

Project Title	Stove Capital Guatemala Improved Stove and Water Purification Project
ERM CVS Reference	2619.V1
Gold Standard Project Reference Number	GS 1321
Client Name	The Paradigm Project
Client Address	619 N Cascade Ave Suite 110 Colorado Springs 80903 USA

Gold Standard Verification Report

ERM Certification and Verification Services

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
EB	Executive Board
CER	Certified Emission Reduction(s)
CL	Clarification Request
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DOE	Designated Operational Entity
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas
GS	Gold Standard
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention for Climate Change
VVS	CDM Validation and Verification Standard

Project specific abbreviations

BWBT	baseline water boiling test
HH	household
ICS	improved cooking stove
WT	Water Treatment
KPT	kitchen performance test
MKS	monitoring kitchen survey
WCFT	water consumption fuel test
SM	Socorro Maya
KS	Kitchen Survey

US	Usage Survey
MS	Monitoring Survey
CRW	Carbon Rights Waivers
DCD	Detailed Customer Databases
TSR	Total Sales Record
NGO	Non- Governmental Organisation
CBO	Community Based Organizations
WHO	World Health Organization

1. Project information

Project Title	Stove Capital Guatemala Improved Stove and Water Purification Project
Gold Standard Project reference	GS 1321
Project Location	Alta Verapaz, Baja Verapaz, San Marcos, Quetzaltenango, Antigua, Guatemala
Host Party	Guatemala
Annex I Party(s)	n/a
Project Participants	Stove Capital, CEMEX, Ecofiltro, The Paradigm Project
Methodology	Gold Standard Methodology "Technologies and practices to displace decentralized thermal energy consumption (version 1 - 11/04/2011)"
Methodology version number	11/04/2011

Monitoring report version made publicly available	01
Final monitoring report version	07
Monitoring Period	01 April 2014 – 31 March 2015
Date(s) of Site Visit	26 April – 02 May 2015

Date/version of Registered PDD and monitoring plan	Version 05; dated 20 September 2013
Date/version of revised PDD (if applicable)	N/A
Date of Initial Gold Standard Approval	13 November 2012
Crediting Period	01 January 2013 – 31 December 2019

Number of emission reductions certified	206,161 tCO ₂ e (146,255 tCO ₂ e in 2014 and 59,906 tCO ₂ e in 2015)
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2. Verification Opinion and Certification Statement

ERM Certification and Verification Services (ERM CVS) was commissioned The Paradigm Project to verify and certify the emissions reductions reported for the period 01 January 2013 – 31 March 2014 as set out in the monitoring report of the project activity Stove Capital Guatemala Improved Stoves and Water Purification Project, Registration Reference GS 1321.

Basis of verification	ERM CVS based its verification work on: - the approved Gold Standard methodology applied in the project design document (PDD) - the CDM Validation and Verification Standard (VVS) - Gold Standard requirements version 2.2 and guidance	
Responsibilities of ERM CVS	ERM CVS is responsible to provide an independent verification conclusion on the reported greenhouse gas (GHG) emission reductions for the project during the relevant monitoring period. The verification activities included desk review, site visit, close out of open issues, preparation of report and technical review.	
Responsibilities of Project Participants	The Project Participants (PPs) are responsible for the preparation of the information and GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the applicable monitoring plan.	
ERM CVS Opinion	Based on the verification activities undertaken, ERM CVS concludes that the project activity is implemented and operated as described in the Project Design Document version 05 and Gold Standard Passport version 01 approved by the Gold Standard. The GHG emissions reductions and sustainability indicators set out in the monitoring report version Version 7 were found to be appropriately measured and calculated in accordance with the applied monitoring methodology 'Technologies and Practices to Displace Decentralized Thermal Energy Consumption' (11/04/2011), the monitoring plan set out in the Project Design Document, Version 05 dated 20 September 2013, and Gold Standard Passport version 01.	
Total GHG emission reductions certified	Emission reductions: 206,161 tCO₂ equivalent	
Report approved by Name: Melanie Eddis Date 28 September 2015		Signature 

3. Introduction

This report sets out the methodology and conclusions of the verification process and the ERM CVS Certification Statement. ERM CVS assessed and verified whether the implementation of the project activity and the steps taken to report emission reductions comply with the Gold Standard criteria and relevant guidance provided by the Gold Standard, and the CDM Executive Board where relevant.

3.1. Verification Objectives

As set out in the Gold Standard Requirements (version 2.2), verification means the periodic independent review and ex post determination by a Designated Operational Entity of monitored reductions in anthropogenic emissions by sources of greenhouse gases (GHG) that have occurred as a result of a registered project activity during the verification period.

The objective of the verification is to establish whether sufficient evidence exists to confirm, to reasonable assurance:

- Whether the project activity has been implemented and is being operated as per the PDD and the Gold Standard Passport and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project activity are in place.
- Whether the applied monitoring plan is in compliance with the relevant approved Gold Standard monitoring methodology.
- Whether the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the monitoring plan and applicable Gold Standard requirements.
- Whether the emission reductions as set out in the Monitoring Report have been measured, calculated and reported in accordance with the requirements of the carbon monitoring plan and the sustainability monitoring plan in the Gold Standard Passport.
- Whether the reported data meet the key principles of data quality and are complete, reliable, consistent, accurate, valid, transparent and conservative.

3.2. Scope and basis of verification work

The verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE.

Based on the key project information set out on page 2, the verification addresses the implementation and operation of the project activity as set out in the PDD and the Gold Standard Passport, and the information and reported emissions reductions set out in the monitoring report prepared by the project participant (PP) for this monitoring period.

The verification tests the data and assertions set out in the monitoring report prepared for this monitoring period by the PPs and is based on

- the approved methodology applied in the PDD the monitoring plan accepted by Gold Standard
- the Gold Standard Passport and its sustainability monitoring plan
- Gold Standard Requirements version 2.2 and Gold Standard Toolkit version 2.2 and its Annexes
- the CDM Validation and Verification Standard (VVS) except where Gold Standard rules or procedures are different
- Other information and references relevant to the project activity's reported emission reductions - refer to Annex 1 for full set of documents

The verification considers both quantitative and qualitative information on emission reductions. The monitoring report is assessed, using a rules-based approach, against the principles of accuracy, relevance, credibility, reliability, completeness, consistency, and transparency. Conservativeness is applied throughout the process to ensure that emission reductions are not overstated.

ERM CVS conducts all its work under strict rules to safeguard impartiality and ensure the independence of the verification team. The verification does not provide any consulting or recommendations for the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

3.3. Appointment of Team Members and Technical Reviewer

Based on ERM CVS's review of the project, a verification team was established that takes into account the coverage of the technical area(s), sectoral scope(s) and relevant host country experience for verifying the emission reductions achieved by the project activity in the relevant monitoring period for this verification

Personnel who undertook this verification were:

Verification Team	Role	CDM Knowledge	Gold Standard Knowledge	Technical Area	Host country	Participated in site visit?
Miguel Cortes	Lead Verifier	Yes	Yes	Yes	Yes	Yes
Sushmita Seelam	Support verifier	Yes	Yes	Partial	No	No

Technical Review	Role	CDM Knowledge	Gold Standard Knowledge	Expertise relevant to Technical Area	Host country	Participated in site visit?
Neringa Pumputyte	Technical Reviewer	Yes	Yes	Yes	N/A	No

3.3.1. Verification Team Member Profiles

Miguel Cortes has 10 years of Climate Change and GHG emission reduction experience, 5 of which was spent working as a project developer and 5 as a Technical Reviewer and Lead Assessor for ERM CVS under CDM, Gold Standard, and Voluntary Standards. Miguel has undertaken several validations and verifications process with certifiable experience for Thermal Energy Generation, Renewable Energy, Energy Demand, Manufacturing (Cement industry), Mineral & Mining process and waste management. He also has experience in GHG assessment projects for Iron & Steel and Oil & Gas industries, metal production, and coal mine methane sectors. Additionally, Miguel has experience in cook-stove and water filters projects and has performed several assessments for biomass and biofuel initiatives. Miguel has 9 years of direct experience in the Cement industry as an Environmental Manager and has spent 2 years on academic research in Environmental Studies and Integral Water Management Systems. In ERM CVS, Miguel has completed the ERM CVS CDM training, as well as Gold Standard methodology training. Miguel is Civil Engineer with Master of Science Degree on Environmental and Water Resources Management and ISO14001 Lead Auditor.

Sushmita Seelam

Sushmita Seelam is a validator/verifier based in London and has been with ERM CVS for two years. Sushmita was the support assessor for the validation of the Impact Carbon Global Safe Water Programme of Activities in Uganda and Rwanda, and validation of the Impact Carbon Safe Water and Improved Cookstoves Global Programme of Activities which covers Uganda and Indonesia (which is a retroactive project and uses the TPDDTEC methodology). Prior to ERM CVS, Sushmita had been working in the sustainability consulting service industry for three years. As a CDM consultant, she has been involved in the development of over 25 CDM and VCS projects in various sectors. Her work also involves research and experience in supply chain evaluation, resource footprinting and life cycle assessment of commodities, with a focus on water and GHG footprinting for sectors such as global energy (especially oil & gas), agricultural commodities etc. Sushmita holds a B.E. in Environmental Engineering and an MSc in Environment and Sustainable Development. She has also completed the ERM CVS CDM validation and verification training and the CDM Gold Standard advanced training.

Neringa Pumputyte is a lead assessor at ERM CVS, where she conducts validations and verifications of CDM and Gold Standard projects and Programmes of Activities (PoAs), and works on assurance projects. She has over 5 years of experience in climate change and GHG emission reductions, having worked as a consultant and project developer prior to joining ERM CVS. Neringa has successfully completed 7 validations of PoAs in the sectors of renewable energy, energy demand, and manufacturing; 5 Gold Standard verifications in the sector of energy demand; and worked on project validations in the sectors of landfill gas and fugitive emissions (oil and gas), as well as corporate GHG assurances. She has led development of the Gold Standard programme in ERM CVS. Before joining ERM CVS, Neringa worked on hydro, cook stove and animal waste handling projects as a project developer. Neringa has completed the ERM CVS CDM training, Gold Standard training, and GHGMI renewable energy training. Neringa also has a BSc and MSc in Geography, and an MSc in Environmental Change and Management from the University of Oxford.

3.4. Verification activities

The verification approach is based on the approach depicted in the CDM VVS and Gold Standard rules, procedures and guidance where they are different from CDM. The verification activities are designed to evaluate:

- Whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period;
- The source and nature of the evidence (external or internal, oral or documented, etc);
- Cross-checks with comparable information available from sources other than that used in the monitoring report, where possible.

3.4.1. Desk review

A detailed desk review was undertaken prior to the site visit. This included the PDD and its carbon monitoring plan, the Gold Standard Passport and sustainability monitoring plan, the validation report, the applied monitoring methodology, relevant external data and reports, on-site documents, and relevant decisions, clarifications and guidance from the Gold Standard, and the CDM Executive Board where relevant.

The desk review included

- A review of the data and information presented to verify completeness and consistency in accordance with relevant Gold Standard requirements
- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, quality of metering equipment (including calibration requirements) and the quality assurance and quality control (QA/QC) procedures
- An evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of emission reductions.

A complete list of all documents reviewed is contained in Annex 1.

3.4.2. Site Visit

A site visit to the project activity was undertaken on 26 April to May 2 2015 to assess implementation and operation of the project activity and to review evidence, and interview key personnel to confirm evidence associated with the data generation, aggregation, calculation and reporting of the monitoring parameters.

The site visit addressed:

- An assessment of the project implementation and operation as per the PDD and the Gold Standard Passport (including visiting households where the project has been implemented);
- Review of information flows for generating, aggregating and reporting the monitoring parameters;
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan. A list of all interviewees is included in Annex 2.
- A cross-check between information provided in the monitoring report and data from other sources such as log books, reports of monitoring surveys, KPTs, Water Boiling Test, Water Quality Test, purchase records or similar data sources to establish the existence of a clear audit trail and records that validate or invalidate the stated data;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- A review of assessment made in determining sustainability indicators;
- Identification of quality control procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters

The site visit included the following:

- Meetings with project's implementation partners, key personnel involved in monitoring and data collection
- Visiting households where project's units are located and used, and interviews with the end users
- Visiting the project's central warehouse and the office of Socorro Maya in San Pedro Carchá – Altaverrapaz and Ecofiltro in Ciudad Vieja - Sacatepequez.
- Reviewing electronic sales, monitoring databases and checking against a sample of paper sales receipts

The verification team aimed to visit a number of units that is square root of the number units surveyed by the PP. As the PP used several surveys for the same clusters, the verification team used monitoring and usage surveys as the guiding surveys for selecting a sample for the site visit. For each scenario the following were the interviews developed during the site visit

Project Scenarios	End users interviewed	Location
Household Water Treatment – Scenario 1 Ecofiltro - includes the BWBT US/MS and Water Quality 17 households	Edelmira Lopez Anastasia Juliana Menchu Garcia Maria Angela Santay Chojolan Maria Antonieta Chojolan Colop Hermanejilda Poz Garcia Mercedes Haz Tomas Chojolan Colop Ana Roselia Ixtacuy Mul Lidia Hermelinda Tzigüila Yac Lucia Chavez Argentina Isabel Poz Mejia Vicenta Mul Chojolan	Xejuyup Quetzaltenango Department,
	Edilberto Modesto Charar Chuta Moisés Ovalle Vásquez Yessica Leticia Ixmocur JOJ Micaela Anastasio Can Vásquez Ramona Carmen Chuta Vásquez	El Novillero Sololá Department
Improved Cookstove & Water Treatment, Dual Installation – Scenario 2 Eko-stove and Ecofilter include KPT. BWBT, Water Quality and US/MS. Taking into account that the scenario considered Eko-Stove and Ecofilter distributed by Socorro Maya, the Verification team also checked the Ecofiltro uses (Scenario 1) 36 Households	Matilde Caz Pop Lucia Quiix Yat de Tec Amalia Cac Ical Maria Carmelina Caz de Sagui Matilde Sacul Chub de Choc	Tzunutz Alta Verapaz Department
	Olivia Sierra Macz de Yat Cesar Alberto Macz Macz Olga Esperanza Pop Rosario Macz de Caal Francisco Pou	Chicoj Alta Verapaz Department
	Francisco Poou Yat Carmela Macz	Samac Alta Verapaz Department
	Angelica Maria Gabriel Santos Alba Marina Santos Belteton Concepción Santos Belteton María Orbelina García de Santos Francisca Hernandez Ajcuc	San Isidro Baja Verapaz Department
	Maura Vitalina Ramírez Velásquez Odevia Noemí Pojoy Tomás Hilaria Carmela Meneces Rabanales Hilda Carmelina Rabanales Enma Rosenda López Velásquez	Divino Tesoro San Marcos Department
	Eva Julia Pablo Gómez Lily Yomary Pojoy Miriam Yolanda Miranda Castañón Nicolasa Victorina Aguilón Orfa Mariselda Gómez Mazariegos	Nueva Generation San Marcos Department
	Luis David Ruiz Clemente Aholibama Jehuda Perez Orozco Lucinda Otilia Vásquez Bravo Osmar Roelbi Lopez Bautista Gabriel Macario Juarez gonzales	Barranca Grande San Marcos Department
	Rogelina De Jesus Roblero Selvin Vitaino Mejia Hernandez Aura Marina Ramos Puac Juan Jose Perez Morales	Cancela & Linda Vista San Marcos Department

3.4.3. Reporting

After the site visit, a draft report is prepared with the preliminary findings of the verification. Where it is not possible to confirm compliance, the verification team raised findings as follows:

- Clarification Request (CL): where information is insufficient or not clear enough to determine whether the applicable requirements have been met.
- Corrective Action Request (CAR): This is issued where:
 - Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
 - Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;
 - Issues identified in a Forward Action Request (FAR) during validation (or previous verification) to be verified have not been resolved by the project participants.

The verification process may be stopped until this information has been made available to the verifiers' satisfaction. Failure to address a CL may result in a CAR. Information or clarification provided as a result of a CL may also lead to a CAR.

Forward Action Requests (FAR) may also be raised for actions if the monitoring and reporting require attention and/or adjustment for the next verification period. These have no impact upon the completion of the current verification activity.

After satisfactory close out of CARs and CLs, the final report presents the verification activities undertaken; the issues raised, and explains how these issues have been closed out to enable the final verification conclusions to be made.

3.4.4. Independent technical review

The verification activities and content of the report are subject to a review by an independent technical reviewer. The role of the Technical Reviewer is to provide oversight that all procedures have been followed by the verification team and all conclusions justified and supported by evidence. The Technical Reviewer will either accept or reject the recommendations made by the verification team.

