



Monitoring report form for CDM programme of activities
(version 01.0)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form for CDM programme of activities" at the end of this form.

MONITORING REPORT

Title of the programme of activities (PoA)	Proyecto Mirador Enhanced Distribution of Improved Cookstoves in Latin America	
UNFCCC reference number of the PoA	Gold Standard PoA Project No. 1988	
Version number(s) of the PoA-DD(s) applicable to this monitoring report	Version 6, dated 25 March, 2016	
Coordinating/managing entity (CME)	Proyecto Mirador Foundation	
Version number of this monitoring report	02	
Completion date of this monitoring report	31 January, 2018	
Monitoring period number and dates covered by this monitoring report	Monitoring Period 8 1 December, 2016 – 30 November, 2017	
Monitoring report number for this monitoring period	1	
Host Party(ies)	Host Party(ies) of the PoA	Is this a host Party to a specific-case CPA covered in this monitoring report?(yes/no)
	Honduras	Yes
	Nicaragua, Guatemala, El Salvador, Mexico	No
Sectoral scope(s)	End user energy efficiency improvement	
Selected methodology(ies)	Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Version 2.0	
Selected standardized baseline(s)	N/A	
Total amount of GHG emission reductions or net GHG removals by sinks for all specific-case CPAs in the PoA covered in this monitoring report	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	0	295,726 tCO ₂ e

PART I - Programme of activities

SECTION A. Description of PoA

A.1. Brief description of the PoA

Established in 2004, Proyecto Mirador is a non-profit organization that sells Gold Standard voluntary carbon offsets to finance the construction of improved cookstoves in Central America.

Mirador's project activity was originally certified by the Gold Standard in 2009 under a small-scale Project Design Document (PDD). In 2014 that project became the First Voluntary Project Activity (VPA) under the Gold Standard Programme of Activities (PoA), *Proyecto Mirador Enhanced Distribution of Improved Cookstoves in Latin America*.

The Coordinating/Managing Entity (CME), Proyecto Mirador Foundation, assumes responsibility for all communications with the UN Designated Operational Entity (DOE) auditor and the Gold Standard, manages carbon finance certification and sustainability monitoring, receives and allocates all carbon revenues, and ensures VPA operations are properly funded and that proper resources are in place to meet construction targets.

Project implementation, stove construction and supply sourcing are managed locally under VPA supervision through the creation of local microenterprises. Such microenterprises include stove construction organizations, suppliers to provide specific stove construction components, and other vendors. Partnerships are formed with local community leaders to facilitate stove construction in each community.

This Monitoring Report covers the First VPA, under which Proyecto Mirador replaces the traditional, inefficient *fogón* biomass cookstove with the improved Dos por Tres plancha-style chimney cookstove in Honduras. Since 2004 Proyecto Mirador has built more than 150,000 improved Dos por Tres cookstoves directly onsite in Honduran homes, providing economic and health benefits to over half a million people and creating sustainable local employment for 170 Hondurans. By reducing fuelwood consumption by 53%, the Dos por Tres addresses problems of forest degradation, indoor air pollution, global warming and slow economic development.

For further detail regarding project activity and conditions in Honduras, please see Part II, Section D, "Description of specific-case CPA."

A.1.1. Generic CPA(s)

Title, identification/reference number and/or version number of the generic CPA(s) of the PoA	Sectoral scope(s)	Applied methodology(ies) or combination of methodologies and/or standardized baseline(s)
Proyecto Mirador Enhanced Distribution of Improved Cookstoves in Latin America – Renewed VPA for Distribution of Dos por Tres Cookstoves in Honduras (Version 06, dated 25 March, 2016)	End user energy efficiency improvement	<i>Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Version 2.0.</i>

A.1.2. Specific-case CPA(s) covered in this monitoring report

Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period	Title, identification/ reference number and version number of the generic CPA to which the specific-case CPA applies	Crediting period dates of the specific-case CPA	Is this specific-case CPA covered in this monitoring report? (yes/no)
VPA 1	Proyecto Mirador Enhanced Distribution of Improved Cookstoves in Latin America – Renewed VPA for Distribution of Dos por Tres Cookstoves in Honduras (Version 06, dated 25 March, 2016)	1 May, 2016 - 30 April, 2023	Yes

A.2. Contact information of the coordinating/managing entity (CME) and/or responsible persons(s)/entity(ies)

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SECTION B. Implementation of PoA**B.1. Implementation of the management system of the PoA**

Proyecto Mirador Foundation, a U.S. based 501(c)3 non-profit corporation, receives carbon funds and donated equity capital and in turn distributes it to Proyecto Mirador LLC, a U.S. based 501(c)3 non-profit and also a registered non-profit in Honduras. Proyecto Mirador LLC's U.S. office manages all activities related to carbon finance, certification and Gold Standard compliance, and funds all project operations. Stove building operations are managed from Proyecto Mirador LLC's office in Santa Barbara, Honduras.

Mirador's co-founder and director, Doña Emilia Mendoza, has primary responsibility for the management team. She is assisted by a Director of Finances, as well as a Director of Operations who, in turn, manages a team of mid-level managers. These managers include a Manager of Technology, Manager of Human Resources, and Manager of Supervision and Verification. In addition, the Director of Operations supervises stove construction entrepreneurs through Mirador's outsourced *Programa de Ejecutores*. In this microenterprise program, entrepreneurs (whom we call Ejecutores) are trained and paid by Mirador to build and install Dos por Tres stoves under Mirador's leadership and verification.

Under the *Programa de Ejecutores*, scaling the project simply involves the addition of more Ejecutores, or encouraging existing Ejecutores to "pyramid up" and hire more stove building teams under their direction. Expansion thus creates additional jobs for Ejecutores and Stove Technicians; middle managers; supervisors and inspectors; material suppliers; IT providers and other support organizations. As of 2017, 7 Ejecutores and an additional 13 provider businesses are operating under Proyecto Mirador's regimes.

The management system covered in the PoA had already been implemented at the time of crediting period renewal (2016) and all components are still in place as described in the renewal PoA, including:

- *Roles and responsibilities:* Management hierarchy remains unchanged since PoA renewal.
- *Training and capacity development:* Structured training is ongoing and training practices remain unchanged since PoA renewal.
- *Technical review for inclusion of VPAs:* Not applicable in the current Monitoring Period.
- *Procedure to avoid double counting:* Stoves are built *in situ* and a unique household account is created in the electronic database at the time of construction. An inspector visits each home before construction can begin and at that time, verifies that improved cookstove technology is not already present and that a traditional *fogón* is the primary cooking unit. While Mirador never builds cookstoves in homes where another ICS is in current use, we do see cases in which another carbon certified stove project has installed an ICS in homes where the Dos por Tres was already present. Mirador conducts extensive surveys to determine the presence of ICS from another project and the results are tabulated in Parameter ID 9 - Leakage.
- *Records and documentation control processes:* Documentation is maintained as described in the PoA, with data collection performed from Mirador's Honduras office and Gold Standard documentation and reporting conducted from its U.S. office.
- *Continuous improvements of the PoA management system:* Mirador's senior management meets regularly with office staff, Supervisors and Ejecutores to make sure operations are running efficiently and to facilitate communication between the departments. Mirador's Manager of Human Resources continues to review and improve training, management and communication systems on an ongoing basis. Additionally, in October 2017, Mirador's Director of Operations met with U.S. management in California to review systems and discuss further improvements to Mirador's operations. Various improvements to IT infrastructure and general operations were discussed and will be implemented as applicable.

B.2. Implementation of single sampling plan(s)

(a) List of CPAs to which the single sampling was applied:

Single sampling was applied to VPA1, the only VPA currently registered under this PoA.

(b) Description of implemented single sampling plan:

CME follows all requirements set forth in the Gold Standard methodology *Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Version 2.0* and the CDM EB 69, Annex 4, *Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities*. The objective of the sampling effort is to monitor the value of each parameter (PoA Section B.7.1). Monitoring for all VPAs has been ongoing since VPA implementation. CME carries out all survey procedures so as to ensure monitoring is representative of typical technology and fuel use practices among the target group.

Target population is the total population served under the PoA, defined as household or institutional users of inefficient biomass stoves. For sampling the project population, the sampling frame is the sales/project database. For sampling baseline households, the sampling frame is Mirador's collection of solicitations from villages that wish to receive the Dos por Tres, with each solicitation containing the names, government ID numbers and phone numbers (as available) of all interested *fogón* users in each village who wish to have their stoves replaced. Project KPTs and surveys were conducted throughout the current Verification Period.

