MONITORING REPORT

Proyecto Mirador
Enhanced distribution of efficient wood stoves in Honduras
GS Project No. 690

First monitoring period: 1 May 2009 – 30 November 2010

CONTENTS

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SECTION A. General description of the project activity

A.1. Brief description of the project activity: >>

1. Purpose of the project activity and the measures taken to reduce greenhouse gas emissions.

The objective of our project, Proyecto Mirador, is to create an organization that disseminates fuel-efficient stoves and that utilizes carbon finance to provide a market based financial solution to address the problems of deforestation, indoor air pollution, global warming and slow economic development in rural Honduras. Proyecto Mirador hopes to serve as a model for other stove projects by monetizing certified carbon savings and greatly accelerating the dissemination of fuel-efficient stoves in rural Central America where degraded conditions of forests, indoor air pollution and rural poverty exceed acceptable levels.

The original model La Justa stove was pioneered by the Aprovecho Research Lab and was engineered to burn hotter and use 1/2 to 1/3 the wood of traditional *fogon* stoves, thus reducing the time devoted to wood collection and/or money spent on wood. The La Justa also efficiently vents smoke outside of the house, helping to prevent respiratory and other illnesses caused by exposure to toxic gases and excessive particulate matter emitted by burning wood.

La Justa stoves reduce emissions of greenhouse gases (GHG) that are causing the Earth's average temperature to rise to dangerous levels. A field study was conducted by Professor Robert Bailis, PhD, author of the Kitchen Performance Test (the Gold Standard baseline methodology for cookstoves, hereinafter referred to as "KT"), and an assistant professor at the Yale School of Forestry and Environmental Studies (FES), in June and July of 2007. This study, hereinafter referred to as the "Yale 2007 Study," showed that the replacement of one traditional *fogon* stove with one La Justa stove reduces GHG emissions by between 1.2 and 1.7 $mtCO_2e$ /year.

Since the Yale 2007 Study, PM has made additional design improvements to the original La Justa stove with assistance from Aprovecho Research Lab. The Aprovecho Lab studies methods for designing, building, and disseminating cooking and heating technology by using vernacular (locally available) low cost materials that can be found easily in the towns and villages where improved stoves are needed.

A study completed by Nordica MacCarty of Aprovecho Research Lab on April 28, 2009, has shown that the La Justa Model 2x3 generates even greater wood savings than the original La Justa. Further, laboratory tests show that the La Justa Model 2x3 reduced Carbon Monoxide emissions and particulate matter by 79%, CO_2 by 43% and CH4 by 94% compared to traditional stoves (McCarty, N., Apr. 2009).

Since the 2009 Aprovecho lab test, and in accordance with a Forward Action Request issued by the Gold Standard as part of the final Registration Review in June 2010, Proyecto Mirador has also completed a paired sample, n=55 quantitative Fuelwood Consumption Study (July-September 2010) indicating that each stove reduces GHG emissions by 2.73 $mtCO_2e$ /year. This study was conducted under the supervision of Professor Robert Bailis, with data collected from July to September 2010.

PM's previously projected GHG emissions reduction of 2.23 $mtCO_2e$ /year, as set forth in the PDD, was based on Aprovecho's findings, together with the Yale baseline study conducted in 2007, and calculated based on mean fuel consumption. The projected emissions reduction of 2.23 $mtCO_2e$ /year will be replaced with the new and more accurate projection of 2.73 $mtCO_2e$ /year going forward.

2. Brief description of the installed technology and equipments.

A standard La Justa stove consists of a ceramic firebox for the stove mouth, a steel plancha, 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 improved model of La Justa stove is called the "La Justa Model 2x3" and is the model covered in this Monitoring Report. The La Justa Model 2x3 includes a few important structural modifications: First, the grate in the stove mouth has been raised 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 steel cooktop *(plancha)* have been changed, allowing the *plancha* to heat up faster and distribute the heat more evenly than before. Third, the *plancha* has been lowered closer to the level of the wood ash insulation in order to use the firepower of the stove more efficiently. From the user's point of view the La Justa Model 2x3 is functionally the same stove as the traditional *fogon,* and PM staff have observed that it has been positively received by the beneficiaries.

PM donates to each beneficiary the steel cooktop (*plancha*), the chimney and chimney top, and the six custom ceramic pieces for the stove mouth or firebox, and the installation and training. These components are sourced and manufactured locally in Santa Barbara Province, creating local employment opportunities. Beneficiaries contribute the remaining components, including cement, rebar, bricks, adobe blocks and wood ash, all of which are common items available in all villages of Honduras. This cost-sharing arrangement is part of PM's philosophy of *"No Cuesta, No Cuida,"* which asserts that beneficiaries will better care for their donated stove if they invest some of their own resources in its acquisition. Old stoves are removed at the time the new La Justa 2x3 stoves are installed.

Traditional La Justa stove

New La Justa 2x3 stove

3. Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.).

Construction of stoves for the crediting period began on May 1, 2009 and will continue through April 30, 2019. Construction of fuel-efficient stoves by Proyecto Mirador began in June, 2004.

La Justa 2x3 Stoves are used in homes an average of 7.85 hours per day, every day. We expect stoves to operate in homes for the duration of 5-7 years, after which time they will be retired and replaced.

The stoves are not all installed at the start of the project, but are installed progressively during the 10-year crediting period. The chart on the following page reflects an actual installation rate of 3,489 stoves in Year 1, then follows an aggressive ramping up of production from Years 2-4 and growth of 8% per year after Year 4. The increase in production between Years 2-4 is financed by a private injection of capital of US$ 2,000,000 ($1M from The Grantham Foundation for the Protection of the Environment and $1M from the Overlook International Foundation). This reflects confidence in Proyecto Mirador's growing experience as an organization, and also the success of Proyecto Mirador's *Programa de Contratistas* (Associates Program) in scaling the project. In this microenterprise program, entrepreneurs are trained and paid by Proyecto Mirador to install La Justa 2x3 stoves under Proyecto Mirador's leadership and verification.

The growth rate over the 10-year time frame was agreed upon by the Board of Directors of Proyecto Mirador after a complete review of Proyecto Mirador's internal capabilities and the size of the market demand. The 8% growth rate agreed upon after year 4 is substantially below Proyecto Mirador's historical growth. In fact the annual growth rate has exceeded 8% in every year since inception. To move forward with an 8% growth rate after 2013, Proyecto Mirador will need only to hire additional stove technicians and supervisors, and is counting on proceeds from the sale of Gold Standard certified carbon credits as a source of funding for more employees and stove building materials.

Upon securing carbon credit certification, Proyecto Mirador will expand its own operations and support our partners in the *Programa de Contratistas.* In this way the implementation of carbon finance can empower stove builders to expand their operations, ultimately resulting in an overall expansion of the stove industry.

Total emission reductions estimated for the crediting period.

The results of the 2010 Paired Fuelwood Consumption Study determined that each La Justa 2x3 generates actual emissions reductions of 2.73 $mtCO_2e$ /year. This figure is calculated using the lower bound of the 90% confidence interval for actual fuelwood savings and is therefore appropriately conservative. All calculations set forth herein are based on an emissions reduction of 2.73 $mtCO_2e$ /year per stove. (Verification of the First Monitoring Period will be confined to the figures presented in Section E.4 of this report.)