4. Verification Findings

4.1. Status of open issues from validation and previous verification

ERM CVS reviewed the validation report for this project and the Gold Standard reviews of the project registration. The FARs have been addressed as follows:

Forward Action Request	Date and document (Validation or verification)	Verification activities undertaken to close the FAR	Draft OK/ CAR/CL	Final OK/ Not OK
FAR 1 For the next verification process, the DOE should check that the PP has carried out the following: 1. PP should show the complete list of CRWs signed by all CBOs/NGOs and DOE should evaluate how is the end-users information collection by these institutions. 2. There is not clear record of bulk sales through CBO/NGOs institutions in the TSR. 3. Ecofiltro have created a unique inventory distinction reserved exclusively for project activity sales 4. Invoice number is included in the DCD data records of Ecofiltro. 5. DOE should check that the Operation Manual is consistent with all field monitoring procedures and collection and management of information is consistent with the physical data. 6. The DOE shall check that the end users who signed the CRW electronically understand what they are signing.	Final Verification Report from the 1st verification /6/	Although there is a significant improvement on operations procedures /25/ in terms of data collection, registration, sales records and traceability, the Scenario 1 project databases shows (i.e. Ecofiltro TSR and DCD) that the monitoring procedures defined in the Operation Manual are only partially completed. ERM CVS found some inconsistencies: • The list of signed CRWs by the CBOs/NGOs is incomplete. The bulk sales through CBOs/NGOs are around 80% of total sales but only 60% of sales have CRWs signed. • Total Sales Record (TSR) of Ecofiltro is not sufficiently clear /11/. There are not full sales of monitoring period and some records are not clear enough. • The TSR mixed current and previous invoice systems which is not consistent with the Operation Manual. The Ecofiltro should use only the invoices Series C but Verification found records with the previous system (i.e. invoices Series A) • During crosschecking the Verification team found serious inconsistencies in the records. Some records are not matching between the TSR/11/ and DCD/12/ and some invoices were not consistent with the records. For example the invoice C-685 appeared as Ecofiltro direct sales when the records is related with the NGO bulk sales. This issue is not consistent with the monitoring plan and Operating Manual/2/25/. • The filters sales records to Maya Relief Foundation are not consistent with the number registered in the Project Scenario 2 data bases/10/. The Project Scenario databases shall be reviewed and updated with the 2015 year. There is information which is not consistent. • During the CBOs/NGOs interviews/IV19/IV20/IV21/ the representatives expressed that Ecofiltro has not been clear enough with the requirement to collect the end users information. ERM CVS confirmed that the NGOs/CBOs are able to provide the information but this was not requested by Ecofiltro • Verifier found that there are no clear procedures to account and register the filters provide to schools. A CAR 1 has been raised requesting the integral revision of data records and complete the FAR 1 request. According to PP's responses, evidence submitted and additional analysis, ERM CVS conclude the following:	CAR 1 CL 1	FAR 1

		1. Although a revision of Ecofiltro's Databases/11/12/ was done during monitoring process, PP was not able to complete the collection of all CRWs for sales to NGOs/CBO's and review the operational procedures with the Ecofiltro's sellers and field supervisor. Therefore, the PP proposed a 6 months' work plan to complete CWRs collection from partners and institutions, do an integral revision of the databases, execute a weekly supervision of registration system and develop a re-training program to the Ecofiltro sellers and supervisors' team to avoid future inconsistencies. See details in CAR 1. ERM CVS found reasonable the scope of the work plan and the next verification should verify the efficiency and effectiveness of activities developed. FAR 1 for the next verification process was raised. 2. A significant improvement on NGO/CBOs' bulk sales was implemented during the verification process. Now the TSR /10/11/ is clear and traceable. Furthermore, the PP clarified and justified the inclusion in the Ecofiltro's TSR the filters installed in the rural and peri-urban schools/38/. ERM CVS confirmed with the PDD/2/ that the institutional fuel users can be part of the scope of work of the project activity, therefore there is no limitation to schools inclusion. From the review of Ecofiltro's evidence, ERM CVS was able to confirm that the program starts formally in 2015, providing one filter per class-room in the schools in areas of project implementation. The schools through a signed contract/38/, the director, teachers, parents and community leaders assumed responsibilities to guarantee the use, training and maintenance of the filters to the kids. According to documents, the verifier confirmed that the schools, like households targeted by the project, have unsafe water and the baseline practice under suppressed demand is water boiling/38/. Further, the number of total users per filter in a school is higher than in the households. Therefore ERM CVS agrees that the assumption that the filter in schools is the same as households, is conservative. Taking into account that the Verifier was not able to visit schools during the site inspection, a representative number of schools shall be included in the next verification process for the DOE to visit. See FAR 1 3. PP presented a credible justification/37/ of invoices mistakes done during the monitoring period. A total of 236 filters were excluded from the TSR due to not having a reliable transaction support, which is conservative. Any case, an integral review of invoice system should be included during the inspection of the next verification process to check if similar inconsistencies would appear again. See FAR 1 4. The revised Ecofiltro's DCD/12/ included the invoices references and the DCD records consistent with the TSR (fully traceable) 5. The differences found during the verification process were corrected.. ERM CVS agree that PP would not be able to get all end users data, however the PP should ensure the compliance with the final users registration requirements stated in the Operation Manuals/25/26/. This shall be checked during the next verification		
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		6. The verifier found during the site inspection that the final users understand better the meaning and purposes of CWRs and program in general terms compared to the interviews in the first verification. CAR 1 is closed. Additionally, the PP did not include relevant discussion and proper responses of the FARs in the MR. CL 1 has been raised PP included relevant discussions in the FARs section in the Monitoring Report /5/. The CL 1 has been closed.		
FAR 2 The San Marcos (SM) department seems to have high fuel savings i.e., 80% as compare to the Alta Verapaz (AV) department i.e., 69%, which is close to the savings reported by the technology provider elsewhere. However, there is no apparent reason for this variation. The emission reduction volume in question is quite low, therefore the PP is requested to carry out the additional KPTs in SM department to ensure the fuel savings level prior to next issuance	3-week issuance review period under GS Version 2.2 /4/	ERM CVS confirmed by reviewing the report/06/ and during site inspection that PP conducted the KPTs in the communities of Linda Vista, Cancela and Nueva Esperanza located in the San Marcos Department, as follows: • 41 paired household KPTs • 55 baseline household KPTs After removal of outliers, results of paired KPT tests on 35 households were used for calculations During the households inspection in Linda Vista Community, the Verifier checked and found that: 1. The final users confirmed the presence of CO2 Management's enumerators in January 2015. 2. During the days of monitoring, two enumerators arrived early morning to weight and prepare the firewood for the daily cooking activities. Furthermore, they asked different questions about food, meals and number of persons during the day per each meal and determine the amount of wood used per day. The task has been repeated during three consecutive days as the Verifier confirmed. According to the KPTS supports/7/ the minimum family size is 4 persons (2 adults and 2 children) and the average size is 6 persons. During the inspection, it found a variety of meals for breakfasts, lunches and dinners. The typical meals cooked per day are tortillas, beans, eggs and tamal for breakfast and snacks, vegetables, bananas, meat, chicken, rice for lunch and dinner; which it is consistent with the calculation of the 19 person-meals per day calculated by the PP/7/ and cross-checked with the users during the household visit. 3. All monitored households, before the KPT started, received a water filter to avoid that the end users need to boil water for the safe water provision 4. Furthermore, during the site inspection in household where the paired KPTS done the Verifier confirmed that they only use firewood and traditional open fired in their homes before getting the eko-estufa project activity (i.e. three stone or their traditional stoves called by the users "polloton"). 5. The users also confirmed the installation of the Eko-stove and the monitoring activities have been repeated with the new stove. Furthermore, they expressed their complete satisfaction with the project activity equipment; which has been confirmed by the Verifier with the Socorro Maya project data base/10/ In terms of additional KPT results/7/, the Verifier checked	CL 2	OK

that the the calculations are correct and consistent with the quantitative and qualitative data collected during the test. No issues have been found according to the GS Methodology requirements/05/

Comparing the results with the previous issuance for the San Marcos area, ERM CVS confirmed that they are consistent and the fuel savings are in the same range..

Parameter	1 st KPT/9/	2 nd KPT/7/
	San Marcos	
Saving fuel day Lbs / hh / day (%)	35.58 (82%)	31.47 (73%)
Fuel savings tons/meal/day	0.0011	0.0015

In terms of emission reductions calculation/1/, ERM CVS confirmed that PP applied a conservative weighted average factor of **0.0092** tonnes of fuel wood/person meal/day derived of weighted fuel savings in San Marcos and Alta Verapaz against sales from those regions and the others. The assumptions of fuel savings numbers have been done taking consideration of the geographical proximity and similar characteristics

Region	Stoves Sales %	tons/meal/day
Alta Verapaz	29%	0.0006
Baja Verapaz	31%	0.0006
San Marcos	38%	0.0015
Others	1%	0.0006
Weighted average		0.0092

In terms of fuel savings analysis, the Verifier dedicated reliable time with the end users during household's visits in San Marcos, to understand the cooking practices and wood uses to try to make some conclusions for wood savings. ERM CVS found that:

1. In the baseline condition, there is a custom of leaving wood burning to keep open fire place heated all day. Some users need to cook traditional Nixtamal or tamal and keep the burner ready for preparing meals quickly (i.e. lunch, snacks and dinner). In cases of open fires, plancha or polloton stoves the reason to keep firing is related to the difficulty to start fire ignition. It implies effort, smoke and time to have reliable temperature to meals preparation. In these cases, the users leave a few thick logs of wood to prevent fire from extinguishing. In contrast, in the project condition, all users confirmed that the fire in Ekostoves is quickly and fastest and therefore, no necessary to keep burning the wood if no cooking requirement.
2. Furthermore, in baseline condition, the users have the tendency to use more wood than would be necessary because they could feed wood anywhere as opposed to Ekostove that has a small entrance to the combustion chamber, where the amount of wood that can be added is only what is needed.
3. Additionally, the Verifier checked that during the cooking baseline process, the residents use a hard wood or special wood instead of any type of residues or thin logs wood, which make a significant differences with the project activity Eko-stoves, where any type of wood is possible with relevant efficiency.

		4. According to the data collected during the site inspections, the Verifier tried to make the translation of the local and regional measuring units applicable to the wood consumption; such as tarea (task), bestiada (the best), manojo (that you could charge), metro (linear metro of height), to identify the order of magnitude of fuel savings before and after to EKO-stoves installation. From this analysis, ERM CVS concluded that the final user unanimously recognized that they have fuel saving between 60 to 80% of baseline conditions. In terms of fuel consumptions and differences between Alta Verapaz y San Marcos, it is difficult to identify clearly the reasons for these differences. Probably, one of the differences that it was possible to see during the analysis of the test it could be a consequence of the altitude, which make influence in the wood consumption. While the Alta Verapaz is located at an altitude of 1,400 meters, San Marcos is around 3,000 meters. During the inspection, the final users in San Marcos confirmed that they need heat water with different purposes such bathing purposes or hot meals requirements. While in San Marcos the people use more than 40 Lb of wood per day/7/, the average value in Alta Verapaz is only around to 29 Lb/day /9/ as reveled the KPTs. If the eko-stove made positive influence on wood saving, therefore the savings would be higher according to the proportion of the stove use. In terms of monitoring procedure applied, ERM CVS confirmed that all test practices were in line with the methodology requirements, however, the KPT reports lacked clear descriptions and relevant references to the types of stoves tested. The CL 2 was raised. From the new version of KPT report/7/, ERM CVS confirmed that clear references to stove models were included by the PP. The Plancha-stoves is an improved stove with significant differences to the Open fired stoves, which is the baseline scenario. Furthermore, PP applied the values of 3-stone fires for plancha-style baseline stoves in the ER calculation, which is conservative. CL 2 is closed		
FAR 3 The methodology allows crediting of multiple baseline scenarios depending on type of technology, usage pattern etc against the same project scenario. However, it shall be noted that for such cases the baseline studies are carried out for each scenario (Page 9, TPDDTEC). If such a scenario exists, the PP shall demonstrate that these stoves (metal grate and cinder block) shall be treated as a separate stove and DOE shall provide his opinion at the time of next issuance. Furthermore, The PP shall	Verification	ERM CVS, during the site inspection in Xejuyup Community, Quetzaltenango Department, confirmed that the BWBT was developed according to GS directions. Two trained enumerators of CO2 Management (i.e. third party consultant) conducted the water boiling test on the stoves of households selected from the SM pre-sales list and using their own pots according to the Global Alliance for Clean Cookstoves BWBT protocol /16/. The stoves users confirmed that the enumerators in anticipation prepared the wood, selected the pot, asked some questions and took several measures and data before, during and after the testing. The PP developed the monitoring procedure in 13 households with the open-fire stoves. During the inspection, the Verifier was able to confirm that the open-fired stoves correspond to the three stones, metal grate and cinder block stoves types. All of	CAR 2 CL 3	OK

carry out the supplementary WBTS for three stone stoves to meet the sample size requirement of methodology. Please follow the KPT guidelines (Table 3, Annex -4, Page 44, TPDDTEC methodology) to determine the sample size		these stoves have similar characteristics related to stack up the wood without combustion chamber and no air flow direction. PP did not treat as separate stoves, which is conservative and consistent with the ER calculations. Also, the PP did additional BWBTs on “plancha-stove” type demonstrating the lower performance comparing with the open-fire stoves. However, they did not apply these differences in the parameter $W_{b,y}$ calculation, which is conservative. The verifier confirmed that the types of stoves used are consistent with the test photo registration/20/ and all procedures seem reasonable and credible. However, the verifier found the following issues to be inconsistent in the report/20/: • The testing procedure states that every monitored point in the households should be tested at least three times. The BWBT's spreadsheet/20/ shows only one point per household. • The report did not present reliable description of calibration procedure of elements used for the test • The reports mentioned that they used formats and templates from the Clean Cookstoves Methodology, which is not consistent with the reports submitted/20/ • Apparently, the enumerators did not pay attention to some methodological test procedures; such as not use hotter water than ambient temperature or prepared at least 5 kg of wood. • There is no discussion of how the size of sample was defined according to KPT A CAR 2 has been raised in order to request justification of differences with the methodological procedures. From the new version of BWBT report/20/ ERM CVS confirm that PP attended and responded all issues requested during the verification process. The Verifier found that field testing procedures and data collection and data management were developed according to the Clean Cookstoves Guidelines/16/. The BWBT reports/20/ clarified the calibration procedures and there were no issue with the formats and templates. The sample of 13 households in open-fire stoves with single test per point was developed with previous GS approval /35/ and the additional testing in the 13 households plancha-stoves followed-up the same procedure . The election to use the values associated with the 3-stove fire to Plancha-stove is credible and conservative. The CAR 2 is closed ERM CVS checked with the Report/20/ and training materials/22/ that all considerations were included in the training materials. The PP did not provide relevant evidence of CO2 Management training process. A CL 3 has been raised. From evidences submitted by the PPs, ERM CVS confirmed that Enumerators received proper training/23/ and the CO2 Management is a credible third party /32/. The CL 3 is closed	
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4.2. Project Implementation in accordance with the PDD

As per VVS section 11.4.2 /27/, ERM CVS evaluated the conformity of the project activity and its operation with the PDD. This assessment was undertaken on the basis of the site visit, review of documents and interviews with relevant personnel.

During the site visit, ERM CVS assessed whether all features of the project as described in the PDD are in place and that the PP has operated the project in accordance with operational criteria set out in the PDD.

The project covers distribution and sales of the cooking stoves and water purification devices. The volumes of sales are not projected in the PDD.

4.2.1. Overview of project design

The current monitoring period details the implementation of 2 project scenarios:

- Project Scenario 1 (hh-wt): Household Water Treatment - consisting of households using project water treatment technologies that displace the use of biomass for water purification.
- Project Scenario 2 (hh-dual): Household Improved Cookstoves + Water Treatment - consisting of dual implementation of project improved cookstoves and water treatment technologies that displace the use of biomass for water purification and allow for the efficient use of biomass for cooking.

The registered PDD includes an additional scenario (Project Scenario 3 (hh-ics): Household Improved Cookstoves – but this scenario does not apply for the current monitoring period as confirmed during the site visit and document revision/10/11/12/

The project targets populations within Guatemala – primarily the rural and peri-urban domestic fuel wood users, majority of whom use traditional unimproved stoves. It aims to improve the health and incomes of Guatemalans by reducing time and money spent acquiring fuel for cooking and by providing local populations with improved access to clean water. The project provides affordable improved cook stoves to replace inefficient traditional open fires (i.e. polloton) in rural and peri-urban areas. It also provides high quality, affordable water purification devices that increase access to safe drinking water and reduce the need for boiling water for drinking/sanitation.