(c) Collected data

Leakage and Sustainability Survey

Applicable Parameters: ID 9, ID 10, ID 12; ID 6 (with respect to seasonal variation)

During the Eighth Verification Period 758 Leakage and Sustainability surveys were administered across 14 Departments to every *n*th household that received a household visit from a Mirador supervisor. At the time households were selected for regular follow-up visits

following installation, office staff marked every n th household to receive the survey in addition to the follow-up visit and regular Maintenance Survey. Thus the Supervisor has no control over which household is surveyed, the surveys are taken throughout the year by different personnel, and a full geographic and demographic spectra of project beneficiaries are represented. Thus the sample group is representative of the entire target population.

For older stoves, households were selected at random from villages that are close to routes used to access villages in the regular follow-up visit schedule for stoves in their first 1.5 years of operation. Since stoves are built and surveyed in diverse areas throughout the project area on an ongoing basis, the sample base is wide enough to provide a fully representative sampling for older stoves. 41% of the surveys (312 in total) were taken in households with stoves older than 1.5 years.

Usage Survey

Applicable Parameters: ID 8

Sample group was determined as follows:

Using the electronic monitoring database, a supervisory team manager generates a complete list of villages containing stoves within a given age group. In order to streamline workflow and minimize cost while providing a broad representation of each age group, each list is compared against the locations where all Supervisors are programmed to perform follow-up visits on new installations. Keeping geographic diversity as a primary objective, each Supervisor is assigned several villages along or near his or her planned routes in which to perform surveys on older stoves. At any given moment Mirador's team of Supervisors is divided amongst several Departments; likewise, each Supervisor visits and performs follow-up surveys in several departments over the course of a year. Thus the entire project area is adequately represented by this approach.

Once the villages are selected, a complete list of beneficiaries is generated showing all households included each installation; then households are chosen at random from the list. Sample sizes follow the Gold Standard approved baseline and monitoring methodology, *Technologies and Practices to Displace Decentralized Thermal Energy Consumption*, v.2 (hereinafter referred to as TPDDTEC), which requires that at least 30 surveys be taken of stoves in each age group to determine drop-off, with a minimum total sample size of 100. In every case the minimum sample of size of 30 houses per age group was exceeded and the total sample size far exceeds 100. (The large first- and second-year sample sizes reflect that an abandonment survey is conducted in every household that receives a regular supervisory visit from Mirador.)

Actual drop-off survey sample sizes for the Eighth Verification Period are as follows:

Stove Age Group	# of Drop-off surveys	# of villages included	Minimum size achieved?
0 1 Years	25,028	959	Yes
1 2 Years	11,990	531	Yes
2 3 Years	700	50	Yes
3 4 Years	155	26	Yes
4 5 Years	105	21	Yes
5 6 Years	62	8	Yes

Project Field Test

Applicable Parameters: ID 7

As per the provisions of the TPDDTEC, Section 7, *Performance Field Tests and Calculation of Emission Reductions*, The baseline and project performance field tests (BFT and PFT)

measure real, observed technology performance in the field. Consumption is measured with a representative sample of end users under the defined baseline scenario (in the absence of project technology) and project scenario using the Kitchen Performance Test (KPT). Simple random sampling is employed; testing is transparent, easily replicable and conservative; and the impact of day-to-day variation in cooking practices is accounted for as we calculate emission reductions on absolute fuelwood savings as observed in the KPT over a complete four-day cycle. File attachments “VP8-03 KPT Data Sheet SPANISH.pdf” and “VP8-04 KPT Data Sheet ENGLISH.pdf” show the actual data sheets used during the four-day KPT and “VP8-05 KPT Guidelines.pdf” articulates the process that was observed.

At the time of PoA renewal, Mirador already had a large base of existing KPT data for stove ages ranging from 1 month to 5.5 years in age. Rather than jettison the existing research, Mirador has continued to aggregate new KPTs to the existing data for each age group. Geographic diversity is carefully considered so that the data for each age group becomes more diverse over time.

As per the VPA-DD, once the requisite sample size of 100 is reached for each age group, a yearly plan similar to the following will be observed thereafter, with the data from each subsequent KPT added to existing data to strengthen the sample in both size and geographic diversity.

KPTs							
Age Group *	0-1	1-2	2-3	3-4	4-5	5-6	Total
Number of Surveys	10	10	10	10	10	10	50 Surveys
Number of Villages	2	2	2	2	2	2	10 Villages
Surveys per Village **	5	5	5	5	5	5	
* "Age Group" refers to the age of the stove <u>at the time the survey is collected</u> .							
** As a guideline, try not to exceed 5 surveys in any single village.							

The following table shows how many new KPTs were performed in the current Verification Period for each age group, as well as the total number of KPTs that have been performed for each age group, for all test years overall. The new KPTs were performed in 11 villages across 6 departments. In the stove age groups for which emission reductions are being claimed, the KPT data now includes a total of 641 project scenario KPTs in 9 departments.

Stove Age Group	# of KPTs in 8 th VP	# of KPTs overall	Statistical confidence satisfied?
0_1 Years	18	73	Yes
1_2 Years	16	95	Yes
2_3 Years	16	113	Yes
3_4 Years	18	139	Yes
4_5 Years	18	118	Yes
5_6 Years	19	103	Yes

(c) *Analysis of the collected data*

Leakage

The TPDDTEC provides 5 potential sources for leakage, most of which do not apply to a project that builds permanent, unmovable stoves *in situ* in replacement of traditional stoves that are also built *in situ*. For the current verification period, Mirador reports a leakage factor of 3%.

Following is analysis of each source and its applicability in Mirador's case.

(i) *The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project.* Baseline stoves are built *in situ*, cannot be relocated, and

therefore cannot be reused in another location. Mirador requires as a precondition of installation that the beneficiary agree to destroy the old *fogón*, and Mirador monitors the presence or absence of a *fogón* on every follow-up visit.

During the current verification period 729 households were assessed for the presence of an auxiliary *fogón*. A traditional *fogón* was still present in 124 of households surveyed (17%). Among those households, the *fogón* was in use an average of 3.49 hours/week, whereas the Dos por Tres was in use 7.67 hours per day, 7 days a week (total 53.69 hours per week). Thus the *fogón* was responsible for just 6.5% of total cooking times in 17% of households. Leakage was determined as stated in Parameter ID 9.

(ii) Non-project users who previously used lower emitting energy sources use the non-renewable biomass or fossil fuels saved under the project activity.

Traditional biomass cookstove use is by far the most common baseline scenario in villages where Mirador builds cookstoves. Given the high percentage of forest cover in Honduras (41.54% of total land area), fuelwood is generally available for harvest or purchase. People who use more efficient fuel types are not doing so for lack of availability of biomass. The non-renewable biomass saved under the project activity contributes to healthier forests by detracting from forest degradation, but does not incur a risk that users of efficient stoves will convert to biomass.

(iii) The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for the NRB fraction in their baseline scenario.

Although fuelwood reduction does have a mitigating effect on forest degradation, Mirador's construction activities are not at a level that would impact NRB significantly enough to affect other projects. Based on our highest build rate to date (~24,000 stoves/year), we estimate 1000 hectares of forest are protected annually as a result of Mirador's project activity, as compared to a total of 4,648,000 hectares of forest cover in Honduras.¹

(iv) The project population compensates for loss of space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology.

Mirador's Leakage & Sustainability Survey includes questions to determine whether or not the beneficiaries use/used their project/baseline stoves to heat their homes, and whether or not there is/was an auxiliary heater present in the project/baseline scenario.

During the current verification period 649 households were randomly assessed to determine whether the Dos por Tres is used to heat their home (aside from the heat generated by regular cooking activity), and if so, whether it replaced a more efficient heater that was present prior to installation of the 2x3. Of the 649 respondents, only 4 (or 0.6%) answered that they use their 2x3 to heat the home. Assuming a worst case scenario, that among those 4 households the Dos por Tres is used 25% of the time only for heating outside of normal cooking times, the result is 0.02% (*de minimis*).

(v) By virtue of promotion and marketing of a new technology with high efficiency, the project stimulates substitution within households who commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline.

Households are only eligible to use the 2x3 if they are using a traditional *fogón* as their baseline stove. The 2x3 is built *in situ* and Mirador sends an Inspector to every household in advance of stove construction to assess its suitability to receive a 2x3; thus, we are able to verify in every case that the Dos por Tres is replacing a traditional *fogón* and that the *fogón* is the primary stove used for cooking.