Crediting Year	**Average Number of Net Stoves in Operation**	**Annual estimation of emission reductions ($mtCO_2e$)**
1	1,614	4,405
2	5,871	15,776
3	13,771	36,763
4	24,345	64,391
5	35,093	91,999
6	45,044	117,062
7	55,664	143,123
8	69,760	169,218
9	87,396	197,248
10	108,503	219,081
Total estimated reductions for the crediting period ($mtCO_2e$)		**1,059,066**
Total number of crediting years		10
Annual average over the crediting period of estimated reductions ($mtCO_2e$)		105,907

Table 1

Table 1 above shows the total estimated emissions reductions of the project activity in the 10-year crediting period (1 May 2009 - 30 April 2019). The result is based on an estimate of the reduction in GHG emissions of 2.73 $mtCO_2e$/year per stove, which compares the baseline wood consumption from the 2010 Paired Fuelwood Consumption Study against paired data for the project scenario (using the La Justa 2x3). It then applies emission factors measured in laboratory tests (Aprovecho, April 28, 2009), and adjusts for an NRB fraction explored and quantified within the Yale 2007 Study as well as the Yale 2009 Study. The estimates above also account for conservative estimates of dropoff and stove degradation rates, increasing appropriately by year. The analysis can be found in ANNEX MR-01: "MR01_Financing Plan rev.011210.xls." The table above is meant only as an estimate, and the actual emission reductions for the First Monitoring Period are calculated and reported in Table 2 in Section E.4 of this Monitoring Report.

A.2. Project Participants

Project Participant is a non-profit organization, Proyecto Mirador Foundation, which intends to use the sale of VERs along with donations to install improved stoves in Honduras. In 2004, the Overlook International Foundation (OIF), a U.S.-based 501(c)3 corporation, created Proyecto Mirador LLC (PM), a registered charity in Honduras managed by Doña Emilia Giron de Mendoza. Together the two organizations initiated a program to reduce indoor air pollution by disseminating improved La Justa 2x3 wood stoves into poor, rural homes in the highlands of Western Honduras in Santa Barbara Province.

In 2010 this corporate structure was revised as follows: Proyecto Mirador Foundation was established as a separate entity with $2M in capital ($1M from The Grantham Foundation for the Protection of the Environment and $1M from the Overlook International Foundation), with the intention that Proyecto Mirador Foundation will replace OIF as the Sole Member and funding entity for Proyecto Mirador LLC. This transition will officially occur upon confirmation of Proyecto Mirador Foundation's status as a 501(c)(3) non-profit organization, which is expected to occur by the end of 2010.

Since inception in early 2004 PM has installed over 11,500 stoves for individual families, built an efficient organization of more than 40 direct and indirect employees, and overcome the challenges of executing a successful stove project.

Richard H. Lawrence Jr., Managing Director of the Overlook International Foundation, is also the Executive Director of Overlook Investments Limited, an investment management business headquartered in Hong Kong. Richard founded the organization over 19 years ago. Overlook Investments Limited invests in public listed equities in Asia. Dee Lawrence and Esther Adams also help manage the activities of OIF and PM.

A.3. Location of the project activity:

Complete information of the location of the project activity: town, city, country and GPS coordinates.

Country: Honduras
Region: Western Highlands
Stoves will be distributed to the Western Highlands of Honduras in the four provinces of Santa Barbara, Copan, Lempira, and Intibucá
GPS Coordinates for the center of operations for the project are:
Latitude 14º 55' 26" N
Longitude 88º 13' 44" W

The following statistics reflect census figures from July 28, 2001 as quoted from:
http://www.citypopulation.de/Honduras.html

Santa Barbara (SBA)
Capital – Santa Barbara
Population 342,054

Copan (COP)
Capital – Santa Rosa de Copán
Population 288,766

Lempira (LEM)
Capital – Gracias
Population 250,067

Intibucá (INT)
Capital – La Esperanza
Population 179,862

Number of municipalities in each province:
Santa Barbara – 28
Copan – 23
Lempira – 28
Intibucá – 17

Proyecto Mirador – Area of Operations

In addition to the boundaries described above (and already Registered by the Gold Standard), Proyecto Mirador intends to petition the Gold Standard to expand its project boundary to include other poor hillside areas of rural Honduras, El Salvador, Guatemala, and perhaps Southern Mexico, which otherwise meet our cluster definition. The villages where we have installed stoves so far include elevations above 150M. Thus, non-green areas in the two elevation maps below depict the potential area for further development, without respect to demographic considerations.

A.4. Technical description of the project

Description of the technology applied in the project activity and detailed technical process, including diagrams.

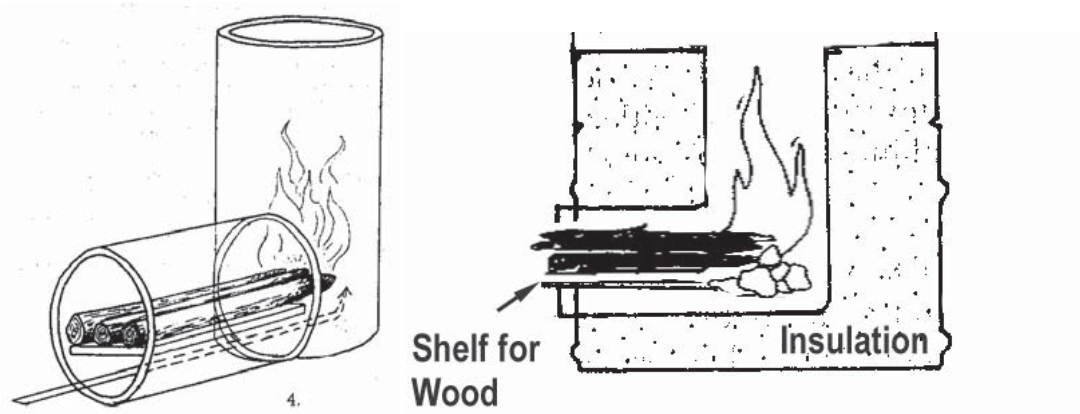
The La Justa fuel-efficient stove was invented by Dr. Larry Winiarski of Aprovecho Research Center in association with Trees, Water and People, a non-profit organization headquartered at Fort Collins, Colorado. The La Justa stove was specifically designed for Honduran cooking habits and optimizes cooking temperatures by placing the *plancha* (reinforced steel rectangle cooktop) at the hottest point above the combustion chamber, and using the conductivity of the metal plancha to spread the heat evenly over the cooking surface. Compared with other stove alternatives, the La Justa stove is an effective and easily assimilated replacement for the traditional *fogon* type of stove already prevalent in Honduras.

The La Justa stove combines an adaptation of clean combustion principles (known as Rocket Elbow technology) to the local cooking practices of Honduran families. The rocket elbow is an easy-to-build, highly adaptable and inexpensive cooking device characterized by a hollow, L-shaped shaft made of ceramic that acts as the combustion chamber. The firebox sits in an adobe or brick container and the space around the elbow and within the container is filled-in with wood ash or other lightweight insulation.

Rocket Elbow technology uses a grate under the fire to enable air to pass under the fuel source. Optimum results are achieved when the air passes under the shelf and through the coals so that when it reaches the fire it is preheated to help the gases reach complete combustion.

The key advantages of the La Justa stove technology are:

1) The design promotes the flow of air across the wood, into the firebox and out the chimney. This improves the efficiency of the combustion and removes the smoke from the house.
2) The small size of the firebox encourages beneficiaries to utilize small pieces of wood or alternative fuel sources such as corncobs and reduces wood consumption.
3) The La Justa allows beneficiaries to use identical cooking habits, which permits quick and easy cultural adoption of the stove.



More information can be found in the Aprovecho publication, "Design Principles of Wood Burning Cook Stoves," at the following address: http://www.aprovecho.org/lab/pubs/arcpubs.

