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TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

RELATED SUPPORT – **TEMPLATE GUIDE Monitoring Report v. 1.1**

This document contains the following Sections

Key Project Information

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KEY PROJECT INFORMATION

Programme of Activity Information

GS ID of Programme	GS1988
Title of Programme	Proyecto Mirador Enhanced Distribution of Improved Cookstoves in Latin America
Version of POA-DD applicable to this monitoring report	Version 06 (date: 25/03/2016)
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	Proyecto Mirador Enhanced Distribution of Improved Cookstoves in Latin America – Second VPA for Distribution of Dos por Tres Cookstoves in Guatemala, GS 10457

Key Project Information

GS ID (s) of Project (s)	GS 10457
Title of the project (s) covered by monitoring report	Proyecto Mirador Enhanced Distribution of Improved Cookstoves in Latin America – Second VPA for Distribution of Dos por Tres Cookstoves in Guatemala
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	Version 5.6 (date: 09/03/2021)
Version number of the monitoring report	1.4
Completion date of the monitoring report	12/04/2022
Date of project design certification	02/11/2020
Date of Last Annual Report	30/11/2021
Monitoring period number	1 st Monitoring Period
Duration of this monitoring period	01/12/2019 to 30/11/2021
Project Representative	Esther Adams, Program Manager eadams@proyectomirador.org +1 (415) 925-1887
Host Country	Guatemala
Activity Requirements applied	<input checked="" type="checkbox"/> Community Services Activities <input type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> N/A
Methodology (ies) applied and version number	Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), Version 2.0
Product Requirements applied	<input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label <input type="checkbox"/> N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 13 Climate Action (mandatory)	Emission Reductions	14,409	VERs
SDG1 No Poverty	USD saved per week per household	2.59	USD
SDG1 No Poverty	Reduction in time spent collecting fuelwood	46%	%
SDG 2 Zero Hunger	Wood purchasers report they used the money saved to buy food	42%	%
SDG 3 Good Health and Well-Being	Reduction in personal exposure to PM2.5	47%	%
SDG 4 Quality Education	Annual training hours provided	238 (2020) 515 (2021)	Hours
SDG 5 Gender Equality	Satisfaction among stove beneficiaries	89%	%
SDG 5 Gender Equality	Stove users report improved cooking times	76%	%
SDG 5 Gender Equality	Mirador’s direct employees are women	25%	%
SDG 7 Affordable and Clean Energy	Reduction of PM2.5 emissions resulting from cookstove intervention	79%	%
SDG 8 Decent Work and Economic Growth	Jobs created	71	Number of jobs
SDG 8 Decent Work and Economic Growth	Job satisfaction rate	100%	%
SDG 15 Life on Land	Fraction of non-renewable biomass in the supply area	79.28%	%
SDG 15 Life on Land	Fuel saving Baseline fuel consumption Project fuel consumption	Pb,p,y 0.005212 Pb,y 0.014080, Pp,y 0.008867	t/household/day

Table 2 – Product Vintages

Start Dates	End Dates	Amount Achieved VERs
01/12/2019	31/12/2019	130
01/12/2020	31/12/2020	2,926
01/01/2021	30/11/2021	11,353

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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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 VVB 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 Second VPA under Mirador's PoA, under which Proyecto Mirador replaces the traditional, inefficient fogón biomass cookstove with the improved Dos por Tres plancha-style chimney cookstove in Guatemala. Since 2019 Proyecto Mirador has built more than 8,226 improved Dos por Tres cookstoves directly onsite in Guatemalan homes, providing economic and health benefits to over half a million people and creating sustainable local employment for 71 Guatemalans. By reducing fuelwood consumption by about half, the Dos por Tres addresses the problem of forest degradation while also improving health and providing a significant savings in time and/or money to the client.

Per FAR #1, as established at PoA CP2 renewal, PP shall carry out baseline surveys as and when institutional stoves are implemented. However, at this time, institutional stoves have not been implemented as a part of the project.

Following is a general description of the project's implementation and management structure.

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

Under the Second VPA, Proyecto Mirador's Dos por Tres improved cookstove (ICS) technology is implemented for household applications. The objective is to perpetuate and expand a successful improved cookstove project that utilizes carbon finance to provide a market based solution that addresses the problems of deforestation, indoor air pollution, global warming and slow economic development in the poor, rural communities of Guatemala.

The project monetizes certified carbon savings to accelerate the dissemination of fuel-efficient stoves in rural Guatemala where degraded conditions of forests, indoor air pollution and rural poverty exceed acceptable levels. As the researches indicate, more than half of the population is below the national poverty line, and 23% of the population lives in extreme poverty. Poverty among indigenous groups, which make up

more than 40% of the population, averages 79%, with 40% of the indigenous population living in extreme poverty. Nearly one-half of Guatemala's children under age five are chronically malnourished, one of the highest malnutrition rates in the world.¹

Guatemala ranks 96th out of 190 countries globally In terms of ease of doing business, and 176th out of 190 on the successful enforcement of contracts.² Despite these obstacles, including the COVID-19 pandemic and two devastating hurricanes that hit Central America³, Mirador has successfully installed more than 8,226 cookstoves in Guatemala in the past two years, created 4 thriving microenterprises and provided 28 local jobs to Guatemalans in areas where reliable employment is difficult to find. All of the components used to build the Dos por Tres, including the plancha (steel cooktop), chimney and ceramic firebox, are manufactured and sourced in Guatemala providing a boost to local economies.

96% of rural households in Guatemala use fuelwood for cooking⁴ and 91 percent of fuelwood-using families cook over a three-stone fire.⁵ Lower-income households are more dependent on wood because it is less costly than electricity or gas. The traditional *fogón* cookstove is in widespread use across Guatemala, especially in rural areas. Chronic exposure to smoke from inefficient biomass cookstoves causes respiratory illness such as asthma, emphysema, acute respiratory lung infections (ARLI) 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 reduced wood use by 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 Guatemala, 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, and yet are able to coinvest in a stove with materials they can easily acquire.

Mirador donates to each client the 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 Guatemala, creating local jobs through 5 material provider businesses. Beneficiaries contribute the remaining components, including cement, rebar, bricks, adobe blocks and wood ash, all of which are commonly available throughout Guatemala. 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 client 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-

1 https://www.cia.gov/library/publications/the-world-factbook/geos/print_gt.html

2 The World Bank, Economy Profile: Guatemala, in Doing Business 2020, <https://www.doingbusiness.org/content/dam/doingBusiness/country/g/guatemala/GTM-LITE.pdf>

3 <https://www.amnesty.org/es/latest/news/2020/12/devastating-impact-hurricanes-eta-iota-honduras/>

4 What Have We Learned about Household Biomass Cooking in Central America? (page 16), ESMAP, The World Bank, <https://documents1.worldbank.org/curated/en/197301468231876909/pdf/762220Revised00kstove0FINALFULLOREV.pdf>

5 Ibid

construction Community Meetings as well as the training brochure presented to each client at the time of installation. The brochure is provided for verification (see “VP1-08 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 client 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 (construction team leader) 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 half, 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 147, 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) and 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. Fourth, the chimney attachment has been modified to eliminate excess air circulation. 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: 13/05/2019

First Crediting Period: 13/05/2019 – 12/05/2024

1st Verification Period: 01/12/2019 – 30/11/2021

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 01/05/2009, and the expected operational lifetime of this VPA is expected to be 15 years (5

years x 3 crediting periods) according to the updated PoA provisions.

A.2. Location of project

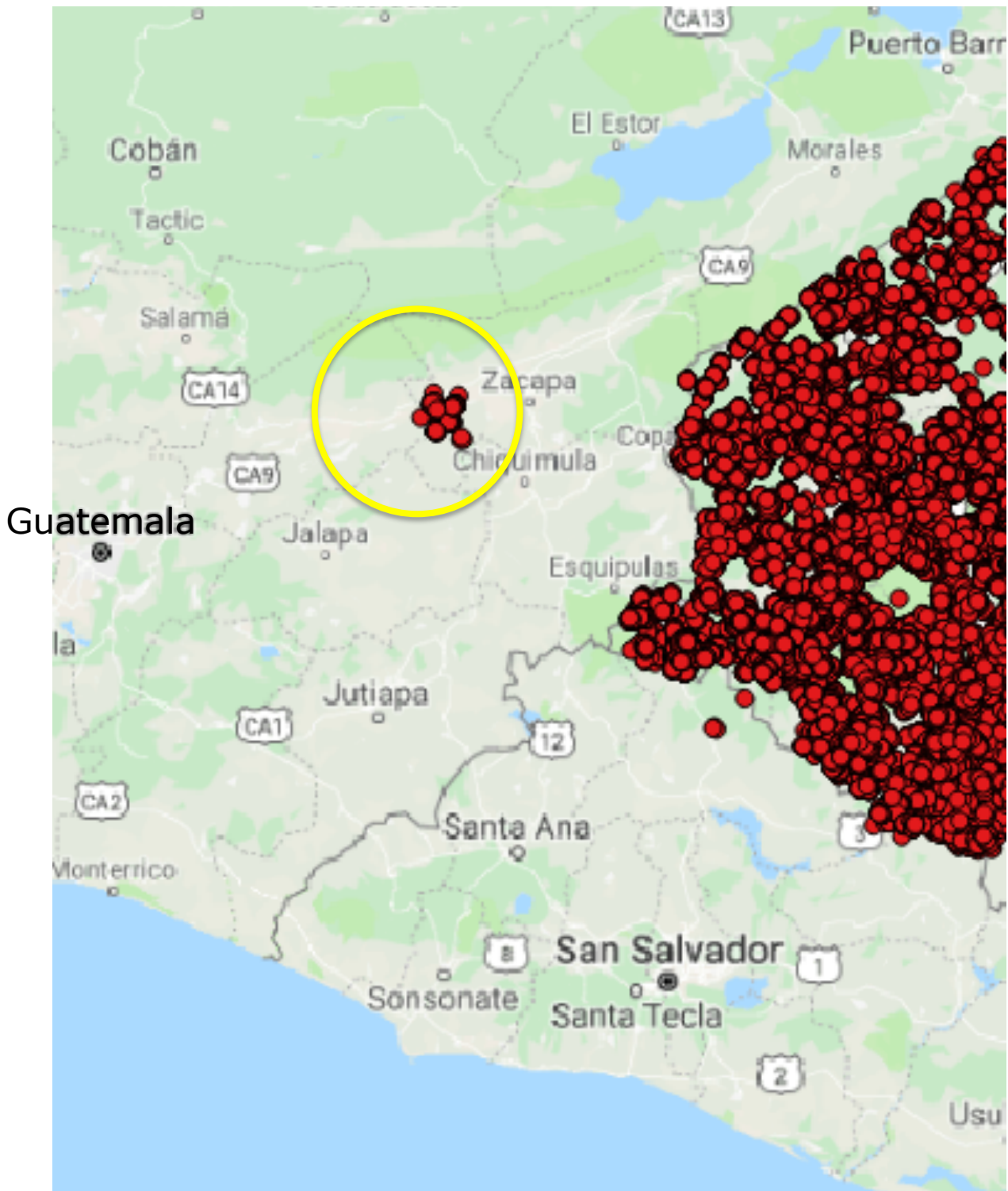
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i. Physical address

VPA project boundary is Guatemala, which is located within the geographical boundary of the registered PoA. Host party is Guatemala, a non-Annex 1 party to the 1992 UN Framework Convention on Climate Change. This VPA covers the construction of the Dos por Tres cookstove exclusively, and only as appropriate, wherever baseline conditions are similar and cluster definition is met. CME operations are headquartered Colonia Suyapa, Barrio Gualjoco in the municipality of Santa Bárbara, in Santa Bárbara Department, Honduras (14°56'49.1"N 88°14'23"W), with administrative offices in Greenbrae, California, USA, and operations in Guatemala.

ii. Map

GPS markings are kept for each stove installed and are available to the VVB for verification to ensure all stoves are within VPA project boundary. There is a unique identification for each stove included in the project activity.



