GOLD STANDARD VERIFICATION REPORT

ENHANCED DISTRIBUTION OF EFFICIENT COOK STOVES IN HONDURAS

(Gold Standard ID Number GS690)

MONITORING PERIOD:
01 DECEMBER 2012 TO 30 NOVEMBER 2013

REPORT NO. 2014-9087
REVISION NO: 01

DET NORSKE VERITAS

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GOLD STANDARD VERIFICATION REPORT

Date of first issue: 12 February 2013	Project No.: PRJC-482850-2013-CCS-USA
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Summary:
DNV Climate Change Services AS (DNV) has performed the verification of the emission reductions reported for the "Enhanced Distribution of Efficient Cook Stoves in Honduras Project" in Honduras (Gold Standard Ref. No. GS690) for the period 01 December 2012 to 30 November 2013.

In our opinion, the GHG emission reductions reported for the project in the monitoring report (Version 03) of 27 January 2014 are fairly stated.

The GHG emission reductions were calculated correctly on the basis of the GS approved monitoring methodology "Methodology for Improved Cook-stoves and Kitchen Regimes V.01" and the monitoring plan contained in the revised Project Design Document of 11 February 2013.

DNV Climate Change Services AS is able to certify that the emission reductions from the "Enhanced Distribution of Efficient Cook Stoves in Honduras Project" during the period 01 December 2012 to 30 November 2013 amount to 129 911 tonnes of CO_2 equivalent. Of this total, 8 652 tonnes of CO_2 equivalent were generated in 2012, and 121 259 tonnes of CO_2 equivalent were generated in 2013.

Report No.:	Subject Group			
2014-9087	Environment			Key words:
Report title:				
Enhanced Distribution of Efficient Cook Stoves in Honduras Project				Gold Standard Additionality Sustainable Development
Work carried out by:				
Kyle Silon			☒	No distribution without permission from the Client or responsible organizational unit
Work verified by:				
Weidong Yang			☐	Limited distribution
Date of this revision:	Rev. No.:	Number of pages:		
17 March 2014	01	20 (excluding annexes and cover page)	☐	Unrestricted distribution

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO_2e	Carbon Dioxide Equivalent
DNV	Det Norske Veritas
DOE	Designated Operational Entity
DRB	Demonstrably Renewable Biomass
ER	Emission Reduction
GHG	Greenhouse Gas(es)
GS	Gold Standard
HH	Household
KS	Kitchen Survey
KT	Kitchen Performance Test
MP	Monitoring Plan
NRB	Non-Renewable Biomass
PDD	Project Design Document
PP	Project Participant

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1 INTRODUCTION

Proyecto Mirador has commissioned DNV Climate Change Services AS (DNV) to carry out the verification of emission reductions reported for the "Enhanced Distribution of Efficient Cook Stoves in Honduras Project" (hereafter called "the project") during the period 01 December 2012 to 30 November 2013.

This report summarizes the findings of the verification and contains a verification statement for the verified emission reductions.

1.1 Objective

Verification is the periodic independent review and ex post determination by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered GS project activity during a defined monitoring period.

The objective of this verification was to verify the emission reductions reported for the "Enhanced Distribution of Efficient Cook Stoves in Honduras Project" (hereafter called "the project") during the period 01 December 2012 to 30 November 2013.

1.2 Scope

The scope of the verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification shall ensure that reported emission reductions are complete and accurate in order to be certified.

1.3 Description of the Project Activity

Proyecto Mirador disseminates fuel-efficient stoves and utilizes carbon finance to provide a market-based financial solution to address the problems of deforestation, indoor air pollution, global warming, and slow economic development through the creation of microenterprises in rural Honduras. Construction of fuel-efficient stoves by Proyecto Mirador began in June 2004. Using a uniquely designed stove called "Estufa Dos por Tres", these stoves are now used in project beneficiaries' homes an average of 9.11 hours per day **/3/**, every day.

The PP donates to each beneficiary the steel cooktop (plancha), the chimney and chimney top, and the six custom ceramic pieces for the stove mouth or firebox, and the installation and training. These components are sourced and manufactured locally in Santa Barbara Province, creating local jobs through eight material provider businesses. Beneficiaries contribute the remaining components, including cement, rebar, bricks, adobe blocks and wood ash, all of which are common items available in all villages of Honduras. This cost-sharing arrangement is part of

Proyecto Mirador's philosophy of "No Cuesta, No Cuida," which asserts that beneficiaries will better care for their donated stove if they invest some of their own resources in its acquisition. Old stoves are removed at the time the new Estufa Dos por Tres stoves are installed.

In recent years, with the growth of the project, Proyecto Mirador now has a "Programa de Contratistas" (Associates Program), which has greatly aided them in scaling up their project. In this microenterprise program, entrepreneurs are trained and paid by Proyecto Mirador to build and install Estufa Dos por Tres stoves under Proyecto Mirador's leadership and verification. The project has installed 58 614 stoves since the project start, including 24 484 stoves installed during this verification period.