The La Justa Model 2x3 uses all the principles of Larry Winiarski's technology, but with a few important design and structural improvements that maximize the reduction of GHG emissions reduction. First, the grate in the stove mouth has been raised 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 steel cooktop *(plancha)* have been adjusted, allowing the *plancha* to heat up faster and distribute the heat more evenly than before. In addition, 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. Also, a maintenance tool called the *Cinco* has been introduced to help stove users carry out the basic cleaning and maintenance of the stove. Lastly, stove beneficiaries are thoroughly educated on the use of the stove during three separate training sessions, and through written materials that are left behind. From the user's point of view the La Justa Model 2x3 is functionally the same stove and PM staff have observed that it has been positively received and easily assimilated by the beneficiaries.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

According to the Gold Standard Tool Kit the project fits into the category of:
End-use Energy Efficiency Improvement category is defined as the reduction in the amount of energy required for delivering or producing non-energy physical goods or services.

The project uses Gold Standard approved baseline and monitoring methodology "*Methodology for Improved Cook-stoves and Kitchen Regimes,"* Version 01.

This methodology is applicable to programs or activities introducing improved cook-stoves and practices to households within a distinct geographical area. The project activity is implemented by a project coordinator who acts as a project participant. The individual households will not act as project participants.

The methodology addresses the switch from cook-stoves and kitchen regimes used in domestic homes having significant greenhouse gas emissions to those having considerably less or zero emissions.

Reference and version of the baseline.

The baseline scenario reflects that each household uses a traditional *fogon* stove prior to becoming a project beneficiary, and assumes that installation of the new improved stove has not yet occurred. This scenario is captured by assessing fuel wood supply, wood consumption patterns and environmental behaviors among households that use traditional wood stoves. These data define the baseline situation, which we use to characterize conditions that would prevail in the absence of the project activity. The baseline is defined based on the assumption that, in the absence of PM's activity, all households in the community would continue to utilize the traditional *fogon.* Their fuel consumption is defined in the KT discussed above, and is applied to the entire population.

The population sampled in quantitative field-testing in the 2010 n=55 Paired Fuelwood Consumption Study showed a mean household size of 3.64 adult equivalent persons. Baseline fuelwood consumption totaled 1.26 kg per adult equivalent person-meal (as opposed to the project scenario of 0.59 kg). Raw data for both baseline and project scenarios are attached in ANNEX MR-02: "MR02_PM Fuel Usage Study Data 101510.xls" and a summary description of the study is attached in ANNEX MR-03: "MR03_PM Fuel Usage Study Summary Report 101510.pdf." The original data collection sheet used in the study is provided as ANNEX MR-04: "MR04_PM Fuel Usage Study Data Sheet SPANISH.pdf" and an English translation of the data collection sheet is attached as ANNEX MR-05: "MR05_PM Fuel Usage Study Data Sheet ENGLISH.pdf." The study was conducted according to guidelines provided to Proyecto Mirador by Prof. Robert Bailis of the Yale School of Forestry & Environmental Studies and those guidelines are attached as ANNEX MR-06: "MR06_PM Fuel Usage Study Guidelines.pdf."

The estimate of 2.23 mtCO_2e /year as stated in the PDD was based on prior baseline studies (Yale,

2007, and Aprovecho, 2009), as the 2010 Paired Fuelwood Consumption Study had not yet been undertaken at the time of project submission for Registration to the Gold Standard. The results of the 2010 Paired Fuelwood Consumption Study should replace all previous data as contained in the PDD, for both baseline and project scenarios, as it confirms accurate fuelwood savings at a greater confidence level than any previously available data due to the large sample size, paired design, and field testing.

The cluster is defined as one cluster for poor, rural households in the hillside communities of the Western Highlands of Honduras defined as traditional Fogon users that rely on woody biomass fuels and the project focuses on this group exclusively.

Since the baseline social, economic, and environmental conditions are not likely to consistently improve during the crediting period, a fixed baseline will be used for the duration of the crediting period.

A.6. Registration date of the project activity:

29 June, 2010

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

The crediting period is stated as May 1, 2009 through April 30, 2019.

A.8. Name of responsible person(s)/entity(ies):

Richard H. Lawrence, Director
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(415) 464-9590

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SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

1. The starting date of operation of the project activity. For project activities that consist of more than one site, the report shall clearly describe the status of implementation and starting date of operation for each site. For GS project activities with phased implementation, the report shall indicate the progress of the proposed GS project activity achieved in each phase.

The starting date of operation of the project activity was 1 May, 2009. The geographic scope of the project is limited to the defined project boundary. The project boundary for the distribution of the La Justa stoves is Honduras, and to date the project area has encompassed the following four provinces in the Western highlands of Honduras: Santa Barbara, Copan, Lempira and Intibucá.

2. The information regarding the actual operation of the project activity during this monitoring period, including information on special events, for example overhaul times, downtimes of equipment, exchange of equipment, etc.

The PDD assumes a project build rate of 3,500 stoves during the first year of the crediting period, with the build rate increasing by 8% per year for each subsequent year of the crediting period. The project is ahead of schedule in meeting its objectives as stated in the PDD.

Proyecto Mirador has revised its projections as follows: An actual number of 3,489 stoves were installed during the first year of the crediting period. Proyecto Mirador assumes an aggressive ramping up of production from Years 2-4, as justified in Section **A.1 (3)** above, and growth of 8% each year after Year 4. The numbers used for emission reduction calculations in this document are based on net stoves in operation (rather than the gross number of stoves built), adjusted for dropoff and stove degradation rates, increasing appropriately by year.

3. A brief description of: (i) events or situations that occurred during the monitoring period, which may impact the applicability of the methodology, and (ii) how the issues resulting from these events or situations are being addressed.

The project has been and will continue to be subject to typical monthly variability resulting from factors such as: (1) availability of raw materials; (2) weather; (3) holidays; (4) project cycle for building and installation; (5) research activities in line with Gold Standard requirements; and (6) availability of personnel. We consider the above variables to be normal in scope, and none should impact the applicability of the Monitoring Methodology.

B.2. Revision of the monitoring plan

The monitoring plan has been revised as of 15 June, 2010 and was approved on 29 June, 2010. The monitoring plan is set forth here with changes from the PDD Version 4. The Gold Standard's final approved Registration Review was posted to the Gold Standard Registry on 29 June, 2010, signifying the official date of project Registration.

B.3. Request for deviation applied to this monitoring period

There have been no requests for deviation from this monitoring period.

B.4. Notification or request of approval of changes

There have been no changes in the project activity and thus, no request for approval of changes.

SECTION C. Description of the monitoring system

Proyecto Mirador's Monitoring System includes extensive training of stove beneficiaries at various stages in the process, including Community Meetings staged before and after stove construction. The Monitoring System also includes a database of all stoves installed; routine inspection of stoves; as well as systematic data collection and reporting of surveys to assess Leakage and Sustainability. Additional studies are carried out to maintain the accuracy of emissions reduction reporting, including an Aging KT Survey to assess quantitative fuelwood consumption and quantify emissions; and a Usage Survey to assess drop off. The details of the system are described below.

Prior to the commencement of stove construction in each community, PM's full-time Community Organizers conduct a Community Information Meeting to prepare the beneficiaries for installation. At that meeting stove beneficiaries are introduced to the structural and functional aspects of the La Justa 2x3 and provided with an initial overview of stove use and maintenance. At that time beneficiaries are instructed to obtain the materials they must contribute for stove construction.