¹ Mongabay Environmental News, "Honduras." <http://rainforests.mongabay.com/deforestation/archive/Honduras.htm>

Leakage Due to Transportation

Leakage due to transportation is determined by assessing whether significant emissions from transportation suggest more impact than if the project did not exist. To that end, an annual report is compiled to assess changes in mileage from year to year. A standard online carbon calculator is used to calculate the total CO₂ produced from driving the total of number of miles reported. That figure is then compared against the total emissions being claimed during the verification period in order to determine leakage.

Sustainability

758 Leakage and Sustainability Surveys were collected during the current verification period to assess compliance with the Passport – Section G (#1, Air Quality; #7, Livelihood of the Poor; and #9, Human and Institutional Capacity). Raw data is provided and results are summarized in the file “VP8-09 Leakage Sustainability.xlsx.” Relevant data is also provided in the Sustainability Parameters (section G.2. of this Monitoring Report).

In addition, employees surveys are conducted annually to assess #6, Quality of Employment; and ongoing records are kept by the Manager of Human Resources to track #10, Quantitative Employment and Income generation. Raw data is provided in the file “VP8-10 Employee Survey Export.xlsx” and results are summarized in the Sustainability Parameters (section G.2. of this Monitoring Report).

Usage

In late 2016 Mirador implemented a new system whereby an Inspector visits every household in advance of stove construction in order to review the space, assess compliance with the requirements for installation, and determine optimum positioning of the stove to maximize air flow and thermal efficiency. By avoiding construction problems that have historically caused some users to abandon their stoves within the first year, Mirador was able to accomplish a dramatic improvement in the adoption rate for first-year stoves. Drop-off survey data is provided in the attached file “VP8-13 Dropoff Data.xlsx.” Cumulative abandonment rates (as provided in Parameter ID6) are applied in the document “VP8-01 ER Calculations.xlsx” and are in turn used to determine project technology-days.

Project Field Test

Fuelwood consumption data from 641, 4-day project KPTs is compiled and summarized in the document “VP8-02 KPT Data.xlsx.” These project KPTs, which were collected from 2010 to the present, include 105 new KPTs from the current verification period covering 6 stove age groups in 6 Departments. The following outputs are applied to the ER Calculations for each age group:

- Household size
- Person-meals per day
- Dry wood use per person-meal

Per TPDDTEC methodology, when the sample sizes are large enough to satisfy the “90/30 rule,” i.e., the endpoints of the 90% confidence interval lie within +/- 30% of the estimated mean, overall emission reductions can be calculated on the basis of the estimated mean annual emission reduction per unit of the mean fuel annual savings per unit. Accordingly, since all age groups meet the 90/30 test, use mean figures are applied to the ER Calculations to determine fuelwood savings.

Data analysis is conducted by Robert Bailis, PhD, of the Stockholm Environmental Institute.

(e) *Demonstration of whether the required confidence/precision has been met:*

Leakage and Sustainability Surveys

The validated PoA requires a minimum sample size of 300. During the current verification period 758 surveys have been collected.

Usage Surveys

The validated PoA requires that a minimum sample size of 30 must be met for each age group, with a minimum total sample size of 100. For each age group surveyed, the sample size exceeded 60. The total sample size for all age groups exceeded 38,000.

Project Field Test

Aggregated data satisfies the 90/30 rule for all age groups, i.e., the endpoints of the 90% confidence interval in each case lie within $\pm 30\%$ of the estimated mean. The statistical analysis is provided in the file "VP8-09 KPT Data.xlsx" (see worksheet "90-30 tests").

- (f) *Demonstration of whether the samples were randomly selected and are representative of the population:*

Leakage and Sustainability Surveys

During the Eighth Verification Period 758 surveys were collected across 15 Departments (provinces) and are thus representative of the entire project area. For newer stoves (<1.5 years), a survey was administered to every n th household that received a post-construction visit in order to guarantee a random sample. Older stoves (>1.5 years) also received surveys chosen at random by office staff, in advance of the visits, using villages that were close to routes used in the current follow-up visit schedule for newer stoves.

Usage Surveys

For stoves in their first two years of age, usage surveys were conducted at the time of every post-construction visit, so sample sizes are outstandingly large and cover the vast majority of applicable households. For subsequent years, usage rates were monitored among a random sample of households in each village that was included. Villages were chosen at random based on the availability of samples close to current supervision routes (to simplify logistics), with each age group including a broad geographic distribution (ranging between 8 and 152 separate villages per age group).

Project Field Test

Households from 11 separate villages in 6 Departments were included in the new data and project households were selected at random from each community. Raw data has been added to existing data from previous years and the analysis is provided in the file "VP8-09 KPT Data.xlsx."

SECTION C. Post-registration changes to the PoA (including the generic CPA(s))

C.1. Corrections

N/A

C.2. Inclusion of a monitoring plan to the registered PoA-DD (including its generic CPA-DD(s)), if a monitoring plan was not included at the time of registration

N/A

C.3. Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline

N/A

C.4. Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA

N/A

C.5. Types of changes specific to afforestation and reforestation activities

N/A

PART II - Specific-case component project activity(ies)

SECTION D. Description of specific-case CPA(s)

First VPA: Proyecto Mirador Enhanced Distribution of Improved Cookstoves in Latin America – Renewed VPA for Distribution of Dos por Tres Cookstoves in Honduras (Version 06, dated 25 March, 2016)

D.1. Brief description of implemented specific-case CPA(s)

(a) Purpose of the specific-case VPA and measures taken for GHG emission reductions:

Under the First VPA, Proyecto Mirador replaces the traditional, inefficient *fogón* biomass cookstove with the improved Dos por Tres plancha-style cookstove in Honduras, where degraded forest conditions, indoor air pollution and rural poverty exceed acceptable levels. The Dos por Tres cookstove reduces wood use by 53% thus reducing the problem of forest degradation while also improving health and providing a significant savings in time and/or money to the beneficiary.

Honduras is one of the poorest countries in the Western Hemisphere, with more than 63% of the population living in poverty (2014).² In rural areas, 6 out of 10 households live in extreme poverty, on less than US\$ 2.50 per day.³ Honduras also faces the highest level of economic inequality in Latin America, with rampant crime and violence being major contributing factors. It has one of the world's highest homicide rates, at 67 homicides per 100,000 people (2014).⁴ Owing to crime, corruption and other factors, Honduras ranks 125th out of 185 countries globally in terms of ease of doing business, and 179th out of 185 on the successful enforcement of contracts.⁵ Despite these obstacles, Mirador has successfully installed more than 150,000 cookstoves, created 21 thriving microenterprises and provided 170 local jobs in areas where reliable employment is difficult to find. All of the components used to build the Dos por Tres, including the plancha, chimney and ceramic firebox, are manufactured and sourced in Honduras providing a boost to local economies.

81% of rural households in Honduras use fuelwood for cooking⁶ and 65 percent of the country's total energy comes from fuelwood. Lower-income households are more

² World Bank, Honduras country overview. <http://www.worldbank.org/en/country/honduras/overview>

³ *ibid.*

⁴ *ibid.*

⁵ The World Bank, *Economy Profile: Honduras*, in *Doing Business 2013: Smarter Regulations for Small and Medium-size Enterprises*. <http://www.doingbusiness.org/reports/global-reports/doing-business-2013>

⁶ Government of Honduras, "Encuesta Nacional de Demografía y Salud (National Demographic and Health Survey), 2011-2012." http://pdf.usaid.gov/pdf_docs/pnaec215.pdf (p.19)

dependent on wood because it is less costly than electricity or gas. The traditional *fogón* cookstove is in widespread use across Honduras, especially in rural areas. Chronic exposure to smoke from inefficient biomass cookstoves causes respiratory illness such as asthma, emphysema and lung cancer. Such illnesses disproportionately affect women and children, who spend much of their time indoors while cooking and attending to other household responsibilities. In addition, woodcutting for private use contributes significantly to forest degradation, so reducing fuelwood consumption has a positive effect on forest conditions.

Wherever wood use is high, carbon savings from the Dos por Tres is also high. Thus, carbon finance both helps Mirador to lower the cost of improved cookstove intervention and incentivizes us to serve rural areas where poverty is rampant. The Dos por Tres is the lowest cost plancha-style improved cookstove technology available in Honduras, and our unique “no cash” business model enables even the poorest households to access our program. We pride ourselves in serving the “last mile” and helping families that cannot afford to purchase improved cookstoves, yet are able to coinvest in a stove with materials they can easily acquire.