Map with stove locations. The area circled indicates the location of stove built in Guatemala territory.

A.3. Reference of applied methodology

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- Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), Version 2.0
- Tool for the Demonstration and Assessment of Additionality, V 7.0.0

A.4. Crediting period of project

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Original Crediting period: 13/05/2019 – 12/05/2024
5 years

Updated Crediting period: 01/12/2019 - 30/11/2024
5 years

See details below in section B.2.3 about change in start date of crediting period.

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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VPA1 is fully implemented and its status is "Design certified". Since project inception 8,226 stoves have been installed across 4 Departments (provinces) in Guatemala. Based on a reported average of 3.78 people per household, this translates to 31,094 people served.

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 that is also registered as a 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 Bárbara, Honduras.

Mirador's co-founder and director, Doña Emilia Mendoza, has primary responsibility for the management team. She is assisted by a Director of Finance, a Director of International Expansion, and 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, Manager of Communication 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 lead stove teams that 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 30 November 2021, 36 Direct Employees in Honduras, 4 direct employees in USA, 21 Ejecutores and technicians in Guatemala (stove builders), 7 suppliers, 3 indirect employees (USA) and an additional 4 material provider businesses are operating under Proyecto Mirador's regimes in Guatemala.

The management system covered in the PoA had already been implemented at the time of crediting period renewal (01/05/2016) and all components are still in place as described in the renewal PoA, including:

- Roles and responsibilities: Management hierarchy remains unchanged since PoA renewal except for the addition of a Director of International Expansion whose work is to direct Mirador's expansion into Guatemala and Nicaragua.
- Training and capacity development: Structured training is ongoing and training structure remain unchanged since PoA renewal. Employee training data is provided in the attached file, "VP1-17 Training Data.xlsx."
- Technical review for inclusion of VPAs: The request for inclusion of the second and third VPAs in Guatemala and Nicaragua, respectively, took place on 10/10/2020.
- 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 prevalence of such cases and the results

are tabulated in Parameter ID 9 - Leakage. Substantiating data collected on Salesforce.com is provided in the attached file, "VP1-16 Double Counting Data.xlsx."

- 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. Periodically, Mirador's Honduran management meets with U.S. management in California to review systems and discuss further improvements to Mirador's operations. IT structures are reviewed frequently and revised as needed, including enhancements to SMS workflows and IT infrastructure.

B.1.1 Forward Action Requests

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FAR # 1: The verifying VVB shall provide an assessment of the inclusion criteria being at time of verification. The assessment can be included in the verification report as required by the Deviation request approval for the proposed project, dated 02/01/2020.

CME response: Information and details regarding the inclusion criteria have been made available to the VVB at the verification.

FAR # 2: The PP shall follow the CDM Project Standard for Programmes of Activities as required by the GS4GG requirement that "1.1.4 Unless otherwise specified in this document, Gold Standard PoAs follow the requirements listed in the CDM Project Standard for Programmes of Activities".

CME response: The CME has followed the CDM Project Standard for Programmes of Activities.

B.2. Post-Design Certification changes

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N/A

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

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The Drop-off rates for age group 2-3 years were calculated using stoves with an average age of 2.20 years because no older stoves were available at the time of the survey. The CME has adopted a conservative value of 20% based on the drop-off rate of the previous age group.

The specific fuel consumption for age group 2-3 years is based on the KPT results from VPA1 in Honduras since no stoves under that age were available at the time the KPTs were carried out. Timing has been a challenge during this verification period due to restrictions on importing the monitoring equipment and mobility constraints due to COVID-19 lockdown. Given the low number of stoves under this age group (303) and the ERs that represent these age groups (337 tCO₂e) the deviation applied is not considered critical nor material; it represents 1.9% of the total ERs.

B.2.2. Corrections

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N/A

B.2.3. Changes to start date of crediting period

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The VPA changes the start date of the crediting period as per the following details:

Original Crediting period: 13/05/2019 – 12/05/2024
5 years

Updated Crediting period: 01/12/2019 - 30/11/2024
5 years

The change is based on the 'GHG EMISSIONS REDUCTION & SEQUESTRATION PRODUCT REQUIREMENTS' (v2.0), paragraph 10.2.2 that states the following:

"10.2.2 | In case the start date of the Crediting Period is after date of Project Design Certification then it may be postponed in line with the requirements listed in paragraph 3.1.3 (b) and (c), of the Design Change requirements. (LUF – N/A)"

Paragraph 3.1.3 (b) of the Design Change requirements states the following:

- b. In case the start date of the Crediting Period is after the date of Project Design Certification, a certified project activity is not required to request approval for the changes summarised in the table below, but shall instead notify SustainCERT of the changes;

Table: 1

Change from registered crediting period start date	Project location	Requirements ⁶
Up to one year	All locations	No Justification and/or approval is required
Between 1-2 year	All locations	At the time of verification, the project should: <ul style="list-style-type: none"> i. Demonstrate that no changes have occurred to the project activity that would result in a less conservative baseline, or update the baseline using conservative data. ii. Demonstrate that substantive progress has been made by the project developer to start the project activity.

Based on the above-mentioned requirements and considering the change from the registered crediting period start date is less than one year, no justification and/or approval is required.

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

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N/A

B.2.5. Changes to project design of approved project

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N/A

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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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 through direct supervision by the Ejecutor as well as ongoing monitoring by Mirador's Director of Operations. Mirador's supervisory and electronic monitoring systems enable Mirador management to capture any maintenance issues or problems with stove use at the level of the household, so that the Ejecutor and Technician can take appropriate steps to correct user behavior. Ejecutores and Technicians are incentivized through higher construction allocations based on good construction 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 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 provides a critical advantage for Mirador. Recommendations from the beneficiaries as to functional improvements or problems are explored and researched, then implemented if appropriate. Furthermore, as Mirador expands into new areas, local government leaders and NGOs are informed and consulted on an ongoing basis. Stakeholder feedback is channelled 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.

Stakeholder feedback is either submitted directly by beneficiaries or gathered by Mirador's Supervisors and Ejecutores. In either case it is tracked electronically in Mirador's Electronic Feedback Log using Salesforce.com. All comments logged in the physical process book (kept in Mirador's office) are added to the electronic system as well. When relevant, stakeholder feedback is reviewed at weekly staff meetings and Mirador's responses are documented. In many cases stakeholder feedback results in follow-up visits to beneficiaries' homes by a specialized Mirador supervisor to address outstanding issues and repair any defects in construction. Responses and follow up are tracked appropriately. An export of the Electronic Feedback Log is provided to the VVB for review (see VP1-15 Stakeholder Comment Guatemala.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 it 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 client
- Government ID number of each client
- Unique serial number applied to each stove

The stove account record also provides the basis for all further interaction with the client. 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.

Equipment Specifications & Calibration

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

Item	Equipment	Manufacturer	Model	Capacity	Number Inventory
1	Balanza Digital de Mano	Dr meter	ES-PS01	110 lb/50 Kg	#01b
2	Balanza Digital de Mano	Dr meter	ES-PS01	110 lb/50 Kg	#02b
3	Balanza Digital de Mano	Dr meter	ES-PS01	110 lb/50 Kg	#03b
4	Probador de Humedad	DELMHORST	BD-2100	6%-40%	49278
5	Probador de Humedad	DELMHORST	BD-2100	6%-40%	51131
6	Cast Iron Grip (Masa certificada)	METTLER TOLEDO	M1-20 KG	20 Kg	U-0254

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 scales are calibrated by checking the accuracy of the readings using a certified Cast Iron Grip (Standard Mass weight)⁶ of 20 kg. A calibration procedure ('VP1-18 Scales calibration procedure') has been defined and Mirador staff have received a training on said procedure.⁷

GPS Marking Device (used to mark stove locations)

Stove technicians use handheld devices to mark each stove location. GPS is reset at each location prior to measurement. GPS locations are digitally uploaded and matched to correct stove accounts in the Salesforce.com database using an automated data transfer process involving TaroWorks and Mogli SMS software.

⁶ The certificates are available for the verifier and the Gold Standard upon request.

⁷ Educational videos are available for the verifier and the Gold Standard upon request.

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

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Please refer to Mirador's GS4GG Transition Annex, Sections A.1 and A.2, for explanatory notes on how each Parameter below is specifically tied to the Relevant SDG Indicators noted.

Relevant SDG Indicator	13 – Climate Action <ul style="list-style-type: none"> 13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
Data/parameter	ID 1 / EF_{fuel,CO_2}
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 (https://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	

Relevant SDG Indicator	13 – Climate Action <ul style="list-style-type: none"> 13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
Data/parameter	ID 2 / $EF_{fuel,nonCO_2,CH_4}$
Unit	tCO _{2e} /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 (https://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	

Relevant SDG Indicator	13 – Climate Action <ul style="list-style-type: none"> 13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
Data/parameter	ID 3 / E_{fuel,nonCO₂,N₂O}
Unit	tCO _{2e} /TJ
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 (https://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	

Relevant SDG Indicator	13 – Climate Action <ul style="list-style-type: none"> 13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
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	IPCC default for wood fuel
Value(s) applied)	0.0156 TJ/ton
Choice of data or measurement methods and procedures	NCV for Wood
Purpose of data	Calculation of baseline and project emissions
Additional comments	

Relevant SDG Indicator	SDG 13
Data/parameter	E _{F_{p,non co2}}
Unit	tCO ₂ /TJ
Description	Non-CO ₂ emission factor arising from use of fuels in project scenario

Source of data	GWP: IPCC AR4, https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf GWP: IPCC AR5, https://www.ipcc.ch/assessment-report/ar5/ CH ₄ and N ₂ O (GWP for CH ₄ = 28; GWP for N ₂ O = 265) Emission Factors: Emission Factor value provided in Table 2.5 of Chapter 2:Stationary Emissions (2006 IPCC Guidelines for National Greenhouse Gas Inventories). https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
Value(s) applied	8.692 (value applied for ERs achieved from 01/12/2019 to 31/12/2020) 9.460 (value applied for ERs achieved from 01/01/2021 onwards)
Choice of data or Measurement methods and procedures	$8.692 \text{ tCO}_2/\text{TJ} = (\text{Effuel,nonCO}_2,\text{CH}_4 \ 0.30 \text{ tCH}_4/\text{TJ} * 25 \text{ GWP CH}_4) + (\text{Effuel,nonCO}_2,\text{N}_2\text{O} \ 0.004 \text{ tN}_2\text{O}/\text{TJ} * 298 \text{ GWP N}_2\text{O})$ $9.46 \text{ tCO}_2/\text{TJ} = (\text{Effuel,nonCO}_2,\text{CH}_4 \ 0.30 \text{ tCH}_4/\text{TJ} * 28 \text{ GWP CH}_4) + (\text{Effuel,nonCO}_2,\text{N}_2\text{O} \ 0.004 \text{ tN}_2\text{O}/\text{TJ} * 265 \text{ GWP N}_2\text{O})$ and; Deemed valid by GS VER Methodology Determined as per IPCC default figures
Purpose of data	Determination of non-CO ₂ emission factor in baseline
Additional comment	This value has been updated based on the GS rule update 'APPLICABILITY OF GLOBAL WARMING POTENTIAL FOR GOLD STANDARD FOR THE GLOBAL GOALS PROJECTS PUBLICATION', dated 03/06/2021.