Following the Community Information Meeting, Stove Technicians also provide extensive training to individual beneficiaries upon installation of each La Justa 2x3 stove, and training materals are left behind with each beneficiary at that time. All training materials are visually oriented to accommodate for the high rate of illiteracy among stove beneficiaries. The photo below shows a new La Justa 2x3 owner holding the training brochure provided by PM upon stove installation.

Four to six weeks after construction is completed in each community, PM's Community Organizers will hold Community Followup Meetings of stove beneficiaries. Community Followup Meetings will

review the training initially provided by the Technicians upon installation. Community Organizers will also take this opportunity to ensure that the stoves are functioning properly and to address all individual concerns and issues that may arise. The community meeting format will also empower leaders within each community to address any individual difficulties or questions that may come up in the future among individual beneficiaries.

All Community Followup Meetings are scheduled according to a central calendar that is managed in Proyecto Mirador's operations office and systematically follows Proyecto Mirador's schedule for stove installation to ensure proper timing for followup.

PM's Supervisors (the same employees whom we referred to in the PDD as "Inspection and Monitoring Specialists") also carry out a statistically significant number of more extensive surveys in order to assess Leakage and ensure continued compliance with the Gold Standard's Sustainability requirements. These surveys are further elaborated below in the section *Installation Record, Leakage & Sustainability Monitoring.* The current leakage and sustainability survey form is attached as ANNEX MR-07: "MR07_Leakage-Sustainability Survey SPANISH" and in translated form as ANNEX MR-08: MR08_Leakage-Sustainability Survey ENGLISH." PM's Supervisors also oversee inspections of stoves that have been built in the Gold Standard crediting period to ensure that the quality of operation and handling is of the required standard. When necessary, Supervisors replace defective stove parts or instruct their Technicians to do so.

Before conducting any meetings or surveys, our Supervisors and Community Organizers are extensively trained. They spend ample time in the field learning to build stoves and learning all aspects of the stove's operation and the management of Proyecto Mirador. This training process generally takes longer than a month to complete. Training Materials have been developed to facilitate the training process, and training procedures are constantly under review for further improvements.

The work of the Supervisors and Community Organizers is subject to periodic audit by Elder Mendoza, Chief Operating Officer, and Emilia Mendoza, President of Proyecto Mirador LLC. The objective of the reviews is to ensure that the stove construction, training of the beneficiaries, and the collection of monitoring information are being completed in an accurate and timely manner, as well as to support any ongoing third party verification as part of the Gold Standard certification.

At the current project build rate, two Community Organizers with sufficient support have the capacity to conduct both Community Information Meetings and Community Followup Meetings at a rate sufficient to provide timely followup and monitoring for all beneficiary communities, with Community Followup Meetings conducted four to six weeks following completion of stove construction in each community. At the current stove build rate, two Supervisors are sufficient to sustain the collection of Leakage and Sustainability data at a statistically significant level and to oversee the ongoing inspection of existing stoves. As the capacity of each Community Organizer and Supervisor is reached, PM will continue to employ additional personnel to meet operational standards. When necessary, PM will also employ outside resources to assist with research and analysis. Such resources may include the Regional Stove Testing Center at Zamorano University, Aprovecho Research Center and Yale University, to name a few.

Since ongoing research is a vital component of a successful Gold Standard project, having the "on-the-ground" resources will be a critical advantage for PM. Recommendations from the beneficiaries as to functional improvements are explored and researched, then implemented if appropriate.

Installation Record, Leakage & Sustainability Monitoring:

PM keeps a sales record and installation database of every stove contructed. PM's sales record is called the Database of Beneficiaries and includes the family name, ID number, location, and date of construction for all the households that receive a stove. It is also noted whether the old *fogon* was removed upon construction of the new La Justa 2x3. This information has been tracked since the inception of the project in 2004. Homes in rural Honduras do not have specific street addresses, and most do not have fixed or mobile telephone lines. Thus the majority of the households are not identified by street as much as village, neighbourhood, and surname.

Our sales record for the First Monitoring Period is attached as ANNEX MR-09: "MR09_Sales Record 050109-113010.xls" and includes a summary of stoves built each month from 1 May 2009 through 30 November 2010. Please note that the number of stoves reported in the PDD as constructed during the first year of the crediting period (1 May 2009 – 30 April 2010) has been adjusted slightly from 3,427 to 3,489. This adjustment was made to account for additional April 2010 stove installation data only recently reported.

The actual number of stoves built during the First Monitoring Period (1 May 2009 through 30 November 2010) is 6,621.

At the Community Followup Meetings described above, PM's Community Organizers review the training provided by the Technicians upon installation and answer individual questions to ensure that the stoves are functioning properly. Any difficult concerns regarding stove function that cannot be verbally addressed in the meeting will be subsequently followed up by Technicians with onsite visits to the beneficiary homes in question.

In addition, PM's Supervisors also carry out a statistically significant number of more extended Leakage and Sustainability Surveys in order to assess Leakage and Sustainability issues as recorded in the PDD (Sections a, b, d, and e) and Passport Section G (#1, Air Quality; #7, Livelihood of the Poor; and #9, Human and Institutional Capacity).

Examples of questions covered with the Leakage and Sustainability Surveys are as follows:

- Number of People in home
- Estimated wood consumption per day (with the traditional *fogon* and with the new La Justa 2x3)
- Length of time La Justa 2x3 stove is in use each day
- Presence of any other alternative type of stove in the house
- Percent of time spent cooking with wood
- Source of wood (bought or collected)
- Effectiveness of maintenance

The Leakage and Sustainability Surveys have been designed with the assistance of Professor Robert Bailis at the Yale School of Forestry and Environmental Studies and Professor Timothy Longwell from Zamorano University in Honduras, and PM, and the results are tabulated in an annual report.

1,788 monitoring surveys have been conducted to date that include leakage, sustainability and qualitative fuel use data. The report format and questions have been periodically reviewed and amended to comply with our understanding of Gold Standard monitoring requirements, so the data available varies somewhat within the report but ultimately captures a very large sample size for all relevant data. The results of all the 1,788 surveys have been compiled and reported herewith, and are attached as ANNEX MR-10: "MR10_Monitoring Data Combined.xls." As all survey results have been relatively consistent, we do not believe that continuing to survey 1 out of every 50 households, as was our practice in the past, is necessary or appropriate. Thus, we have modified the monitoring plan, committing to "a statistically significant number of surveys" going forward so that we can adjust the number of surveys appropriately to ensure accurate representation of project data.

Sustainability Analysis

Since inception Proyecto Mirador has been a clear leader in sustainable development. First, beneficiaries enjoy the health benefits of reducing indoor air pollution as smoke is diminished by cleaner burning stoves and channelled outside the home through effective chimneys. Second, Proyecto Mirador continues to create stable, safe jobs with competitive salaries within communities where opportunities for full-time employment are exceedingly rare and working conditions are generally substandard at best. Third, Proyecto Mirador is passing along sustainable technology to its employees through on-the-job training, as well as to its beneficiaries through rigorous education in the training and maintenance of stoves. Fourth, deforestation is slowed due to the reduction in fuelwood of the La Justa 2x3. This is particularly important in Honduras, which boasts the fourth largest rainforest in the world, and where deforestation is occurring at an alarming rate. Beneficiaries enjoy a greater amount of time to devote to activities other than collecting wood, and/or are relieved of a corresponding part of the financial burden of purchasing wood.

In addition to the benefits listed above, it should be noted that there is no evidence that Proyecto Mirador has any negative effects on sustainability. All sustainability parameters will be monitored as outlined in Parameters ID 14, ID 15, and ID 16 of this Monitoring Report.