Mirador donates to each beneficiary the steel cooktop (plancha), the chimney and chimney top, 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 Department, Honduras, creating local jobs through 10 material provider businesses. Beneficiaries contribute the remaining components, including cement, rebar, bricks, adobe blocks and wood ash, all of which are commonly available throughout Honduras. This cost-sharing arrangement is part of 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.

Beneficiaries are clearly informed that the ownership of emission reductions shall reside with the CME. Each beneficiary must agree to relinquish any claims to ownership of emission reductions as a precondition to receiving the Dos por Tres. The concept is related at multiple stages during the process, including training materials presented at pre-construction Community Meetings as well as the training brochure presented to each beneficiary at the time of installation. (The brochure is provided in the attached “VP8-08 Training Brochure.pdf.”)

Beneficiaries are also required to remove the traditional stove that is being replaced. They are made aware of this requirement at the time they sign up to receive the stove. Also, during Mirador’s training exercises, Stove Technicians are instructed to require the beneficiary to remove the traditional stove. Supervisors return later to ensure the stove has actually been destroyed, making a note on the account to follow up if that has not yet happened.

In order to ensure that only the baseline *fogón* is being replaced, the Ejecutor sends an Inspector to visit each household prior to installation. At that time the Inspector makes sure that a *fogón* is present and that it is the primary stove used for cooking.

(b) *Description of the technology employed and installed equipment and/or infrastructure, including information requested by the eligibility criteria:*

Under this VPA Proyecto Mirador exclusively installs its own proprietary “Dos por Tres” model improved cookstoves, in replacement of the less efficient traditional *fogón* baseline stove. A new Dos por Tres improves combustion efficiency and reduces fuelwood consumption by 53% as compared to the baseline *fogón*, thus reducing the overall emission of greenhouse gases into the atmosphere due to cooking. Our stove’s efficiency has been confirmed with 641, 4-day project scenario Kitchen Performance Tests (KPTs), with the data

analysis performed by leading third-party industry experts. Additionally, third-party laboratory tests show that the Dos por Tres reduces Carbon Monoxide emissions and particulate matter by 79%, CO₂ by 43%, and CH₄ by 94% compared to traditional stoves (Aprovecho Research Center, 2009).

The Dos por Tres design is based on the original La Justa model stove, with structural modifications to improve efficiency, maximize safety and facilitate successful adoption. It is built *in situ* (directly installed at each home) consists of a ceramic firebox for the stove mouth, a steel plancha (cooktop), a chimney, and a sophisticated system of insulated interior walls constructed from adobe blocks or ceramic bricks that channels the heat under the plancha and smoke and particulates out the chimney.

The structural modifications reflected in the Dos por Tres include the following: First, the grate in the stove mouth has been elevated slightly in order to raise the fuel off the stove floor, thus making the wood burn more thoroughly and efficiently. Second, the dimensions of the plancha have been changed, allowing the plancha to heat up faster and distribute the heat more evenly than before. Third, the plancha has been lowered closer to the level of the wood ash insulation in order to use the firepower of the stove more efficiently. From the user's point of view the Dos por Tres is functionally similar to the traditional *fogón*, making successful adoption seamless.

(c) *Relevant dates for the specific-case CPA:*

Start Date of the VPA: 1 May, 2009

First Crediting Period: 1 May, 2009 – 30 April, 2016

Second Crediting Period: 1 May, 2016 – 30 April, 2023

Eighth Verification Period: 1 December, 2016 – 30 November, 2017

Stoves have been installed continuously, *in situ*, throughout the first crediting and second crediting period to date. The project has operated under Gold Standard certification since 2009 and the expected operational lifetime of the VPA is expected to be 21 years (7 years x 3 crediting periods) according to PoA provisions.

(d) *Total GHG emission reductions achieved in this monitoring period for the specific-case CPA, including information about how double-counting is avoided:*

Mirador has achieved a total of 295,726 tonnes of GHG reductions within the 8th Verification Period (1 December, 2015 – 30 November, 2016). (See ER Sheet, Cell DA74.) This figure is based on a total of 23,090 stoves installed during the 8th Verification Period and includes emission reductions from stoves installed during prior monitoring periods that are still in operation.

Stoves are built *in situ* and a unique household account is created in the electronic database at the time of construction. Furthermore, an inspector visits each home before construction can begin and at that time, verifies that improved cookstove technology is not already present and that a traditional *fogón* is the primary cooking unit. For those reasons, if there is another similar activity within the same target area, stoves from the other project cannot possibly be counted under Mirador's activity.

D.2. Geographical references or other means of identification of the location of the specific-case CPA(s)

VPA project boundary is Honduras, which is located within the geographical boundary of the registered PoA. Host party is Honduras, a non-Annex 1 party to the 1992 UN Framework Convention on Climate Change. This VPA shall cover the construction of the Dos por Tres cookstove exclusively, and only as appropriate, wherever baseline conditions are similar and cluster definition is met. GPS markings are kept for each stove installed and are available to the DOE for verification to ensure all stoves are within VPA project boundary. Project operations are headquartered in the municipality of Santa Bárbara, in Santa Bárbara Department, Honduras, with administrative offices in Greenbrae, California, USA.



Project Area: Honduras

SECTION E. Post-registration changes to specific-case CPA(s)

E.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

N/A

E.2. Corrections

N/A

E.3. Changes to the start date of the crediting period of the specific-case CPA(s)

N/A

E.4. Inclusion of a monitoring plan into the specific-case CPA(s) that was not included at registration

N/A

E.5. Permanent changes to the monitoring plan as described in the registered specific-case CPA-DD(s), applied methodology or standardized baseline

N/A

E.6. Changes to project design of the specific-case CPA(s)

N/A

E.7. Types of changes specific to afforestation and reforestation specific-case CPA(s)

N/A

SECTION F. Description of the monitoring system of specific-case CPA(s)

Proyecto Mirador's Monitoring System includes extensive training of stove beneficiaries at various stages in the stove construction process, including Community Meetings staged by the Ejecutor before construction; a home visit by an inspector to determine the correct stove location and assess appropriateness of the household prior to construction; direct training at the time of construction; and multiple Follow-up Visits after construction. Mirador has invested in a sophisticated, highly customized electronic monitoring system built on the Salesforce.com platform to monitor all aspects of our operations and to bring us closer to our clients. We are constantly refining our design, construction and supervision practices to optimize efficiency and guarantee successful stove adoption.

The quality of stove construction by each Technician is monitored by direct supervision of the Ejecutor as well as ongoing monitoring by the Director of Operations. Mirador's electronic monitoring system enables Mirador management to identify maintenance issues at the level of the Ejecutor or Technician to spot any issues and appropriate steps are taken to correct. Ejecutores and Technicians are incentivized through higher construction allocations based on their performance.

All aspects of business are subject to audit by Director of Operations and Director of Proyecto Mirador LLC. The objective of the reviews is to ensure that the stove construction, training of the beneficiaries, and the collection of monitoring information are being completed in an accurate and timely manner, as well as to support any ongoing third party verification as part of the Gold Standard certification.

Since ongoing research and stakeholder consultation are vital components of a successful Gold Standard project, having solid "on-the-ground" resources is a critical advantage for Mirador. Recommendations from the beneficiaries as to functional improvements are explored and researched, then implemented if appropriate. Furthermore, as Mirador expands into new areas, local leaders and NGOs are informed and consulted on an ongoing basis. Stakeholder feedback is channeled through the Ejecutores or Supervisors to Mirador management and reviewed regularly. When issues are relevant to construction or maintenance, beneficiaries are contacted or revisited by a Mirador Supervisor as appropriate.

During the 8th Verification Period, stakeholder feedback was either submitted directly by beneficiaries or gathered by Mirador's Supervisors and Ejecutores. In either case it was tracked electronically in Mirador's Electronic Feedback Log using Salesforce.com. All comments logged in the physical process book (kept in Mirador's office) were added to the electronic system as well. When relevant, stakeholder feedback was reviewed at weekly staff meetings and Mirador's responses were documented. In many cases stakeholder feedback resulted in follow-up visits to beneficiaries' homes by a specialized Mirador supervisor to address outstanding issues and repair any defects in construction. Responses and followup were tracked appropriately. An export of the

Electronic Feedback Log is provided to the DOE for review (see VP8-15 Stakeholder Comment Log.xlsx).