Relevant SDG Indicator	SDG 13
Data/parameter	EF _{b,non co2}
Unit	tCO ₂ /TJ
Description	Non-CO ₂ emission factor arising from use of fuels in baseline scenario
Source of data	GWP: IPCC AR4, https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf GWP: IPCC AR5, https://www.ipcc.ch/assessment-report/ar5/ CH ₄ and N ₂ O (GWP for CH ₄ = 28; GWP for N ₂ O = 265) Emission Factors: Emission Factor value provided in Table 2.5 of Chapter 2:Stationary Emissions (2006 IPCC Guidelines for National Greenhouse Gas Inventories). https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
Value(s) applied	8.692 (value applied for ERs achieved from 01/12/2019 to 31/12/2020)

	9.460 (value applied fro ERs achieved from 01/10/2021 onwards)
Choice of data or Measurement methods and procedures	<p>8.692 tCO₂/TJ = (E_{fuel,nonCO₂,CH₄} 0.30 tCH₄/TJ * 25 GWP CH₄) + (E_{fuel,nonCO₂,N₂O} 0.004 tN₂O/TJ * 298 GWP N₂O)</p> <p>9.46 tCO₂/TJ = (E_{fuel,nonCO₂,CH₄} 0.30 tCH₄/TJ * 28 GWP CH₄) + (E_{fuel,nonCO₂,N₂O} 0.004 tN₂O/TJ * 265 GWP N₂O) and;</p> <p>Deemed valid by GS VER Methodology Determined as per IPCC default figures</p>
Purpose of data	Determination of non-CO ₂ emission factor in baseline
Additional comment	This value has been updated based on the GS rule update 'APPLICABILITY OF GLOBAL WARMING POTENTIAL FOR GOLD STANDARD FOR THE GLOBAL GOALS PROJECTS PUBLICATION', dated 03/06/2021.

Relevant SDG Indicator	15 – Life on Land 15.2.1 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation
Data/parameter:	ID 5 / fNRB,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	fNRB Calculation Guatemala V3 13 Feb 2021 CONFIDENTIAL Comparison GS UPDATED.xls
Value(s) of monitored parameter	79.28%
Monitoring equipment	N/A
Measuring/reading/recording frequency	Fixed, can be updated at PP's option as allowed in Section III.1, item f, of the TPDDTEC.
Calculation method (if applicable)	Technologies and Practices to Displace Decentralized Thermal Energy Consumption" (TPDDTEC) version 2.0
QA/QC procedures	Assessment shall be conducted by a reputable carbon consultant.
Purpose of data	Calculation of project emissions
Additional comments	

D.2 Data and parameters monitored

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Please refer to Mirador’s GS4GG Transition Annex, Sections A.1 and A.2, for explanatory notes on how each Parameter below is specifically tied to the Relevant SDG Indicators noted.

Relevant SDG Indicator	13 – Climate Action <ul style="list-style-type: none"> 13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
Data/parameter	ID 6 / Np,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	1,908,777 days (Based on 7,766 total stoves in operation at the end of the 1st Verification Period)
Monitoring equipment	Smartphones; Salesforce.com installation database
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	The value of Np,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. The figure reported above represents an average of the monthly values for Np,y reported in the ER Calculations during VP1 (J57:AG57)
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: <ul style="list-style-type: none"> - Date of installation - Location of installation - Model/type of stove installed - Model of use prior to installation of ICS - Name of client - Government ID number of client - Unique serial number applied to each stove
Purpose of data	Calculate emission reductions and assess sustainability
Additional comments	A sales record including all stoves built during the 1st Verification Period is exported from Salesforce and provided in the attached "VP1-06 Sales Record.xlsx." A

	<p>monthly summary is provided in the attached “VP1-07 Stoves Installed by Month.”</p> <p>19% of our clients report that there are days in the year when the stove is not in use. Of those 19%, the average number of days per year when the stove is not in use is 1.77 days. When averaged over the entire survey population, there is 0.005 day per year per household when the stove is not in use; thus, adjustments have not been made to the ER Calculations to account for seasonal variation. (Substantiation is provided in the attached “VP1-09 Leakage Sustainability Results Guatemala”)</p>
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Relevant SDG Indicator	<p>15 – Life on Land</p> <ul style="list-style-type: none"> 15.2.1 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation
Data/parameter	ID 7 / Pp,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	119 Kitchen Performance Tests (22 baseline and 97 project scenario) performed in 2021 in multiple villages across 4 municipalities in 4 Departments (provinces) in Guatemala. (See “VP1-02 KPT Data.xlsx,” “Location” worksheet.) For weighted average calculation see ER Calculations spreadsheet, “Assumption” worksheet, Cell H35.
Value(s) of monitored parameter	0.005212 t/household/day
Monitoring equipment	<p>Compact digital hanging scale</p> <p>Zipper polyethylene bag</p> <p>Moisture meter with digital readout</p> <p>The details of the equipment used are provide above on section C, page 15.</p>
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 "VP1-02 KPT Data.xlsx" and parameter flows to "VP1-01 ER Calculations.xlsx," "Assumption" worksheet, Cell H35. This value Fuel saving (P,b,p,y 0.005212) is derived from the difference between Baseline fuel consumption (Pb,y 0.014080) and Project fuel (Pp,y 0.08867)
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Relevant SDG Indicator	13 – Climate Action <ul style="list-style-type: none"> 13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population 												
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	2,798 usage surveys collected in 218 villages during the 1st Verification by Mirador supervisors on handheld devices and input directly into the Salesforce.com monitoring database, then exported and tabulated in the attachment "VP1-13 Dropoff Data.xlsx."												
Value(s) of monitored parameter	The following monitored <i>cumulative</i> abandonment rates are applied for the 1st Verification Period: <table style="margin-left: 40px;"> <tr> <td>Year 0_1</td> <td>11.91%</td> </tr> <tr> <td>Year 1_2</td> <td>19.84%</td> </tr> <tr> <td>Year 2_3</td> <td>[10.00%]⁸</td> </tr> </table> The average age of stove at the time of the survey for each age group is as follows: <table style="margin-left: 40px;"> <tr> <td>Year 0_1</td> <td>0.50 years</td> </tr> <tr> <td>Year 1_2</td> <td>1.50 years</td> </tr> <tr> <td>Year 2_3</td> <td>2.20⁹ years</td> </tr> </table>	Year 0_1	11.91%	Year 1_2	19.84%	Year 2_3	[10.00%] ⁸	Year 0_1	0.50 years	Year 1_2	1.50 years	Year 2_3	2.20 ⁹ years
Year 0_1	11.91%												
Year 1_2	19.84%												
Year 2_3	[10.00%] ⁸												
Year 0_1	0.50 years												
Year 1_2	1.50 years												
Year 2_3	2.20 ⁹ years												
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 tracked using Salesforce.com database.												

⁸ The actual value monitored is 1.82% (see file 'VP1-13 Dropoff Data Rev.xlsx', tab 'SUMMARY Avg.', cell 'C10'); however, a value of 10% is adopted in order to align with 'GS Requirements and Guidelines for carrying out usage surveys for projects implementing improved cooking devices' that allows the project with Level B. Good Practice Monitoring Requirements to claim up to maximum 90%.

⁹ The minimum required age (2.5 years) was not reached for stoves under this groups at the time when drop-off surveys were carried out.

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 "VP1-13 Dropoff Data.xlsx."

Relevant SDG Indicator	13 – Climate Action <ul style="list-style-type: none"> 13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
Data/parameter	ID 9 / LEp,y
Unit	%
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	332 Leakage and Sustainability Surveys collected by Mirador supervisors in the 1st verification period across 81 villages in 20 Departments (provinces) of Guatemala.
Value(s) of monitored parameter	777 tonnes (5%)
Monitoring equipment	Surveys are taken onsite via handheld device and tracked using Salesforce.com database.
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	<p>(1) Leakage due to the replacement of efficient household heating sources was determined to be zero. Out of 213 respondents, zero answered that they use their Dos por Tres to heat the home outside of regular cooking activity.</p> <p>(2) Leakage due to the continued presence of a baseline stove was determined as follows:</p> <ul style="list-style-type: none"> Multiply the % of homes that have a <i>fogón</i> (29%) by the net stoves in operation, being the total stoves in the population for which ERs are being claimed, net of abandonment (7,766: see ER Sheet, cell AG53), which returns a value of 2,252 households affected. Reduce 2,252 according to the percent of total cooktime during which the <i>fogón</i> is in use in those households (11%: see Leakage Sustainability Results, "Summary" sheet, Cell G20), resulting in a value of 247. This is the number of cookstove equivalents for which emissions are not reduced. Multiply 247 (cookstove equivalents) by the annualized average of 2.90 ERs/stove (see ER Sheet, Row 70) = 719, the number of tonnes lost due to the presence of the auxiliary stove. ER claims are directly discounted by the absolute figure of 719 (see ER Sheet, cell AG74). <p>(3) Double counting was determined as follows:</p>

	<ul style="list-style-type: none"> Count the total number of households surveyed for the presence of another ICS between November 2019-November 2021: 8,441 Count the total number of households surveyed in which another ICS was present in the household: 22 Divide these two figures to determine the ratio of households in which another ICS is present: 0.26% Multiply 0.26% by the net stoves in operation, being the total stoves in the population for which ERs are being claimed, net of abandonment (7,766: see ER Sheet, cell AG53), which returns a value of 20 households affected. Multiply 20 households by the annualized average of 2.90 ERs/stove (see ER Sheet, cell AG70) = 59, the number of tonnes lost due to the presence of the auxiliary stove. ER claims are directly discounted by the absolute figure of 59 (see ER Sheet, cell AG76). <p>Considering the sources of leakage identified above, including discounts to prevent double counting, total leakage for the 1st Verification Period is 778 VERs, which equates to 5% of gross ERs (see ER Sheet, cell AG88).</p>
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 "VP1-09 Leakage Sustainability Results.xlsx"

Relevant SDG Indicator	13 – Climate Action <ul style="list-style-type: none"> 13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
Data/parameter	ID 10 / LEp,y – Leakage due to Transportation
Unit	%
Description	Assess leakage due to transportation
Measured/calculated/default	Measured
Source of data	Mileage records; transportation and maintenance records maintained and tabulated by the Assistant to the Director of Operations during the course of the 1st Verification, including all vehicle types in use by the project at all levels (large trucks, light trucks and motorcycles).
Value(s) of monitored parameter	0.38%
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)	<p>A standard online carbon calculator is used to calculate the total CO₂ 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.</p> <p>Transportation records for all Mirador vehicles are tabulated in the attached "VP1-14 Transportation Summary.xlsx" showing Mirador vehicles collectively drove 126,617 km (or 78,676 miles) during the 1st Verification Period. Mileage was recorded for 3 vehicle types (motorcycles, light pickups and delivery trucks) and emissions were assessed accordingly. Altogether the project emitted 54.92 tonnes of CO₂ due to transportation during the 1st Verification Period (see Cell E3, Summary sheet). That figure equates to 0.38% of the total emissions claimed, so it is disregarded as <i>de minimis</i>. (Source: http://www.nativeenergy.com/travel.html).</p>
QA/QC procedures	Vehicle odometer checks at each instance of reporting
Purpose of data	Calculation of project emissions
Additional comments	It should be noted that: (1) such emissions also occur in the baseline scenario, and the consolidation of transit routes in the project scenario increases transportation efficiency relative to the baseline scenario, in which parts are often procured individually; and (2) due to the reduction in fuelwood use, the project is also expected to result in reduced leakage emissions due to the reduced need for transportation of fuel.