Annually, Proyecto Mirador's Management Team will report on the Passport's Sustainability Monitoring Plan, Section G, including assessment of #6, Quality of Employment, by means of an annual employee survey, and #10, the Quantitative Employment and Income generation of the project, is addressed in an annual report on the quantity and type of jobs created by the project. Income figures are confidential and, as such, are not included in this report; however, all employees are paid at or above the minimum wage, and Proyecto Mirador has provided the Verifier with a complete list of current salaries by employee type.

The results of our first annual employee survey are attached as ANNEX MR-11: "MR11_Employee Questionnaire Summary 2010.xls" and the survey itself is attached as ANNEX MR-12: "MR12_Employee Questionnaire.doc." Quantitative Employment is reported in ANNEX MR-13: "MR13_Quantitative Employment.pdf."

#12, Technology Transfer, includes training on stove use, technology, and installation. The employees who construct stoves all undergo a paid training period. Stove beneficiaries also receive training and instruction in the new stove technology. Proof of technology transfer to beneficiaries is the fact that they are able to keep stoves working well because they understand how the stoves work. Training is performed on an ongoing basis for all stove recipients as follows:

- The first round of training occurs at the time when the community is first introduced to Proyecto Mirador and the La Justa 2x3. This takes place at the Community Information Meeting, at which the major components of maintenance are introduced and beneficiaries are informed of their responsibilities to correctly operate the stove.

- The Technicians carry out the second round of training. The Technicians, who build the stoves, are in charge of providing Beneficiaries with a comprehensive training on the use of the stoves. Technicians carry notes to assist with following a standard training procedure, and brochures are left behind with full details of the operation of the stove.

- PM's Community Organizers carry out the third round of training in Community Followup Meetings, held four to six weeks after the completion of construction in each community, to review the training provided by the Technicians and ensure that the stoves are functioning properly. These meetings will address all concerns and issues that may arise and empower each community to address any individual difficulties or questions that may come up in the future.

Project beneficiaries are consistently informed that Proyecto Mirador owns all carbon credits issued as a result of emission reductions from all stoves installed. This is first articulated at the Community Meetings staged before stove construction begins in each area, then reiterated when beneficiaries are individually trained. The PM Training Brochure given to stove beneficiaries also includes a written statement of Proyecto Mirador's ownership of carbon credits, and the consent of all beneficiaries is required as a precondition to stove installation. The training brochure is attached as "MR16_Training Brochure.pdf" and the translation of the relevant clause (at bottom of the brochure) is as follows:

> "By accepting a new stove from Proyecto Mirador, you agree that any reductions in CO_2 emissions created by the stove are the property of PM."

Additional Studies:

Aging Stove KT Survey: Quantitative Fuelwood Consumption Study

A quantitative Fuelwood Consumption Study will be conducted biennially in order to determine whether there is a decline in stove efficiency as determined by a change in fuelwood usage. An appropriately sized sample group will be drawn from the same 55 homes surveyed in the original 2010 Paired Fuelwood Consumption Study described above. The biennial follow-up survey will account for any changes in the number and ages of household members. We will ask questions including: "What is your family size?" and "What is the age and gender of each household member?" and will also perform wood weighing over 4 days, similar to the original study, to determine if fuel use patterns have changed. The first such followup survey will be conducted in 2012.

Aging Stove KT Survey: Emissions Test

Emission factors for CO2, CH4 and N2O were determined in the Aprovecho lab tests for traditional and La Justa stoves.

Gold Standard Methodology states as follows: "If IPCC defaults are not used, testing of EFs of new stoves is only required if there is evidence that the new stove may give rise to significantly different EFs leading to possible over-estimation of emission." (Methodology for Improved Cook-stoves and Kitchen Regimes V.01, footnotes for pp. 24 & 25)

Thus, further monitoring is not required, as the fixed baseline emission factors remain constant throughout the project period.

Usage (Drop-off) Survey

As per Gold Standard methodology, PM will conduct a biennial Usage Survey of a statistically relevant number of beneficiaries with stoves that were built during the first crediting period (1 May, 2009, to 30 April, 2010) to determine whether or not they are still using the La Justa stove, and to assess why or why not. The quantification of carbon emissions will systematically account for usage drop-off according to the results of the Usage Survey.

SECTION D. Data and parameters

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data / Parameter:	**ID 1/ $X_{nrb,bl,y}$**
Data unit:	%
Description:	The non-renewable fraction of the woody biomass harvested in the project collection area in year y in the baseline scenario
Source of data used:	Yale 2007 Study and Yale 2009 Study
Value applied:	59%
Indicate what the data are used for (Baseline/Project/ Leakage emission calculations)	Baseline
Justification of the choice of data or description of measurement methods and procedures actually applied:	The Yale 2007 Study relied upon a qualitative study of households and their experience and observations of fuelwood sources, forest conditions and changes over time. Based on anecdotal descriptions of the state of the forests in the area there is evidence that the forest cover in the region is declining. If we take an average of the respondents that primarily rely on forest sources, weighted by household consumption reported in the qualitative survey, we find roughly 59% of fuel consumed is unsustainable. Given the resources and information available to the project this rate of NRB is a reasonable estimate of the renewability of woody biomass in the region
Any comment:	

Data / Parameter:	**ID 2/ $B_{bl,y}$**
Data unit:	T woody biomass/year/household
Description:	The mass of woody biomass consumed during cooking in the baseline scenario
Source of data used:	2010 Paired Fuelwood Consumption Study
Value applied:	3.87 tonnes per household
Indicate what the data are used for (Baseline/Project/ Leakage emission calculations)	Baseline
Justification of the choice of data or description of measurement methods and procedures actually applied:	Data obtained during the 2010 Paired Fuelwood Consumption Study. The number 3.87 was calculated by taking the average fuelwood consumption for the baseline scenario expressed in kg per day, multiplying by 365 days/year and converting to metric tonnes.
Any comment:	Value above (3.87) differs from the value in the PDD (3.97) because the PDD was based on the Yale 2007 Study. Baseline information used in the PDD has been replaced with data obtained in the 2010 Paired Fuelwood Consumption Study as described in

	Section A.5 of the Monitoring Report.

Data / Parameter:	**ID 3/ $EF_{bl,bio,co2}$**
Data unit:	tCO_2/t woody biomass
Description:	The CO_2 emission factor for use of the biomass fuel in the baseline scenario
Source of data used:	Aprovecho Stove Test (28 April 2009)
Value applied:	87.6 g/MJ is the emission factor measured in laboratory testing of traditional fogon stoves.
Indicate what the data are used for (Baseline/Project/Leakage emission calculations)	Baseline
Justification of the choice of data or description of measurement methods and procedures actually applied:	Data is obtained by use of the net calorific value (NCV) of wood 18.6 MJ/kg., the calorific value listed for Red Oak (the common fuel used in Honduras) in Cheremisinoff, N. (1980), *Properties of Wood*; Wood for Energy Production. Ann Arbor, MI, Ann Arbor Science: 31-43 (cited in Aprovecho 2009 Study, p. 2).
Any comment:	

Data / Parameter:	**ID 4/ $EF_{bl,bio\ nonCO2,CH4}$**
Data unit:	tCH_4/t woody biomass
Description:	The CH_4 emission factor for use of the biomass fuel in the baseline scenario
Source of data used:	Aprovecho Stove Test (28 April 2009)
Value applied:	0.47 g/MJ is the emission factor measured in laboratory testing of traditional fogon stoves.
Indicate what the data are used for (Baseline/Project/ Leakage emission calculations)	Baseline
Justification of the choice of data or description of measurement methods and procedures actually applied:	Data is obtained by use of the net calorific value (NCV) of wood 18.6 MJ/kg.
Any comment:	

Data / Parameter:	**ID 5/ $EF_{bl,bio,nonCO2,N2O}$**
Data unit:	$t\ N_2O$ /t woody biomass
Description:	The N_2O emission factor for use of the biomass fuel in the baseline scenario
Source of data used:	Aprovecho Stove Test (28 April 2009)
Value applied:	0
Indicate what the data are used for (Baseline/Project/ Leakage emission calculations)	Baseline
Justification of the	

choice of data or description of measurement methods and procedures actually applied:	
Any comment:	N_2O emissions are de minimis.