The central aspect of our Monitoring Plan is an electronic monitoring database where all household information, as well as usage, maintenance, leakage and sustainability monitoring data, is kept. Data integrity is checked and maintained by the Director of Technology in Honduras on an ongoing basis. Throughout the process by which data is gathered and verified in the field, the office team, under the supervision of the Director of Technology, cross checks and reviews the data with various data de-duplication tools, checking the data for quality, eliminating duplicates if found, and making sure that the required data is being captured on all records. The electronic database is automatically backed up. If any data is modified or changed, a record history is tracked.

Sales Record/Installation Record/Stove Database

CME keep its sales record electronically using the Salesforce.com platform. At the time of stove construction, a stove account record is created in the system to track the installation. Basic data for each account includes the following:

- Date of installation
- Location of installation
- Model/type of stove installed
- Model of use prior to installation of improved cookstove
- Name of beneficiary
- ID number of beneficiary
- Unique serial number applied to each stove

The stove account record also provides the basis for all further interaction with the beneficiary. When any type of survey is conducted in a given household, the survey is created electronically from within the household record in the stove database and is thus automatically associated with that household. The database accepts survey data through a handheld interface and the desktop interface allows flexible reporting and data management on the administrative side.

Every time a Supervisor performs a follow-up visit to a household post-installation, the Supervisor enters basic data related to stove condition and maintenance and verifies user information. That data is entered using a handheld device and is used by Mirador Supervisors and Ejecutores to schedule additional training or repairs, if needed, and to streamline operations.

In response to FAR1, the following survey questions were added to the digital Maintenance Survey through Salesforce.com. The questions were field tested, refined, and fully implemented in July, 2017 as follows:

- Is there another improved cookstove in the home?
- Who installed the other ICS?
- Is the other ICS in use?
- Was the other ICS installed before the Dos por Tres?
- (If applicable) When did they stop using the other ICS?

The Maintenance Survey is collected at every follow-up visit (over 50,000 were conducted during the 8th Verification Period overall) and the above questions are included in every survey. Therefore, the ongoing sample ensures ample geographic diversity and is representative of the entire project area. Every stove age group is represented among the sample, and during the 8th Verification Period the sample size for each age group was greater than 100 in all cases except the oldest group, for which 62 surveys were collected.

From July through September 2017, Mirador surveyed 13,423 households for the presence of an ICS from another carbon project. Among these households 224 were found to have another ICS present, representing 1.7% of the total project population for which ERs are claimed. ERs are discounted according to the calculations set forth under Parameter ID 9 below.

Equipment Specifications & Calibration

The specifications for all equipment used by Mirador for purposes of measurements related to emission reduction calculations are as follows:

Equipment	Manufacturer	Type	Accuracy
Humidity Meter	Delmhorst	BD-2100	± 0.2% (in moisture range 6% to 40%)
Digital Scale	MadBite	Digital hanging fish scale	± 1 ounce (to 110 lbs / 50 kg)
GPS marking device	Garmin	eTrex 20	± 12 feet

Humidity Meter (used for KPT)

Prior to each test the user checks the calibration of the humidity meter using the Calibration Check Key. This key checks the meter calibration according to manufacturer specifications. Meter is in calibration if it displays 12% (±0.2). Any other reading generally indicates low battery, in which case batteries are replaced and the meter is reset according to manufacturer specifications.

Digital Scale (used for KPT)

The digital scale is calibrated by checking that the scale is reset to zero prior to each measurement.

GPS Marking Device (used to mark stove locations)

Stove technicians use the Garmin eTrex 20 to mark each stove location. GPS is reset at each location prior to measurement. Per manufacturer recommendations, 5 separate waypoints are collected and averaged to maximize accuracy. GPS locations are digitally uploaded and matched to correct stove accounts in the Salesforce.com database using an automated data transfer process.

SECTION G. Data and parameters

G.1. Data and parameters fixed ex ante, at registration, inclusion or renewal of crediting period

Data/parameter	ID 1/ EF _{fuel,CO₂}
Unit	tCO ₂ /TJ
Description	CO ₂ emission factor of the fuel that is reduced
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories 2.1, Volume 2: Energy (http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf).
Value(s) applied	112 tCO ₂ /TJ
Choice of data or measurement methods and procedures	IPCC default value
Purpose of data	Calculation of baseline and project emissions
Additional comments	

Data/parameter	ID 2/ EF _{fuel,nonCO₂,CH₄}
Unit	tCO ₂ /TJ
Description	CH ₄ emission factor for the fuel that is reduced

Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories 2.1, Volume 2: Energy (http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf).
Value(s) applied	0.30
Choice of data or measurement methods and procedures	IPCC default value
Purpose of data	Calculation of baseline and project emissions
Additional comments	

Data/parameter	ID 3/ EF_{fuel,nonCO₂,N₂O}
Unit	tCO ₂ eTJ
Description	N ₂ O emission factor for wood that is reduced
Source of data	IPCC Default value
Value(s) applied	0.004
Choice of data or measurement methods and procedures	2006 IPCC Guidelines for National Greenhouse Gas Inventories 2.1, Volume 2: Energy (http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf).
Purpose of data	Calculation of baseline and project emissions
Additional comments	

Data/parameter	ID 4/ NCV_{fuel}
Unit	TJ/ton
Description	The Net Calorific Value (NCV) of the fuel that is substituted or reduced
Source of data	NCV for Red Oak, per Global Alliance for Clean Cookstoves, "WBT 4.2.4 Spreadsheet" (http://cleancookstoves.org/technology-and-fuels/testing/protocols.html) with reference to Cheremisinoff, N. Properties of Wood. Wood for Energy Production. Ann Arbor, MI, Ann Arbor Science: 31-43. 1980
Value(s) applied	0.0186 TJ/ton
Choice of data or measurement methods and procedures	NCV for Red Oak
Purpose of data	Calculation of baseline and project emissions
Additional comments	

G.2. Data and parameters monitored

Data/parameter	ID 5/ f_{NRB,b,y}
Unit	%
Description	The non-renewable fraction of the woody biomass harvested in the project collection area in year y in the baseline scenario
Measured/calculated/ default	Measured
Source of data	Third-party NRB Analysis by Berkeley Air Monitoring Group (2011). Result adjusted downward to ensure conservativeness and align with recently validated project NRB figures.
Value(s) of monitored parameter	69%

Monitoring equipment	N/A
Measuring/reading/recording frequency	Fixed at the time of revalidation; can be updated at PP's option as allowed in Section III.1, item f, of the TPDDTEC.
Calculation method (if applicable)	Assessed in accordance with the CDM AMS II.G., <i>Energy efficiency measures in thermal applications of non-renewable biomass</i>
QA/QC procedures	Assessment shall be conducted by a reputable third party forestry expert
Purpose of data	Calculation of project emissions
Additional comments	

Data/parameter	ID 6 / N_{p,y}
Unit	Number of project technology days
Description	Cumulative number of project technology-days included in the project database for project scenario p against baseline scenario b in year y
Measured/calculated/ default	Measured
Source of data	Salesforce.com installation database
Value(s) of monitored parameter	23,090 total stoves installed during the 8 th Verification Period (1 December, 2016 – 30 November, 2017)
Monitoring equipment	Garmin GPS devices; Salesforce.com installation database
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	The value of N _{p,y} is a function of the total stoves in use times days in operation and is updated on a monthly basis in the ER Calculations spreadsheet.
QA/QC procedures	Stoves are built <i>in situ</i> and a unique household account is created in the electronic database at the time of construction. Data integrity is checked and maintained by the Director of Technology in Honduras on an ongoing basis. Throughout the process by which data is gathered and verified in the field, the office team, under the supervision of the Director of Technology, cross checks and reviews the data with various data de-duplication tools, checking the data for quality, eliminating duplicates if found, and making sure that the required data is being captured on all records. The electronic database is automatically backed up. If any data is modified or changed, a record history is tracked. The Salesforce.com database holds the following information to identify each household using project technology: - Installation record - Date of installation - Location of installation - Model/type of stove installed - Model of use prior to installation of the Dos por Tres - Name of beneficiary
Purpose of data	Calculation of emission reductions
Additional comments	A sales record including all stoves built during the current verification period is exported from Salesforce and provided in the attached "VP8-06 Sales Record.xlsx." A monthly summary is provided in the attached "VP8-07 Stoves Installed by Month." 10% of our beneficiaries report that there are days in the year when the stove is not in use. Of those 10%, the average number of days per year when the stove is not in use is less than 2 days. When averaged over the entire population, there is less than 0.2 days per year per household when the stove is not in use; thus, adjustments have not been made to the ER Calculations in regards to seasonal variation. (Substantiation is provided in the attached "VP8-09 Leakage Sustainability Results.")