The project is implemented by multiple partners:

- Stove Capital LLC is a company established for the purpose of financing the project and bringing local partners together to scale the project through carbon financing.
- CEMEX is an international cement manufacturing company with operations in Guatemala. CEMEX worked with local partner Socorro Maya, with international improved stove design expert - Peter Scott, and with Burn Design Lab to design the Eko-stove and has established local manufacturing operations for the Eko-stove.
- Ecofiltro S.A. is a Guatemalan business created to manufacture and market the locally designed Ecofiltro water purification devices. Ecofiltro is a company established on the belief that business practices and sustainable markets can more effectively address the lack of access to clean drinking water in Guatemala. It manufactures and distributes the Ecofiltro technology under Project Scenario 1.
- Socorro Maya is a non-profit Guatemalan organization with the goal of serving the humanitarian needs of the poor. It distributes the Eko-stove and Ecofiltro to Guatemalan communities and provides training and follow-up to ensure technologies are used correctly (i.e. Socorro Maya distributes all technologies under Project Scenario 2).
- The Paradigm Project is an international social enterprise specializing in the development of clean cook stove projects and in carbon finance for scale-up and development of sustainable supply chains. The Paradigm Project has partnered with Stove Capital LLC to finance the development of a carbon program in Guatemala and to facilitate processes for tracking and monitoring of the project.

A brief description of the project technologies has been presented below:

- Eko-Stove: As described above, the Eko-stove was designed by engineers at CEMEX with the support of local partner Socorro Maya, an improved stove design expert - Peter Scott, and the Burn Design Lab. The stove is a large metal 'plancha' stove made up of cinder blocks and concrete as the team checked with all household inspection during the site visit. The average thermal efficiency of the stove is 15.4% and the stove has a power output of 8.95 kW with a lifetime on 10 year as could be cross-checked with the Registered PDD/20/ and with the Manufacturing specification provided by the PP/35/. The stove is locally appropriate for Guatemalan cooking needs, providing beneficiaries ample

space to cook daily food, local foods and large meals. Socorro Maya is the local Project partner responsible for the sales and installations of Eko-stoves.

- **Ecofiltro Water Filter:** The Ecofiltro is manufactured locally by Ecofiltro S.A. This water filter purifies water by a gravity fed porous ceramic filtration element. The ceramic element has a pore size of 0.6 to 0.3 microns and is lined with colloidal silver which helps to remove impurities and disinfect the filtered water. The filter has a flow rate of 1-2 liters per an hour and a maximum capacity of 20 liters and has a lifespan of at least 2 years as it could be checked during households inspection and checked with manufacturing specification/35/. Ecofiltro S.A is the local Project partner responsible for the sales and installations of Ecofiltro water filters.

Under this monitoring period, the project proponents are claiming credits for the use of stoves and water treatment technologies during the period 01 April 2014 – 31 March 2015, for the stoves and filters that were sold from the start of the project in January 2013 to the end of this monitoring period. According to the last version of the monitoring report and ER calculation, the project activity installed

- 3.599 improved wood stoves sold/installed (resulting in 29.390 tons CO₂e reduced from improved stove technologies)
- 37.984 water filters sold/installed (resulting in 197.700 tons CO₂e reduced from water treatment technologies)

Compliance question	Verification activities undertaken	Verification findings (including justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
What is the Implementation and operation status of the project? Are all physical features of the project activity in place as per the PDD?	Review of the monitoring report and registered PDD Review of project sales records (TSR) and Detailed Customer Databases (DCD) Interviews with The Paradigm Project and Impact Carbon staff and Project Partners during the site visit listed in A.2. Visits to a representative sample of households for project scenario 1 and 2	During the site visit, ERM CVS confirmed that the project activity implementation for the monitoring period consists of installation of stoves and filters by Socorro Maya distribution (Project Scenario 2) and Ecofilters (Project Scenario 1) distributed by Ecofiltro S.A through CBOs/NGO or local distributors in Guatemala. ERM CVS checked that the same type of Eko-Stove and model of Ceramic Water Filter are being disseminated during this monitoring period. Although the MR is consistent with the PDD/1/, the Verifier found that some references of data sources are wrong or not clear enough and there is not clear description of actual status of project implementation. Furthermore, the PP did not include relevant discussion of FARs resolutions. CL1 has been raised. From the revision of latest version of MR/5/, ERM CVS confirmed that all cross-reference with individual testing reports, spreadsheets and evidences are included. Also the FAR discussions are complete and sufficiently clear. The CL 1 is closed.	CL 1	OK
Does the monitoring report correctly state the implementation and operational status of the project activity?	Review of the monitoring report and the registered PDD. Interviews with Paradigm and its partners Review of project sales records (TSR) and Detailed Customer	Although the MR is fully consistent with the PDD/1/ and includes a clear description about the monitoring campaign and surveys and all physical features of the project activity as confirmed during the site inspection. However, ERM CVS was not able to confirm the total sales and filters distribution due to inconsistencies in the Project Data bases See CAR 01 From the latest version of ER calculation/1/ and the project databases/10/11/12/ ERM CVS can confirm that the total number of sales transactions during the monitoring period are transparent, credible and traceable. The PP did a significant improvement in project databases content, eliminating inconsistencies and clarifying the transactions	CAR 1	OK

Compliance question	Verification activities undertaken	Verification findings (including justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	Databases (DCD). Interviews with The Paradigm Project, Ecofiltro and Maya Relief during the site visit listed in A.2. Visits to a sample of households	/37/ that by mistake were not registered according to the Operative Manual/25/. CAR 1 is closed.		
Have provisions been implemented for the transfer of carbon rights to the project developer?	Review of the monitoring report and the registered PDD. Interviews with Paradigm and its partners Review of project sales records (TSR) and Detailed Customer Databases (DCD). Interviews with The Paradigm Project staff and project partners during the site visit listed in A.2. Visits to a sample of households	Although there is an important improvement of the recording system, Ecofiltro did not have all signed Carbon Rights Waivers from NGO's/CBOs water filter distributors. Only the 60% of bulk sales in this monitoring period is backed by supporting information, which is not consistent with the requirements of FAR 1. In addition, during the phone interviews with the NGOs representatives they express their readiness to provide the final user data registration to Ecofiltro if they are requested. These issues also have included into the CAR 1 ERM CVS find reasonable the proposed 6 month work plan proposed by the PP, to finish collecting all CRWs from NGO/CBOs entities, do an integral revision of the databases and execute a weekly supervision of registration system. FAR 1 was raised to check the effectiveness and efficiency of this process during the next verification. CAR 1 is closed.	CAR 1	OK

Conclusion

Based on the verifier's site visit, it can be confirmed that all physical features of the project activity have been implemented in accordance with the PDD and the Gold Standard Passport. No specific monitoring equipment had to be installed according to the monitoring plan /5/. ERM CVS confirmed, through the visual inspection that all physical features of the Gold Standard project activity have been implemented in accordance with the PDD. Only one type of Eko-Stove and one type of Ceramic Water Filter were disseminated during this monitoring period.

The project activity was also confirmed to be fully operational in accordance with the PDD.

4.3. Compliance of the monitoring plan with the monitoring methodology

As per VVS section 11.4.3, ERM CVS evaluated whether the monitoring plan complies with the requirements of the applied methodology.

Compliance question	Verification activities undertaken	Verification findings (including justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Is the monitoring plan in compliance with the applied methodology?	Check of the revised monitoring plan in the PDD against the applied methodology	The application of the monitoring methodology was found to be appropriate and ERM CVS confirms that the monitoring plan is consistent with the requirements of the Gold Standard Methodology "Technologies and practices to displace decentralized	OK	OK

		thermal energy consumption (version 1 - 11 April 2011).		
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Conclusion

ERM CVS confirms that the registered monitoring plan is in accordance with the methodology applied for the project activity.

4.4. Compliance of monitoring with the monitoring plan

4.4.1. Overview of monitoring system

The monitoring system, as set out in the registered PDD, includes the monitoring of the following aspects:

Usage surveys: Usage surveys are designed to estimate the percentage of project technologies still in use within the sales population, i.e. to account for drop off rates as project technologies age and are replaced. The usage survey provides a single usage parameter that is weighted based on drop off rates that are representative of the distribution of stove vintages in the total sales record. All usage surveys are done by means of visual inspection/face-to-face assessments. These usage surveys are carried out at least once every 2 years.

Monitoring surveys: The monitoring surveys are used to investigate changes over time in a project scenario, providing information on year-to-year trends in end user characteristics such as technology use, fuel consumption and seasonal variations. For Project Surveys (PS) and Water Quality (WQ), the sampling frame is drawn from the Project Database as defined by sales date, appliance type, serial number, and end-user information. The sampling frame for the Leakage Assessment (LA) is determined according to leakage type. Regarding frequency of monitoring surveys: PS and WQ are completed annually, and LA is completed every once every 2 years.

Baseline and project performance field tests: The baseline and project performance field tests (BFT and PFT) measure real, observed technology performance in the field. The FTs will be undertaken by using either testing a paired sample (baseline and project performance measured for same subjects) or by independent sampling (different subjects, and usually different sample sizes, for baseline and project scenarios); where applicable a single sample test may be conducted.

Baseline Water Boiling Tests (BWBT): these are conducted for water treatment project scenarios to measure the performance of baseline stoves used for boiling water. The test results are used to determine the quantity of fuel required to purify by boiling one litre of water for 10 minutes using technologies and fuels representative of the baseline scenario. Baseline water boiling tests only need to be updated if the monitoring surveys show that water boiling technologies change over time.

Water Quality Tests (WCFT): The water quality test (WQT) is conducted to ensure that the water filters disseminated during the operation of project activity are treating water effectively. Water quality testing may be conducted either in the field or by transportation to laboratories; in all cases the testing approach must be described fully in monitoring reports, credible 3rd party endorsement must be included, and the appropriateness of the testing approach must be justified.

Record Keeping (Data Management) - Implementation Synopsis

Total Sales Record (TSR): This is designed to record the number of units sold of each technology. An ongoing record, the TSR for each technology is a record of all project technologies that have been sold to the end user.

The TSR for stoves is collected from sales invoices, and includes each individual stove sold. The database includes the date of installation, end-user's name and contact information (when possible), stove serial number, and the geographic location (community and department). Since all stoves distributed were of the same model, the stove model was not recorded. An integral part of Socorro Maya's sales and customer care process is the filling out a stove registration form that serves to collect end user contact information. These records are also used for Socorro Maya's internal follow-up processes for warranties and servicing.

Socorro Maya communicates the transfer of carbon rights and the need to dismantle traditional stoves on each sales contract signed by improved stove end-users. A component of warranty registration informs the consumer that enrolling in the warranty program also waives rights to carbon credits associated with the use of the stove. Warranties are invalid if the end-user continues to use their baseline stove.

The stove TSR is used for customer follow-up and sampling for project monitoring. All data is collected in paper form then entered manually into the excel database.

The TSR for filters was recorded from sales invoices from bulk sales. Due to Ecofiltro's distribution model of distributing filters in batches to NGOs/CBOs and communities, and the difficulties of collecting sales information at the end-user level, the PP

elect to track bulk sales as per the methodology. The TSR includes distributors or end-users names, number of technology units in the batch, date of sale, and contact information when available. The technology model was not included as all stove and filter technologies distributed were of the same model. Technology identification numbers and end-user information for Project Scenario 1 and 2 is collected in the Detailed Customer Database (DCD).

NRB fraction: The non-renewable biomass fraction is fixed based on the results of the NRB assessment. Over the course of a project activity the PP may at any time choose to re-examine renewability by conducting a new NRB assessment. In case of a renewal of the crediting period the NRB fraction will be reassessed as any other baseline parameters and updated in line with most recent data available.

Leakage: this is assessed biennially based on an assessment of each of the leakage sources identified by the methodology.

Compliance question	Verification activities undertaken	Verification findings (including justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Was the Total Sales Record collected accurately and in accordance with the methodology and registered monitoring plan?	Review of the Total Sales Records & Detailed Customer Databases spreadsheets Review of sales invoices records for each project scenario Interviews with Paradigm and project Partners such as Socorro Maya and Ecofiltro S.A. Interviews with NGO's partners Review the Operation Manuals for Ecofiltro and Socorro Maya	By reviewing the Eko-stoves database/10/, the verifier found that the Socorro Maya database records show credibility and strong transparency including traceability of the signed carbon right transfers. Sales invoices and final users data are registered in a 100%. However, some inconsistencies have been found during document review. See CAR 1 and CL 4 to request clarification and improvement. During the cross-checking inspection of the Ecofiltro S.A. databases/11/12/, ERM CVS found that the records are not fully consistent with the invoices; some references of distributors are not clear and there are wrong references in the DCD and others. CAR 1 has been raised to request its improvement and correction. As discussed in the previous section, ERM CVS confirmed that latest version of Socorro Maya and Ecofiltro's TSR and DCD/10/11/12/ are consistent, traceable and consistent with the monitoring plan/5/ and GS methodology. Additional improvements and project operations shall be implemented and improved during the 6 months work plan, which should be verified during the next verification. See FAR 1 CAR 1 is closed	CAR 1	FAR 1
Was detailed customer data collected appropriately and is it representative of the sales record?	Review of the Total Sales Records & Detailed Customer Databases spreadsheets Review of sales invoices records for each project scenario Interviews with Paradigm and project Partners such as Socorro Maya and Ecofiltro S.A. Interviews with	The project database/10/ for Improved Cookstove & Water Treatment sales through Socorro Maya seems appropriate and fully traceable with the TSR. Customer data is collected for all end users of Eko-stoves. However, PP shall clarify some data in the project database/10/, which is not consistent with the Operation Manual/26/. See CL 4 ERM CVS confirmed that the updated Socorro Maya project database is consistent with the Operating Manual/26/ and MP/5/. PP justified the changes in the current version: the content is the same as in the previous version of the database but data is organized by regions, which helps for cross-checking process. CL 4 is closed In terms of Water Filters databases, PP should do an integral revision to clarify and review some aspects related to final users' data recording system. The databases shall include the final users that the NGOs would be able to provide. See CAR 1 ERM CVS confirmed that the PP did an integral revision of	CAR 1 CL 4	FAR 1

Compliance question	Verification activities undertaken	Verification findings (including justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	NGO's partners	project activity databases/10/11/12/ and introduced relevant changes and corrections in the register system. Now the databases are traceable and credible. Some additional improvements in terms of NGO/CBO operation should be implemented during the next 6 months, and these improvements should be checked during the next verification period. See the FAR 1 raised. CAR 1 is closed.		
Were surveys implemented and data collected in a way that minimises errors and bias and ensures conservative estimate of emission reductions?	Review of monitoring and usage survey results and reports, cross checks against filled in paper questionnaires Interviews with the staff of The Paradigm project, implementing partners, and CO2 Management enumerators	During the site visit, ERM CVS confirmed that the Water Quality, KPT, BWBTs, Usage Surveys, and Monitoring Surveys have been conducted. The Verification team visited a sample of households where the above surveys and tests have been done and confirmed by interviewing the users that CO2 Management conducted the activities described in the survey and test reports in their kitchens, asked question and took physical measurements before, during and after activities. However, neither the Monitoring Report/5/ nor the individual reports for MS/US/18/19/, Water Quality/14/ and KPT/7/ are clear enough on the sampling size definition, site selections and sampling frame definitions for every test and survey. The sampling spreadsheet supplied by PP is not consistent with the monitoring period data and the cross-checking is quite complex. CL 5 has been raised to request description improvement and clarification on supporting documents. ERM CVS confirmed that PP clarified in the Monitoring Report/5/ and field testing and survey reports /7/14/18/19/ the sample frame, sample size calculation, and sample selection. Survey/test results from the Issuance 1 were used to inform the expected mean and variance for calculating the sample sizes for this monitoring period. The use of means and standard deviation from the previous issuance is acceptable for the Issuance 2 conditions because the areas and households characteristics have the same characteristics of targeted households as in Issuance 1. The sample frames were confirmed to be appropriate. Further details can be found below. The CL 5 is closed. Baseline & Project Fuel Tests: During the household visits in San Marcos Department, the verification team selected a household where the KPT test has been conducted. Into the inspections the Verifier checked the data provided to the enumerators, and undertook an in-depth observation of cooking practices and developed wood saving assessment. These observations have been cross-checked with the visits to others areas where the stoves have been installed and no KPTs were developed. According to the assessment, it was possible to confirm that PP developed 41 paired KPT and 55 baseline KPT samples in San Marcos. The 41 paired KPT correspond to the GS's FAR 2 and the baseline KPT to characterize the "Plancha-Stoves" fuel consumption. The CO2 Management's enumerators conducted the activities and the end users confirmed that the main benefits of Eko-stoves use is the significant portion of wood savings (i.e. more than 70% of previous practice). 6 outliers were removed from the analysis of paired KPTs.	CL 5 CL 6	OK

Compliance question	Verification activities undertaken	Verification findings (including justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		Cookstoves & Water filters US/MS Survey: from the site inspections in the Departments of Alta Verapaz, Baja Verapaz, San Marcos and Quetzaltenango, ERM CVS confirmed that US and MS were conducted by CO2 Management. A total of 118 US&MS for Project Scenario 1 and 125 US&MS for Project Scenario were developed. Furthermore, the verifier checked that a trained enumerator visited the household and collect information according to the designed surveys. The results registered in the data bases/18/19/, which are consistent with the information checked by the DOE in the site inspections. The enumerator asked different questions related to the level of satisfaction, demographic issues, maintenance process, seasonal cooking differences and the daily cooking practices into the others. The differences between data collected in the site inspection with the data records were minimal, therefore the survey results are fully consistent with the context of the project activity and their equipment. Water Quality: During the inspection to households in Quetzaltenango Department, ERM CVS checked that the CO2 Management's enumerators have approached the end users of filters to collect a sample of water to be conducted to the lab for the quality testing. The results were provided and explained. During the inspection, the Verifier found some filters have been used for more than 2 years (i.e. the expected filters life time). Although the users are conscious that the filter should be changed, the Ecofilter's regional operators /IV18/ confirmed that the filter was not changed because the owners have not been paid for the new unit. The treatment of these filters in the ER calculation/1/ was not clear enough and other inconsistencies have been found during the document cross-checking. A CL 6 has been raised to request PP clarifications. ERM CVS confirmed that the filters with more than 2 years in operation were excluded from the crediting period, and no emission reductions accounted for them from the point they reach 2 years operation. The inconsistencies founded during the cross-checking were corrected in the reports/14/15/ CL 6 is closed.		