Title of Project Activity	Enhanced Distribution of Efficient Cook Stoves in Honduras Project
Gold Standard ID Number	GS690
Baseline and monitoring methodology	GS approved methodology "Methodology for Improved Cook-stoves and Kitchen Regimes V.01"
Project Entity	Proyecto Mirador 919 Sir Francis Drake Blvd., Suite 201 Kentfield, CA 94904 +1 415-925-1887
Location of the project activity	Honduras
Period verified in this verification	01 December 2012 to 30 November 2013

1.4 Methodology for determining emission reductions

The methodology used for the estimation of the emission reduction is in line with the GS approved methodology, *Methodology for Improved Cook-stoves and Kitchen Regimes,* Version 01 /25/. According to the applied methodology, the emission reductions are determined as the difference between baseline emissions, project emissions and leakage:

$ER_y = BE_y - PE_y - LE_y$

BE_y is the sum of annual emissions from the continued use of baseline stoves. This scenario was captured by assessing fuel-wood supply, consumption patterns and environmental behaviors among households that use traditional wood stoves, or "fogones". These data define the baseline situation, which was used to characterize conditions that would prevail in the absence of the project activity. The baseline is defined based on the assumption that, in the absence of project activity, all households in the community would continue to utilize the traditional "fogon".

PE_y represents the sum of annual emissions from the use of project stoves. Project emission calculations use an estimated 3.31 $mtCO_2e$/year/stove (described in more detail in section 3.5). The improved stoves are installed progressively over time, so project emissions are calculated based on the number of stoves installed and the annual operating period.

The emissions reductions calculation assumes an estimated leakage of zero (0) tCO_2/year. This value is substantiated by qualitative surveys reviewed during the site visit /15/, in the table "**ID 12 / Leakage**", showing that leakage is negligible.

2 METHODOLOGY

The verification of the emission reductions stated in the monitoring report has assessed all factors and issues that constitute the basis for emission reductions from the project. These include:

- Review of project documentation;
- On-site inspections, including the review of performance records, interviews with project participants, observation of collection of measurements, established practices;
- Review of monitoring results and verification of the correct application of the monitoring methodologies

Verification Team

				Type of involvement					
Role/Qualification	*Last Name*	*First Name*	*Country*	Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TA Competence (3.2)
Team Leader (Verifier)	Silon	Kyle	USA	√	√	√	√		√
CDM Technical reviewer	Yang	Weidong	USA					√	

Duration of Verification

Preparations:	03 November 2013 – 25 November 2013
On-site verifications:	02 December 2013 – 05 December 2013
Reporting, calculation checks and QA/QC:	06 December 2013 – 17 March 2014

2.1 Desk Review of the Project Documentation

This is the third verification for the project. The desk review was conducted prior to the site visit. The verification has been performed based on the review of the following documentation:

- The monitoring report /3/
- The PDD, including the monitoring plan /1/
- The validation report /30/

- The verification reports for the first /31/, second /32/ and third /33/ monitoring periods
- The approved baseline and monitoring methodology applied by the project /25/
- The usage survey report for HH cook stoves, ages 0-1 years and 1-2 years **/4/**
- Kitchen Performance Tests conducted to determine the amount of fuel consumed /5/
- Sales Records /14/

During the desk review, DNV applied standard auditing techniques to assess the quality of information provided. The following activities were performed:

- A review of the data and information presented to verify their completeness,
- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, sampling plan for survey and the quality assurance and quality control procedures; and
- An evaluation of data management, and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

2.2 Site Visit

A site visit was conducted on 3-7 December 2013. Different sets of interviews were conducted during the site visit on separate days, as summarized in Table 4.

Table 4: Summary of Site Visit Interviews

Date	Attendees	Discussion Topics
02 December 2013	**Esther Adams,** Proyecto Mirador, Program Manager **Elder Mendoza,** Proyecto Mirador, Chief Operating Officer **Evans Hernandez,** Proyecto Mirador, IT Manager	1. Review of calculations 2. Review of sales database 3. Status of implementation of project activity
03/04 December 2013	Households/Project Beneficiaries	Sample of Household Survey Questions: 1. When and from whom did you receive your improved stove? 2. What type of stove/fuel did you use before this purchase? 3. How often do you use the improved stove? 4. Since purchasing your improved stove, do you still use your traditional stove? How often?

		5. What benefit do you observe from the use of the new cook stove? • If you purchase/d wood, how much did you spend before/after purchase of the new stove? • If you collect wood, how much time does it take to collect wood before/after purchase of the new stove? • Have you observed improved air quality in the house? 6. How many people do you cook for?
03/04 December 2013	**Esther Adams,** Proyecto Mirador, Program Manager **Edy Rodriguez,** Proyecto Mirador, Supervisor **Manuel,** Proyecto Mirador, Technician **Juan Carlos**, Proyecto Mirador, Supervisor	1. Duration of employment 2. Training received 3. Salary relative to minimum wage 4. Holidays/rest time received 5. Comparison of this job to previous job
6 December 2013	**Esther Adams**, Proyecto Mirador, Program Manager **Martin**, Proyecto Mirador, HR Manager	1. Methods/Records of staff trainings 2. Training plans for 2013
6 December 2013	**Esther Adams,** Proyecto Mirador, Program Manager	1. Status of implementation of project activity 2. Review of QA/QC procedures 3. Review of CARs/CLs 4. Closing Remarks

During the site visit, DNV applied standard auditing techniques to assess the quality of information provided. The following activities were performed:

- A cross-check between information provided in the monitoring report and data from other sources such as the sales database, kitchen surveys and kitchen tests;
- A review of calculations and assumptions made in determining the GHG data and emission reductions; and
- A review of QA/QC procedures in place to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters.