Data/parameter	ID 7 / P_{p,b,y}
Unit	Average daily dry wood fuel reduction per person-meal (tonnes/household/day)

Description	Specific fuel savings from an individual technology of project p against an individual technology of baseline b in year y.
Measured/calculated/ default	Measured
Source of data	Kitchen Performance Test
Value(s) of monitored parameter	0.005485 t/household/day
Monitoring equipment	Compact digital hanging scale Zipper polyethylene bag Moisture meter with digital readout
Measuring/reading/ recording frequency	Annual
Calculation method (if applicable)	Average fuel savings per person-meal, weighted on the basis of number of stoves in operation for each age group
QA/QC procedures	Equipment is calibrated at the start of each study. All KPT studies are managed by a supervisor who is specifically trained to oversee data collection and to spot potential errors in the reported figures. Any concerns are addressed and resolved onsite before data sheets are submitted for data entry. Data is compiled and reviewed by a third-party expert, with all outlier values individually checked and reviewed for accuracy.
Purpose of data	Calculation of emission reductions
Additional comments	Survey data is tabulated in the attached "VP8-02 KPT Data 2016.xlsx" and parameter flows to "VP8-01 ER Calculations.xlsx," "Assumption" worksheet, Cell G20.

Data/parameter	ID 8 / Up,y
Unit	% of households
Description	Abandonment (drop-off) rate (the number of stoves that have fallen out of use in a given age group)
Measured/calculated/ default	Measured
Source of data	Survey and visual observation
Value(s) of monitored parameter	The following monitored <i>cumulative</i> abandonment rates are applied for the current verification period: Year 0_1 3% Year 1_2 9% Year 2_3 18% Year 3_4 26% Year 4_5 46% Year 5_6 52%
Monitoring equipment	Surveys compiled by handheld device and uploaded to Salesforce.com database.
Measuring/reading/ recording frequency	Annual
Calculation method (if applicable)	Total stoves abandoned out of total households surveyed
QA/QC procedures	Surveys are taken onsite, results are corroborated by visual inspection and tabulated using Salesforce.com database.
Purpose of data	Calculation of emission reductions
Additional comments	Monitored abandonment rates are cumulative, i.e., they reflect the total rate of abandonment for a given age group. Annual rates are extrapolated and applied to ER Calculations. Survey data is exported from Salesforce and tabulated in the attached "VP8-13 Dropoff Data.xlsx."

Data/parameter	ID 9 / LEp,y
Unit	Number of households

Description	Assess leakage sources including (1) replacement of efficient household heating sources with less efficient fuel; (2) continued use of baseline stove after installation; (3) double counting
Measured/calculated/ default	Measured
Source of data	Ongoing questionnaires
Value(s) of monitored parameter	8,914 tonnes (3%)
Monitoring equipment	Surveys are taken onsite via handheld device and tabulated using Salesforce.com database.
Measuring/reading/ recording frequency	Ongoing
Calculation method (if applicable)	(1) Leakage due to the replacement of efficient household heating sources with less efficient fuel was determined by multiplying the % of homes that replaced a more efficient heater with the Dos por Tres (0.2%) by 25%, which would represent a worst-case scenario in which the Dos por Tres is turned on half the time solely for heating purposes, when it would not have otherwise been turned on for cooking. The result is 0.05% (<i>de minimis</i>). (2) Leakage due to the continued presence of a baseline stove was determined as follows: • Multiply the % of homes that have a <i>fogón</i> (17%) by the net stoves in operation, being the total stoves in the population for which ERs are being claimed, net of abandonment (101,555: see ER Sheet, cell DA53), which returns a value of 17,264 households affected. • Reduce 17,264 according to the percent of total cooktime during which the <i>fogón</i> is in use in those households (6.5%), resulting in a value of 1,122. This is the number of cookstove equivalents for which emissions are not reduced. • Multiply 1,122 (cookstove equivalents) by the annualized average of 3.13 ERs/stove (see ER Sheet, Row 69) = 3,512, the number of tonnes lost due to the presence of the auxiliary stove. ER claims are directly discounted by the absolute figure of 3,512. • Dividing 3,512 tonnes by the gross number of ERs being claimed (304,640) translates to a leakage factor of 1.2%. (3) Double counting was determined as follows: • Count the total number of households surveyed between July-September 2017 (during which time questions on double counting were fully implemented): 13,423 • Count the total number of households surveyed between July-September 2017 in which another ICS was present in the household: 224 • Use these two figures to determine the ratio of households in which another ICS is present: 1.7% • Multiply 1.7% by the net stoves in operation, being the total stoves in the population for which ERs are being claimed, net of abandonment (101,555: see ER Sheet, cell DA53), which returns a value of 1,726 households affected. • Multiply 1,726 households by the annualized average of 3.13 ERs/stove (see ER Sheet, Row 69) = 5,402, the number of tonnes lost due to the presence of the auxiliary stove. ER claims are directly discounted by the absolute figure of 5,402. • Dividing 5,402 tonnes by the gross number of ERs being claimed (304,640) translates to a leakage factor of 1.8%, confirming the discount is conservative. Considering the sources of leakage identified above, including discounts to prevent double counting, total leakage for the 8th Verification Period is 3%.
QA/QC procedures	Survey, on an ongoing basis, 1 of every 100 new Dos por Tres stove owners. Questionnaires to be administered by Mirador Supervisors.
Purpose of data	Calculation of leakage

Additional comments	Survey data is exported from Salesforce and tabulated in the attached "VP8-09 Leakage Sustainability Results.xlsx"
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Data/parameter	ID 10 / LEp,y – Leakage due to Transportation
Unit	Kilometers
Description	Assess leakage due to transportation
Measured/calculated/ default	Measured
Source of data	Mileage records; transportation and maintenance records
Value(s) of monitored parameter	0%
Monitoring equipment	Vehicle odometers
Measuring/reading/ recording frequency	Mileage records track miles driven on an ongoing basis for each vehicle, and the results are tabulated annually.
Calculation method (if applicable)	A standard online carbon calculator is used to calculate the total CO ₂ produced from driving the total distance driven. That figure is compared against the total emissions being claimed during the verification period in order to determine leakage.
QA/QC procedures	Vehicle odometer checks at each instance of reporting
Purpose of data	Calculation of project emissions
Additional comments	Transportation records for all Mirador vehicles are tabulated in the attached "VP8-14 Transportation Summary.xlsx." Mirador's 4x4 vehicles drove 293,956 km (or 182,656 miles) during the 8th Verification Period. Assuming an estimated average fuel efficiency of 14 mpg, Mirador's 4x4 vehicles emitted 133.07 tonnes of CO₂ during the 8th Verification Period. (Source: http://www.nativeenergy.com/travel.html) Additionally, Mirador employees drove 113,015 km (70,224 miles) during the 8th Verification Period. Based on an engine size of between 125cc and 500cc, Mirador's motorcycles emitted 36.59 tonnes of CO₂ during the 8th Verification Period. (Source: https://calculator.carbonfootprint.com/calculator.aspx?tab=5) Thus, emissions from all vehicles total 169.66 mtCO₂e. That figure is less than 1% of the total emissions claimed, so it is disregarded as <i>de minimis</i>. It should also be noted that due to the reduction in fuelwood use, the project is expected to result in reduced leakage emissions due to the reduced need for transportation of fuel.

Data and Parameters used to assess sustainability

Whereas the Sustainability Parameters in the VPA-DD are combined under three Parameter ID numbers (#11-13), this Monitoring Report separates each parameter into its own ID number (#11-16).

Data/parameter	ID 11 / Air Quality
Unit	Individuals
Description	Assess agreement with statements in Sustainability Monitoring Plan Sections, Passport Issue #1, Air Quality
Measured/calculated/ default	Measured
Source of data	Responses to questionnaire
Value(s) of monitored parameter	758 Leakage and Sustainability Surveys collected during the Eighth Verification Period returned the following results. Cell references below pertain to the "Summary-Vertical" worksheet within the file "VP8-09 Leakage Sustainability Results.xlsx."

	#1, Air Quality: 99% of respondents reported the air is cleaner in their homes with the new Dos por Tres cookstove (Cell C53).
Monitoring equipment	Questionnaire administered by Supervisors using handheld devices
Measuring/reading/recording frequency	Survey, on an ongoing basis, a statistically significant number of Dos por Tres stove owners. Data tabulation and report issued on an annual basis.
Calculation method (if applicable)	N/A
QA/QC procedures	Large sample size; data kept in an electronic database. Randomness of the sample will be maintained by surveying every <i>n</i> th beneficiary who receives a supervisory visit from Mirador.
Purpose of data	Assess sustainability
Additional comments	Survey data is exported from Salesforce and tabulated in the attached "VP8-09 Leakage Sustainability Results.xlsx."