4.4.2. Completeness of monitoring parameters

The verification team evaluated the monitoring of each parameter stated in the monitoring plan. The parameters included in the monitoring plan are listed below and a full description of each parameter and the verification activities associated with monitoring of each one is included in Section 4.4.3.

Monitored parameter in monitoring plan		Included in the Monitoring Report?	Draft OK/ CAR/CL	Final OK/ Not OK
Parameter	Description			
Data and parameters to be monitored for the crediting of households improved cookstove over the crediting period (Project Scenario 2):				

Monitored parameter in monitoring plan				
Parameter	Description	Included in the Monitoring Report?	Draft OK/ CAR/CL	Final OK/ Not OK
Np,y,ics-nb	Cumulative number of project technology-days included in the project database for Project Scenario 2 for technology against baseline scenario in year y	Yes However the Monitoring Report/5/ and ER spreadsheets are not consistent in parameters definitions. CL 7 has been raised requesting the unification. ERM CVS confirmed that all parameters in the monitoring report/5/, ER calculation/1/ and PDD/2/ are now consistent and traceable. CL 7 is closed	CL 7	OK
P, p,b,y,ics-nb	Specific fuel savings for an individual technology of Project Scenario 2 against an individual technology of baseline scenario in year y, in tons/technology-day, as derived from the statistical analysis of the data collected from the field tests			
Up,y,ics-nb	Cumulative usage rate in Project Scenario 2, for technology improved cookstove, during year y			
f NRB,y,ics-nb	Fraction of biomass used in year y as non-renewable of woody biomass fuel in scenario 2			
LEp,y,	Leakage in Project Scenario 2 during year y			
Data and parameters to be monitored for the crediting of water treatment technologies (Scenario 1 & 2) over the crediting period:				
Np,y,wt	Number of persons-days of water consumed by project scenario 1 and 2 through year y	Yes However the Monitoring Report/5/ and ER spreadsheets are not consistent in parameters definitions. CL 7 has been raised requesting unifications. ERM CVS confirmed that the all parameters in the monitoring report/5/, ER calculation/1/ and PDD/2/ are now consistent CL 7 is closed	CL 7	OK
Up,y,wt	Cumulative usage rate in project scenario 1 and 2, for technology water filters during year y, based on cumulative installation rate and drop off rate.			
Qp,y	Quantity of raw water treated with water treatment technology and used for hygienic purposes in the project scenario 1 and 2, during year y, capped at 6 L/p/d			
Qp,cleanboil,y	Quantity of treated water still boiled in the project scenario 1 and 2, after installation of project technology			
Quality of the treated water	Performance of th treatment technology			

4.4.3. Data and parameters monitored

The verification findings for the monitoring of each parameter are set out below

Data / Parameter:	Np,y,ics-nb
Data unit:	technology-days
Description:	Cumulative number of project technology-days included in the project database for Project Scenario 2 for technology against baseline scenario in year y
Measured/calculated/default	Calculated

Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Is the parameter monitored in accordance with the monitoring plan and are the QA/QC procedures appropriately applied? Does the monitoring report correctly state all relevant information and data relating to the monitoring of parameters during the monitoring period?	ERM CVS confirmed during the site visit and document cross-checking that the parameter is recorded according to the monitoring plan and the QA/QC procedures. The parameter is calculated based on the sales data recorded in the Socorro Maya TSR/10/ data base: sales from the start of the project to the end of this monitoring period recorded in the TSR are used. The operational time does not include the day of installation. All data have clear references of installation of the eko-stoves and filters in the households, which was cross-checked by ERM CVS during site visit of the PP's office. The Verifier selected randomly a considerable number of sales records to check their consistency with the TSR data/10/. All data were fully consistent and every data are traceable and verifiable. Minor issues have been found but these differences do not represent risk of double counting. The Verifier confirms that the spreadsheet do not include technology –days corresponding to the previous monitoring period through reliable calculation of number of days since the stove installation. The internal oversee process and QC/AC procedures by Paradigm are functional and effective. Some revision of parameters definitions in the Monitoring Report and Spreadsheet shall be reviewed and adjusted. See CL 7 ERM CVS confirmed that PP has updated and corrected the parameters and their descriptions in the MR to make them consistent and traceable /5/. CL 7 is closed	CL 7	OK
Conclusion	ERM CVS confirmed that - The parameter has been calculated appropriately, in accordance with the monitoring plan and methodology. - The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.		

Data / Parameter:	P, p,b,y,ics-nb		
Data unit:	tons/technology-day		
Description:	Specific fuel savings for an individual technology of Project Scenario 2 against an individual technology of baseline scenario in the Monitoring Period, in tons/technology-day, as derived from the statistical analysis of the data collected from the field tests		
Measured/calculated/default	Measured / Calculated		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Is the parameter monitored in accordance with the monitoring plan and are the QA/QC procedures appropriately applied?	ERM CVS confirmed that the P _{p,b,y,ics-nb} parameter as unique parameter and is the same as the difference in the specific fuel consumption for an individual technology in baseline scenario b (P _{b,y, ics-nb}) and the specific fuel consumption for an individual technology in project scenario p (P _{p,y, ics-nb}), as stated in the Monitoring Plan /2/.	CL 8	OK
Does the monitoring	The Verifier confirmed that the value of parameter is the result of the combination of fuel wood saved per meal identified based on KPT tests/7/ and		

report correctly state all relevant information and data relating to the monitoring of parameters during the monitoring period?	the total number of meals per day per stove unit installed in project scenario determined from the US&MS/18/. Although, the final calculation seems reliable and consistent with the values checked during the site visit, the PP did not provide relevant and clear explanation of rationality of the calculation. CL 8 has been raised to request additional justification. ERM CVS confirmed that PP included a clearer description of how the parameter was determined, which is consistent with the Monitoring Plan/2/. The Verifier confirmed that the fuel savings per person per meal values as well as person-meal per day values are consistent with the paired KPTs developed in San Marcos in 41 households (results from 35 households were used for calculations after removing outliers) and KPTs developed in other areas during previous issuance period. The final P, p,b,y,ics-nb value was updated according to the weighted average fuel savings weighed according to sales in San Marcos, Alta Verapaz and Baja Verapaz . Therefore, the value is credible and reliable. The monitoring procedures comply satisfactorily with the GS Methodology/13/ and MP/3/ requirements in terms of sampling frame, sampling size, confidence levels and the target population (See Section 4.4.1 above). The monitoring report/5/ and ER calculation/1/ are consistent. CL 8 is closed		
Conclusion	ERM CVS confirmed that - The parameter has been monitored appropriately, in accordance with the monitoring plan and methodology. - The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.		

Data / Parameter:	Up,y,ics-nb		
Data unit:	Percentage		
Description:	Cumulative usage rate in Project Scenario 2, for technology improved cookstove, during year y		
Measured/calculated/default	Measured based on usage survey		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Is the parameter monitored in accordance with the monitoring plan and are the QA/QC procedures appropriately applied? Does the monitoring report correctly state all relevant information and data relating to the monitoring of parameters during the monitoring period?	ERM CVS confirmed that the parameter is determined according to the monitoring plan and the QA/QC procedures. Eko-Stove Monitoring Survey (MS)/Usage Survey (US) According to the site inspection in Alta Verapaz and San Marcos, ERM CVS confirmed that PP conducted a combined MS / US surveys on the same samples for project activity target population. According to the revised usage and monitoring survey report and its data set /19/, the team found that the sampling and monitoring procedure were developed according to the MP/2/ and Methodology/37/ requirements and the results are congruent with the site inspections. Sampling methodology & sample size: the total sample size was 121 for MS and 125 US applying multi-stage random sampling developed in 6 different communities, with 17 to 25 households per community. However, the	OK	OK

	PP did not provide relevant justification of criteria applied for the Sampling frame. CL 5 has been raised in order that the PP clarify the criteria of sampling in the different documents. During the report revision/19/, ERM CVS confirms that the PP's assumption that all stove can be considered 0 – 1 and 1 – 2 years ages is reasonable because the project activity started in January 2013 and the sample process started in January 2015. Therefore the sampling considered the age properly. The installation data is consistent with the TSR/10/ and the cumulative usage rate was appropriately weighted according to installation ages. During the site visit it was also possible to confirm that the target population in different Departments where the technology installed, is homogeneous. There are no significant differences in terms of cooking practices, domestic customs or wood consumption behavior into the same regions and communities. Some differences can be seen in the communities on Alta Verapaz and Baja Verapaz Department (interior and central Guatemala) and San Marcos Department (Border Mexico) in terms of level of life (purchasing power), social contour (communal lands) and geographic localization in terms of altitude and environment. Therefore, the division of surveys in San Marcos and Alta Verapaz-Baja Verapaz seems reasonable and applicable. In terms of QA/QC procedures, ERM CVS checked that the Paradigm oversee intervention to minimize sampling errors and internally check the consistency of data. All surveys were conducted by CO2 Management and Paradigm cleaned the data to guarantee the consistency. These procedures could be checked by the Verification team during the site visit, document review and interviews with the persons responsible for monitoring /IV2/ IV3/IV4/IV5/IV8/. In summary, ERM CVS considered that the sampling process applied for cookstoves is consistent with CDM sampling and GS rules, and is reliable and consistent with the Operation manuals/26/		
Conclusion	ERM CVS confirmed that - The parameter has been monitored appropriately, in accordance with the monitoring plan and methodology. - The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.		

Data / Parameter:	$f_{NRB,y,ics-nb}$		
Data unit:	Fraction		
Description:	Fraction of biomass used in year y as non-renewable of woody biomass fuel in scenario 2		
Measured/calculated/default	Default		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Is the parameter monitored in accordance with the monitoring plan and are the QA/QC procedures appropriately applied?	PP used the same value as that set out in the PDD, which was calculated based on NRB assessment and has been validated and approved by GS. The assumption is valid taking into account that the PDD defined that the value will be Fixed by baseline study for a given crediting period and updated if necessary as specified in Methodology section III.1	OK	OK
Does the monitoring	ERM CVS confirmed that the parameter value is fixed for the crediting period consistent with the MP/2/ there is no new relevant data that PP should take		

report correctly state all relevant information and data relating to the monitoring of parameters during the monitoring period?	into account to update the value as the team could check with FAO Guatemala public report/40/. The PP did not have to update it.		
Conclusion	ERM CVS confirmed that the parameter did not have to be updated in this monitoring period, in accordance with the monitoring plan		

Data / Parameter:	LEp,y,		
Data unit:	tCO2e/year		
Description:	Leakage in Project Scenario 2 during year y		
Measured/calculated/default	Calculated / Measured		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Is the parameter monitored in accordance with the monitoring plan and are the QA/QC procedures appropriately applied? Does the monitoring report correctly state all relevant information and data relating to the monitoring of parameters during the monitoring period?	ERM CVS confirmed that the leakage assessment was included in the section 8 of the revised MR. However the NRB assessment report /24/ was not integrated in the leakage assessment in the monitoring report and the PP did not use a reputable public analysis for the analysis of stoves markets in Guatemala/28/. CL 9 has been raised to provide relevant assessment with these studies. ERM CVS confirmed that relevant discussion of NRB has been included in the Leakage assessment of MR/5/. The Verifier cross-checked the conclusions with reputable public information /28/. The CL 9 is closed	CL 9	OK
Conclusion	ERM CVS confirmed that - The parameter has been monitored appropriately, in accordance with the monitoring plan and methodology. - The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.		

Data / Parameter:	Np,y,wt		
Data unit:	Person-days days		
Description:	Number of persons-days of water consumed by project scenario 1 and 2 through year y		
Measured/calculated/default	Measured / Calculated from Monitoring Survey (MS)		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK

	information, data and evidence)	CAR/CL	Not OK
Is the parameter monitored in accordance with the monitoring plan and are the QA/QC procedures appropriately applied? Does the monitoring report correctly state all relevant information and data relating to the monitoring of parameters during the monitoring period?	From the review of the water filter Monitoring Survey report/18/ and project databases/11/12/, ERM CVS confirmed that the water filter databases record the date of water filter supply for bulk water suppliers. The average time lag from the bulk sales to the day that filters reach the end users was estimated using inventory analysis. However, due to the inconsistencies found during the document revision, the data base shall be reviewed once the CAR 1 is closed. See CAR 1. The Verifier checked that the time lag for bulk sales in the updated databases version/10/11/ is consistent and credible. CAR 1 is closed.	CAR 1	OK
Conclusion	ERM CVS confirmed that - The parameter has been monitored appropriately, in accordance with the monitoring plan and methodology. - The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.		

Data / Parameter:	Up,y,wt		
Data unit:	Percentage		
Description:	Cumulative usage rate in project scenario 1 and 2, for technology water filters during year y, based on cumulative installation rate and drop off rate		
Measured/calculated/default	Measured based on usage survey		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Is the parameter monitored in accordance with the monitoring plan and are the QA/QC procedures appropriately applied?	Household Water treatment Monitoring Survey (MS)/Usage Survey (US): According to the site inspections in Alta Verapaz, Baja Verapaz, San Marcos and Quetzaltenango areas, ERM CVS confirmed that Water Filter US and MS were conducted in the project activity target population for the two scenarios by CO2 Management.	CL 5 CL 6	OK
Does the monitoring report correctly state all relevant information and data relating to the monitoring of parameters during the monitoring period?	According to the US/MS report and its data set /18/, the team found that the sampling and monitoring procedure was done according to the MP/3/ and Methodology/37/ and the results are congruent with the site inspections. Sampling process & sample size: Reviewing the survey reports/18/ a total of 243 US and 238 MS surveys have been developed in San Marcos, Alta Verapaz, Baja Verapaz, Quetzaltenango, Quiche, Solola and Escuintla Departments in a proportional number related to the amount of communities in each Department and weighted by age of filter (i.e. filters ages between 0-1 and 1- 2 years). ERM CVS confirmed that filters older than 2 years were removed from ER Calculations/1/ due to reaching the estimated end of their lifetime. The Verifier confirmed that these areas are related to distributions by Ecofiltro and Socorro Maya..The sampling selection was designed consistent with the project data bases of Project Scenario 1 and 2 /10/11/12/. Although, the sample size is greater than the minimum of 100 required by the		

	methodology and 90/10 confidence and precision of CDM guidance some clarification shall be provided by the PP in the CL 5. ERM CVS is able to confirm that the assumptions and method applied for sample framework and sample size is consistent with the methodology and the monitoring requirements. The PP included relevant discussion the rationality of sample frame and size definition into the report/18/. CL 5 is closed. Survey QA/QC procedures: in the same way as cook-stoves surveys, ERM CVS checked that this water filter survey conducted by CO2 Management benefited from general oversight by Paradigm, which has internal checking procedures in line with the operation manual/25/. All of these could be checked by ERM CVS with the hard-copy of developed surveys and interviews with the people responsible for monitoring. /IV4/IV8/ /IV13/ IV14/IV15/IV16/. According to final version of report, ERM CVS considered that the sampling process applied for water filters is consistent with CDM and GS rules, and that the usage rate has been reliably monitored by means of surveys. The usage rate for filters older than 12 months was further discounted to take into account the results of the water quality test (please see verification of water quality parameter below).		
Conclusion	ERM CVS confirmed that - The parameter has been monitored appropriately, in accordance with the monitoring plan and methodology. - The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.		