Relevant SDG Indicator	<p>7 – Affordable and Clean Energy</p> <ul style="list-style-type: none"> 7.3.1 Energy intensity measured in terms of primary energy and GDP
Data/parameter	ID 11 / % reduction in release of PM2.5
Unit	%
Description	Measurement of the reduction of PM2.5 emissions resulting from cookstove intervention.
Measured/calculated/default	Calculated
Source of data	McCarty, Nordica & Still, Dean, "Results of Testing the Overlook Foundation Justa Stoves Including the '2 By 3' Stove: Fuel Use and Carbon/CO _{2eq} Savings" (2009)
Value(s) applied	79%
Choice of data or Measurement methods and procedures	The Water Boiling Test (WBT) was used to determine relative PM2.5 emissions in the baseline vs. project stove, as measured by Aprovecho's Research Center's commercially available Portable Emissions Measurement System (PEMS), in which real-time emissions of carbon dioxide (CO ₂), carbon monoxide (CO) and particulate matter (PMTSP) are recorded.
Purpose of data	Assess sustainability

Additional comment	Due to the cost and complexity of such studies, PP will maintain original monitored figures unless it is determined that baseline or project conditions have materially changed or testing methodologies require reassessment.
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Relevant SDG Indicator	3 – Good Health and Well Being <ul style="list-style-type: none"> 3.9.1 Mortality rate attributed to household and ambient air pollution
Data/parameter	ID 12 / % reduction in personal exposure to PM2.5
Unit	%
Description	Measurement of the reduction of personal exposure to PM2.5 (as opposed to the overall reduction to PM2.5) resulting from cookstove intervention.
Source of data	Lefebvre, Olivier, "Health Impact of Proyecto Mirador Dos por Tres Stove" (2018)
Value(s) applied	47%
Choice of data or Measurement methods and procedures	Exposure to PM2.5 was measured in real-life control and intervention households using a the HAPEx Nano light scattering nephelometer. This device provides real time readings on PM2.5 and takes a new measurement every minute. It was worn by study participants in control and intervention groups during a 48-hour period.
Purpose of data	Assess sustainability
Additional comment	Due to the cost and complexity of such studies, PP will maintain original monitored figures unless it is determined that baseline or project conditions have materially changed or testing methodologies and/or assessment equipment have improved, in which case PP may opt to further assess the parameter.

Relevant SDG Indicator	1 – No Poverty <ul style="list-style-type: none"> 1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
Data/parameter	ID 13 / Time saved collecting fuelwood
Unit	Hours/week
Description	For clients who collect their own wood, PP will monitor how much time they have saved, and how they invest the time saved.
Measured/calculated/default	Calculated
Source of data	332 Leakage and Sustainability Surveys collected by Mirador supervisors in the 1 st verification period in multiple villages across 81 villages in 20 Departments (provinces) of Honduras.
Value(s) of monitored parameter	5.06 (a reduction of 46%)

Monitoring equipment	Surveys are taken onsite via handheld device and tracked using Salesforce.com database.
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	Subtract average time spent collecting wood in the project scenario from average time spent collecting wood in baseline scenario.
QA/QC procedures	Surveys are taken onsite, results are corroborated by visual inspection and tracked using Salesforce.com database.
Purpose of data	Assess sustainability
Additional comments	<i>Cross-reference to GS v2.2 documentation: ID 12 – Livelihood of the poor; ID 13 – Human & Institutional Capacity</i>

Relevant SDG Indicator	1 – No Poverty <ul style="list-style-type: none"> 1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
Data/parameter	ID 14 / Money saved purchasing fuelwood
Unit	US Dollars
Description	For clients who purchase fuelwood, PP will monitor how much money clients save due to the reduction in fuelwood consumption and track how the saved funds are spent.
Measured/calculated/default	Calculated
Source of data	332 Leakage and Sustainability Surveys collected by Mirador supervisors in the 1st verification period in multiple villages across 81 villages in 20 Departments (provinces) of Guatemala.
Value(s) of monitored parameter	US\$ 2.59 (62 Honduran Lempiras ^{10 11}) per week per HH, a reduction of 49%
Monitoring equipment	Surveys are taken onsite via handheld device and tracked using Salesforce.com database.
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	Subtract average money spent purchasing wood in the project scenario from average money spent purchasing wood in baseline scenario.
QA/QC procedures	Surveys are taken onsite, results are corroborated by visual inspection and tracked using Salesforce.com database.
Purpose of data	Assess sustainability

¹⁰ Base on Exchange rate 23.85 Lempiras per USD.

¹¹ Savings converted from Guatemalan Quetzal to Honduran Lempiras, then, converted to USD because reporting is managed at Honduras office with the accounting in Lempiras.

Additional comments	<i>Cross-reference to GS v2.2 documentation: ID 12 – Livelihood of the poor; ID 13 – Human & Institutional Capacity</i>
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Relevant SDG Indicator	2 – Zero Hunger <ul style="list-style-type: none"> 2.1.1 Prevalence of undernourishment
Data/parameter	ID 15 / % of people reporting they used money saved purchasing fuelwood to buy food
Unit	%
Description	For clients who report saving money due to the reduction in fuelwood purchased, PP will monitor how the saved funds are spent.
Measured/calculated/default	Measured
Source of data	332 Leakage and Sustainability Surveys collected by Mirador supervisors in the 1st verification period in multiple villages across 81 villages in 20 Departments (provinces) of Guatemala.
Value(s) of monitored parameter	42%
Monitoring equipment	Surveys are taken onsite via handheld device and tracked using Salesforce.com database.
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	N/A
QA/QC procedures	Surveys are taken onsite, results are corroborated by visual inspection and tracked using Salesforce.com database.
Purpose of data	Assess sustainability
Additional comments	See Parameters ID 13 and ID 14 for qualitative data showing savings of time and money. While direct monetary savings is the monitored parameter for SDG 2, it should be noted that time savings (for those who collect their fuelwood) can also translate to higher income, if saved time is dedicated to work that generates income. <i>Cross-reference to GS v2.2 documentation: ID 12 – Livelihood of the poor; ID 13 – Human & Institutional Capacity</i> <i>Cross-reference to GS v2.2 documentation: ID 12 – Livelihood of the poor; ID 13 – Human & Institutional Capacity</i>

Relevant SDG Indicator	7 – Affordable and Clean Energy <ul style="list-style-type: none"> 7.3.1 Energy intensity measured in terms of primary energy and GDP
Data/parameter	ID 16 / % of households that report the air inside the home is cleaner
Unit	%
Description	Households are surveyed to determine if they report the air is cleaner after installation of the Mirador stove.

Measured/calculated/default	Measured
Source of data	332 Leakage and Sustainability Surveys collected by Mirador supervisors in the 1st verification period in multiple villages across 81 villages in 20 Departments (provinces) of Honduras.
Value(s) of monitored parameter	99%
Monitoring equipment	Surveys are taken onsite via handheld device and tracked using Salesforce.com database.
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	N/A
QA/QC procedures	Surveys are taken onsite, results are corroborated by visual inspection and tracked using Salesforce.com database.
Purpose of data	Assess sustainability
Additional comments	<i>Cross-reference to GS v2.2 documentation: ID 11 – Air Quality</i>

Relevant SDG Indicator	4 – Quality Education <ul style="list-style-type: none"> 4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex
Data/parameter	ID 17 / Training hours provided per year
Unit	Hours/year
Description	Demonstrate the transfer of useful and marketable job skills to local direct and indirect employees through training records.
Measured/calculated/default	Measured
Source of data	Human resource training records, provided by Director of Human Resources (see “VP1-12 Training Data Guatemala.xlsx”)
Value(s) of monitored parameter	238 hours (2020) 515 hours (2021)
Monitoring equipment	N/A
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	N/A
QA/QC procedures	Human resources specialist tracks all hours spent by Mirador employees and associates in various types of training and/or certification programs.
Purpose of data	Assess sustainability
Additional comments	<i>Cross-reference to GS v2.2 documentation: ID 16 – Technology Transfer</i> The details of the training offered can be found in the files “VP1-17 Training Data Guatemala”. Some training sessions offered were carried out in common for the various VPAs .

Relevant SDG Indicator	5 – Gender Equality <ul style="list-style-type: none"> 5.5.2 Proportion of women in managerial positions
Data/parameter	ID 18 / Proportion of employees who are women
Unit	%
Description	Employment records showing the proportion of women employed, by job type
Measured/calculated/default	Measured
Source of data	Employment records provided by Director of Human Resources (see “VP1-12 Quantitative Employment.xlsx” – “Mujeres” worksheet).
Value(s) of monitored parameter	25% (direct employees) 20% (overall, including all field personnel)
Monitoring equipment	N/A
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	N/A
QA/QC procedures	Human resource specialist maintains ongoing log of direct and indirect employees by employee type
Purpose of data	Assess sustainability
Additional comments	<p>While the gender balance of Mirador’s managerial and office positions is rather even, despite sincere efforts it is extremely difficult to find women who are willing to fill stove construction jobs—partly because it is physically very taxing, but especially because it involves long periods of time away from home and family. We are continually striving to find ways to creatively address this issue.</p> <p><i>Cross-reference to GS v2.2 documentation: ID 15 – Quantitative Employment and Income Generation</i></p>

Relevant SDG Indicator	5 – Gender Equality <ul style="list-style-type: none"> 5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women’s empowerment
Data/parameter	ID 19 / Improvement in Cooking Times
Unit	%
Description	Qualitative surveys to determine if the Dos por Tres cooks faster, slower or the same
Measured/calculated/default	Measured
Source of data	332 Leakage and Sustainability Surveys collected by Mirador supervisors in the 1st verification period in multiple villages across 81 villages in 20 Departments (provinces) of Honduras.
Value(s) of monitored parameter	76%

Monitoring equipment	Surveys are taken onsite via handheld device and tracked using Salesforce.com database.
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	% of respondents that say the Dos por Tres cooks faster
QA/QC procedures	Surveys are taken onsite, results are corroborated by visual inspection and tracked using Salesforce.com database.
Purpose of data	Assess sustainability
Additional comments	<p>Reduced time spent cooking allows women to have more discretionary time that they can spend as they wish, rather than doing the cooking task assigned to them.</p> <p>Usage monitoring with SUMS devices installed for VPA1 in 2018 confirmed that the average cooking event performed on the Dos por Tres was 11% shorter (20 minutes) than the average cooking event performed on the traditional fogón.¹²</p>

Relevant SDG Indicator	<p>5 – Gender Equality</p> <ul style="list-style-type: none"> 5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women’s empowerment
Data/parameter	ID 20 / % of users who say there is something they don’t like about the stove
Unit	%
Description	Qualitative surveys to demonstrate the % of users who say there is something they don’t like about the stove
Measured/calculated/default	Measured
Source of data	332 Leakage and Sustainability Surveys collected by Mirador supervisors in the 1st verification period in multiple villages across 81 villages in 20 Departments (provinces) of Guatemala.
Value(s) of monitored parameter	<p>1.81% Requires too much maintenance</p> <p>0.30% Difficult to clean</p> <p>0.91% The plancha is not big enough</p> <p>1.21% The plancha is not flat</p> <p>2.72% it is difficult to light</p> <p>0.91% It is difficult to control the temperature</p> <p>2.42% Takes time to get hot</p> <p>2.42% The stove has cracks</p> <p>0.60% Don’t like to use small fuelwood</p> <p>0.32% Can’t cook some foods</p>

¹² Lefebvre, Olivier (Climate Solutions), “Health Impact of Proyecto Mirador Dos por Tres Stove” (2018)

Monitoring equipment	Surveys are taken onsite via handheld device and tracked using Salesforce.com database.
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	N/A
QA/QC procedures	Surveys are taken onsite, results are corroborated by visual inspection and tracked using Salesforce.com database.
Purpose of data	Assess sustainability
Additional comments	Women in Central America spend a large part of their time cooking. Mirador eases their burden by providing a stove that functions to their satisfaction.