All sales information is recorded on smartphones and uploaded directly to an electronic database. DNV confirmed that the information in the database was accurately reflected in the PPs emission reduction calculations. DNV further cross-checked the information in the database by visiting HHs found in the database. 4 villages were randomly selected, taking into consideration logistical and cultural norms prevalent in the relative area, and 5 HHs were randomly selected within each village.

Through the above-mentioned activities, the following aspects of the Gold Standard project activity were confirmed:

- The implementation and operation of the project activity are as described in the monitoring plan in the revised GS-VER-PDD **/1/**;
- The information flow for generating, aggregating and reporting of the monitored parameters;
- The operational and data collection procedures are implemented in accordance with the monitoring plan in the PDD **/1/**;
- Procedures to avoid pitfalls of double-counting.

2.3 Report of findings

A corrective action request (CAR) 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 which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

A clarification request (CL) shall be raised if information is insufficient or not clear enough to determine whether the applicable GS requirements have been met.

A forward action request (FAR) is issued for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

The list of CLs, FARs, and CARs has been described in detail in Appendix A. One CAR, one CL and one FAR have been raised as part of the verification crediting period (note that the FAR was transferred from the previous verification). All findings have been closed based on the customer's response.

3 VERIFICATION FINDINGS

This section summarizes the findings from the verification of the emission reductions reported for the Project during the period 01 December 2012 to 30 November 2013.

3.1 Remaining issues, CARs, FARs from previous validation/verification

This is the fourth periodic Gold Standard verification for the project. There are no follow-up action requests remaining from the validation. 1 FAR remained from the third verification. As discussed in Table A-1 of the Appendix A, the FAR was not applicable to this monitoring period, and has been transferred to the next monitoring period.

3.2 Project Implementation

DNV was able to confirm that the project is implemented in accordance with the project description contained in the PDD dated 11 February 2013 **/1/**. The starting date of operation of the project activity was 1 May 2009. The PDD assumes a project build rate of 3,500 stoves during the first year of the crediting period, with the build rate increasing by 8% per year for each subsequent year of the crediting period. The project is ahead of schedule in meeting its objectives as stated in the PDD and as confirmed from the sales records provided by the PP.

The project has constructed and distributed only that technology that was included in the PDD, including the sale of 58 614 stoves /6/, as follows:

- 6,621 stoves installed in the first monitoring period (01 May 2009 – 31 November 2010)
- 10,509 stoves installed in the second monitoring period (01 December 2010 – 30 November 2011)
- 17,000 stoves installed in the third monitoring period (01 December 2011- 30 November 2012)
- 24,484 stoves installed in the fourth monitoring period (01 December 2012 – 30 November 2013)

The numbers used for emission reduction calculations in the monitoring report based on net stoves in operation (rather than the gross number of stoves built), and adjusted for drop-off and stove degradation rates, increasing appropriately by year.

The verification team confirmed, through visual inspection that all physical features of the proposed project activity including data collection systems and storage have been implemented in accordance with the PDD. DNV confirmed during the on-site visit that the project was completely operational in this monitoring period.

3.3 Compliance of monitoring plan with monitoring methodology

As stated in the validation report /30/, the monitoring plan contained in the original PDD of 15 June 2010 **/2/** is in accordance with the approved methodology applied by the project activity. The PP submitted a design change request during the 3rd monitoring period, and updated the PDD **/1/** accordingly . As confirmed in the third verification report /33/, the monitoring plan in the updated PDD **/1/**is in accordance with the approved methodology.

3.4 Compliance of monitoring with monitoring plan

The PP has implemented an electronic monitoring system based on the Salesforce.com platform, allowing monitoring data to be recorded on smartphones and uploaded directly to the electronic database. DNV reviewed the database during the site visit, and can confirm that the monitoring is done in compliance with the monitoring plan.

In general, the monitoring plan requires the following continuous monitoring tasks:

Table 1: Continuous Monitoring Requirements

Methodology Requirement	DNV Assessment
Maintenance of a Total Sales Record	DNV has reviewed the electronic sales records /14/ and can confirm that the records include all data required by the methodology. DNV reviewed the figures in the sales database and confirmed that they match the figures in the emission reduction calculations.
Maintenance of a Detailed Customer Database and Monitoring KS's	The PP has maintained a detailed customer database which includes the baseline KS, as well as the quarterly monitoring KS's. These results are compiled in an electronic database /23/. During this monitoring period, the PP surveyed 465 HH that included leakage, sustainability and qualitative fuel-wood use data /15/. The results of these surveys have been compiled and have also been stored electronically. Interviews were conducted in person by project staff. The questions asked during the interviews included all questions required by the methodology, as well as all additional project-specific questions as required. Finally, the results of the monitoring KS suggest that the characteristics of the population in the total sales record are equivalent to the characteristics of the HH included in the KTs /23/. Two new departments were added during this monitoring period; Yoro and Francisco Morazán. In accordance with the applied methodology, the PP conducted 25 surveys in each department. DNV verified this sample as follows: DNV randomly selected 5 surveys from each department and administered the surveys to these HHs to verify the original survey results.

	DNV found the results to be in line with the PPs surveys. Therefore, the baseline and project values determined during this monitoring period are appropriate for use in the calculation of emission reductions.
Updating of Project Database	The Project Database includes all information required by the methodology, including sales by cluster, results of the KSs and KTs, factors affecting emission reductions, and adjustments to emission reduction calculations.