Data/parameter	ID 12 / Livelihood of the Poor
Unit	Individuals
Description	Assess agreement with statements in Sustainability Monitoring Plan Sections, Passport Issues #7, Livelihood of the Poor
Measured/calculated/default	Measured
Source of data	Responses to questionnaire
Value(s) of monitored parameter	758 Leakage and Sustainability Surveys collected during the Eighth Verification Period returned the following results. Cell references below pertain to the "Summary-Vertical" worksheet within the file "VP8-09 Leakage Sustainability Results.xlsx." #7, Livelihood of the Poor: 99% of respondents who collect their own wood reported that they have more free time since having the Dos por Tres (Cell C96). Respondents reported saving an average of 3.71 hours per week (Cell C80), representing a reduction of 41% in time spent collecting wood (Cell C81). 60% of those respondents reported that they invest the time saved from collecting fuelwood to work in the fields. Other reported uses of extra time include setting up a business (2%); attending school (1%); helping their partner (4%); resting (14%), taking better care of children or siblings (9%), and other activities (10%). (Cells C100-C107). 79% of respondents who purchase their fuelwood reported using the funds saved after installation of the 2x3 to purchase food. 5% reported using the funds to pay for electricity and 16% reported other uses (Cells C114-C116).
Monitoring equipment	Questionnaire administered by Supervisors using handheld devices
Measuring/reading/recording frequency	Survey, on an ongoing basis, a statistically significant number of Dos por Tres stove owners. Data tabulation and report issued on an annual basis.
Calculation method (if applicable)	N/A

QA/QC procedures	Large sample size; data kept in an electronic database. Randomness of the sample will be maintained by surveying every <i>n</i> th beneficiary who receives a supervisory visit from Mirador.
Purpose of data	Assess sustainability
Additional comments	Survey data is exported from Salesforce and tabulated in the attached "VP8-09 Leakage Sustainability Results.xlsx."

Data/parameter	ID 13 / Human & Institutional Capacity
Unit	Individuals
Description	Assess agreement with statements in Sustainability Monitoring Plan Sections, Passport Issues 1, 7, & 9: Air Quality, Livelihood of the Poor, Human & Institutional Capacity.
Measured/calculated/ default	Measured
Source of data	Responses to questionnaire
Value(s) of monitored parameter	758 Leakage and Sustainability Surveys collected during the Eighth Verification Period returned the following results. Cell references below pertain to the "Summary-Vertical" worksheet within the file "VP8-09 Leakage Sustainability Results.xlsx." #9, Human & Institutional Capacity: - Figures above under #7, Livelihood of the Poor, also substantiate #9, Human & Institutional Capacity. 99% of respondents reported they cook faster with the Dos por Tres (Cell C119), indicating that women have more time to participate in the activities previously listed.
Monitoring equipment	Questionnaire administered by Supervisors using handheld devices
Measuring/reading/ recording frequency	Survey, on an ongoing basis, a statistically significant number of Dos por Tres stove owners. Data tabulation and report issued on an annual basis.
Calculation method (if applicable)	N/A
QA/QC procedures	Large sample size; data kept in an electronic database. Randomness of the sample will be maintained by surveying every <i>n</i> th beneficiary who receives a supervisory visit from Mirador.
Purpose of data	Assess sustainability
Additional comments	Survey data is exported from Salesforce and tabulated in the attached "VP8-09 Leakage Sustainability Results.xlsx."

Data/parameter	ID 14 / Quality of Employment
Unit	Individuals
Description	Assess agreement with statements in Passport Sustainability Monitoring Plan sections regarding wider social and economic impact of the project including #6. Quality of Employment
Measured/calculated/ default	Measured
Source of data	Surveys of employees; HR managerial report on number of employees; and copies of training materials used by employees.

Value(s) of monitored parameter	#6, Quality of Employment: • % of employees receiving more than minimum wage: 100% • % of employees over the age of 16: 100% • % of employees that report familiarity with work regulations: 100% • % of employees that report they are informed about safety risks and modes of prevention related to their jobs: 96% • % of full-time employees who receive paid vacation commensurate with labor law requirements (applies after 1 year of employment): 100% (Employees may or may not have actually taken their vacation, but it is available to all.) • % of employees who are happy with sleeping/eating conditions when traveling: 96% • % of employees reporting they are required to carry >50 kg.: 0% • % of employees reporting working conditions better than other people in their communities: 88% (the other 12% report conditions are equal) • % of employees who report their relationships with managers are good or excellent: 96% (4% reported "average") • % of employees who report their relationships with colleagues are good or excellent: 100% • % of employees who report they are satisfied with their job: 100% • % of employees who feel their complaints are listened to: 88%
Monitoring equipment	Questionnaire administered by Supervisors using handheld devices
Measuring/reading/recording frequency	Annual
Calculation method (if applicable)	N/A
QA/QC procedures	HR management includes assessment of compliance with Honduran labor law and supervision over employee rights and responsibilities. Training and capacity building are ongoing functions of HR.
Purpose of data	Assess sustainability
Additional comments	Qualitative employment data is substantiated in the attached "VP8-10 Employee Survey Export.xlsx" and "VP8-11 Employee Questionnaires.pdf."

Data/parameter	ID 15 / Quantitative Employment and Income Generation
Unit	Individuals
Description	Assess agreement with statements in Passport Sustainability Monitoring Plan sections regarding wider social and economic impact of the project including #10, Quantitative Employment and Income Generation
Measured/calculated/ default	Measured
Source of data	Surveys of employees; HR managerial report on number of employees; and copies of training materials used by employees.
Value(s) of monitored parameter	#10, Quantitative Employment and Income Generation: • # of direct employees of Mirador at end of 8th Verification Period: 23 • Total employees (both direct and indirect): 177
Monitoring equipment	Questionnaire administered by Supervisors using handheld devices
Measuring/reading/recording frequency	Annual
Calculation method (if applicable)	N/A

QA/QC procedures	HR management includes assessment of compliance with Honduran labor law and supervision over employee rights and responsibilities.
Purpose of data	Assess sustainability
Additional comments	Quantitative employment data is provided in the attached "VP8-12 Quantitative Employment 2016.xlsx."

Data/parameter	ID 16 / Technology Transfer
Unit	Individuals
Description	Assess agreement with statements in Passport Sustainability Monitoring Plan sections regarding wider social and economic impact of the project including #12, Technology Transfer
Measured/calculated/ default	Measured
Source of data	Surveys of employees; HR managerial report on number of employees; and copies of training materials used by employees.
Value(s) of monitored parameter	#12, Technology Transfer: • <i>Technology transfer to users:</i> - Technology is transferred to beneficiaries in the Community Meetings prior to stove construction as well as the Follow-up Visits conducted after stove installation. Each time a follow-up visit is conducted, a Maintenance Survey is recorded. - Number of Maintenance Surveys recorded during the Eighth Verification Period: 54,405 • <i>Technology transfer to employees:</i> - Technology transfer to employees ranges from stove building practices to the use of state-of-the-art technology using Salesforce.com and hi-res GPS mapping on both iPhones and laptops. - % of employees who report familiarity with work regulations: 100% - % of employees who received job training in the past year: 88%
Monitoring equipment	Questionnaire administered by Supervisors using handheld devices
Measuring/reading/ recording frequency	Annual
Calculation method (if applicable)	N/A
QA/QC procedures	Large sample size for survey; data kept in an electronic database. Randomness of the sample will be maintained by surveying every <i>n</i> th beneficiary who receives a supervisory visit from Mirador.
Purpose of data	Assess sustainability
Additional comments	Qualitative employment data is substantiated in the attached "VP8-10 Employee Survey Export.xlsx" and "VP8-11 Employee Questionnaires.pdf." Quantitative employment data is provided in the attached "VP8-12 Quantitative Employment 2016.xlsx." Maintenance surveys are recorded in Salesforce.com and available for DOE review.

G.3. Implementation of specific-case CPA level sampling plan

The single sampling plan described in Section B.2. of Part I above was applied to the specific-case VPA; thus, requirements (a)-(f) are previously discussed in Section B.2.