Data / Parameter:	**ID 6/ $EF_{pe,bio,co2}$**
Data unit:	tCO_2/t woody biomass
Description:	The CO_2 emission factor for use of the biomass fuel in the project scenario
Source of data used:	Aprovecho Stove Test (28 April 2009)
Value applied:	98.3 g/MJ is the emission factor measured in laboratory testing of La Justa 2x3 model stoves.
Indicate what the data are used for (Baseline/Project/ Leakage emission calculations)	Project
Justification of the choice of data or description of measurement methods and procedures actually applied:	Data is obtained by use of the net calorific value (NCV) of wood 18.6 MJ/kg.
Any comment:	

Data / Parameter:	**ID 7/ $EF_{pe,bio\ nonCO2,CH4}$**
Data unit:	tCH_4/t woody biomass
Description:	The CH_4 emission factor for use of the biomass fuel in the project scenario
Source of data used:	Aprovecho Stove Test (28 April 2009)
Value applied:	0.05 g/MJ is the emission factor measured in laboratory testing of traditional fogon stoves.
Indicate what the data are used for (Baseline/Project/ Leakage emission calculations)	Project
Justification of the choice of data or description of measurement methods and procedures actually applied:	Data is obtained by use of the net calorific value (NCV) of wood 18.6 MJ/kg
Any comment:	

D.2. Data and parameters monitored

Data / Parameter:	**ID 8 / Stove Sales**
Data unit:	Number of stoves
Description:	Identification of household that has received a La Justa stove.
Measured/Calculated/	Measured

Default:	
Source of data to be used:	Installation record database ("Database of Beneficiaries")
Value(s) of monitored parameter:	6,621 (number of stoves installed during the First Monitoring Period)
Description of measurement methods and procedures to be applied:	The electronic database will hold the following information for each household: - Installation record - Date of installation - Location of installation - Name of beneficiary - Note presence of old stove in the household if applicable.
QA/QC procedures to be applied:	PM Supervisors shall provide complete stove installation records by month to PM's Honduras office, where the records will be compiled, computerized, and in turn reported monthly to the California office where the Master Sales Database will be maintained.
Any comment:	Parameter ID 8 in the PDD reported as the Value of monitored parameter: "3,500 stoves installed in year one and an installation rate that increases 8% annually." This value has been modified above to 6,621 to reflect the actual number of stoves that were installed during the First Monitoring Period. All stoves installed will be the La Justa Model 2x3, and all will replace a traditional *fogon*. Therefore, the items "Model/type of stove installed" and "Model of use prior to installation of the La Justa Model 2x3" will not specifically be tracked on the Master Sales Database as was reported in Parameter ID 8 on the PDD.

Data / Parameter:	**ID 9 / $B_{,pj,y}$**
Data unit:	Tonne
Description:	Fuelwood consumed per household per year (This is the mass of woody biomass consumed during cooking in the project in year y in tonnes per year per household by users of La Justa 2x3 model stove.)
Measured/Calculated/ Default:	Measured
Source of data to be used:	Biennial Fuelwood Consumption Study (Aging Stove KT).
Value(s) of monitored parameter:	2,126.47 kg
Description of measurement methods and procedures to be applied:	Biennial survey of tonnes of woody biomass per year per household consumed by beneficiaries, to determine whether there is a decline in stove efficiency as determined by a change in fuel wood usage. An appropriately sized sample group will be drawn from the same 55 homes as surveyed in the 2010 Paired Fuelwood Consumption Study.
QA/QC procedures to be applied:	We will ask questions including: "What is your family size" and "What is the age and gender of each household member?" and will also perform wood weighing over 4 days, similar to the original study, to determine if fuel use patterns have changed.
Any comment:	We acknowledge an error in the PDD, in which 2.73 mtCO2e/yr

	was reported as the Value of the Monitored Parameter for ID 9. This error was pointed out by SGS and we have adjusted the above value accordingly. 2.73 mtCO2e/yr has been calculated on the basis of 2.126.47; therefore, the monitored parameter is 2,126.47 and was moved to the "Value of Monitored Parameter" section above. To be measured biennially in the Fuelwood Consumption Study (Aging Stove KT). The value 2.126.47 is calculated as follows: Please refer to the file MR02_PM Fuel Usage Study Data 101510.xls, "Summary" worksheet, Cell K59. We take the value from Cell K59, which is 5.826 kg/household/day, and multiply it by 365 to get the total of 2,126.47 kg fuelwood consumed per household per year.

Data / Parameter:	**ID 10/ $EF_{pj,bio,co2}$**
Data unit:	tCO_2/tonne woody biomass
Description:	The CO_2 emission factor for use of the biomass fuel in the project scenario in tonnes CO_2 per tonne of woody biomass fuel.
Measured/Calculated/ Default:	Calculated
Source of data to be used:	If the Verifier deems it necessary (as indicated by the Verifier's belief that there has been a significant change in this parameter), a laboratory study will be conducted biennially to measure the CO_2 emission factor of woody biomass consumption in the project boundary.
Value(s) of monitored parameter:	98.3 g/MJ is the emission factor measured in laboratory testing of La Justa 2x3 model stoves.
Description of measurement methods and procedures to be applied:	Data is obtained by use of the net calorific value (NCV) of wood 18.6 MJ/kg. Value will be measured by same method biennially only if Verifier determines it necessary.
QA/QC procedures to be applied:	N/A
Any comment:	Per Gold Standard Methodology: "If IPCC defaults are not used, testing of EFs of new stoves is only required if there is evidence that the new stove may give rise to significantly different EFs leading to possible over-estimation of emission."

Data / Parameter:	**ID 11/ Continued use of stoves over time**
Data unit:	Households
Description:	Drop off rate
Measured/Calculated/ Default:	Measured
Source of data to be used:	Survey and visual observation
Value(s) of monitored parameter:	7.5%
Description of measurement methods and procedures to be applied:	Going forward, Proyecto Mirador will conduct a biennial survey of 50 of the same beneficiaries who had stoves installed within the first 12 months of the Gold Standard crediting period (1 May, 2009 – 30 April, 2010) to see if they are still using the stoves. Dropoff

	rate is to be determined by comparing the results with prior biennial surveys.
QA/QC procedures to be applied:	Questionnaire to include the questions: "Is your La Justa 2x3 still in use?" and "why or why not?"
Any comment:	For the First Monitoring Period, a 7.5% dropoff rate was approved by SGS based on surveys taken by SGS with the assistance of Zamorano University during onsite verification. (Version 1 of the Monitoring Report used a figure of 3.0% which was adopted as a conservative approximation based on our own findings, which showed a dropoff rate of 1.9% during the First Monitoring Period. The new figure of 7.5% was mutually agreed by SGS and PM based on onsite verification.)