In addition, the following periodic monitoring tasks are found in Table 2:

Table 2: Periodic Monitoring Requirements included in Monitoring Report

Monitoring Requirement	DNV Assessment
NRB fraction should be re-assessed at least every 2 years	This value was re-assessed during the last monitoring period. As the project boundary is still applicable to the f_{NRB} value (see FAR1), this value was not assessed during this monitoring period.
Leakage estimates should be re-assessed at least every 2 years	According to the approved monitoring plan**/3/**, leakage is monitored via 2 parameters: - ID 13 / Leakage Due to Transportation – This parameter is measured as the ratio of total mileage (as reported by mileage records) compared to the total number of stoves built. This ratio for the fourth monitoring period was found to be 7.64%, well below the 15.61% baseline established in the first verification. DNV reviewed the records and calculations and can confirm that they are accurate /20/. As the ratio is less than that established at validation, this source of leakage can be assumed to be 0. - ID 12 / Leakage – This parameter is measured through HH surveys. 465 surveys were conducted prior to verification. DNV cross-checked these results during the site visit /15/. As discussed in CAR 1, the site visit

	revealed one HH that had a gas stove in the baseline but was included in the Sales Database had a gas stove in the baseline. Therefore, the PP conducted an additional 1,696 surveys, to demonstrate that emission reductions are only claimed for HHs that used traditional fogons in the baseline. These surveys indicated that 1.3% of HHs had gas stoves in the baseline. Based on this survey, the PP conservatively assumed a 2% discount to stoves installed during the fourth monitoring period. DNV review the PPs survey results and revised calculations, and can confirm that the survey results are accurately stated, and that this source of leakage is 2%. Therefore DNV can confirm that leakage emissions for this monitoring period are 0.
A usage survey should be undertaken at least every 2 years	The PP included a usage survey as part of the quarterly monitoring during this monitoring period to understand the drop-off rate in HH stove usage over time **/4/**. DNV reviewed the surveys and cross-checked the results during the site visit and can confirm that the drop-off rates are accurately stated.
Aging Stove KT should be undertaken not less frequently than every 2 years for sales made in the first year	The PP commissioned an aging stove KT for stoves in their 4th and 5th year of operation. The study was conducted by Rob Bailis at the Yale School of Forestry /5/, the same entity that completed the KTs prior to validation, and DNV can confirm that the team is suitably qualified to conduct the work. The study included paired and unpaired samples. The paired results showed an average 35% reduction in fuelwood consumption of year 4-5 stoves relative to baseline consumption, while the unpaired results showed an average 43% reduction in fuelwood consumption of year 4-5 stoves relative to baseline consumption. The more conservative result (35% reduction) represents an annual decline of 5%; however, the PP has elected to use a 7% decline for Year 4-5 stoves. As this is conservative relative to

	the study results, DNV found it to be acceptable.
Baseline monitoring KT, as required	The monitoring plan requires baseline monitoring KTs to be conducted if the monitoring KS reveals that baseline parameters have changed significantly. Ongoing monitoring did not suggest that the baseline parameters changed during the monitoring period, and therefore the PP was not required to conduct a baseline KT.
New Stove KT	No new stove KTs were required during this monitoring period.
Social and economic impact of the project should be investigated biannually.	As described in Section 3.6, the PP has investigated the social and economic impact of the project, and found that the project is making a positive contribution to sustainable development. DNV confirmed these results during the site visit.

DNV confirms that the monitoring plan has been properly implemented by the project participant. All parameters stated in the monitoring plan, the cook stove methodology (version 01) and the relevant Gold Standard requirements have been sufficiently monitored and updated as necessary. The table below shows the monitored parameters and the data units used for this monitoring period. As shown in the table, several parameters must be updated if the monitoring KSs suggest that the characteristics of the sales population differ from the characteristics of the KT population. DNV can confirm that the characteristics of the HH sampled for this verification do not differ from the characteristics of the HH sampled for the KT, and therefore a new KT was not required.

Parameters that were verified specifically for this monitoring period include:

Data / Parameter:	**ID 8 / Stove Sales**
Data unit:	Number of stoves
Description:	Identification of household that has received an Estufa Dos por Tres stove.
Measured/Calculated/ Default:	Measured
Source of data:	Installation record database (“Database of Beneficiaries”) /14/
Means of Verification	During site visit, DNV reviewed the electronic database, which contains non-editable timestamps indicating when the data was modified. DNV confirmed the installation records through household visits.
Cross-check	NA

Data / Parameter:	**ID 9 / $B_{,pj,y}$**
Data unit:	Tonne
Description:	Fuelwood consumed per household per year (This is the mass of woody biomass consumed during cooking in the project in year y in tonnes per year per household by users of the Estufa Dos por Tres stove aged one year or less.)
Measured/Calculated/ Default:	Measured
Source of data:	Biennial Fuelwood Consumption Study (Aging Stove KT) **/5/**.
Means of Verification	DNV can confirm that the characteristics of the HH sampled for this verification do not differ from the characteristics of the HH sampled for the KT **/5/**, and therefore a new KT was not required.
Cross-check	N/A

Data / Parameter:	**ID 10/ $EF_{pj,bio,co2}$**
Data unit:	g/MJ
Description:	The CO_2 emission factor for use of the biomass fuel in the project scenario in tonnes CO_2 per tonne of woody biomass fuel.
Measured/Calculated/ Default:	Calculated
Source of data:	98.3 g/MJ was the emission factor measured in laboratory testing of Estufa Dos por Tres model stoves and used during validation.
Means of Verification	Per Gold Standard Methodology: "If IPCC defaults are not used, testing of EFs of new stoves is only required if there is evidence that the new stove may give rise to significantly different EFs leading to possible over-estimation of emission." This was not the case and therefore DNV did not see the need for a new testing during this verification period.
Cross-check	N/A