Relevant SDG Indicator	8 – Decent Work and Economic Growth <ul style="list-style-type: none"> 8.8.2 Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status
Data/parameter	ID 21 / % of Mirador employees and microenterprises who report they are satisfied with their jobs
Unit	%
Description	Results of qualitative annual survey to employees showing job satisfaction
Measured/calculated/default	Measured
Source of data	Online survey administered by Director of Human Resources. Raw data for the employee survey is provided in the file "VP1-10 Employee Survey Export.xlsx," and the survey template is provided as "VP1-11 Employee Questionnaire.pdf."
Value(s) of monitored parameter	100%
Monitoring equipment	Annual qualitative survey administered electronically or on paper and tabulated electronically.
Measuring/reading/recording frequency	Annual
Calculation method (if applicable)	N/A
QA/QC procedures	Surveys are taken onsite, results are corroborated by visual inspection and tracked using Salesforce.com database.
Purpose of data	Assess sustainability
Additional comments	<i>Cross-reference to GS v2.2 documentation: ID 14 – Quality of Employment</i>

Relevant SDG Indicator	8 – Decent Work and Economic Growth <ul style="list-style-type: none"> 8.5.2 Unemployment rate, by sex, age and persons with disabilities
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Data/parameter	ID 22 / Quantitative employment by job type
Unit	Number of Employees
Description	Employment records showing the number of people employed by the project (direct and indirect)
Measured/calculated/default	Measured
Source of data	Employment records provided by Director of Human Resources (see "VP1-12 Quantitative Employment.xlsx" – "Empleados" worksheet).
Value(s) of monitored parameter	71
Monitoring equipment	N/A
Measuring/reading/recording frequency	Ongoing
Calculation method (if applicable)	N/A
QA/QC procedures	Human resource specialist maintains ongoing log of direct and indirect employees by employee type
Purpose of data	Assess sustainability
Additional comments	<i>Cross-reference to GS v2.2 documentation: ID 15 – Quantitative Employment and Income Generation</i>

Relevant SDG Indicator	13 – Climate Action <ul style="list-style-type: none"> 13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
Data/parameter	ID 23 / Tonnes of CO₂ reduced
Unit	mtCO ₂ e
Description	Number of tonnes of CO ₂ reduced in a given monitoring period
Measured/calculated/default	Measured
Source of data	Emission reduction calculations, as detailed and applied in the validated file "VP1-01 ER Calculations.xlsx."
Value(s) of monitored parameter	14,409
Monitoring equipment	N/A
Measuring/reading/recording frequency	Annual
Calculation method (if applicable)	Detailed in ER Calculations spreadsheet
QA/QC procedures	3 rd -party VVB verification; Sustain-Cert review
Purpose of data	Assess sustainability; calculation of baseline and project emissions
Additional comments	Further detail provided in Section E of this Monitoring Report

D.3. Comparison of monitored parameters with last monitoring period

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
Not applicable as this is the first monitoring period of the project.	N/A	N/A

D.4. Implementation of sampling plan

>>

A single sampling plan was applied to VPA2, and it has been consistently followed by this registered VPA. The sampling plan is noted below.

(a) *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 1st Verification Period.

(b) *Collected data*

Leakage and Sustainability Survey

During the 1st Verification Period 332 Leakage and Sustainability surveys were administered across 81 villages in 20 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. As such, 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 spectrum of project beneficiaries is represented. Thus, the sample group is representative of the entire target population.

For different stove age groups, households were selected at random from villages that are close to routes used to access villages in the regular follow-up visit schedule. 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, and proportional to the number of stoves under each age group. 80% of the surveys (2,234 in total) were taken in households with stoves >0.5 year and <1 year; 18% (19.84% (509 in total) were taken in households with stoves >1.5 years and <2 years; 2% of surveys (55 in total) were taken in households with stoves >2 years.

Usage Survey

Applicable Parameters: ID 8

Sample group was determined as follows:

The CME exported the stove database from Salesforce to Excel where the RANDBETWEEN function is applied, with the sample size represented by the variable 'n'. Based on the random numbers, the villages are selected as per their corresponding number according to their position in the list. If a random number is repeated, the second repeated number is excluded along with the corresponding village. Once the villages have been selected, a complete list of beneficiaries is generated showing all households, then households are chosen completely at random from the list.

The CME used to perform a usage survey on 5 homes within any given village and to survey as many as 15 villages for each group during the course of each year, in order to reach the minimum sample size of 30 per age group or higher whenever possible. For this verification, the assigned villages to visit from the random selection were those near or along the way from the supervisors' location. The restricted mobility due to COVID-19 lockdown forced the project to adopt this approach to define sampling and make the monitoring possible.

The approach followed aligns with the Multi-stage sampling approach from the CDM sampling guidelines, where samples are taken from cluster units as primary sampling. In this case the clusters are villages and the sampling units within the clusters are stoves.¹³ The multi-stage sampling has been expanded to two stages, the villages and the cooking devices.

The sample size used by the CME for each age group was larger than what would be required if the Multi-sampling approach was strictly followed as stated in the CDM sampling guidelines (22 samples per age group).¹⁴

Actual drop-off survey sample sizes for the 1st Verification Period are as follows:

Stove Age Group	# of Drop-off surveys	# of villages included	Minimum size achieved?
0_1 Years	2,234	178	Yes
1_2 Years	509	135	Yes
2_3 Years	55	5	Yes

The "Rule Update: Requirements and Guidelines for carrying out usage surveys for projects implementing improved cooking devices" was accounted for as follows:

The weighted average usage rate across the total stove population for which ERs are claimed is 87% (see "VP1-18 Usage Weighted Average Guatemala"). As this figure is below 90%, PP shall monitor in compliance with Level B – Good Practice. Accordingly, the requirements for both Level A and Level B are observed, as detailed below.

A. Mandatory Monitoring Requirements

Step 1. Defining stove use and non-use

¹³ Following the definition in Guideline Sampling and surveys for CDM project activities and programmes of activities Version 04.0, section 5.5. Multi-stage sampling, paragraph 22.

¹⁴ Please see file 'Multi-sampling approach demonstration VP1.xlsx'

Stove is considered out of use if the visual or verbal check reveals any of the following:

- The beneficiary states they have stopped using the stove
- The stove mouth, chimney or plancha have been removed or modified
- The chimney has deteriorated beyond the point of efficiency
- The stove is otherwise no longer reasonably intact as built
- The stove appears to be out of use (i.e., the stove is cold at the time survey is taken, and clothes/dishes/other household items are sitting on top of it, etc.)
- The beneficiary has moved out of the house
- Traditional cookstove or project cookstove other than the Dos por Tres is in primary use (note that minimal use of other stove types for isolated cooking tasks is factored into ER calculations as leakage)
- Ash is not present, indicating the stove has not been used

Step 2. Household Usage Survey

- Kitchen Observation – Mirador surveyors visit each household and interview the beneficiary in person.
- Interview with the primary cook – At each household visit, the primary cook is interviewed if present, verbal responses are corroborated by visual check and hand-on assessment of the cookstove, and stove stacking is accounted for when applicable.
- Photos of the cooking area – At each household visit, Mirador supervisors take a photo of the cook next to the Dos por Tres. Photos are stored in our Salesforce.com monitoring database and correlated to each household record such that the photos can be downloaded in whole or in part, with household data attached, at any time.
- GPS Coordinates – GPS location is noted and automatically entered into our Salesforce.com monitoring database at the time of each household visit.

Step 3. Verification Checks

- Rule update requires that the project developer telephone a randomly selected 5-10% of the surveyed households to verify that homes were visited by surveyors and the recorded responses are correct. While this may make sense for a smaller sample size, Mirador collected 2,798 usage surveys in the 1st VP, indicating we would be required to call between 140 and 279 households, which is not practical. Understanding that the spirit of this rule is to ensure our supervisors are performing their duties with accuracy, we have several safeguards in place to ensure this is the case.
 - Mirador’s IT Manager and Director of Supervisors track every supervisor by GPS tracking software that shows where each supervisor is at a given time, as well as maintains a permanent record of which households were visited and how long the supervisor spent in each home. This information is reviewed daily and supervisors are contacted if anything looks amiss.
 - When a home is closed, and thus a survey cannot be collected, it is marked as closed. When a home is open, a survey is collected. The GPS tracking software makes it is easy to tell if a supervisor has not spent enough time in an open household to perform a complete survey, thus protecting against false data collection.
 - Supervisors collect a GPS mark at each household which is tied to the survey record in Salesforce.com. Each survey record is in turn correlated with the main household record for each stove.
 - Supervisors perform repeat visits to each village, and typically a household is surveyed 3 times post-construction. If there are inconsistencies between data from one visit to the next, it is likely to be caught by a supervisor.
 - The sheer number of detailed, on-site usage surveys we conduct indicates a much higher level of attention to detail than most projects

are able to replicate. Talking with beneficiaries on the phone cannot provide the same assurance that the stove is in use, regardless of how beneficiaries respond.

B. Good Practice Monitoring Requirements

Field team training and supervision:

- Mirador supervisors undergo a 2-3 day intensive training workshop, plus a full month of training before they are allowed to collect surveys without another supervisor or manager present.
- Mirador maintains consistency by ensuring all supervisors are trained directly by the Director of Supervisors, using consistent training materials; and all supervisors are trained in use of the Salesforce.com monitoring system and use the same survey form.
- In Salesforce.com, the survey form itself ensures supervisors are not left to guess whether a stove is in use. Detailed questions are included and based on those answers, the system (based on predetermined rules) makes the decision as to whether or not the stove is in use. This is recorded automatically in a calculated field that is used for reporting abandonment to the Gold Standard.
- Mirador's Director of Supervisors and IT Manager work together to continually monitor and review field staff and provide re-training on data collection practices as necessary.

End-user Training and follow up visits:

- When it comes to beneficiary training, Mirador is a leader in the cookstove arena. As stated earlier in the Monitoring Report, "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."

Awareness campaign:

- Beneficiaries are informed of the benefits of proper use and maintenance at each pre-construction Community Meeting, then individually trained at construction, and again individually trained (and the maintenance process fully reviewed) at each subsequent supervisory visit.
- Each beneficiary receives a *Cinco* maintenance tool to perform the 5 steps needed to keep their stove in good order and functioning efficiently.
- Additionally, a Use and Maintenance brochure is left behind with each beneficiary, reminding them of the maintenance steps and use of the *Cinco* (see VP1-08 Training Brochure.pdf).
- All training and follow up visits are recorded permanently in our Salesforce.com database.

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 "VP1-03 KPT Data Sheet SPANISH.pdf" and "VP1-04 KPT Data Sheet ENGLISH Guatemala.pdf" show the actual data sheets used during the four-day KPT and "VP1-05 KPT Guidelines Guatemala.pdf" articulates the process that was observed. 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 10 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. The following table mirrors the sample size and geographic distribution specified in the VPA-DD:

Stove 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	

The following table shows how many KPTs are applied in the 1st 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 latest KPTs were performed in 6 villages across 4 departments. In the stove age groups for which emission reductions are being claimed, the KPT data now includes a total of 97 project scenario KPTs in 4 departments.