Data / Parameter:	Qp,y		
Data unit:	Litres per person per day (L/p/d)		
Description:	Quantity of raw water treated with water treatment technology and used for hygienic purposes in the project scenario 1 and 2, during year y, capped at 6 L/p/d		
Measured/calculated/default	Measured		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Is the parameter monitored in accordance with the monitoring plan and are the QA/QC procedures appropriately applied? Does the monitoring report correctly state all relevant information and data relating to the monitoring of parameters during the monitoring period?	ERM CVS confirmed that this parameter has been defined according to the water consumption field test from the monitoring period 1. As the monitoring plan requires to monitor this parameter biennially it was correct not to update it during this monitoring period.	OK	OK
Conclusion	ERM CVS confirmed that this parameter did not have to be updated during this monitoring period.		

	in accordance with the monitoring plan and methodology
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Data / Parameter:	Qp,cleanboil,y		
Data unit:	Litres per person per day (L/p/d)		
Description:	Quantity of treated water still boiled in the project scenario 1 and 2, after installation of project technology		
Measured/calculated/default	Measured		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Is the parameter monitored in accordance with the monitoring plan and are the QA/QC procedures appropriately applied? Does the monitoring report correctly state all relevant information and data relating to the monitoring of parameters during the monitoring period?	ERM CVS confirmed that this parameter has been defined according to the water consumption field test from the monitoring period 1. As the monitoring plan requires to monitor this parameter biennially it was correct not to update it during this monitoring period.	OK	OK
Conclusion	ERM CVS confirmed that the parameter did not have to be updated during this monitoring period, in accordance with the monitoring plan and methodology - The parameter has been monitored appropriately,. - The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.		

Data / Parameter:	Quality of the treated water		
Data unit:	Percent		
Description:	Performance of the treatment technology		
Measured/calculated/default	Measured Laboratory testing procedure and the effectiveness through proxies		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Is the parameter monitored in accordance with the monitoring plan and are the QA/QC procedures appropriately applied? Does the monitoring report correctly state all	ERM CVS checked that the PP applied properly approach of monitoring effectiveness of the filters (i.e. water quality). For filters 1.5 years of age or newer, the PP has opted for the proxies option according to the MP/3/. The Verifier confirmed that the Water Filter Monitoring Surveys/18/ included a relevant question about if the end-users received training on maintenance and cleaning of the filters, which it was possible to check directly during household inspections by ERM CVS. All interviewed end-users responded consistently to questions about the cleaning and	CL 6	OK

relevant information and data relating to the monitoring of parameters during the monitoring period?	maintenance process according to the results recorded in the monitoring process. For filters over 1.5 years of age, PP conducted microbiological tests by transportation of water samples to accredited laboratories to assure the project technologies' effectiveness/14/15/. However, during the document revision and analysis of test results, the Verification team found that the testing procedures applied were not clear enough according to the MP/2/ and an additional discussion would be necessary on post coliforms contamination and conservative approach to apply in ER calculation. See CL 6. From the clarification provided by the PP, ERM CVS confirmed that the monitoring procedure was a quantitative test. Two sets of tests were used: first samples if water collected from the field were transported to the laboratory and tested there, and then in the second test the filters taken from the field and used for filtering unclean water in the laboratory. The tests were conducted by relevant and credible third party/15/, and the methodology of the first test is consistent with the monitoring plan and methodology requirements. The second test was used by the PP to support the argument that the source of post coliforms contamination is due to unhygienic conditions in domestic environment and not a consequence of filter operation. Whilst the laboratory tests proved that filters of over 1.5 age taken from the field perform reliably in the laboratory conditions, the procedure is not in line with the methodology requirements and the emission reductions for filters of over 1 year age were discounted using the pass rate of water quality test on the water samples taken from the field. CL 6 was closed. Further, ERM CVS agree with the hygiene plan proposed to reduce the risk of post-treatment contamination – this will have to be checked during the next verification period. See FAR 2.		
Conclusion	ERM CVS confirmed that • The parameter has been monitored appropriately, in accordance with the monitoring plan and methodology. • The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.		

4.4.4. Management and operational system

ERM CVS evaluated the management systems in place to implement the monitoring of the project activity. This included the organisational structure, roles and responsibilities, data collection, transfer and aggregation procedures, training of personnel, data storage and archiving and emergency procedures for the monitoring system.

Compliance question	Verification activities undertaken	Verification findings (including justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Has an appropriate management and operational system for monitoring and reporting, including responsibilities and authorities, been	Interviews with the staff of The Paradigm project, implementing partners, and CO2	The project in this monitoring period consists of 2 project scenarios, each of which has differences in the operational and management setup for monitoring as ERM CVS could confirm during the site visit and check with the Usage and Monitoring Survey Report. The Monitoring Report /5/ provides a relevant summary of	CL05	OK

Compliance question	Verification activities undertaken	Verification findings (including justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
established in accordance with the monitoring plan?	Management	management and operational system including responsibilities and authorities. However, demonstration of CO2 Management training records shall be provided. See CL 3 ERM CVS confirmed that PP submitted the relevant evidence/23/32/ to support that CO2 Management is a third party and enumerators received proper monitoring training. CL 5 is closed.		

Conclusion

ERM CVS confirmed that the monitoring of all relevant parameters has been carried out in accordance with the monitoring plan. It is confirmed that data acquisition process, data transferring process, archiving process and reporting process occur as required by the monitoring plan. The final monitoring report provides an accurate description of the monitoring for all parameters throughout the monitoring period.

4.5. Data and parameters determined at registration and not monitored

The verification team evaluated the status of data and parameters that were determined at registration and not monitored during the monitoring period, including default values and factors, and confirmed whether they were correctly presented in Section D.2 of the monitoring report and applied correctly in the emission reduction calculations.

Data and parameters that were determined at registration and not monitored during the monitoring period				
Parameter	Description	Presented correctly in section the Monitoring Report and applied correctly in the emission reduction calculations?	Draft OK/ CAR/CL	Final OK/ Not OK
EFb,wood,CO2	CO ₂ emission factor arising from use of fuels in baseline scenario	ERM CVS checked that the list of ex-ante parameters are consistent with the PDD and Methodology and according to IPCC values. Yes	OK	OK
EFb,wood,CH4	CH ₄ emission factor arising from use of fuels in baseline scenario		OK	OK
EFb,wood,N2O	N ₂ O emission factor arising from use of fuels in baseline scenario		OK	OK
EFp,fuel,CO2	CO ₂ emission factor arising from use of fuels in project scenario		OK	OK
EFp,fuel,CH4	CH ₄ emission factor arising from use of fuels in project scenario		OK	OK
EFp,fuel,N2O	N ₂ O emission factor arising from use		OK	OK

	of fuels in project scenario			
NCVb,wood	Net calorific value of the fuel used in the baseline		OK	OK
NCVp,fuel	Net calorific value of the fuel used in the project scenario p	ERM CVS checked that the list of ex-ante parameters have been updated and consistent with the PDD and Methodology	OK	OK
Wb,y	Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of baseline scenario b during project year y	ERM CVS confirmed that the value applied for this parameter has been defined in the BWB test developed in this monitoring period./20/ However, some clarification and explanation shall be verified into the FVR stage. See CAR 2	CAR 2	OK
Wp,unimproved stove,y	Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technology i representative of the project scenario p during project year y	ERM CVS confirmed that the method and field test procedures were approved by GS previously/35/. Therefore, the amount of point and test per point is consistent with the requirements.	CAR 2	OK
C _j	Portion of users of project safe water supply who were already in baseline using a non-boiling safe water supply	ERM CVS reviewed the MS/US /18/19/ and confirmed that values come from the monitoring results and consistent with information obtained during the site visit interviews. .	OK	OK

4.6. Assessment of data and calculation of GHG emission reductions

As per VVS section 11.4.6, /27/ ERM CVS evaluated the calculations applied to determine the emission reductions during the monitoring period resulting from implementation of the project activity. In conducting this evaluation, the verification team evaluated whether:

- A complete set of data for the monitoring period was available, and whether the most conservative assumption has been applied in any case where only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the monitoring plan unless a deviation has been approved (see section 5).
- Information provided in the monitoring report has been cross checked with other sources such as log books, inventories, purchase records, laboratory analysis (see section 5)
- Calculations of baseline, project and leakage emissions have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology.
- Any assumptions used in the emission calculations have been justified
- Appropriate emission factors, IPCC default factors and other reference values have been correctly applied.

Compliance question	Verification findings (including justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Were data available throughout the monitoring period in accordance with the	Only sales data is collected continuously. Other parameters are monitored by surveys and tests conducted once in a certain period of time. There was no period when data was not collected.	OK	OK

monitoring plan and methodology?			
Has the project participant used appropriate methods and formulae for calculating baseline, project and leakage emissions?	ERM CVS checked the methodological options for emission reduction calculation and found methods and formulae are correct and according to Project Scenario 1 & 2, in Section 10 of the MR, and in accordance with the PDD and methodology. The PP included the algorithms and parameter definitions which facilitate the comprehension of the ER calculation/1/ Some aspects related to the consistency in parameters definition and some improvement in methodological procedures shall be included into the MR/5/ and its appendixes. See CL 7, 8 and 9 ERM CVS confirmed that PP used appropriate methods and formulae for baseline and projects emissions. Also the leakage assessment is consistent with the MP/5/ and methodology requirements, and the parameters and their description were made consistent. CL 7, 8 and 9 are closed.	CLs7-9	OK
Has the project participant justified all assumptions, emission factors and default values that have been applied?	After closing the corrective action requests, ERM CVS confirmed that all assumptions are consistent with the PDD/2/ and Methodology/13/	Pending	OK
Do the monitoring report and associated emission reduction spreadsheet correctly present the data and formulae used to calculate the reported emission reductions?	The ER spreadsheet /1/ presents clear, traceable and consistent data, formulas and methods to calculate emission reduction calculations. However, this calculation and description shall be reviewed according to CARs/CLs close out From the latest version of MR//5/ and ER spread sheet/1/ ERM CVS confirmed that ER calculation is consistent with the monitoring and usage surveys	Pending	OK

Conclusion

Emission reductions have been calculated in accordance with the monitoring plan and the applied methodology, and it was determined that the data processing and emission reductions calculations resulted in real and measurable emission reductions. Where there was any unavailability of data, conservative assumptions have been made. All assumptions, emission factors and default values have been justified and the information has been cross checked with other sources.

4.7. Other observations

No other observations.

4.8. Assessment of sustainability monitoring

4.8.1. *Completeness of sustainability monitoring parameters*

The verification team evaluated the monitoring of each sustainability indicator stated in the Gold Standard passport and compared with the description in the MR how the indicators were monitored, their results, and scoring.

The parameters included in the Gold Standard passport are listed below and a full description of each parameter and the verification activities associated with monitoring of each one is included in Section 4.9.3.

Monitored sustainability indicators				
Number	Description	Included in Monitoring Report?	Draft OK/ CAR/CL	Final OK/ Not OK
1	Air quality	Yes	OK	OK
2	Water quality and quantity	Yes	OK	OK
3	Livelihood of the poor	Yes	OK	OK
4	Access to affordable and clean energy services	Yes	OK	OK

4.8.2. Sustainability indicators monitored

The verification findings for the monitoring of each sustainability parameter are set out below. Note that only those sustainability parameters monitored for this verification period are presented (see table above).

Number:	1	Air quality		
Chosen parameter:	Measurement of user perceptions between old stove and new stove: smoke levels, incidence of coughing, incidence of respiratory illness, and incidence of itchy eyes			
Target:	Households will report reduced smoke levels, reduced incidence of coughing, reduced incidence of respiratory illness, reduced incidence of itchy eyes			
Means of monitoring (as per GS Passport):	Baseline and project household surveys regarding sustainability issues will be conducted. Household monitoring surveys will be given to a sample of all purchasers of improved cookstoves.			
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)		Draft OK/ CAR/CL	Final OK/ Not OK
Has the monitoring procedure been followed appropriately? Has the trend of the indicator been appropriately assessed and presented in the MR?	By review of the MR/5/, ERM CVS checked that the Sustainable Development Indicators have been correctly monitored and consistent with the Monitoring Plan in the GS Passport/4/. The monitoring surveys for water filters/18/ and cook-stoves/19/ show that the user perception of the project is highly positive. 99% of eko-stove users report better ergonomic conditions in terms of eye irritation and coughing. ERM CVS checked that the survey questions were worded appropriately to get proper responses from the users, which was also checked during the site interviews with the households.		OK	OK
Conclusion	ERM CVS confirmed that • The indicator has been monitored appropriately in accordance with the monitoring plan • The scoring of the indicator presented in the MR is appropriate			

Number:	2	Water quality and quantity
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Chosen parameter:	Measurement of user perceptions of filtered water compared to boiled or untreated water and incidence of diarrheal disease		
Target:	Avoidance of boiling water for purification and increased levels of water treatment by filters for drinking and cooking; households will report on reduced incidence of diarrheal disease		
Means of monitoring (as per GS Passport):	Household surveys will be given to beneficiaries of water filter technologies.		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Has the monitoring procedure been followed appropriately? Has the trend of the indicator been appropriately assessed and presented in the MR?	By reviewing the MR/5/, ERM CVS checked that the Sustainable Development Indicators have been correctly developed consistent with the Monitoring Plan in the GS Passport/4/. The monitoring surveys for water filters/18/ show that user perceptions of the project are highly positive. This parameter was properly monitored in the Monitoring Survey asking relevant questions about frequency of water-borne illnesses, water taste, and perception of water quality. The surveys show that 97% of water filter users feel quite conformable with the quality and water taste, and 98% of respondents also reported a reduction in stomach illnesses since using the filter, consistently with the household interviews during the site visit, where respondents interviewed were highly positive about the effect filters have had on them.	OK	OK
Conclusion	ERM CVS confirmed that - The indicator has been monitored appropriately in accordance with the monitoring plan - The scoring of the indicator presented in the MR is appropriate		

Number:	7	Livelihood of the poor	
Chosen parameter:	Time and/or money savings due to reduced fuel consumption		
Target:	For families that purchase fuel wood, access to efficient cookstoves will likely reduce fuel expenditures, resulting in more disposable income. For families and institutions that gather biomass, efficient cookstoves will reduce the time spent collecting fuel		
Means of monitoring (as per GS Passport):	Kitchen Performance Tests will be conducted at regular intervals according to the Gold Standard Methodology. This, or related survey method, will provide information on the percentage of fuel saved that will be combined with data regarding the price and time required to collect fuel. Surveys will also assess how time and price savings (if any) are used.		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Has the monitoring procedure been followed appropriately? Has the trend of the indicator been appropriately assessed and presented in the MR?	ERM CVS confirmed that that the Sustainable Development Indicators have been corrected in the monitoring report and consistent with the Monitoring Plan in the GS Passport/4/. The paired KPTs were conducted to determine the fuel consumption savings associated with the use of the Eko-stove and ERM CVS checked the KPT report/7/ to verify the signigicant fuel savings on a per meal basis. As the Verifier could check in the site visit interviews, the final users have significant money savings represented in the monthly wood purchase savings (around 70 to 80 %) and similar time savings for collecting fuel. During the interviews, it was found that when the users do not have enough money they also collect the wood. Other relevant issue that the Verifier noticed was the improvement of the quality time / family sharing (i.e. better conditions in the house to dinner together or new time for children activities). In terms of project	OK	OK

	scenario 1 (Water filters) the end-user shows their highly gratitude with the benefits of pure water for everyone but most especially for the kinds.		
Conclusion	ERM CVS confirmed that - The indicator has been monitored appropriately in accordance with the monitoring plan - The scoring of the indicator presented in the MR is appropriate		

Number:	8	Access to affordable and clean energy services	
Chosen parameter:	Time and money savings due to reduced fuel consumption.		
Target:	Families will adopt efficient cookstoves and water filters. For families and institutions that purchase fuel wood, access to efficient cookstoves and water filters will reduce fuel expenditures, resulting in more disposable income. For families that gather biomass, efficient cookstoves and water filters will reduce the time spent collecting fuel		
Means of monitoring (as per GS Passport):	Evaluation of household fuel consumption will be evaluated according to Gold Standard methodology. The evaluation will provide information on the percentage or estimated amount of fuel saved that will be combined with data regarding the price and time required to collect fuel. Surveys will assess how time and price savings (if any) are used		
Compliance question	Verification findings (including verification activities undertaken and justification/substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Has the monitoring procedure been followed appropriately? Has the trend of the indicator been appropriately assessed and presented in the MR?	This indicator is monitored in the same way as the Livelihood of the poor parameter. ERM CVS confirmed that the reporting of this Sustainable Development Indicator in the MR has been corrected and is consistent with the MP.	OK	OK
Conclusion	ERM CVS confirmed that • The indicator has been monitored appropriately in accordance with the monitoring plan • The scoring of the indicator presented in the MR is appropriate		

5. Remediation Requests

5.1. Clarification Requests

Where information was insufficient or not clear enough to determine whether the applicable requirements have been met ERM CVS raised a Clarification Request (CL). The CLs raised, and a description of how each was resolved are set out below.