Data / Parameter:	**ID 11/ Continued use of stoves over time**
Data unit:	Households
Description:	Drop off rate
Measured/Calculated/ Default:	Measured
Source of data:	Survey and visual observation **/4/**
Means of Verification	During the site visit, DNV reviewed the results of the surveys conducted by the PP, and can confirm that they were accurately transcribed.
Cross-check	DNV cross-checked these results through observations during HH interviews. The drop off rates observed by DNV were less than the

	values reported in the PDD. DNV therefore confirms that the reported drop-off rates are acceptable for the monitoring period. **/4//3/**

Data / Parameter:	**ID 12 / Leakage**
Data unit:	Households
Description:	Assess agreement with statements regarding possible leakage effects, including: a. Rebound Effect b. Stimulation of increased use of a high emission fuel c. Promotion of new stove type stimulates substitution of a cooking fuel or stove type with relatively high emissions d. Loss of space heating causes users to use alternative sources of (and thus, a greater amount of) fuel e. Traditional stoves are reused f. Other types of stoves are present in the household g. Length of time auxiliary stoves are used each day
Measured/Calculated/ Default:	Measured
Source of data:	Ongoing quarterly monitoring questionnaires /15/
Means of Verification	DNV reviewed a sample of the Leakage-Sustainability Surveys /15/ and can confirm that they were accurately transcribed.
Cross-check	DNV cross-checked the survey results through HH interviews conducted during the site visit. The site visit results corroborate the PPs findings.

Data / Parameter:	**ID 13 / Leakage due to Transportation**
Data unit:	Kilometers
Description:	Assess agreement with statement regarding possible leakage effects described in the PDD: "f. Significant emissions from transportation or other suggest more impact than if project did not exist."
Measured/Calculated/ Default:	Measured
Source of data:	Mileage records /20/; Sales Database (for total # of stoves built per year) /14/
Means of Verification	The Gold Standard PDD and the First Monitoring Report were both approved assuming 0 leakage due to transportation. This was done by determining the total number of stoves constructed / total miles driven. It was approved that this

	15.61% ratio would serve as the baseline for further monitoring of leakage due to transportation. For this monitoring period, this ratio was found to be 7.64% and was confirmed by DNV through the review of documents /20/ /A-23/. Based on this reduced ratio, the PP is also reporting 0 leakage emissions for the Fourth Monitoring period, as a total of 320,356 Km driven represents <1% of the total ER, and hence can be considered *de minimis* per the Gold Standard methodology. DNV reviewed the data and calculations, and can confirm the results are accurately stated.
Cross-check	N/A

3.5 Assessment of data and calculation of emission reductions

The PP submitted all the necessary data and parameters required to be monitored to DNV along with the monitoring report. All the parameters required to be monitored as per the PDD have been monitored and reported in the monitoring report. DNV reviewed the calculation worksheet **/6/**//22/ for the emission reduction calculation for the monitoring period 01 December 2012 to 30 November 2013. DNV confirms that the formulas, conversions, aggregations and factors are consistent with the monitoring plan in the PDD. The reported data was checked as follows:

- All the necessary data and all the parameters required to be monitored in the revised PDD **/1/** were reviewed to ensure accuracy;
- The Project Sales Database maintained by Proyecto Mirador /14/was reviewed to confirm the number of stoves sold during the monitoring period.

Emission Reductions

In accordance with the applied methodology, annual emission reductions are calculated as follows:

$$ERy = \sum_y BEi, y - \sum_y PEi, y - \sum_y LEi, y$$

Where:

ER_y = Total emission reductions in year y (tCO_2e/yr)

$BE_{i,y}$ = Baseline emissions of cluster I in year y (tCO_2e/yr)

$PE_{i,y}$ = Project emissions of cluster I in year y (tCO_2e/yr)

$LE_{i,y}$ = Leakage of cluster I in year y (tCO_2e/yr)

In June 2010, Proyecto Mirador completed a paired sample, n=55 quantitative Fuel wood Consumption Study (July-September 2010) **/7//8//9/**//10//11/ indicating that each stove reduces GHG emissions by 4.05 tonnes CO_2e /year. Accounting for the f_{NRB} of 77%, the emission reductions claimed per stove during this monitoring period are 3.31 tonnes CO_2e/year.

Total emission reductions are based on the 58 614 stoves installed since the project start date, including 24 484 stoves built during this monitoring Period.

The value of 129 911 tCO_2 is calculated on a monthly basis, not an annual average. The stoves in operation by month were reduced by the drop-off rates of 8%, 6% and 6% and 6% for years 1, 2, 3 and 4 respectively, based on the developer's drop-off surveys **/4/**. The emissions reductions were then further reduced to account for an efficiency reduction of 6% in the second and third year of operation ("degradation rate"), and 7% in the fourth year of operation, a conservative estimate relative to the Aging stove KTs conducted during this verification period **/5/**. Correspondingly, the calculation of the emission reductions for stoves in operation for 12 months or less utilizes 3.11 tCO_2e/year, as set forth in the Financing Plan **/6/** and also described above. A more detailed summary of the calculations used to arrive at the emissions reductions is found in appendix B of this report.