Data / Parameter:	**ID 12 / Leakage**
Data unit:	Households
Description:	Assess agreement with statements regarding possible leakage effects, including: a. Rebound Effect b. Stimulation of increased use of a high emission fuel c. Promotion of new stove type stimulates substitution of a cooking fuel or stove type with relatively high emissions d. Loss of space heating causes users to use alternative sources of (and thus, a greater amount of) fuel e. Traditional stoves are reused f. Other types of stoves are present in the household g. Length of time auxiliary stoves are used each day
Measured/Calculated/ Default:	Measured
Source of data to be used:	Ongoing questionnaires.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	0
Description of measurement methods and procedures to be applied:	Survey, on an ongoing basis, a statistically significant number of La Justa 2x3 stove owners. (Randomness of the sample will be maintained by surveying every *n*th beneficiary.) Questionnaires to be administered by Proyecto Mirador's Supervisors and Community Organizers.
QA/QC procedures to be applied:	Questionnaires include questions to assess agreement with statements a-g under "Description" above.
Any comment:	Comments on the "Description" field above: a. PM's approach values training the beneficiaries on conservation practices. To remain conservative, however, our emission reduction calculations are based on relative wood savings between the *fogon* and the La Justa 2x3. We do not assume an increase in emission reductions based on improvements in conservation practices among the beneficiaries. Furthermore, as we have carefully measured absolute fuelwood consumption before and

	after the introduction of the La Justa 2x3, any possible rebound effect would have been captured in absolute terms and reported in the 2010 Fuelwood Consumption Study. Therefore, we do not anticipate any effect on leakage. b-c: Though some people reported using paper, corn or cardboard as supplementary materials with their stoves, these were used minimally, primarily as fire starters, and used exactly as before the installation of the La Justa 2x3. Thus, these auxiliary materials have no effect on leakage. d-g: 388 homes were surveyed to see if auxiliary cookstoves were present. Survey results are reported in ANNEX MR-14: "MR14_Leakage Assessment.xls" (see worksheet labeled "Leakage Assessment"). 23% (90 out of 388) of the homes surveyed about auxiliary cookstoves reported having a gas or electric stove in the home. Among those 90 homes, the auxiliary stoves were only in use an average of 22.26 minutes per day, whereas the La Justa 2x3 was in use an average of 7.92 hours per day. This indicates that homes with new La Justa 2x3 stoves are still using wood as their primary fuel, with gas and electric only used occasionally as a supplement. As the auxiliary stoves were also present before, their existence has no effect on leakage.

Data / Parameter:	**ID 13 / Leakage due to Transportation**
Data unit:	Kilometers
Description:	Assess agreement with statement regarding possible leakage effects described in the PDD: "f. Significant emissions from transportation or other suggest more impact than if project did not exist."
Measured/Calculated/ Default:	Measured
Source of data to be used:	Mileage records; Sales Database (for total # of stoves built per year).
Value of data applied for the purpose of calculating expected emission reductions in section B.5	43,088 km driven within the First Monitoring Period.
Description of measurement methods and procedures to be applied:	Annual report to assess changes in mileage from year to year. Reported annual mileage (reported in km) is to be compared with the number of stoves built within the same year to see if mileage is increasing significantly beyond the relative increase in project activity.
QA/QC procedures to be applied:	Mileage records track kilometers driven on an ongoing basis for each vehicle, and the results are tabulated annually.
Any comment:	Transportation results for the First Monitoring Period are reported in ANNEX MR-14: "MR14_Leakage Assessment.xls" (please refer to the worksheet labeled "Transportation"). 43,088 km represents <1% of total ER and is hence *de minimis* per Gold Standard methodology. This number was used to determine a ratio of 15.61% when

	measured against stoves constructed within the First Monitoring Period (using number of stoves constructed / total miles driven). This ratio will serve as the baseline for further monitoring of leakage due to transportation. PM reported 0 leakage in the Gold Standard approved PDD. PM will continue to assume 0 leakage from transportation going forward if the transportation does not increase significantly beyond the relative increase in project activity. Thus, it is the ratio of stoves constructed : km driven that is primarily relevant to our assessment of leakage, rather than raw annual mileage. The PDD stated the Data Unit as "Miles" for Parameter ID 13, but it was since determined that original mileage records are tracked in kilometres. In order to avoid any possibility of error due to unit conversion, we have modified the data unit to "kilometres" to agree with the original data we are provided.

Data and Parameters used to assess Sustainability.	
Data / Parameter:	**ID 14 / Number and percentage of individuals**
Data unit:	**Individuals**
Description:	Assess agreement with statements in Sustainability Monitoring Plan Sections, Passport Issues 1, 7, & 9. Air Quality, Livelihood of Poor, Human & Institutional Capacity.
Monitored /Calculated /Default:	Responses to questionnaire.
Value (s) of monitored parameter:	Number of positive responses to questionnaires.
Monitoring equipment (type, accuracy class, Calibration frequency, date of last calibration, validity)	Questionnaire administered by PM's Community Organizers and Supervisors.
Measuring/Recording frequency:	Survey, on an ongoing basis, a statistically significant number of La Justa 2x3 stove owners. (Randomness of the sample will be maintained by surveying every *n*th beneficiary.) Questionnaires to be administered by Proyecto Mirador's Supervisors and Community Organizers.
Source of data:	Survey.
Calculation method (if applicable):	Data tabulation and report issued on an annual basis.
QA/QC procedures applied:	Sufficient sample size. Questionnaires administered by both local community organizers and PM.

Data and Parameters used to assess Sustainability.	
Data / Parameter:	**ID 15 / Number of individuals**
Data unit:	**Individuals**
Description:	Assess agreement with statements in Passport Sustainability Monitoring Plan sections regarding wider social and economic impact of the project including 6. Quality of Employment, 10. Quantitative employment and income generation, 12. Technology Transfer (to stove builders.)
Monitored /Calculated /Default:	Responses to questionnaire.

Value (s) of monitored parameter:	*Quality of Employment:* % of employees over the age of 16: 100% % of employees who receive 1 or more day of rest per week: 100% % of full-time employees who receive paid vacation: 100% % of complaints about sleeping/eating conditions when traveling: 0% % of employees reporting they are required to carry >100 lbs.: 0% % of employees reporting better working conditions than other people in their communities: 100% % of employees reporting that their work with PM has contributed to improving their quality of life: 100% *Quantitative Employment and Income Generation:* # of direct employees of PM at start of crediting period: 16 # of direct employees of PM at end of first year of creding period: 28 % of employees that report earning minimum salary or more: 100% *Technology Transfer (to stove builders)* % of employees who report familiarity with work procedures: 100%
Monitoring equipment (type, accuracy class, Calibration frequency, date of last calibration, validity)	Questionnaire
Measuring/Recording frequency:	Annual
Source of data:	Surveys of employees, management report on number of employees, and copies of training materials used by employees.
Calculation method (if applicable):	Annual written report of number of employees and record of employee surveys. No calculation needed.
QA/QC procedures applied:	Results for Quality of Employment are tabulated in the attached ANNEX 5: "05_Employee Questionnaire Summary 2010.xls" which has now been translated into English. Results for Quantitative Employment are tabulated in the attached ANNEX 7: "07_Quantitative Employment.pdf." Though income figures are confidential, ANNEX 5: "05_Employee Questionnaire Summary 2010.xls" reflects that all employees of Proyecto Mirador are compensated with minimum wage or greater.