CL 1	
Comment:	The Monitoring Report does not include relevant and sufficient analysis of responses to FARs raised in the previous Verification process and Gold Standard's 3 weeks review. Furthermore, the report lacks clear references to data sources; there is no clarity on the actual status of project implementation, and the file names and evidence are not fully consistent across the documentation.
Clarification Request:	<i>Please include a clear and sufficient assessment how the FARs have been responded to, with reliable and key data showing compliance. Furthermore, please correct and improve the system of references in the Monitoring Report/5/ and give a clear description of project implementation status as of the end of the monitoring period (April 2015).</i>
PP Response The PP has revised FAR response language in the Monitoring Report to clarify results in brief and refer the reader to the relevant sections of the Monitoring Report and Annex documents for more details. With respect to FAR 1 (EF Record-Keeping), the PP has left the changes requested to the issues addressed below in CAR 1. The PP originally cited all reference file names throughout reports with the word "FIN" following the file name to reference that this was a final version of the document. The assumption was that the PP and DOE would work together through several rounds of revisions on each document, requiring that the changes be tracked in each round for reference. The PP thus elected to place the date at the end of each file name so that the PP and DOE always know which version of a document is the latest to allow for multiple versions to be catalogued for later review. The PP elected to reference the files in reports with the word "FIN" rather than the date so that the reports references would not have to be changed with every round of DOE review. The PP has changed all references within the reports to remove the word "FIN" and replace it with "[DATE]". The file names thus now refer to files in the DOE review folder with the exact same names followed by a date which represents the date at which either the PP or the DOE made the most recent revisions. When all revisions are closed out the PP will go through the files and replace the word "[DATE]" with the word "FIN" to represent that this is the final document for submission to GS for their review. Examples: EXAMPLE FILE IN REVIEW FOLDER: - Monitoring Report GS1321 Iss 2 4.10.docx This file was last updated on 4/10/15 EXAMPLE CITATION OF SAME FILE IN REPORTS: - Monitoring Report GS1321 Iss 2 FIN.docx (Prior to above PP changes) - Monitoring Report GS1321 Iss 2 [DATE].docx (Following above PP changes)	
Documentation provided	Monitoring Report GS1321 Iss 2 201530630

Verification activity

ERM CVS reviewed the new version of Monitoring Report /5/

Conclusion

ERM CVS confirmed in the MR Version 04 /5/ that PP include relevant discussions of FARs resolutions consistent with the

project data bases/10/11/12/ and KPT and BWBT monitoring procedures/7/20/.

Also, the PP has made relevant improvements in terms of cross references, names, language, and description of project implementation.

CL 1 is closed.

CL 2	
Comment:	During this monitoring period, the PP has developed baseline KPTs, which are consistent and credible according to the Methodology and GS requests. However, the Report of testing /7/ is not clear enough about the differences or similarities in the unimproved stoves analyzed (i.e. the Plancha, Clay, Open Fires, Pollo, Pollotón). This difference would be a source of confusion for the overall results and conclusions.
Clarification Request:	<i>Please include a clear definition and mainly characteristics with reliable evidence of the differences in unimproved stoves that the KPTs reported. The definitions shall be included into the KPTs report/7/.</i>
PP Response The PP has revised the KPT report to include clear descriptions of each stove type and has inserted photo examples of each type to clarify which types of stoves were tested.	
Documentation provided	KPT Report GS 1321 Iss 2 20150523

Verification activity

ERM CVS review and analyzed the new version of KPT reports /7/.

Conclusion

According to the new version of KPT report ERM CVS confirmed that each stove type and their differences now are clear. The Verifier confirmed during the site visit that the baseline unimproved stove is the open fire. The PP's assumption that the three stone, metal grate and cinder blocks also fall into the open fire classification seems reasonable and credible as Verifier was able to confirm during the inspection that they have similar characteristics in terms to stacking up the wood without combustion chamber and no air flow direction. Furthermore, the PP demonstrate that the plancha-style stoves are a type of 'improved' stove with significant differences from the open fire and perform worse than open fires in terms of firewood use. However, no different baseline consideration is necessary because the PP applied a conservative measure using the values associated with the 3-stove fire to Plancha-stove. The Plancha-stove has lower performance than open-fire, see relevant analysis CAR 2 .

The CL 2 is closed.

CL 3	
Comment:	Although the PP provided the training materials and agenda of training for the KPT, BWBT and Water Quality, there is no relevant evidence of this training for CO2 Management enumerators, theirs assistance and their comprehension of procedures. Furthermore, the PP shall demonstrate that the

	CO2 Management is a complete independent third party.
Clarification Request:	<i>Please provide relevance evidence of enumerators training that participate in the field monitoring processes and demonstrate that CO2 Management is an independent third party of project participants.</i>
PP Response The PP has included a new folder within the DOE Review folder on Drop Box called “Enumerator Training.” It can be found here: https://www.dropbox.com/sh/7ihdlr5lnm17ve7/AAAEj_NwhdsUOfvAGJ62fvaa?dl=0 This folder contains attendance records and photographs of enumerator training that were conducted by CO2 Management in the field with local enumerator teams conducting KPTs. Eddy Melendez and Gabriel Jerez of CO2 Management conducted these training sessions, assuring each enumerator had full comprehension of the required processes, and further supervised the KPT teams as they conducted the tests. With regard to BWBTs and Water Quality tests, Eddy Melendez and Gabriel Jerez conducted all such tests themselves directly to assure quality and consistency of the results. The PP has included the contract with CO2 Management in the folder “Reference Docs from Monitoring Period 2” within the DOE Review folder on Drop Box as evidence of its independence.	
Documentation provided	Enumerators training Evidence Contract Monitoring Services Between The Paradigm and CO2 Management

Verification activity

ERM CVS checked the enumerators training evidence/23/ and the Signed contract by CO2 Management for monitoring process in January 2015/32/

Conclusion

According to the evidence submitted, ERM CVS confirmed that Enumerators received relevant training /23/ for every monitoring field process and the CO2 Management is a relevant independent third party/32/. Therefore, the third party consideration and relevant enumerator’s ability have been fully demonstrated.

The CL 3 is closed.

CL 4	
Comment:	The Scenario 2 Project database (i.e. TSR Socorro Maya) has some changes comparing with previous monitoring period/6/. Although the verifier confirmed that basically the information is the same, and there are no changes in stove’s type, models or locations, the changes implemented in the TSR are not consistent with the Operation Manual/26/.
Clarification Request:	<i>Please support the changes of Project Data Bases and be consistent with the Operation Manual.</i>
PP Response The PP has updated the Operation Manual to be consistent with changes made to the TSR, which were undertaken in an effort to clarify and streamline record keeping. The updated Operations Manual can be found here:	

<https://www.dropbox.com/sh/tqci74mpqj488cd/AAAhM2x2cn3j3z9XHRNyRPgBa?dl=0>

The PP has updated both TSR records within the "PP Response Round 2" folder in the DOE Review Folder. Both records now contain all sales from both MP1 and MP2.

Documentation provided

Socorro Maya Operations Manual Version 2 May 18, 2015
SM Stoves TSR 20141231
ER Calculations GS1321 Iss 2_20150518

Verification activity

ERM CVS checked the new version of Socorro Maya Operation Manual/26/ and the Socorro Maya TSR/10/ and ER Calculations/1/ and confirmed that they are now consistent

Conclusion

ERM CVS confirmed that the new version of Operation Manual was consistent with the TSR/10/ and ER Calculations. ERM CVS also confirmed that the final TSR version included all sales records from monitoring periods 1 and 2, which is consistent with the ER Calculation/1/.

CL 4 is closed.

CL 5	
Comment:	The Monitoring Report/5/ and its annexes/7/14/18/19/ are not sufficiently clear about the Sampling Frame and Sample Size calculation. The data of sampling is confusing and it's quite complex to do the cross-checking process with the data collected in the field surveys.
Clarification Request:	<i>Please improve description in the Monitoring Report about the Sampling conducted for this monitoring period and give clear references of name and localization of data sources to allow the cross-checking process with the monitored data records.</i>
PP Response As the Monitoring Report is an overview of multiple monitoring efforts, it does not describe a Sampling Plan. Rather, each individual report informing the monitoring plan had a description of the sampling plan. The sampling plan and the description of said sampling plan mirrors the previous monitoring period, following the sampling plan framework developed by the 3rd party statistician for Issuance 1. Data from issuance 1 was used as a reference to understand the characteristics of the population to determine appropriate sample sizes. The actual results from issuance 1 monitoring were not used in the KPT results for Issuance 2. So the use of Issuance 1 data was simply to enter Issuance 2 monitoring and performance testing with some additional assurance that the sampling frames would be adequate to meet confidence requirements. As the KPT report indicates, "Sample size was estimated using data from Issuance 1 KPTs in San Marcos communities (See Table 2 below). The means, number of samples in the community, and Standard Deviation from 3 communities surveyed were entered into the CDM equation for multi-stage sampling." After entering this information, the PP had a better understanding of how many households should be	

tested to meet GS methodological requirements for each performance test and monitoring survey.

Evidence that sampling met the appropriate requirements is contained in the fact that the monitoring met the confidence requirement.

Since the communities in Issuance 2 monitoring were randomly selected within a certain parameter of size to assure enough homes for monitoring (just as they were last year) they are certainly representative of the area in that they were randomly selected amongst many communities.

Documentation provided

Monitoring Report GS1321 Iss 2 20150523
 KPT Report GS 1321 Iss 2 20150523_MC
 BWBT Field Report GS1321 Iss 2_20150523_MC
 MS_US Filter (hh-wt, hh-dual) Report GS1321 Iss 20150523
 MS_US Stove (hh-dual) Report GS1321 Iss 2_20150523
 Spreadsheets Sampling Frame Selection US/MS, KPT, BWBT, WQT
 Spreadsheet Sample Size US/MS, KPT, BWBT, WQT

Verification activity

ERM CVS checked the new version of MR/5/ and individuals survey and test reports/7/18/19/20/, cross-checking with the sampling frame/31/ and Sampling Size calculation/32/

Conclusion

In the revised MR and survey and test reports /5/7/18/19/20/ the PP has more clearly described how the sample size was calculated and how it was selected.

The Verifier confirmed that the use of the means and the standard deviation from the previous issuance to calculate the sample size for this monitoring period was correct and in line with the sampling guidelines, as the households of previous issuance and the households target in this issuance were confirmed to have the same characteristics in terms of locations, cooking practices and social/economic conditions. These characteristics were confirmed during the site visit and results of monitoring surveys /7/18/19/

The CL 5 is closed

CL 6
Comment:

During document review of the Water Quality monitoring report/14/15/, ERM CVS found that PP reported testing method procedures which were not consistent with Lab testing activities. (See section Lab Testing Evidencing Effectiveness in the report/14/ comparing with the method testing reported in the Lab Test/15/). Furthermore, the Report/14/ presents inconsistencies in the total numbers of tests (Table 3).

In terms of Lab Testing results, a portion of 9% of filters tested did not pass the Quality Test (i.e. coliforms presence in the water treated). Although the PP presented relevant discussion about the origin of post- water coliforms contamination, there is no reliable justification that the same issue cannot happen in areas where the test was not taken and how they could manage a conservative approach in the emission reduction and/or what actions should be implemented to prevent this post-contamination.

Furthermore, during the site visit the Verifier found that some filters have reached their estimated 2-year lifetime and no discussion was included in the Monitoring report about the process at the end of the

	lifetime.
Clarification Request:	<i>Please clarify the applied water testing method consistent with the methodology/13/ and monitoring plan/2/. Please correct the Table 3 in the report and complete a reliable and credible preventive post-water treatment contamination prevention program and conservative mechanism over filters that finished the lifetime (2 years) and the filters which would not pass the test.</i>
PP Response First Round The GS methodology requires testing to define the following: “the treatment technology [must demonstrate]-less than 1 Colony Forming Unit (CFU) of E.Coli/100 ml of safe water”. The PP tested all samples for such contamination, and at its own discretion, tested for other contaminants as well as doing additional lab testing to prove that the technology was functioning properly. The PP also did research into coliforms present in the atmosphere in developing world households to support its assertion that contaminants are very likely introduced after boiling or filtering through the air and environment in homes where livestock are widely present along with dirt floors and other conditions that are likely to contaminate water after treatment despite adequate water treatment. Supporting documents for such can be found here: https://www.dropbox.com/sh/xodcy74dfz0iwwa/AAA-n9mRQx56frPX7xf2D6-Ga?dl=0 The ER Calculations only account for filters from 0-24 months. All filters that have exceeded their projected lifespan are excluded from crediting. Also, monitoring is conducted after the fact, thus it would not be abnormal for ERM to find some filter in the field that exceed their 24 month lifespan. Regardless, at the point that a filter reached 25 months of age, it is no longer included for crediting within the database.	
Second Round Water Quality testing report has numerous comments addressing specific concerns raised by the DOE. In short, all testing done on water samples was quantitative lab testing. A presence/absence test is a biological pass/fail test indicating whether there is Ecoli present in water or not. Because those quantitative tests indicated some inconsistencies in the outcomes (meaning the outcomes were valid, but did not align with the logic of deteriorating performance introduced with age), the PP conducted additional quantitative lab tests designed to isolate possible sources of contamination that would be present in both the baseline and the project (dirty hands, dirty household environment, etc.), and thus would not be considered an issue of water treatment technology performance. Upon conducting these additional quantitative tests, 100% of filters passed. Thus the PP submits that the 100% of the distributed technologies pass contaminant testing. With that said, the PP also suggests that an enhanced educational/marketing program be developed within the next Issuance period to incentivize the reduction of contaminants introduced to clean water after the point of treatment from unclean household environments or personal hygiene habits that are detrimental to participants of the program.	
Documentation provided	Filter Testing Results Water Sample Test Results Coliform in Drinking Water State Dept of Health Faecal contamination of drinking water during collection and household storage: the need to extend protection to the point of use

Verification activity

ERM CVS re-checked the Water Quality Report/14/, the Quality Results/15/ and bibliography reports/33/34/

Conclusion

From the clarification provided by the PP, ERM CVS confirmed that the monitoring procedure was a quantitative test. Two

sets of tests were used: first samples of water collected from the field were transported to the laboratory and tested there, and then in the second test the filters taken from the field and used for filtering unclean water in the laboratory. The tests were conducted by relevant and credible third party/15/, and the methodology of the first test is consistent with the monitoring plan and methodology requirements. The second test was used by the PP to support the argument that the source of post coliforms contamination is due to unhygienic conditions in domestic environment and not a consequence of filter operation. Whilst the laboratory tests proved that filters of over 1.5 age taken from the field perform reliably in the laboratory conditions, the procedure is not in line with the methodology requirements and the emission reductions for filters of over 1 year age were discounted using the pass rate of water quality test on the water samples taken from the field. CL 6 was closed.

Further, ERM CVS agree with the hygiene plan proposed to reduce the risk of post-treatment contamination – this will have to be checked during the next verification period. A FAR 2 has been raised.

Furthermore, the verifier confirmed that the filters which have more than 2 years in operation have been excluded from the crediting period, therefore no emission reductions are accounted for them after two operational years /1/.

The CL 6 is closed

CL 7	
Comment:	The monitored parameters have different definitions, indices and units in Methodology/3/, Monitoring Report /5/, the Emissions Reductions formulas and ER calculations/1/. The mix of names and definition is a source of confusion and mistakes. PP shall organize all parameters and their symbols in order to avoid any misinterpretation or mistakes.
Clarification Request:	<i>Please review and unify all parameters in the monitoring report with the ER calculation and all support documents. The definitions shall be consistent with the Project Scenarios and project equipment technologies.</i>
PP Response The PP has attempted to revise the Monitoring Report in accordance with this request. If further changes are needed, please note them within the document so that we can address them directly.	
Documentation provided	Monitoring Report GS1321 Iss 2 20150523 ER Calculations GS1321 Iss 2_20150518 GS1321 PDD Version 5

Verification activity

ERM CVS checked the new version of MR/5/ and the ER calculations spreadsheet /1/ and cross-checked them with the PDD/2/

Conclusion

The Verifier confirmed that the all parameters in the monitoring report/5/, ER calculation/1/ and PDD/2/ are now consistent and well described.