DNV reviewed the spreadsheets provided by the PP /6//22/ and is able to confirm that the calculation of emission reductions for the appropriate technology has been conducted properly, and that all parameter values have been correctly input into the spreadsheet. Thus, DNV can confirm that the final calculation of emission reductions as stated in the monitoring report is correct. The emission reductions from the project during the period 01 December 2012 to 30 November 2013 amount to 129 911 tonnes of CO_2 equivalent. Of this total, 8 652 tonnes of CO2 equivalent were generated in 2012, and 121 259 tonnes of CO_2 equivalent were generated in 2013.

3.6 Monitoring of Gold Standard Sustainability Indicators

Additional parameters monitored are in accordance with the monitoring plan for sustainability indicators, as per the requirements stated in the Gold Standard Passport (June 2010) and the PDD (Version 04) dated 11 February 2013.

Indicator	Monitoring Source	Variables, Units and Frequency of Measurements	DNV Assessment
Air quality	Monitoring Survey	Measurement of user perceptions between old stove and new stove: Perceived smoke levels, Incidence of coughing, Incidence of respiratory illness, Incidence of itchy eyes.	DNV confirmed the positive assessment of this indicator through the review of the results of the PP's monitoring survey results /15/ and through a subsequent cross check. During the site visit, HH were asked to describe any benefits (aside from time or financial savings) associated with use of stove. Over 80% of HH who received project stoves reported reductions in smoke and better air quality in their homes.

Livelihood of the poor	Monitoring Survey	Time and money savings due to reduced fuel consumption and time spent cooking.	DNV confirmed the positive assessment of this indicator through the review of the results of the PP's monitoring survey results /15/ and through a subsequent cross check. All HHs interviewed reported time and money savings as a result of the project technology.
Access to affordable and clean energy services	Monitoring Survey, Sales Database	Time and money savings due to reduced fuel consumption.	DNV confirmed the positive assessment of this indicator through the review of the results of the PP's monitoring survey results /15/ and through a subsequent cross check. All HHs interviewed reported time and money savings as a result of the project technology.
Quality of Employment	Monitoring Survey	Quality and numbers of jobs direct and indirect.	DNV confirmed the positive assessment of this indicator through the review of the results of the PP's survey results /16//17/ and through a subsequent cross check. DNV interviewed 2 employees, and can confirm the positive employee satisfaction results reported by the PP.
Human and Institutional Capacity	Monitoring Survey	Place	DNV confirmed the positive assessment of this indicator through the review of the results of the PP's monitoring survey results /15/ and through a subsequent cross check. During the site visit, 100% of HH interviewed who received stoves reported time and money savings as a result of the project technology. Households reported that these savings were devoted to other activities around the home or for additional income.

Quantitative Employment and Income Generation	Project, Salary records	Jobs created, salaries executed	DNV confirmed the positive assessment of this indicator through the review of the results of the PP's monitoring survey results /18/ and through a subsequent cross check through discussions with the PPs HR Manager.

3.7 Management system and quality assurance

The project's management system was reviewed to determine the effectiveness of its implementation. In accordance with the PDD dated 11 February 2013, the monitoring plan has clearly prescribed the management and operational procedures for monitoring, recording, data management, and training. DNV has verified through document reviews and site visit interviews the management system and quality assurance procedures and has found them to be appropriate and effective.

4 VERIFICATION STATEMENT

DNV Climate Change Services AS (DNV) has performed the verification of the emission reductions that have been reported for the "Enhanced Distribution of Efficient Cook Stoves in Honduras Project" (Gold Standard Registration Reference No.GS690) for the period 01 December 2012 to 30 November 2013.

The project participants are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project.

It is DNV's responsibility to express an independent verification statement on the reported GHG emission reductions from the project.

DNV conducted the verification on the basis of the GS approved monitoring methodology "Methodology for Improved Cook-stoves and Kitchen Regimes V.01", the monitoring plan contained in the Project Design Document of 11 February 2013 and the monitoring report (Version 03) dated 27 January 2014. The verification consisted of checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and the collection of evidence to support the data reported in the monitoring report.

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

In our opinion the GHG emissions reductions of the "Enhanced Distribution of Efficient Cook Stoves in Honduras Project" (Gold Standard Registration Reference No.GS690) for the period 01 December 2012 to 30 November 2013 are fairly stated in the monitoring report (Version 03) dated 27 January 2014.

The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology GS approved monitoring methodology "Methodology for Improved Cook-stoves and Kitchen Regimes V.01", the monitoring plan contained in the revised Project Design Document of 11 February 2013 and the monitoring report (Version 03) dated 27 January 2014.

DNV Climate Change Services AS is able to verify that the emission reductions from the "Enhanced Distribution of Efficient Cook Stoves in Honduras Project" during the period 01 December 2012 to 30 November 2013 amount to 129 911 tonnes of CO_2 equivalent. Of this total, 8 652 tonnes of CO_2 equivalent were generated in 2012, and 121 259 tonnes of CO_2 equivalent were generated in 2013.

5 REFERENCES

The following table outlines the documentation assessed during the verification:

/1/ Proyecto Mirador: Project Design Document - "Enhanced distribution of efficient wood stoves in Honduras", version 05 dated 11 February 2013.

/2/ Proyecto Mirador: Project Design Document - "Enhanced distribution of efficient wood stoves in Honduras", version 04 dated 15 June 2010. This previously registered version is replaced by version 05 above.