Stove Age Group	# of KPTs available in 1st VP	Statistical confidence satisfied? ¹⁵
0_1 Years	22	Yes
0_1 Years	30	Yes
1_2 Years	67	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

¹⁵ Confidence/precisión met for Comparisons of Dry wood use (kg/HH) baseline stove against project stove. Whenever 90/30 is not met, the lower bound is used.

stoves that are also built *in situ*. For the 1st Verification Period, Mirador reports a leakage factor of 5%.

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 client agree to destroy the old *fogón*, and Mirador monitors the presence or absence of a *fogón* on every follow-up visit.

During the 1st Verification Period 332 households were assessed for the presence of an auxiliary *fogón*. A traditional *fogón* was still present in 97 of households surveyed (29%). Among those households, the *fogón* was in use an average of 5.93 hours/week, whereas the Dos por Tres was in use 7.02 hours per day, 7 days a week (total 65.73 hours per week). Thus, the *fogón* was responsible for just 11% of total cooking times in 29% of households (precise calculation without respect to rounding error). 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 Guatemala (41% 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 (~3,600 stoves/year), we estimate 150 hectares of forest are protected annually as a result of Mirador's project activity.

(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 1st Verification Period 332 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 Dos por Tres. Of the respondents, zero answered that they use their Dos por Tres to heat the home outside of regular cooking activity.

(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 Dos por Tres if they are using a traditional *fogón* as their baseline stove. The Dos por Tres is built *in situ* and Mirador sends an Inspector to every household in advance of stove construction to assess its suitability to receive a Dos por Tres; 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.

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. It should be noted that in the baseline scenario a similar or greater amount of transportation would be required to provide labor and distribute materials for construction of the traditional *fogón*.

Usage

In 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 "VP1-13 Dropoff Data.xlsx." Cumulative abandonment rates (as provided in Parameter ID6) are applied in the document "VP1-01 ER Calculations.xlsx" and are in turn used to determine project technology-days.

Project Field Test

Fuelwood consumption data from 119, 4-day project KPTs is compiled and summarized in the document "VP1-02 KPT Data.xlsx." These project KPTs include 119 KPTs covering 6 stove age groups in 4 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.

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

Leakage and Sustainability Surveys

The validated PoA requires a minimum sample size of 100. During the 1st Verification Period 332 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 met or exceeded 100. The total sample size for all age groups exceeded 2,798.

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 "VP1-02 KPT Data.xlsx" (see worksheet "90-30 tests").

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

Leakage and Sustainability Surveys

During the 1st Verification Period 332 surveys were collected across 81 villages in 20 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, the CME followed a Multi-stage sampling approach by selecting randomly villages and users from said villages. Because the COVID-19 lockdown restricted mobility for this verification, the universe of villages from which the random sample was selected was confined to those near or along the way from the supervisors' location.

Project Field Test

Households from 4 separate villages in 4 Departments were included in the new data set 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 "VP1-02 KPT Data.xlsx."

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

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Formula of Money spent in fuelwood at baseline scenario:

Average Wood cost with Traditional stove per week¹⁶ = (15L*Users expending 10-20L + 25L* Users expending 21-30L + 35* Users expending 31-40L + 45* Users expending 41-50L + 55* Users expending 51-60L + 70* Users expending 61-80L + 90* Users expending 81-100L + 110* Users expending 101-120L + 135* Users expending 121-150L + 160* Users expending >150L)/ Total Responses

Data collected via surveys.

'L' stands for Lempiras.

Mid value of each range is used e.g. 15L for 10-20L range.

Formula of Time spent in fuelwood collection at baseline scenario:

Average Hours in week to collect wood at baseline = (1hr*Users expending 1hr + 2hrs*Users expending 2hr + 3hrs*Users expending 3hrs + 4hrs*Users expending 4hrs + 5hrs*Users expending 5hrs + 6hrs* Users expending 6hrs + 7hrs* Users expending 7hrs + 8hrs* Users expending 8hrs + 16hrs* Users expending 2days)/ Total Responses

8hrs = 1 day

16hrs = 2 days

SDG #1 – No Poverty

Absolute values are collected for time and money spent collecting fuelwood in the baseline scenario, as reported by stove beneficiaries.

No formula applied; saving money on fuelwood is not expected at baseline scenario.

SDG #2 – Zero Hunger

Only the people who have reported saving money on fuelwood (see SDG #1) are surveyed to find out if they used that money to buy food. Thus, a baseline value calculation is inapplicable and direct calculation is used for this SDG outcome (as described in E.3 below).

Value measured. For details on the measuring method please see the file

'ADALY_Report_Mirador_2018_10_17_v8.pdf'

SDG #3 – Good Health and Well-Being

In both the baseline and the project scenario, exposure to PM2.5 was measured using a light scattering nephelometer (HAPEX Nano). This device provides real time readings on PM2.5 and takes a new measurement every minute. It was worn by the study participant during a 48-hour period. This class of device required a field calibration performed with gravimetric samplers. A sub sample of the study participants wore the gravimetric sampler collocated with the HAPEX. The gravimetric sampler was comprised of a constant flow pump (AP Buck Libra Elite) and a size selective inlet SKC PME Impactor which selected only particulates smaller than 2.5 µm in diameter (PM2.5). The filters were weighed before and after the sampling.

No formula applied; no training expected at baseline scenario.

SDG #4 – Quality Education

In the absence of project activity Mirador's stove training would not be provided. Thus, baseline value is understood to be zero.

No formula applied; No employees expected at baseline scenario.

SDG #5 – Gender Equality

For Parameter ID 18 (Proportion of employees who are women), in the absence of project activity these jobs would not exist. Thus, baseline value is understood to be zero.

¹⁶ See file 'VP12-09 Leakage Sustainability Results.xlsx', Tab ' Summary', Columns U.

No formula applied; improvement in cooking time is not expected at baseline scenario. For Parameter ID 19 (Improvement in cooking times), qualitative values are collected for time spent cooking in the baseline scenario, as reported by stove beneficiaries.

No formula applied; not applicable for baseline stove. For Parameter ID 20 (% of users who say there is something they don't like about the stove), only Dos por Tres stove users are surveyed. Thus, a baseline value calculation is inapplicable and direct calculation is used for this SDG outcome (as described in E.3 below).

Value measured. For details on the measuring method please see the file 'Aprovecho 2x3 Report 042809.pdf'

SDG 7 – Affordable and Clean Energy

The Water Boiling Test (WBT) was used to determine relative PM2.5 emissions in both the baseline and project stove, as measured by Aprovecho's Research Center's commercially available Portable Emissions Measurement System (PEMS), in which real-time emissions of (PM) are recorded. Specific consumption is reported as a measure of the fuel used to boil (or simmer) one liter of water. Fuel use and emissions made to complete the WBT are reported as the average specific consumption (emissions) of cold and hot start plus simmer, multiplied by 5 Liters. The amount of particulate matter (PM) was measured as emitted to complete the WBT. All of the measured percentage reductions are significant at 95% confidence.

No formula applied; no employment satisfaction expected at baseline scenario.

SDG 8 – Decent Work and Economic Growth

For Parameter ID 21 (% of Mirador employees and microenterprises who report they are satisfied with their jobs), only Mirador project employees are surveyed. Thus, baseline value calculation is inapplicable.

For Parameter ID 22 (Quantitative employment), in the absence of project activity these jobs would not exist. Thus, baseline value is understood to be zero.

$$ER_y = \sum_{b,p} (N_{p,y} * U_{p,y} * P_{p,b,y} * NCV_{b, fuel} * (f_{NRB,b,y} * EF_{fuel, CO2} + EF_{fuel, nonCO2})) - \sum LE_{p,y}$$
 For baseline emissions ($P_{b,y}$) specific fuel consumption of fuel (tones/day) corresponds to the baselines scenario.

SDG #13 – Climate Action

Baseline values are defined as per the 2010 Fuelwood Consumption Study. Field results are adjusted to account for moisture variation and adult equivalent persons. Any lab testing involves tending to replicate stove use as would be done by cooks.

The KT 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.

During the KT it was found that households have a degree of typical fuel and stove-type mixing; however, during the KT only the primary fuel—woody biomass—was measured by measuring the amount of wood not used, 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.

A secondary baseline study was conducted in 2013 among 117 households to enhance the geographic spread of the baseline and test the validity of the 2010 results. Rob Bailis, PhD, of the Yale School of Forestry and Environmental Studies, performed the analysis and concluded the following:

The results show that baseline daily consumption was 10.6 kg of dry-wood per household (1.1 kg per person-meal) in 2010 and 10.9 kg of dry-wood per household (1.0 kg per person-meal) in 2013. These differences are insignificant and we can conclude that there has been no variation in baseline fuel

consumption in this time period. The results of the 2013 baseline study thus corroborated those of the 2010 study.

For more details about hot fNRB was calculated see file 'Berkeley Air NRB Analysis 2011.pdf
SDG 15 – Life on Land

For ID 5 – fNRB,b,y, baseline assessment focused on the fuel supply of Honduras, to determine the fraction of non-renewable biomass in the supply area, as described in the Gold Standard Methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption" (11/04/2011), Annex 1, Section A1.3, "NRB Assessment similar to approach of CDM methodology AMS-II.G. fNRB was calculated using the equation $fNRB = NRB / (NRB + DRB)$.

Daily Dry wood use per person-meal (kg/person-meal) = Average (Dry wood use per person-meal days 1 – 4 (kg/person-meal)) at baseline scenario with a traditional fogon.

For ID 7 / Pp,b,y, baseline and project household fuel consumption is measured in the same way, per Kitchen Performance Test (KPT) protocols. Fuel consumption is measured by weighing fuelwood over a 4-day period and moisture content is noted at each weighing. Also noted are the number of people by age group and gender who are eating meals in the household. Final data is expressed as per-capita daily fuel consumption.

E.2. Calculation of project value or estimation of project situation of each SDG Impact

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Formula of Money spent in fuelwood at project scenario:

Average Wood cost with *Dos por Tres* stove per week¹⁷ = (15L*Users expending 10-20L + 25L* Users expending 21-30L + 35* Users expending 31-40L + 45* Users expending 41-50L + 55* Users expending 51-60L + 70* Users expending 61-80L + 90* Users expending 81-100L + 110* Users expending 101-120L + 135* Users expending 121-150L + 160* Users expending >150L)/ Total Responses

Data collected via surveys.

'L' stands for Lempiras.

Mid value of each range is used e.g. 15L for 10-20L range.

Formula of Time spent in fuelwood collection at project scenario:

Average Hours in week to collect wood at project = (1hr*Users expending 1hr + 2hrs*Users expending 2hr + 3hrs*Users expending 3hrs + 4hrs*Users expending 4hrs + 5hrs*Users expending 5hrs + 6hrs* Users expending 6hrs + 7hrs* Users expending 7hrs + 8hrs* Users expending 8hrs + 16hrs* Users expending 2days)/ Total Responses

8hrs = 1 day

16hrs = 2 days

SDG #1 – No Poverty

Absolute values are collected for time and money spent collecting fuelwood in the project scenario, as reported by stove beneficiaries.