The CL 7 is closed.

CL 8	
Comment:	The parameter P, p,b,y,ics-nb in the Monitoring Report/5/ does not have clear justification or explanation on the sources of data and calculation. The PP shall include in the Monitoring Report a credible discussion to justify the final values, which are higher than the applied value during the previous monitoring period.
Clarification Request:	<i>Please provide relevant justification / explanation of final data applied in the Emission Reductions Calculation for the parameter P, p,b,y,ics-nb. A revision of spreadsheet shall be done in order to give clear evidences of data source.</i>
PP Response The description of this monitored parameter has been updated to include more detail. The ER Calculations sheet also shows all calculations and source material related to calculations transparently.	
Documentation provided	Monitoring Report GS1321 Iss 2 20150523 ER Calculations GS1321 Iss 2_20150518 GS1321 PDD Version 5

Verification activity

ERM CVS checked the new version of MR/5/ and the ER/1/ cross-checking with the PDD/2/

Conclusion

ERM CVS confirmed that the P p,b,y,ics-nb parameter description has been updated consistent with the Monitoring Plan/2/. The monitoring report/5/ and ER calculation/1/ are consistent

The CL8 is closed.

CL 9	
Comment:	Although the leakage assessment has been developed in the Monitoring Report, the NRB Leakage Assessment Report /24/ does not seem to be integrated into the leakage analysis and apparently the PP did not support the analysis with relevant information of Cookstoves in Guatemala.
Clarification Request:	<i>Please complete and give reliable conclusions based on reputable sources with clear analysis of cookstoves market in Guatemala. Please make clear differences with the water filters technologies.</i>
PP Response The PP included a detailed analysis of cookstove projects in Guatemala in the NRB leakage analysis. Such information has now been included within the monitoring report as well.	

Documentation provided	NRB Leakage Assess GS1321 Iss 2_20150518 Monitoring Report GS1321 Iss 2 20150523
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Verification activity

ERM CVS checked the Leakage assessment in the Monitoring Report/5/ and cross-checked with NRB analysis/24/

Conclusion

ERM CVS confirmed that the PP included a relevant discussion of NRB in the Leakage assessment in the MR/5/. Furthermore, the Verifier confirmed that the conclusions are consistent with the data and information in relevant public information /28/.

The CL 9 is closed.

5.2. Corrective Action Requests

ERM CVS raised a Corrective Action Request (CAR) where:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;
- a Forward Action Request (FAR) during validation (or previous verification) to be verified have not been resolved by the project participants

CAR 1	
Comment:	The FAR 1 was not responded to and completed by the PP. During the inspection the PP did not present relevant justification as to why it was not possible to present the complete list of CBOs/NGOs and CRWs. Furthermore, sales data records presented serious inconsistencies in terms of names and final receptors of the filters. In addition, there is not full consistency between TSR and DCD data and the project data bases do not have full information of sales for this monitoring period. Furthermore, although the size of final users data are 10 times higher than the samples sizes (1,000)

	there is not reliable justification as not why the end users information cannot be collected. During the NGOs interviews /IV19/IV20/IV21/, the verifier found that the representatives of NGOs are not clear on the requirement to provided final users data, when they could provide a reliable inventory of final users; which is not consistent with the GS Methodology and the monitoring plan/2/13/25/.
Corrective Action Request:	<i>PP shall complete all relevant information requested in the FAR 1 and complete integral revision of the Project Data bases/11/12/. The PP shall pay attention, into the others in the following points:</i> <i>1. All CRW from NGOs/CBOs shall be signed and recorded in a reliable and clear manner. In case that some CRWs cannot be signed a reliable justification shall be supported. Physically signed CRW shall be stored appropriately. The electronic format is acceptable.</i> <i>2. There are invoices that do not correspond to the new inventory distinction reserved for the project activity. All invoices shall belong to Series C. 1340 filters</i> <i>3. The Ecofiltro shall improve the invoice system. The invoice C-685 is registered as Ecofiltro's direct sales when the receptor was apparently an NGO, which is not acceptable.</i> <i>4. The project activity data bases (Scenario 1 and 2) shall be updated with the 2015 year sales. PP provided data bases to the DOE, which are not fully consistent.</i> <i>5. Ecofiltro shall demonstrate that they have made the best effort to collect and collecting the end users information, with relevant justification when this information is not feasible</i> <i>6. Ecofiltro shall apply the monitoring system stated and defined in the Ecofiltro Operation Manual/25/</i> <i>7. PP shall demonstrate that sales between partners (Maya Relief and Ecofiltros) are fully consistent.</i> <i>8. PP shall update the final users data that the NGOs/CBOs are able to provide.</i>
PP Response First round - It was not clear to the PP or Project Participant EF that the FAR required historical revision of CRWs. A new process has been implemented to record all CRWs going forward (from the point of the issuance of FAR 1), and all CRWs from NGOs since that point have been collected. The PP proposes the following to address historical CRW collection issues: Within 6 months of Issuance 2, the PP and EF will: - Hire a full-time M&E employee to manage all data collections for SM and EF - Request an appointment with all NGOs who previously purchased filters to update CRWs and obtained signed paperwork for all sales to date. - To further train EF sellers regarding the documents that must be presented to the institutions before the sale and during the delivery. - To revise, every week, all the papers sent by the field supervisors; technicians from institutions that meet the requirements for the project of Créditos de Carbono, and to make sure that the total of the invoice tallies or corresponds with the database of the beneficiary. - As a newly implemented inventory control system, it has taken some time to implement a new system whereby all invoices directly associated with the carbon program are C-series. Additionally, some entities have participated in both commercial and rural sales to date. The PP will assure that all sales included in the carbon program fall within this invoice designation from now on. - Invoice C-685 refers to an inter-company sale between Ecofiltro and Ecofiltro S.A., the company's own non-profit organization, as outlined in the Operations Manual. Filters are sold to Ecofiltro S.A. and invoiced as any other sale would be for financial and legal compliance, then the filters are distributed to end users by Ecofiltro S.A. and the individual names of such distributions are recorded in the Detailed Customer Database (DCD). Because this is an inter-company sale (for the purpose of tax and legal compliance, an actual sale needs to take place) and the filters are intended for distribution to individual end users and are recorded on the DCD, it is thus appropriate that the C invoice designation be used. - All 2015 sales through March 31, 2015 have been added to the TSRs for Scenarios 1 and 2. - Ecofiltro makes every effort to collect end-user data from 3rd party intermediary sellers/distributors, whether commercial or non-profit in nature. However, doing so presents significant challenges due the sheer number of filters being sold and distributed and to the fact that collection of such data is expensive and time-consuming. 3rd party distribution and sales partners have little direct motivation to do so on Ecofiltro's behalf without compensation to do so and any such compensation would have to be recouped in the end-price to the consumer. In the GS Methodology - <i>Technologies and Practices to Displace Decentralized Thermal Energy Consumption</i> - 11/04/2011, Section III, A, page 23, the GS states in regard to the data required to be maintained for the Total Sales Record that, "The required data are: (5) Name and telephone number (if available) and address: (5a) Required for all bulk purchasers, i.e. retailers and industrial users, and (5b) All end users except in cases where this is justified as not feasible[footnote 31: Such as cases of distributed sales of small items (such as portable cookstoves, heat retention cookers, water filters) sold in market stalls or shops where the retailer cannot reasonably be expected to collect	

customer names and addresses during busy times]. In such cases the number of names/telephone numbers/addresses collected must be as many as commensurate with representative sampling, i.e. the number of end user names and addresses (and phone numbers where possible) within the sales record shall be large enough so that surveys and tests can be based on representative, purely randomly selected samples. In all cases this should not be less than 10 times the survey and field test sample sizes (including usage surveys for each age of product), in order to ensure an adequate end user pool to which random sampling can be applied." Per the methodology, Ecofiltro has maintained all required data for every bulk sale in its Total Sales Record. Further, despite the considerable cost and difficulty of doing so, Ecofiltro has worked diligently to collect end-user information in the form of a Detailed Customer Database, which contains the names of 2,310 consumers, roughly 20 times the largest survey and field test samples used for the most recent monitoring. The PP therefore asserts that Ecofiltro is compliant with, and in fact exceeding, the required parameters of the methodology.

6. The PP has clarified and revised the Ecofiltro Operations Manual to align all current operating procedures. The new document can be found here: <https://www.dropbox.com/sh/tqci74mpqj488cd/AAAhM2x2cn3j3z9XHRNyRPgBa?dl=0>
7. All sales of filters manufactured by Ecofiltro and sold to Maya Relief Foundation/Socorro Maya have been adjusted in the EF Total Sales record to (a) maintain a record the sale itself for future reference, and (b) eliminate the calculation of technology years accrued by EF for any filter sales to Maya Relief Foundation/Socorro Maya. This assures that only filters sold by Socorro Maya and recorded in their TSR are accounted for within Emission Reduction Calculations. Thus the number of sales from EF to Socorro Maya is irrelevant as it has no bearing on ERs or other calculations being reviewed by ERM CVS.
8. All sales and DCD line items are updated in the ER calculations.

Second Round

Item 2: Ecofiltro has made notes in the document, "DatabaseReview (1) para justificar" explaining the source of the confusion for numerous invoice numbers. They have also agreed to shift as many A-series invoices to C-series invoices as possible without jeopardizing their own tax audit status.

Item 3: See notes on DatabaseReview (1) para justificar. The EF donation program is complex in trying to comply with Guatemalan tax law. They technically invoice donated filters to them themselves (reflected in the TSR) and then show receipt of filters by either a partner organization helping to distribute the filters, or a field manager in charge of such distribution. The PP has asked EF to do a review of the database and has included the notes from such on DatabaseReview (1) para justificar.

Item 4: The Project databases included 2014 and 2015 sales pertinent to this monitoring period, and the ER calculation spreadsheet contains all sales from project inception to date. The PP has, however, added all sales to the raw databases submitted by the project partners and included those in the PP Response folder for DOE Review.

Item 5: The PP has experience with this issue in Guatemala and in several countries in Africa. What NGOs say they can do is often quite different from what they will do when asked to provide information. Collecting data may or may not be part of their ongoing operations, but providing that data to external partners is unusual and can sometimes be perceived as contradicting the best interest of their local constituents as for-profit companies are often perceived as exploitative. Further, the signing of a legal document (CRW) is often something NGO employees are not authorized to do without the consent of their legal department or supervisor. Being a legal release, the CRW can be perceived to be a risk that NGOs are not willing to take. While EF has agreed to pursue NGO CRW signatures and request NGOs supply individual registrations, the PP submits that the Project should not be held to a higher standard than the methodology and other projects are held to as a condition of issuance. The PP can only request these documents, it cannot assure the delivery of them. As the methodology requires 10x the sampling frame in registrations minimum as a fair standard, the PP requests this be used as the deciding factor for completion of diligence toward issuance.

Item 8: Please see notes on Items 2 and 3

Documentation provided

Ecofiltro Operations Manual

Spreadsheet: Detailed Customer Database (DCD)20150501

Spreadsheet: SM 20150403TSR_MonP2

Spreadsheet: ER Calculations GS1321 Iss 2_20150518

Verification activity

ERM CVS re-checked the updates in the Ecofiltro Operation Manual/25/ and the project activity data bases/10/11/, cross-checking the data with the ER calculations/1/

Conclusion

According to the evidences and explanations provided by the PP, ERM CVS can conclude:

1. The PP's proposal to implement a new process to collect the historical CRWs from NGOs/CBOs seems reasonable and consistent with the requirements of the transparency, traceability and reliance on the project data bases/10/11/. The period of 6 months to update all monitoring process and training procedures are credible taking into account the challenge of the task. ERM CVS considers that the gap in the process did not affect the transparency of monitoring process due to the Verifier confirmed the improvement of the monitoring systems compared to the previous monitoring period. A new FAR 1 has been raised.
2. The Verifier confirmed that at least 1,340 sold filters included in the monitoring period, belongs to the A-series. The last one registered was January 2015. PP shall provide relevant evidences that these filters recorded be part of project activity. In case that no relevant evidences were able, the credits shall be excluded from the ER Calculations.
3. The Verifier has relevant evidences that the filters receptor in the invoices C-685 transaction is a NGO/CBO, which was not properly registered in the TSR/11/. ERM CVS call the attention to PP that this invoices sample is only a randomly cross-checking process, which demonstrate the highly probability that the same issue can present in other systems and it is a consequence of project operations. PP shall do a credible revision of project data base to avoid the lack of transparency into the process.
4. ERM CVS confirmed that the project data bases/10/11/12/ included the sales records of 2015. However, the PP did not provide an updated TSR and DCD with all data to date.
5. According to the NGO/CBOs interviews /IV19/IV20/IV21/, developed during the verification process, ERM CVS checked that the PP should do a better effort to collect information from the bulk sellers. According to the information provided directly from the NGO/CBOs, ERM CVS confirmed that they are able to provide this information due to their internal control systems where the filters have been installed; therefore the methodology exceptions are not applicable on these cases. PP did not provide relevant evidences to demonstrate that the NGO/CBOs were not able to present this information.
6. The Verifier confirmed that the updated Ecofiltro Operation Manual is consistent with the methodology requirements and monitoring plan.
7. ERM CVS found that the Socorro Maya filters acquisition or distribution has been adjusted and eliminated in the ER Calculation/1/. There is no risk of double accounting.
8. Unfortunately, some inconsistencies are still found in the project data bases by the Verifier. The inconsistencies will be show to the PP in order to make an integral revision to prevent double accounting.

From the new version of Ecofiltro TRS and DCD/11/12/, ERM CVS confirm that PP provided relevant and credible evidence to demonstrate that the Series A invoices included in the TSR correspond to the scope and areas of project activity. Furthermore, the verifier checked that the invoices A-7007 (55 filters); A-6024 (60 filters); A-5730 (50 filters); A-6038 (26 filters); A-5827 (50 filters) were removed from the TSR and crediting due to not having reliable support, which is conservative. Also, during the double cross-checking of actual version TSR and DCD/11/12/ the mistakes and inconsistencies were corrected and now the project databases are fully traceable.

The verifier agrees that the PP cannot assure that all NGO/CBOs could provide individual registrations from end users. The methodology requires the PP to communicate to sellers and end-users and that they cannot claim rights for emission reductions from the project, and this was confirmed to be done based on the site visit interviews. The carbon rights waivers would be documented evidence that this was clearly communicated but the signed waivers are not required as such. ERM CVS understands the PP also use stickers on the project units to communicate the carbon rights waivers and considers this to be appropriate, and consistent with the methodology. The DCD has a comfortable size of end user details comparing with the Methodology demand (10 times of sample size). However, the PP should be consistent with the Monitoring Plan/2/ and Operative Manuals/25/26/, which clearly states that all CWR shall be signed by entities and the demonstrated that they requested the final user registrations from the NGO/CBOs. These procedures will be checked during the next monitoring period, as part of FAR 1 raised.