/3/ Proyecto Mirador, Monitoring Report - "Enhanced distribution of efficient wood stoves in Honduras", Version 03 dated 27 January 2014, and previous versions.

/4/ Proyecto Mirador, Drop-off Summary 2011.

/5/ Yale University, Aging Stove KT Data 2013

/6/ Proyecto Mirador, Financing Plan. (spreadsheet used to calculate net stoves in operation during monitoring period)

/7/ Yale University, PM Fuel Usage Study Data, 2010.

/8/ Yale University, PM Fuel Usage Study Summary Report, 2010

/9/ Yale University, PM Fuel Usage Study Data Sheet (Spanish) 2010

/10/ Yale University, PM Fuel Usage Study Sheet (English) 2010

/11/ Yale University, PM Fuel Usage Study Guidelines 2010

/12/ Proyecto Mirador, Leakage-Sustainability Survey (Spanish)

/13/ Proyecto Mirador, Leakage-Sustainability Survey (English)

/14/ Proyecto Mirador, Sales Record. Stove Installation Database

/15/ Proyecto Mirador, Leakage-Sustainability Results 2013.

/16/ Proyecto Mirador, Employee Questionnaire Summary 2013.

/17/ Proyecto Mirador, Employee Questionnaire (Spanish and English)

/18/ Proyecto Mirador, Quantitative Employment Report - 2013

/19/ Proyecto Mirador, Training Brochure.

/20/ Proyecto Mirador, Transportation Summary, 2012.

/21/ Proyecto Mirador, Kilometraje 2013 (Record of transport invoices

/22/ Proyecto Mirador, ER Calculations, 2013.

/23/ Proyecto Mirador, Kitchen Surveys – 4th monitoring period

Background documentation reviewed:

/24/ Gold Standard Foundation, Gold Standard, version 2.1

/25/ Gold Standard Foundation, “Methodology for Improved Cook-Stoves and Kitchen Regimes,” Version 01,”, V.01, May 2010

/26/ *Reference removed*

/27/ IPCC: 2006 IPCC Guidelines for National Greenhouse Gas Inventories

/28/ Proyecto Mirador Gold Standard Passport - “Enhanced distribution of efficient wood stoves in Honduras”, June 2010.

/29/ Proyecto Mirador “Gold Standard Local Stakeholder Consultation Report for Enhanced distribution of efficient wood stoves in Honduras”, Dec 18, 2008.

/30/ SGS Climate Change Programme, Gold Standard Validation Report: “Enhanced distribution of efficient wood stoves in Honduras”, Jan 14, 2010, ver. 3.

/31/ SGS Climate Change Programme Gold Standard Verification Report: “Enhanced distribution of efficient wood stoves in Honduras”, Feb 23, 2010.

/32/ DNV Climate Change Services AS, Gold Standard Verification Report: “Enhanced distribution of efficient wood stoves in Honduras”, Feb 16, 2012.

/33/ DNV Climate Change Services AS, Gold Standard Verification Report: “Enhanced distribution of efficient wood stoves in Honduras”, March 17, 2013.

APPENDIX A

CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS

Table A-1 Forward Action Requests (FARS) Raised During Previous Verification

Description	Summary of project owner response	Verification team conclusion
FAR 1. The f_{NRB} value of 77% relies on data that is specific to the Western Highlands. This is appropriate for the current project boundary, and therefore is acceptable for this monitoring period. The project boundary will be expanded in the next monitoring period. PP must determine an f_{NRB} value that is appropriate for the expanded boundary.	The project boundary has not expanded beyond the Western Highlands region.	The existing f_{NRB} is still appropriate for the project boundary. This FAR is closed for this monitoring period. This FAR is transferred to the next monitoring period.

Table A-2 Corrective Action Requests

Draft report corrective action requests by verification team	Summary of project owner response	Verification team conclusion
CAR 1. According to the registered PDD, the project will target HHs that use traditional fogons in the baseline scenario. During the site visit, HH interviews revealed that one HH that was included in the Sales Database had a gas stove in the baseline. PM shall demonstrate that emission reductions are only claimed for HHs that used traditional fogons in the baseline.	As we have always asserted, leakage has a *de minimis* impact on our calculations. However, in order to maintain conservative calculations, we will factor into our revised calculations a 2% leakage figure for stoves built during the Fourth Verification Period. (Since the problem has not been seen prior to the Fourth Verification Period, whether by ourselves or by a DOE, we have assigned the leakage factor only to stoves built in the Fourth Verification Period.) The Financing Plan has been revised accordingly. Please see attached file "Annex_03_Financing Plan 2013 wLeakage.xls" and refer to the "Monthly Results" spreadsheet, Cells AT14:BT15. The Monitoring Report has also been updated according to the revised Financing Plan. Total emissions have been reduced correspondingly to 129,911 from 130,697, a difference of 1,757 VERs, or 1.3% (*de minimis*). In January 2014, Proyecto Mirador supervisors surveyed 1584 households in	DNV reviewed the results of the PPs survey, and can confirm the PPs figures. The surveys sample size exceeds the requirements of the methodology. While the results of this survey indicate that up to 1.3% of HHs received a stove in error, the PP has conservatively applied a 2% discount factor. DNV reviewed the updated emission reduction calculations and can confirm that this discount factor is reflected in the VERs claimed for this monitoring period. In addition, the PP now requires technicians to report immediately to their supervisors if they are about to build a stove in a HH that does not have a fogon. DNV has conducted 3 verification site visits and has not encountered this concern in the past. The conservative discount factor coupled with the PPs updated reporting requirements for technicians and DNVs previous experience provide confidence that the PPs response is sufficient to address the finding.