% of wood purchasers report they used the money saved to buy food = People how report to buy food with the money saved / Total responses

SDG #2 – Zero Hunger

Only the people who have reported saving money on fuelwood (see SDG #1) are surveyed to find out if they used that money to buy food. Thus, a project value calculation is inapplicable and direct calculation is used for this SDG outcome (as described in E.3 below).

Value measured. For details on the measuring method please see the file 'ADALY_Report_Mirador_2018_10_17_v8.pdf'

¹⁷ See file 'VP12-09 Leakage Sustainability Results.xlsx', Tab ' Summary', Columns V.

SDG #3 – Good Health and Well-Being

Please refer to the baseline description in Section E.1 above – baseline and project scenario values were measured in the same way.

Total training hours $y = \sum_{\text{Trainings}} (\text{Number of Trainings}_{y} * \text{Duration in Hours}_{\text{training},y})$ SDG #4 – Quality Education

Human Resources director keeps an ongoing log of all Mirador training activities, including the hours spent on training. Total training hours are tabulated annually.

% of employees that are women = Number of women / Total employees

SDG #5 – Gender Equality

For Parameter ID 18 (Proportion of employees who are women), Mirador’s Director of Human Resources keeps an ongoing log showing the number of Mirador employees (direct and indirect) by job type, as well as by gender. The number of employees who are women (direct and indirect) is specifically tracked and reported as an absolute figure.

For Parameter ID 19 (Improvement in cooking times), qualitative values are collected for time spent cooking in the project scenario, as reported by stove beneficiaries.

For Parameter ID 20 (% of users who say there is something they don’t like about the stove), Dos por Tres users are asked directly if there is anything they don’t like about the stove and “yes/no” values are tabulated. Thus, a project value calculation is inapplicable and direct calculation is used for this SDG outcome (as described in E.3 below).

Value measured. For details on the measuring method please see the file ‘Aprovecho 2x3 Report 042809.pdf’

SDG #7 – Affordable and Clean Energy

Please refer to the baseline description in Section E.1 above – baseline and project scenario values were measured in the same way.

% of Mirador employees and microenterprises Satisfied = Number of employees and microenterprises Satisfied / Total number of employees and microenterprises

SDG 8 – Decent Work and Economic Growth

For Parameter ID 21 (% of Mirador employees and microenterprises who report they are satisfied with their jobs), Mirador employees are surveyed to determine if they are satisfied with their jobs and “yes/no” values are tabulated.

For Parameter ID 22 (Quantitative employment), Director of Human Resources keeps an ongoing log showing the number of Mirador employees (direct and indirect) by job type. The number of employees is specifically tracked and reported as an absolute figure.

$ER_y = \sum_{b,p} (N_{p,y} * U_{p,y} * P_{p,b,y} * NCV_{b, fuel} * (f_{NRB,b,y} * EF_{fuel, CO2} + EF_{fuel, nonCO2})) - \sum LE_{p,y}$
For baseline emissions ($P_{p,y}$) specific fuel consumption of fuel (tones/day) corresponds to the project scenario.

SDG #13 – Climate Action

As per the provisions of the TPDDTEC v2, Section 7, Performance Field Tests and Calculation of Emission Reductions, project performance field tests (PFT) measure real, observed technology performance in the field. Consumption is measured with a representative sample of end users under the defined 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. In order to maximize accuracy and minimize volatility, emission reductions are calculated on the basis of mean fuelwood consumption per person-meal.

For more details about how fNRB was calculated see file ‘fNRB Calculation Guatemala V3 13 Feb 2021 CONFIDENTIAL Comparison GS UPDATED’

SDG #15 – Life on Land

For ID 5 – fNRB,b,y, project calculation is not applicable as fNRB is by definition a baseline value.

Daily Dry wood use per person-meal (kg/person-meal) = Average (Dry wood use per person-meal days 1 – 4 (kg/person-meal)) at project scenario with a Dos por Tres stove.

For ID 7 / Pp,b,y, please refer to the baseline description in Section E.1 above – baseline and project scenario values were measured in the same way.

E.3. Calculation of leakage

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The assessment of leakage includes:

No formula applied.

(1) Leakage due to the replacement of efficient household heating sources was determined to be zero. Out of 332 respondents, zero answered that they use their Dos por Tres to heat the home outside of regular cooking activity.

(2) Leakage due to the continued presence of a baseline stove was determined as follows:

- Multiply the % of homes that have a fogón (29%) by the net stoves in operation, being the total stoves in the population for which ERs are being claimed, net of abandonment (7,766: see ER Sheet, cell AG53), which returns a value of 2,252 households affected.
- Reduce 2,252 according to the percent of total cooking time during which the fogón is in use in those households (11%: see Leakage Sustainability Results, "Summary" sheet, Cell G20), resulting in a value of 247. This is the number of cookstove equivalents for which emissions are not reduced.
- Multiply 247 (cookstove equivalents) by the annualized average of 2.90 ERs/stove (see ER Sheet, Row 70) = 719, the number of tonnes lost due to the presence of the auxiliary stove. ER claims are directly discounted by the absolute figure of 719 (see ER Sheet, cell AG74).

(3) Double counting was determined as follows:

- Count the total number of households surveyed for the presence of another ICS between November 2019-November 2021: 8,441
- Count the total number of households surveyed in which another ICS was present in the household: 22
- Divide these two figures to determine the ratio of households in which another ICS is present: 0.26%
- Multiply 0.26% by the net stoves in operation, being the total stoves in the population for which ERs are being claimed, net of abandonment (7,766: see ER Sheet, cell AG53), which returns a value of 20 households affected.
- Multiply 20 households by the annualized average of 2.90 ERs/stove (see ER Sheet, Row 71) = 59, the number of tonnes lost due to the presence of the auxiliary stove. ER claims are directly discounted by the absolute figure of 59 (see ER Sheet, cell AG76).

Considering the sources of leakage identified above, including discounts to prevent double counting, total leakage for the 1st Verification Period is 778 VERs, which equates to 5% of gross ERs (see ER Sheet, cell AG88).

Additionally, the project assessed the leakage due to transportation including mileage records, transportation and maintenance records maintained and tabulated by the Assistant to the Director of Operations during the course of the 1st Verification, including all vehicle types in use by the project at all levels (large trucks, light trucks and motorcycles).

The leakage due to transportation resulted in 54.92 tCO₂e, which represents the 0.38% of the total ERs for this verification period. This is *de minimis* and is not deducted from the ERs calculations balance.

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emission Reductions	41,046	26,628 ¹⁸	14,409
1	USD saved per week per household	0 (Zero) No expected USD savings in baseline scenario. Average Fuelwood cost per week with traditional fogon is US \$5.32	Average Fuelwood cost per week with Dos por Tres stove is US \$2.73	2.59
1	Reduction in time spent collecting fuelwood	0 (Zero) No expected reduction in time spent in baseline scenario. Average time spent per week collecting fuelwood before Dos por Tres stove is 9.34 hr/week	Average time spent per week collecting fuelwood with Dos por Tres stove is 4.28 hr/week	46% (Time saved 5.06 hr/week)
2	Wood purchasers report they used the money saved to buy food	0 (Zero) No money is expected to be saved in baseline scenario	42%	42% ¹⁹
3	Reduction in personal exposure to PM2.5	0 (Zero) No expected reduction in baseline scenario. Exposure to PM2.5 in baseline scenario is 221 µg/m ³	Exposure in Project scenario is 117 µg/m ³	47%
4	Annual training hours provided	0 (Zero) No expected training in baseline scenario	238 (2020) 515 (2021) Hours Total 753	238 (2020) 515 (2021) Hours Total 753
5	Satisfaction among stove beneficiaries	0 (Zero) No satisfaction expected in the baseline scenario due to the absence of the dos por tres stove.	89%	89%

¹⁸ Including 778 tCO2 of leakage.

¹⁹ 33% of users reported using the money saved to pay electricity bills; 24% report using the money saved to buy 'other'.

5	Stove users report improved cooking times	0 (Zero) No improvement in cooking times in baseline scenario	76%	76%
5	Mirador's direct employees are women	0 (Zero) No employees in baseline scenario	25%	25%
7	Reduction of PM2.5 emissions resulting from cookstove intervention	17,631 PM (mg) emissions of the traditional fogon	3,658 PM (mg) emissions of the Dos por Tres	79%
8	Jobs created	0 (Zero) No Jobs expected in baseline scenario	71	71
8	Job satisfaction rate	0 (Zero) No Jobs expected in baseline scenario, therefore the satisfaction rate is zero.	100%	100%
15	Fraction of non-renewable biomass in the supply area	Not estimated at baseline scenario	69%	69%
15	Baseline and project household fuel consumption	P _{b,y} 0.014080	P _{p,y} 0.008867749	P _{b,p,y} 0.005212

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

With exception of SDG 13 Climate Action, no estimated values for the other SDG impacts were defined in the PDD, nor in the GS4GG Transition annex because the project was originally registered as stand-alone project under the GSv1.0, later upgraded to PoA under GSv2.0, and from there, transitioned to GS4GG. SDG impacts are defined in the transition annex (Mirador GS4GG Transition Annex v4 041219.pdf), but specific baseline and project estimates values are not included in said annex. However, since the baseline scenario has been defined as the use of a traditional fogon, the SDG positive impact is defined as null.

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ²⁰ achieved during this monitoring period
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²⁰ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

13 ²¹	Year 1 – 2,589 tCO ₂ e Year 2 – 10,001 tCO ₂ e Total – 12,590 tCO ₂ e	Year 1 – 2,748 ²² tCO ₂ e Year 2 – 12,439 ²³ tCO ₂ e Total – 14,409 tCO ₂ e ²⁴
1	USD\$ 3 saved per week per HH	2.59 ²⁵ saved per week per HH
1	Time saved collecting fuelwood: 2.02 Hours/week (a reduction of 56%)	Timed saved collecting fuelwood 5.06 hours/week, 46% ²⁶ time saved.
2	50% Wood purchasers report they used the money saved to buy food	42% Wood purchasers report they used the money saved to buy food
3	47% reduction in personal exposure to PM2.5 (The exposure to PM2.5 is reduced from 221 µg/m3 to 117 µg/m3)	47% reduction in personal exposure to PM2.5
4	346 training hours provided per year	238 hours (2020) 515 hours (2021) Total 753
5	99% (The project tests the level of satisfaction of the Dos por Tres stove by asking if there is anything users don't like about the Dos por Tres: 1% of users say there is something they don't like about the stove.	89% satisfaction among stove beneficiaries
5	96% Qualitative surveys to determine if the Dos por Tres cooks faster (e.g., more than one cooking pot can be used simultaneously along with tortillas).	76% Stove users report improved cooking time
5	Employment records showing the proportion of women employed by job type: 31% (direct employees)	25% Direct employees
7	79% reduction in release of PM2.5 (mg, 3,658)	79%reduction, 3,658 PM (mg) emissions of the traditional fogon
8	55 Jobs created	71 Jobs created
8	Results of qualitative annual survey to employees: 95% show job satisfaction	100% Job satisfaction rate
15	Baseline household fuel consumption 0.014080 t/household/day	Project household fuel consumption 0.008867749 t/household/day

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

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Although the PDD and GS4GG Transition Annex didn't include the ex-ante estimated values for the SDGs impact, for the present monitoring period, the approach followed to define the net impact follows the same assumptions and methods as in the previous verifications. The

²¹ Year 1 is from Dec 2019 -Nov 2020; Year 2 is from Dec 2020 to Nov 2021.

²² This corresponds to the first year (Dec 2019-Nov 2020). See ERs spreadsheet, tab ER sheet, cells J67:U67.