CAR 1 is closed

CAR 2

Comment:	ERM CVS found that some procedures and data in BWBT were not consistent with the Global Alliance for Clean Cookstoves Guidelines and WBT procedures. The BWBT report/20/ have some mistakes, and the links to references are not working. PP should provide the explanation why the procedures and collected data are consistent with the methodological requirements, and they should correct the report and adjust the analysis and calculation in case that it would be necessary.
Corrective Action Request:	<i>Please review, correct and complete the BWBT reports according to the findings. PP should take into account the following issues:</i> <i>1. The report has some mistakes and wrong references, which should be corrected and updated</i> <i>2. It is unclear the total number of households tested and the number of boiling test per point. Please clarify</i> <i>3. PP should provide the evidence of data collected in the field and explain if the field activities and collection procedure are consistent with the Clean Cookstoves Guidelines.</i> <i>4. The BWBT report/20/ does not have relevant discussion to prove the size of sampling according to the KPT procedures</i> <i>5. CO2 Management shall provide relevant evidence why did not apply the basic principles of testing such as the amount of wood per point and the water temperature to start the testing.</i>
PP Response First Round The PP has updated the BWBT Report to reflect the following revisions: - All mistakes and references that the PP was able to locate have been corrected or updated. If ERM CVS has additional concerns, the PP would request that ERM CVS provide a track changes document identifying areas of concern that can be revised by the PP. - Page 5 of the BWBT Test Report clearly states that 13 BWBT tests were conducted on Baseline Unimproved stoves (open fires) as required by FAR 6 and in accordance with the direction provided by Gold Standard and detailed in the memo "GS1321 Issuance 2 Monitoring Clarifications" dated November 26, 2014, which is included in the reference materials in the DOE Review Folder here: https://www.dropbox.com/sh/tqci74mpqj488cd/AAAhM2x2cn3j3z9XHRNyRPgBa?dl=0. As per the guidance provided in the memo, which reads "the PP may elect to conduct a single test per household (as opposed to three) in order to facilitate the execution of surveys." the PP elected to conduct a single BWBT test per household in order to facilitate the execution of KPTs in the same household since each test requires a significant amount of household time to complete. Page 5 also states that an additional 13 tests were conducted on plancha-style stoves at the PPs request in order to compare the performance of such stoves to those of open fires since many of these plancha-style stoves were witnesses in baseline households during monitoring. - All field data for BWBTs is included in the Xcel spreadsheet entitled "BWBT Field Data GS1321 Iss 2 [DATE]" on the second tab labelled "BWBT_Guatemala_results". This data was pulled directly from ODK files uploaded from smart phones as the enumerators completed BWBT tests in the field. The relevant data points for collection were programmed into ODK using the <i>Field Baseline Water Boiling Test (BWBT) Overview & Testing Protocol</i> provided by the Clean Cookstove Alliance as outlined in the BWBT field report. - The PP has revised the language on Page 3 of the report to include the relevant discussion on sampling size in accordance with the memo "GS1321 Issuance 2 Monitoring Clarifications" dated November 26, 2014. All parameters were followed exactly per the methodology as was possible within the context of testing in the field with household owners/cooks. Where enumerators felt sticking rigidly to protocol procedures would take considerably more time and possibly jeopardize the household participant's willingness to participate, they were allowed to continue with small deviations from the methodology, but only when such deviations would appear to yield equally conservative or more conservative results. Addressing the two examples cited above: - In every case, the ambient and water temperature were both measured. The WBT protocol states that the tester should "Measure the initial water temperature in each pot. Confirm that it does not vary substantially from the ambient temperature." It does not provide guidance as to an acceptable range of variance. The PP elected to use a 5 degree range of variance between ambient and water temperature as acceptable. 12 out of the 13 BWBTs performed in response to FAR 6 had an ambient/water temperature variance of 5 degrees or less. The single household that had a higher variance also had the lowest fuel use in the test. Were it to be removed, the average fuel use reported would increase resulting in a less conservative outcome. The PP has thus elected to include it for conservatism. - Similarly, in every instance wood type, wood weight, wood dimensions, moisture content, pot weight, pot capacity, and all	

other required data were recorded prior to each test. All such data is recorded in the Excel sheet entitled “*BWBT Field Data GS1321 Iss 2 [DATE]*” on the second tab labelled “BWBT_Guatemala_results”.

Second Round

Item 1: Additional comments have been addressed within the report by the PP.

Item 2C: The PP has requested that GS reiterate its acceptance of the proposed monitoring specification as the email from GS is no longer available due to the discontinuation of a PP employee.

Documentation provided

“GS1321 Issuance 2 Monitoring Clarifications”

Spreadsheet: “*BWBT Field Data GS1321 Iss 2 [DATE]*”

BWBT Field Report GS1321 Iss 2_20150523

Verification activity

ERM CVS checked the BWBT report/20/ to compare with the MR/5/ and spreadsheet data field.

Conclusion

Round 1:

According to the evidence provided and document revision, ERM CVS concluded:

1. Although the BWBT report/20/ was improved, additional comments have been included requesting additional attention by PP.
2. ERM CVS confirmed that CO2 Management conducted 13 household single tests for the baseline stoves. Also, they did additional 13 single tests for plancha style stoves, according with the monitoring plan proposed for KPT and BWBT to Gold Standard, in response of FARs raised during the Issuance1. From the clarification, the Verifier confirmed that;
 - a. The three stones, metal grade and cinder block stoves correspond to the same classification “open-fired” stoves, as defined as baseline scenario in the PDD. The PP does not treat them as different stoves, which is consistent with the field observation by the Verifier. The stove applies the same principle to stack up the wood without combustion chamber and no air flow direction.
 - b. The Plancha style makes a difference from the open fires that the flow of gas is conducted through the combustion to the chimney. Furthermore, the Plancha stove has a flat metal sheet to cook, the smoke is less, and the combustion is closed (i.e. no free air flow) compared to the open fires. The higher fuel consumption analysis in plancha-style stoves demonstrated by PP seems reasonable and credible (i.e. poor design and dense materials). The metal sheet is heavy and absorbs heat, and thickness and the stoves do not have efficiency in wood consumption as confirmed by users during the site visit.
 - c. PP presented evidence to demonstrate that they proposed that the monitoring procedure/29/ is the single test per household instead of the three times. However, there is no relevant evidence of the acceptance by the GSF of this monitoring specification procedures.
3. PP clarified that the field collection method by CO2 Management enumerators and ERM CVS confirmed that all field records/20/ are consistent with the Clean Cookstoves Guidelines/16/
4. In terms of sampling size, ERM CVS confirmed that relevant discussion has been included in the BWBT report/20/. Furthermore, the Verifier confirmed that monitoring was developed according to for simple random sampling/21/ with 90/30 specification
5. explanations, the Verifier considered reasonable the slight deviations from the Clean Cookstove Protocol/16/ and checked that these deviation do not represent a risk of overestimation of monitoring results, and all deviations can be confirmed to be considered conservative.

Round 2:

From the final version of BWBT testing report/20/, ERM CVS confirmed that all minor issues and additional comments were responded to and attended by the PP. Also, PP provided relevant evidence to demonstrate that GSF accepted /35/ the BWBT monitoring procedures consisting of a single test per household instead of the three times defined in the guidelines/16/

The CAR 2 is closed.

5.3. Forward Action Requests

FAR 1	
Comment:	PP will implement during the following 6 months the following activities to complete collection of historic CRWs and to further strengthen the recording procedures: a) Hire a full-time M&E employee to manage all data collections for SM and EF b) Request an appointment with all NGOs who previously purchased filters to update CRWs and obtained signed paperwork for all sales to date. c) To further train EF sellers regarding the documents that must be presented to the institutions before the sale and during the delivery. d) To revise, every week, all the papers sent by the field supervisors; technicians from institutions that meet the requirements for the project of Créditos de Carbono, and to make sure that the total of the invoice tallies or corresponds with the database of the beneficiary.
Forward Action Request:	During the next verification process the DOE shall review the implementation and full operation the measures proposed by PP. For the next verification the PP shall provide: 1. A register of CRWs from all NGOs/CBOs registered in the TSR and DCD/10/11/12/. PP shall demonstrate that the final users data registration shall be properly requested. 2. An evidence of training of Operation Manual operations to Ecofiltro's staff. 3. The cross-checking revision of a portion of filters sales no less than the 50% of totals sales. 4. The DOE shall visit a sample of rural schools to verify the Ecofiltro School programs

FAR 2	
Comment:	The treated water by project activity technology is exposed to possible contamination with coliforms from domestic activities and unclean conditions in the domestic areas. The PP proposed a hygiene campaign during the next verification period to tackle post-treatment contamination. Its effectiveness to prevent/minimize the post-contamination shall be evaluated during the next verification.
Forward Action Request:	During the next verification process, the DOE should check the hygiene program implemented by the PP and evaluate the effectiveness of program on the water quality. In particular the DOE should confirm: 1. The development of the educational flyer to be distributed with all water filters outlining the health and

	- safety benefits of a. Washing hands before taking water from the spigot b. Keeping the spigot covered with a clean, plastic bag c. Avoiding the use of rags or other bacteria-forming materials as a cover or cleaning device for the spigot. 2. The distribution of the ziplock-style bags with each filter 3. The training programme for the salespeople to educate users on the benefits of washing hands and using the provided bag to cover the spigot
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5.4. Minor Issues

Minor issues were communicated by email and directly during the site visit

Annex A: Reference Documents and Interviews

A.1: Documents

Reference	Title and version	Date
1	Emission Reduction calculation ER Calculations GS1321 Version Version 1 ER Calculation GS1321 Version 5	Submitted to ERM CVS on 07 April 2015 08 September 2015
2	Stove Capital Guatemala Improved Stove and Water Purification Project GS1321 PDD Version 5	20 September 2013
3	Stove Capital Guatemala Improved Stove and Water Purification Project GS1321 Passport Version 01	10 May 2012
4	Stove Capital Guatemala Improved Stove and Water Purification Project GS1321 <i>3-week issuance review period under GS Version 2.2</i>	19 September 2014
5	Stove Capital Guatemala Improved Stove and Water Purification Project GS1321 Monitoring Report Version 1 Version 7	Submitted to ERM CVS on 07 April 2015 08 September 2015
6	Final Verification Report, 1 st verification period (01 Jan 2013 – 31 March 2014)	10 July 2014
7	GS 1321 KPTs San Marcos Report Iss 2 Version 1 and Spreadsheet KPT Paired field data and calculations - San Marcos GS 1321 KPTs San Marcos Report Iss 2 Version 4	Submitted to ERM CVS on 07 April 2015 08 September 2015
8	Spreadsheet Baseline KPT field data Unimproved stoves – San Marcos	Submitted to ERM CVS on 07 April 2015
9	Annex 5 Verification 1 st monitoring period KPT field data and calculation	Submitted to ERM CVS on 06 April 2014
10	Total Sales Record – Maya Relief SM TSR_MonP2 Version 20150403 Iss 2 TSR_DCD Version April 1 2014 to March 6 2015 SM Stoves 20150630 TSR_MonP2	Submitted to ERM CVS on 07 April 2015 30 June 2015
11	Total Sales Record – Ecofiltro Ecofiltro Iss 2 TSR Version 20150107 EF Iss2 TotalSalesRecord_ Version 20150722	Submitted to ERM CVS on 07 April 2015 22 July 2015
12	Detailed Customer Database Ecofiltro Iss 2 DCD Version 20141217 EF DetailedCustomerDatabase(DCD)20150722	Submitted to ERM CVS on 07 April 2015 22 July 2015
13	Gold Standard Methodology “Technologies and Practices to Displace Decentralized Thermal Energy Consumption” - 11/04/2011	11 April 2011
14	GS1321 Water Quality Report Version Iss 2 4_28_15 Version 1 Water Quality Report GS1321 Iss 2 20150724 Version 4	28 April 2015 24 July 2015

Reference	Title and version	Date
15	Water Sample Test Results – Households Filter Testing Results - Laboratory	Submitted to ERM CVS on 07 April 2015
16	The Global Alliance for Clean Cookstoves, The Water Boiling Test Version 4.2.3 http://cleancookstoves.org/about/news/03-25-2014-stove-testing-update-release-of-water-boiling-test-protocol-4-2-3.html	25 March 2014
17	Ecofiltro Invoice C-685- Cross-checking process	25 July 2014
18	1. GS1321 Household Final User Water Treatment MS & US Report Version Iss 2 4.10 (Scenario 1) 2. Spreadsheet Field Data MS_US Filter (hh-wt) GS1321 Version Iss 2 4.10. Version 1 MS_US Filter (hh-wt, hh-dual) Report GS1321 Iss 20150724 Version 4	Submitted to ERM CVS on 07 April 2015 03 September 2015
19	1. GS1321 Household Final User Woodstove MS & US Report Version Iss 2 4.10 (Scenario 2) 2. Spreadsheet Field Data MS_US Woodstove (hh-dual) GS1321 Version Iss 2 4.10.xlsx MS_US Stove (hh-dual) Report GS1321 Iss 2_20150724 Version 4	Submitted to ERM CVS on 07 April 2015 03 September 2015
20	GS1321 Baseline Water Boiling Test Version 1 Spreadsheet BWBT Field data and Calculations BWBT Field Report GS1321 Iss 2_20150724 Version 4	07 April 2015 03 September 2015
21	CDM-EB67-A06-GUID, "Sampling and surveys for CDM project activities and programmes of activities" Guideline, Version 3.0 https://cdm.unfccc.int/filestorage/e/x/t/extfile-20131010103828384-meth_guid48.pdf/meth_guid48.pdf?t=MzB8bnAybDB0fDD2GMeEnpEnfMMgsaK9qu9U	4 October 2013
22	Monitoring Process - Training Materials: • Kitchen Performance Test • Baseline Water Boiling Test • Water Quality • Field Formularies	Submitted to ERM CVS on 06 April 2015
23	Enumerators Training Assistance Records	Submitted to ERM CVS on 25 May 2015
24	NRB Leakage Assessment	Submitted to ERM CVS on 06 April 2014
25	Ecofiltro Operation Manual Version 3	Submitted to ERM CVS on 07 April 2015
26	Socorro Maya Operation Manual Version 2	18 May 2015
27	CDM Validation & Verification Standard, (VVS) Version 9	20 February 2015
28	Global Alliance for Clean Cookstoves, "Guatemala Cookstoves and Fuels Market Assessment" http://cleancookstoves.org/binary-data/RESOURCE/file/000/000/213-1.pdf	July 2013
29	The Paradigm Project GS1321 Issuance 2 Monitoring Clarifications to Gold Standard	26 November 2014
30	Sampling Frame for US/MS, KPT, BWBT and Water Quality	Submitted to ERM CVS on 07 April 2015
31	Sampling Method and Size for US/MS, KPT, BWBT and Water Quality	Submitted to ERM CVS on 07 April 2015
32		

Reference	Title and version	Date
	Services Monitoring Contract between The Paradigm Project and CO2 Management	30 January 2015
33	Washington State, Department of Health, Coliform in Drinking Water State,	No available
34	Clasen, T and Bastable, A, "Faecal contamination of drinking water during collection and household storage: the need to extend protection to the point of use", Journal of Water and Health, 2003	2003
35	Hernandez, Ivan, Gold Standard, "Confirmation of BWBT monitoring procedures approval by GSF".	01 July 2015
36	World Health Organization, "A toolkit for Monitoring and Evaluating Household Water Treatment and Safe Storage Programs", 2012. Page 23	2012
37	ECOFILTRO S.A. Scanned evidences and justification of Series A invoices for the monitoring period, which not correspond to the Ecofiltro Operative Manual.	Submitted to ERM CVS 17 July 2015
38	Ecofiltro Schools Program 2015 Rural and Peri-Urban Communities	Submitted to ERM CVS 01 July 2015
39	FAO Guatemala Country Profile http://www.fao.org/forestry/country/57478/en/gtm/	Website accessed on 01 July 2015

A.2: Persons interviewed

Reference	Name	Title & Organisation	Main Topics Discussed
IV 1	Leon Reinhart	Socorro Maya CEO	Project description Project implementation
IV 2	Neil Bellefeuille	The Paradigm Project CEO	Project implementation Monitoring process Monitoring Report
IV 3	Robert Reinhart	Socorro Maya Managing Director	Project description Project implementation Monitoring process Data bases
IV 4	Valeria Prado	CO2 Management CEO	Monitoring process Monitoring Training
IV 5	Carlos Alberto Barrios	Socorro Maya General Manager	Project description Project implementation Monitoring process Data bases
IV 4	Gabriel Jerez	CO2 Management Project Management	Monitoring process Monitoring Training Field work
IV 6	Estuardo Choc	Field technician and support Socorro Maya	Project implementation Monitoring process
IV 7	Hugo Daniel Pop	Finance Socorro Maya	Data bases records
IV 8	Diego Samoyos	CO2 Management Field enumerator	Monitoring process Monitoring Training Field work
IV 9	Eddy Melendez	CO2 Management Field enumerator	Monitoring process Monitoring Training Field work
IV 10	Ana Patricia Chub Maquin	Community Volunteer Socorro Maya	Monitoring process Project implementation
IV 11	Humberto Chue	Community Volunteer Socorro Maya	Monitoring process Project implementation

IV 12	Lidia Arribillaga	Community Volunteer Aguacate Community	Project implementation
IV 13	Aurora Marisol de Leon	Education Director Ecofiltro S.A.	Ecofiltro project implementation Ecofiltro Data Bases Project implementation.
IV 14	Luis Roberto Rodas	Field technician and support Socorro Maya	Project implementation Monitoring process
IV 15	Jorge Perez	Community Volunteer Socorro Maya	Project implementation
IV 16	Cesar Augusto Lopez	Field technician and support Socorro Maya	Project implementation Monitoring process
IV 17	Argentina Paz	Community Volunteer Ecofiltro	Project implementation Monitoring process
IV 18	Rosa Lucan	Field technician and support Ecofiltro	Project implementation Monitoring process
IV 19	Diana Baten	PCI ONG	Carbon Credits Rights – Ecofiltro Bulk Sales & Distribution
IV 20	Oscar Rosales	Asoprogal ONG	Carbon Credits Rights – Ecofiltro Bulk Sales & Distribution
IV 21	Christian Dominguez	Caritas Zacapa	Carbon Credits Rights – Ecofiltro Bulk Sales & Distribution
IV 22	Viviana Rendon	Save Children ONG	Carbon Credits Rights – Ecofiltro Bulk Sales & Distribution