SECTION H. Calculation of GHG emission reductions or net GHG removals by sinks

H.1. Calculation of baseline emissions or baseline net GHG removals by sinks

Baseline fuelwood consumption values are defined as per the 2010 Fuelwood Consumption Study, as approved in the approved VPA-DD and confirmed by subsequent studies. The KPT focused exclusively on typical baseline *fogón* stoves and involved taking physical measurements of daily wood consumption with the required return visits over a four-day period. Field KPT results are adjusted to account for moisture variation and adult equivalent persons. Baseline KPT data is included in the attached "VP8-02 KPT Data 2016.xlsx."

Emission reductions are calculated by comparing daily fuel consumption per person-meal, adjusted for variations in moisture content, in the project scenario vs. baseline scenario.

H.2. Calculation of project emissions or actual net GHG removals by sinks

Project fuelwood consumption values are defined as per the results of 641 KPTs in six separate stove age groups. Project KPTs involve taking physical measurements of daily wood consumption with the required return visits over a four-day period. Field KPT results are adjusted to account for moisture variation and adult equivalent persons. All KPT data is included in the attached "VP8-02 KPT Data 2016.xlsx."

Emission reductions are calculated by comparing daily fuel consumption per person-meal, adjusted for variations in moisture content, in the project scenario vs. baseline scenario.

H.3. Calculation of leakage

Leakage calculations are explained in Section B.2. (c) above. Leakage during the current verification period was found to be *de minimis*; thus, emission reduction calculations assume 0% leakage.

H.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

A total of 295,726 tonnes of emission reductions are claimed in the current Verification Period (net of leakage), based on a gross number of 304,640 before leakage was applied.

The breakdown of gross emission reductions (before leakage) by vintage and CP is as follows:

CP2, Vintage 2016: 25,115 (8.2% of total gross emissions)
CP2, Vintage 2017: 279,525 (91.8% of total gross emissions)

Net emissions (after leakage) by vintage are calculated by applying the same proportion to the figure 295,726 (see ER Sheet, Cells CW81:DA86).

CP2, Vintage 2016: 24,380
CP2, Vintage 2017: 271,346
Net total emissions: 295,726

Emission reductions are calculated by comparing daily fuel consumption per person-meal, adjusted for variations in moisture content, in the project scenario vs. baseline scenario. Calculations are based on absolute fuelwood consumption. The quantity of secondary fuel is treated as zero and emission reductions are calculated on the basis of reduction of only the primary fuel.

In both baseline and project scenarios, households show a degree of typical fuel and stove-type mixing; however, during the KPT only the primary fuel—woody biomass—is measured by weighing the amount of wood left unused from a previously measured pile. The effect of fuel mixing reduces the savings made in primary fuel between the baseline and project scenarios. The quantity of secondary fuel is treated as zero. Wood consumption in the baseline study was calculated on a “dry wood basis” to account for variations in fuelwood moisture between households. Based on the above, the option to measure fuel consumption of the primary fuel only was selected for the calculation of the emission reductions.

Mirador monitors for seasonal variation on an ongoing basis and has found that 15% of our beneficiaries report that there are days in the year when the stove is not in use. Of those 15%, the average number of days per year when the stove is not in use is just 3.9 days. When averaged over the entire population, there is less than half a day per year per household when the stove is not in use. This rounds to zero; thus, adjustments have not been made to the ER Calculations to date. However, Mirador will continue to monitor the number and should a more significant number arise, project days will be adjusted accordingly.

Baseline and project field test data are analysed in combination to estimate the average annual emission reductions or average fuel savings per household. The TPDDTEC dictates that “Whenever the baseline fuel and project fuel are the same (e.g. deployment of improved cook stove for the reduction of non-renewable biomass use), the statistical analysis can be conducted with respect to fuel savings per unit.” In order to maximize accuracy and minimize volatility, emission reductions are calculated on the basis of mean fuelwood consumption per person-meal.

Since project beneficiaries are using the same fuel in baseline and project scenarios, and are not substituting an alternative fuel, the project is subject to Equation 1 of the TPDDTEC Methodology. Equation 1 states as follows (p. 15):

When the baseline fuel and the project fuel are the same and the baseline emission factor and project emission are considered the same, the overall GHG reductions achieved by the project activity in year y are calculated as follows:

$$ER_y = \sum_{b,p} (N_{p,y} * U_{p,y} * P_{p,b,y} * NCV_{b,fuel} * (f_{NRB,b,y} * EF_{fuel,CO_2} + EF_{fuel,nonCO_2})) - \sum LE_{p,y} \quad (1)$$

Emission reduction calculations are applied according to the above equation and provided in the attached file, “VP8-01 ER Calculation.xlsx.”

Specific-case CPA reference number	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
VPA1	*	*	0%	N/A	295,726	295,726
Total	*	*	0%	N/A	295,726	295,726

**Since emission reductions are conducted with respect to fuel savings per unit, rather than by comparing overall emissions in the baseline and project scenarios, the 2nd and 3rd columns in the table below are left blank.*

H.5. Comparison of GHG emission reductions or net GHG removals by sinks with estimates in the included CPA-DD(s)

Specific-case CPA reference number	Value estimated in ex ante calculation in the included CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
VPA1	332,568	295,726
Total	332,568	295,726

H.6. Remarks on difference from the estimated value in the included CPA-DD(s)

In the VPA-DD, 574,103 tonnes were estimated to be reduced between 1 May 2016 – 30 Nov. 2017. The current monitoring period covers 1 Dec. 2016 – 30 Nov. 2017, for which date range ERs were not explicitly estimated in the VPA-DD.

Based on the validated ER spreadsheet, 332,568 tonnes would have been estimated for the Eighth Verification Period at the time of validation. 295,726 tonnes were actually reduced during the Eighth Verification Period (see attached “VP8-01 ER Calculations,” “ER Sheet” worksheet, cell DA74). The difference is attributed primarily to a reduction in 2016 and 2017 stove build quotas in response to devaluation in the carbon market.

This Eighth Verification Period (1 December 2016 – 30 November 2017) is entirely contained within the 2nd Crediting Period of the PoA under which the VPA operates.

Appendix 1. Contact information of coordinating/managing entity and/or responsible persons/entities

Coordinating/managing entity and/or responsible person/entity	☒ Coordinating/managing entity ☐ Person/entity responsible for completing the CDM-MR-FORM
Organization name	Proyecto Mirador, LLC
Street/P.O. Box	919 Sir Francis Drake Blvd., Suite 201
City	Kentfield
State/Region	CA
Postcode	94914
Country	USA
Telephone	(415) 464-9590
Fax	(415) 925-1882
E-mail	eadams@proyectomirador.org
Website	www.proyectomirador.org
Contact person	Esther Adams
Title	Program Manager
Salutation	Ms.
Last name	Adams
First name	Esther

LIST OF ANNEXES

Monitoring Report - 8th Verification Period

Annex #	File Name	Description
01	VP8-01 ER Calculations.xlsx	Carbon credits calculated based on net stoves in operation over the crediting period
02	VP8-02 KPT Data.xlsx	Aging Stove KT - contains all KPT data to date (baseline & project)
03	VP8-03 KPT Data Sheet SPANISH.pdf	Fuelwood Consumption Study/Aging Stove KT - data collection sheet in Spanish
04	VP8-04 KPT Data Sheet ENGLISH.pdf	Fuelwood Consumption Study/Aging Stove KT - data collection sheet in English
05	VP8-05 KPT Guidelines.pdf	Fuelwood Consumption Study - Guidelines provided by Prof. Robert Bailis
06	VP8-06 Sales Record.xlsx	Stove installation database for the 8th Verification Period
07	VP8-07 Stoves Installed by Month.pdf	Monthly summary of stove installation database for the 8th Verification Period
08	VP8-08 Training Brochure.pdf	Brochure given to beneficiaries when trained in stove use and maintenance
09	VP8-09 Leakage Sustainability Results.xlsx	Results & summary for monitoring surveys conducted during 8th VP
10	VP8-10 Employee Survey Export.xlsx	Summary of 2017 employee questionnaires
11	VP8-11 Employee Questionnaires.pdf	Sample employee questionnaire (for Mirador & non-Mirador employees) in
12	VP8-12 Quantitative Employment.xlsx	Report on number of employees and salaries by employee type
13	VP8-13 Dropoff Data.xlsx	Data to substantiate 2017 monitored dropoff figures.
14	VP8-14 Transportation Summary.xls	Report on mileage for all vehicles used during the 8th Verification Period
15	VP8-15 Stakeholder Comment Log.xls	Stakeholder Feedback Log - Continuous Input & Grievance Mechanism