Draft report corrective action requests by verification team	Summary of project owner response	Verification team conclusion
	108 villages in which they asked the question, "Did you have a woodstove before installing the 2x3?" Of those 1584 households, only 22 (1%) reported that they did not previously have a wood stove. (See attached file "No woodstove before 2x3 SUPERVISORS.pdf") As previously stated, PM has instructed its team to only build stoves where a traditional *fogon* exists, and to make sure all beneficiaries remove their original *fogon* once the 2x3 is installed. The reasons given by PM Ejecutores for installing 2x3 stoves in these 22 homes include fear of repercussions from homeowners or community leaders for refusing to build a stove, particularly after the beneficiary had already secured all the necessary materials required by PM. As crime has only worsened in Honduras since our project began, PM has determined that its employees should not put themselves at risk by denying the 2x3 in such cases. Concurrently, in January 2014, Proyecto Mirador's stove technicians surveyed 112 households on their current build lists and asked the question: "Do you currently	CAR 1 is Closed.

Draft report corrective action requests by verification team	Summary of project owner response	Verification team conclusion
	have a traditional wood stove?" The technicians also looked onsite to verify that the answer was correct. Of those 112 households, 1% did not currently have a wood stove. (See attached file "No woodstove before 2x3 TECNICOS.pdf") PM has implemented stricter protocols with its technicians to immediately report any stoves on the construction list where they don't see a wood burning fogón in use. PM will assess the data over the coming year and adjust its practices and calculations accordingly.	

Table A-3 Clarification Requests

Draft report clarifications requests by verification team	Summary of project owner response	Verification team conclusion
CL 1. Page 36 of the monitoring report states "We then subtract the Y3 cumulative rate of 20% from 26% to get a final monitored drop-off rate of 26% for Year 4". PM must correct the report to state a 6% drop-off in Year 4.	The typographical error on Page 36 has been corrected as requested.	DNV reviewed the updated monitoring report and can confirm the error has been corrected. CL 1 is closed

Table A-5 Forward Action Requests (FARS) Raised During This Verification

Description	Summary of project owner response
FAR 1 (This FAR is transferred from the previous verification) The fNRB value of 77% relies on data that is specific to the Western Highlands. This is appropriate for the current project boundary, and therefore is acceptable for this monitoring period. PP must confirm the appropriateness of the fNRB value as the boundary expands.	Proyecto Mirador accepts the FAR and will confirm/revise the f_{NRB} value as appropriate.

APPENDIX B

REVIEW OF EMISSION REDUCTION CALCULATION

For reference, the following subscripts are common to all calculations:

- Bl=baseline
- Inst.=institutional stove
- Y=year
- MP = monitoring period

Baseline emissions

$BE_{hh,y} = k_{hh,y,c,i} * [S_{hh,y,i} * [(X_{nrb,y} * (B_{bl,hh,y,} * EF_{wood,CO2} * NCV_{wood}) * D_{MP}$
$+ \Sigma(\text{Non-}CO_2 \text{ emissions during cooking})$
$+ \Sigma(\text{GHG emissions during production of the fuels})]]$

Where

$BE_{hh,y}$ = Baseline emissions in year y in tonne CO_2e per year specific and unit chosen (t CO_2e)

$k_{hh,y,i}$ = Total number of project stoves distributed to households in year y

$X_{nrb,y}$ = Non-renewable fraction of the woody biomass harvested in the project collection area in year y

$S_{hh,y,i}$ = Fraction of sales of HH stove i in year y.

$B_{bl,hh,y,}$ = Mass of wood fuel consumed during cooking in the baseline in year y (kg/day).

$EF_{wood,co2}$ = CO_2 emission factor in tonne CO_2 per tonne fuel for wood fuel (t CO_2/tFuel)

NCV_{wood} = Net calorific value of wood (TJ/Gg)

D = Discount factor applied to adjust for HHs that received project stoves, but did not have a wood stove in the baseline. The factor is 98% for stoves constructed during the 4th monitoring period, 100% otherwise.

Non-CO_2 emissions during cooking
$= \Sigma(B_{bl,hh,y,} * EF_{wood,non\text{-}co2})$

Where

$EF_{wood,non\text{-}co2}$ = Non-CO_2 (CH_4, N_20) emission factor during cooking for wood fuel in tonne gas per tonne fuel

Project Emissions Equations

$PE_{hh,y} = k_{hh,y,i} * [S_{hh,y,i} * AU_{hh,y,i} * [(X_{nrb,y} * (B_{pj,hh,y,i} * EF_{wood,CO2} * NCV_{wood})$
$+ \Sigma(\text{Non-}CO_2 \text{ emissions during cooking})$
$+ \Sigma(\text{GHG emissions during production of the fuels})]]$

Where (parameters common to the baseline equation are not repeated):

$PE_{hh,y}$ = Project emissions in tonne CO_2e per year in year y and unit chosen (tCO_2e)

$AU_{hh,y,I}$ = Annual usage of HH stove technology i in year y (percent)

$B_{pj,hh,y,}$ = the mass of wood fuel consumed during cooking in the project each year (kg/day).

Non-CO_2 emissions during cooking

$= \Sigma(B_{pj,hh,y,c,i} * EF_{wood,non\text{-}co2})$