²³ This corresponds to the second year (Dec 2020-Nov 2021). See ERs spreadsheet, tab ER sheet, cells V67:AG67.

²⁴ ERs after discounting 778 tones of leakage.

²⁵ Average wood cost with a traditional fogon US\$ 5.32 per week vs. Average wood cost with a Dos por Tres stove US\$ 2.73. The expected saving in baseline scenario is zero.

²⁶ Average hours per week collecting wood with a traditional fogon 9.34 hours vs. Average hours per week collecting wood with a Dos por Tres stove 4.28 hours.

SDGs impact results are not anomalous as compared with the results reported in previous verifications as since the VPA was updated to the GS4GG version.

SDG Goal	Methodological approach for estimating SDG outcome defined in the PoA-DD
1 – No Poverty	<p>Monitoring approach:</p> <ul style="list-style-type: none"> • For clients who purchase fuelwood, PP will gather qualitative surveys to monitor how much money clients save due to the reduction in fuelwood consumption and track how the saved funds are spent. • For clients who collect their own wood, PP will monitor how much time they have saved, and how they invest their time (which often includes more time dedicated to work). <p>The same approach has been followed for the present monitoring period. As explained, this indicator is defined through the monitoring survey. No specific formula or calculation applied.</p>
2 – Zero Hunger	<p>Monitoring approach:</p> <ul style="list-style-type: none"> • For clients who purchase fuelwood, PP will gather qualitative surveys to monitor how much money clients save due to the reduction in fuelwood consumption and track how the saved funds are spent. For many families, this includes purchasing food. <p>The same approach has been followed for the present monitoring period. As explained, this indicator is defined through the monitoring survey. No specific formula or calculation applied.</p>
3 – Good Health and Well-Being	<p>Monitoring approach:</p> <ul style="list-style-type: none"> • Lab and field testing of baseline and project scenario stove types to quantify the reduction of harmful indoor pollution emissions of PM 2.5 and Carbon Monoxide (measurements include both ambient emissions and personal exposure).
4 – Quality Education	<p>Monitoring approach:</p> <ul style="list-style-type: none"> • Maintain detailed training records for all training provided to staff, contractors and technicians.
5 – Gender Equality	<p>Monitoring approach:</p> <ul style="list-style-type: none"> • Maintain records showing quantitative employment generated by the project, including a breakdown of the gender balance by job type. • Show that the stove provides women with more discretionary time by presenting the % time saved by using the Dos por Tres • Provide data to show that women are satisfied with their cookstove, thus easing their burden of difficulty. • Document the number of stoves built, keeping in mind that Mirador’s no-cash model enables women to receive a stove without having to ask for a spouse’s approval to spend household money—thus placing decision making power in the woman’s hands.
7 – Affordable and Clean Energy	<p>Monitoring approach:</p> <ul style="list-style-type: none"> • Lab and field testing of baseline and project scenario stove types to quantify the reduction of harmful indoor pollution emissions of PM 2.5 and Carbon Monoxide (measurements include both ambient emissions and personal exposure).
8 – Decent Work and Economic Growth	<p>Monitoring approach:</p> <ul style="list-style-type: none"> • Maintain records showing quantitative employment generated by the project, including Mirador’s direct employees and all related microenterprises. • Conduct employee surveys to assess job satisfaction and confirm alignment with work regulations.

13 – Climate Action	<ul style="list-style-type: none"> • Document and report reduction of GHGs through annual reporting of emission reduction calculations. • Monitor baseline and project scenario fuelwood consumption through 4-day Kitchen Performance Tests (KPTs) for each age group of stoves included, aggregating new data annually.
15 – Life on Land	<p>Monitoring approach:</p> <ul style="list-style-type: none"> • Monitor baseline and project scenario fuelwood consumption through 4-day Kitchen Performance Tests (KPTs) for each age group of stoves included, aggregating new data annually. A reduction in fuelwood consumption indicates mitigation of forest degradation. • Document and report reduction of GHGs through annual reporting of emission reduction calculations. • Assess the non-renewable fraction of the woody biomass harvested in the project collection area in the baseline scenario (fNRB) as required per TPDDTEC methodology

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

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For SDG 1 - ‘Time saved collecting fuelwood’, in proportion, there is no drastic difference between the values indicated in the PDD and the actual values (56% vs 48%). There is a difference in the estimated hours per week collecting wood with a traditional fogon in the PDD which was 3.29 and the actual value monitored 9.34 hours per week. The PDD’s value comes from the VPA 1 in Honduras, and was found that people invest more time in Guatemala to collect fuelwood. The monitoring survey asks for hours per week to collect wood before the Dos por Tres (baseline situation), therefore, the results can be considered ad hoc and representative of the baselines scenario. As mentioned, the proportion of time saves is coherent with the estimation and the actual fuel saving brought by the project.

For SDG 4 – ‘Training hours provided per year’, the increase can be explained by the fact the COVID-19 related safety training required more time than usual to ensure all project staff was aware of requirements and recommendations to lower risk. Also, during the COVID-19 lockdown the remote modality presented an opportunity to provide more training to project staff.

For SDG 5 – ‘Stove users report improved cooking time’. Since this is the first verification of the VPA, the difference of the actual value against the estimated value in the PDD (96% vs 76%) may be attributed to the learning curve of the technology. The PDD’s value comes from the VPA 1 in Honduras, which is a mature project. Despite the difference, it is clear that the improved cooking time is indeed a positive project impact.

For SDG 8 – ‘Jobs created’, Proyecto Mirador has included in Guatemala two groups of local ejecutores (stove builders) and 5 local suppliers, which is higher than the estimation made in the PDD. This explains the increase in jobs positions created. (50 jobs vs 71 jobs).

For SDG 13 – Emission Reductions. The difference can be explained due to the fact the Ex-ante ERs from the PDD were based on 5,790 stoves and the actual number of stoves are 8,464. For the Ex-ante ERs a conservative estimate of stoves to be installed was applied for December 2020 to November 2021. The CME was ultimately able to install more stoves than estimated.

SECTION F. SAFEGUARDS REPORTING

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No safeguarding principles added to the monitoring plan. There are no changes in the project implementation that require mitigation measures or different approaches to measure the project impact.

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

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During the 12th 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 follow up interactions were tracked appropriately. An export of the Electronic Feedback Log is provided to the VVB for review (see VP1-15 Stakeholder Comment Log.xlsx) and anonymously restated below.

English translations are provided below, in the original comments in Spanish can be found in the file ‘VP1-15 Stakeholder Comments.xls’.

Comment ID	Comment	Request	Form of Resolution	Mirador Response	Who responded	Solved 1=yes, 2=no
a0V5x00000JnRDY	My father-in-law lives in our house next to the kitchen, he breathed smoke and passed with a cough. Since they did the Dos por Tres the health of everyone in the house has improved	None	Supervisor visit	Thank the comment	Eliani Otoniel Claros	1
a0V5x00000JtXwC	I thank you for the stove that is excellent. I'm grateful.	None	Supervision Visit	Thank the comment	Karina Guerra	1
a0V5x00000JtXwH	I feel happy	None	Supervision Visit	Thank the opinion	Karina Guerra	1

a0V5x00000JtXwM	I feel happy because they have given me a stove	None	Supervision Visit	Thank you for your comment	Karina Guerra	1
a0V5x00000JtXwR	I feel very good using the Dos por Tres Stove because we save firewood and take advantage of doing several things at the same time.	None	Supervision Visit	Thank you for your opinion	Karina Guerra	1
a0V5x00000JtXwW	Happy and grateful to have obtained my stove. I totally recommend it, saving firewood is incredible, my children do not get coughs because there is no smoke.	None	Supervision Visit	Thank the comment	Karina Guerra	1
a0V5x00000JtXpQ	I feel happy with my stove because it saves firewood and doesn't smoke dishes. I cook well and I thank the Mirador Project	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000JtXpV	I am very grateful for my stove that saves wood, does not smoke and the dishes do not smoke.	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000JtXwX	I am happy with my stove that saves firewood, before I used more firewood and now I don't.	None	Supervision Visit	Thank the opinion	Karina Guerra	1
a0V5x00000JtXpa	I like it because it saves firewood and there is no smoke, it works well. I am happy because it is beautiful and I thank you.	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000JtXpf	I am grateful for having supported me with the Stove, it saves firewood. Thank you Mirador Project	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000JtXwb	I feel happy because the stove saves firewood	None	Supervision Visit	Thank the opinion	Karina Guerra	1
a0V5x00000JtXpk	Thank you Mirador Project for the Stove that uses less firewood and heats up a lot	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1

a0V5x00000JtXwD	I am grateful for this gift of great help to save firewood and especially to take care of our health.	None	Supervision Visit	Thank you for your opinion	Karina Guerra	1
a0V5x00000NR1IJ	It is very beautiful because it saves firewood and cooks very well.	None	Supervision Visit	Thank the comment	Karina Guerra	1
a0V5x00000NQytW	We appreciate the help of the Dos por Tres Stove, we take up less wood to cook.	None	Supervisory visit	Thank you for your comment	Hermes Eliel Rodriguez	1
a0V5x00000NQywW	I want to thank Proyecto Mirador for benefiting our health, we are very happy for the benefits of the stove	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000NQydo	We thank Proyecto Mirador for the help with the Dos por Tres Stove because it is very useful and saves firewood	None	Supervision Visit	Thank the opinion	Hermes Eliel Rodriguez	1
a0V5x00000NQz1a	We are grateful to the Project for having benefited from the wood-saving stoves.	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000NQz5D	We are grateful to the Mirador Project for the benefit of the stoves, which have been very useful in saving firewood and caring for the environment.	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000NR15P	The Mirador Project Dos por Tres Stove has been something very important and of great benefit since it saves firewood and time to cook.	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000NR17f	The Dos por Tres Stove is of great benefit to the community and is multipurpose	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000NR1ok	I feel very satisfied, I like it a lot because it is hot and it cooks without smoke.	None	Supervision Visit	Thank the comment	Karina Guerra	1
a0V5x00000NR1v7	I am very grateful for the support they	None	Supervision Visit	Thank the comment	Karina Guerra	1

	have given us as it is very beneficial.					
a0V5x00000NR0qp	We are very grateful to Proyecto Mirador for having taken into account our village for Dos por Tres stoves with them we save firewood, we take care of the environment and our health.	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000NR1DO	We thank Proyecto Mirador because it has given us a lot of help and we are very happy in our community.	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000NR1Eq	Many thanks to Proyecto Mirador for their support.	None	Supervision Visit	Thank the comment	Hermes Eliel Rodriguez	1
a0V5x00000NR25L	It is a great project the stove cooks well and without smoke	In the next program please always include us	Supervision Visit	Thank the suggestion	Karina Guerra	1
a0V5x00000NR25q	It is good that there are institutions that care about taking care of the environment and the health of families	None	Supervisory visit	Thank the opinion	Karina Guerra	1

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

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NA

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

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NA

Revision History

Version	Date	Remarks
1.1	14 October 2020	<p>Hyperlinked section summary to enable quick access to key sections</p> <p>Improved clarity on Key Project Information</p> <p>Section for POA monitoring</p> <p>Forward action request section</p> <p>Improved Clarity on SDG contribution/SDG Impact term used throughout</p> <p>Clarity on safeguard reporting</p> <p>Clarity on design changes</p> <p>Leakage section added for VER/CER projects</p> <p>Addition of Comparison of monitored parameters with last monitoring period</p> <p>Provision of an accompanying Guide to help the user understand detailed rules and requirements</p>
1.0	10 July 2017	Initial adoption