Data and Parameters used to assess Sustainability.	
Data / Parameter:	**ID 16 / Number and percentages of individuals**
Data unit:	**Individuals**
Description:	Assess agreement with statements in Passport Sustainability, PDD Leakage, and Emissions Monitoring Plans. Sustainability: social and economic impact of the project including, 7. Livelihood of the poor (wood is collected or bought), 12. Technology Transfer to users (do they know how to maintain and use their stove properly)
Monitored /Calculated /Default:	Responses to follow up survey.
Value (s) of monitored	Positive score

parameter:	
Monitoring equipment (type, accuracy class, Calibration frequency, date of last calibration, validity)	Survey, on an ongoing basis, a statistically significant number of La Justa 2x3 stove owners. (Randomness of the sample will be maintained by surveying every *n*th beneficiary.) Questionnaires to be administered by Proyecto Mirador's Supervisors and Community Organizers.
Measuring/Recording frequency:	Ongoing
Source of data:	Survey
Calculation method (if applicable):	Data tabulation and annual report.
QA/QC procedures applied:	11 recent surveys, with questionnaires attached as ANNEX 12: "12_Sustainability Assessment.pdf" and summarized as ANNEX 13: "13_Sustainability Assessment Summary.xls," confirm positive scores for all monitored sustainability measures. In addition, 904 households have been surveyed to determine what health problems existed before and after stove installation. Among those who reported having health issues when using the *fogon,* the vast majority reported improved health after receiving the La Justa 2x3. The results are attached as ANNEX 14: "14_Health Assessment.xls."

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

>>

Shall include the formulae used and description to calculate the baseline emissions.

Emissions reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \qquad (10)$$

ER_y	Emission reductions in year y in tCO_2/year
PE_y	Project emissions in year y in tCO_2/year
BE_y	Baseline emissions in year y in tCO_2/year
LE_y	Leakage emissions in year y in tCO_2/year

E.2. Project emissions calculation

As described in Section **A.5** above, an estimated emissions reduction of 2.23 $mtCO_2e$/year was reported in the PDD, which was completed prior to the 2010 Paired Fuelwood Consumption Study. As the 2010 study provides data at a much higher confidence level than any data previously available, we have modified our ER Calculations accordingly and arrived at an adjusted estimate of 2.73 $mtCO_2e$/year.

For the details of our calculations, we refer you to ANNEX MR-15: "MR15_ER Calculations Rev.103009.xls."

E.3. Leakage calculation

The emissions reductions calculation assumes an estimated leakage of zero (0) tCO2/year. This value will be substantiated by qualitative surveys referenced and articulated in the table "**ID 12 / Leakage**" above. Accordingly, the surveys (which will be conducted in a statistically significant number of households receiving the La Justa 2x3, with randomness of the sample maintained by surveying every *n*th beneficiary) will assess agreement with statements regarding possible leakage effects, including:

a. Rebound Effect
b. Stimulation of increased use of a high emission fuel
c. Promotion of new stove type stimulates substitution of a cooking fuel or stove type with relatively high emissions
d. Loss of space heating causes users to use alternative sources of (and thus, a greater amount of) fuel
e. Traditional stoves are reused

E.4. Emission reductions calculation / table

Table 2 below is based on an initial emissions reduction of 2.73 $mtCO_2e$/year per stove in the first year, multiplied by the average number of stoves in operation on a monthly basis (adjusted for aging and dropoff) as set forth in ANNEX MR-01: "MR01_Financing Plan rev.011210.xls, for the First Monitoring Period (1 May 2009 – 30 November 2010). Further explanation is provided below the following chart.

Crediting Month	Average Number of Net Stoves in Operation	Estimation of leakage (tCO2/year)	Monthly estimation of emission reductions ($mtCO_2e$)
May-09	135	0	30.75
Jun-09	281	0	64.01
Jul-09	757	0	172.13
Aug-09	1,055	0	239.99
Sep-09	1,444	0	328.45
Oct-09	1,454	0	330.89
Nov-09	1,517	0	345.05
Dec-09	1,802	0	409.98
Jan-10	2,160	0	491.44
Feb-10	2,374	0	540.05
Mar-10	3,966	0	674.69
Apr-10	3,365	0	765.50
May-10	3,893	0	884.83
Jun-10	4,207	0	955.18
Jul-10	4,517	0	1,022.35
Aug-10	5,020	0	1,134.77
Sep-10	5,437	0	1,227.06
Oct-10	5,914	0	1,335.52
Nov-10	6,267	0	1,415.32
Total (tCO2)		**0**	**12,368**

Table 2

Total emission reductions achieved during the First Monitoring Period: **12,368**

We have arrived at the above calculation of total emission reductions based on the final total of 6,621 stoves built in the First Monitoring Period. We have factored in a 7.5% abandonment rate, which was confirmed by SGS with onsite research from Zamorano University during onsite verification. Further, a degradation rate of 3% was factored in, which brings us to a verifiable final total of 12,368 tCO_2. The calculations are attached in the spreadsheet "MR01_Financing Plan rev.011210.xls" (see "Monthly Results" worksheet, cell U57).

The value of 12,368 tCO_2 is calculated on a monthly basis, not an annual average. The stoves in operation by month are reduced by the abandonment rate of 7.5% (Abandonment Rate). The emissions reductions are further reduced to account for a reduction of 3% in the efficiency of the

stoves that are in their second year of operation (Degradation Rate). Correspondingly, the calculation of the emission reductions for stoves in operation for 12 months or less utilizes 2.73mtCO_2e/year as set forth in ANNEX MR-15: "MR15_ER Calculations Rev.112410.xls." For stoves in operation for more than 12 months the calculation utilizes 2.65 mtCO_2e/year, a reduction of 2.93%.

To understand the sensitivity of the Degradation Rate, if we decrease Year 1 efficiency from a 3% drop to 5% drop, then the impact on mtCO_2e would fall by 0.435% over the life of the stove. A further decrease from 3% to 7% in Year 1 would decrease mtCO_2e over life of the stove by 0.87%.

For formulae used to calculate the emission factor of 2.73 mtCO_2e/year, we refer you to ANNEX MR-15: "MR15_ER Calculations Rev.112410.xls." For the calculation of the average number of net stoves in operation by month, as well as the monthly estimation of emission reductions, we refer you to the "Monthly Results" worksheet in the file ANNEX MR-01: "MR01_Financing Plan rev.011210.xls."

E.5. Comparison of actual emission reductions with estimates in the GS-PDD

A quantitative Fuel Consumption Study, requested by the Gold Standard, has been completed to confirm actual fuelwood consumption rates of the La Justa 2x3.

The estimated savings of 2.23 mtCO_2e /year as stated in the PDD was based on a prior baseline study (Yale, 2007 and Aprovecho, 2009), as the 2010 Paired Fuelwood Consumption Study had not yet been undertaken at the time of project submission for Registration to the Gold Standard. The results of the 2010 Paired Fuelwood Consumption Study indicate emissions reduction of 2.73 mtCO_2e /year and will replace the estimate in the PDD.

E.6. Remarks on difference from estimated value in the PDD

The Gold Standard, subsequent to issuance of its Round 2 Response above, agreed to proceed with Registration based on emissions reductions of 2.23 mtCO_2e/year, and to calculate actual savings for the purposes of issuance of VERs based on the 2010 Paired Fuelwood Consumption Study. The Gold Standard's directive is summarized in an e-mail from Meinrad Bürer to Richard Lawrence dated 3 June 2010, which reads as follows:

> *Discussion has now taken place within the TAC with regards to the Kitchen Test issue. We still need to review your responses to the other issues that had been raised, but provided these will be addressed and closed, we are willing to register the project activity with a temporary figure of 2.23 tCO2 per stove per year for the wood savings in the PDD, under the condition that a new Kitchen Test comparing Fogon and La Justa 2x3 wood consumptions will indeed be performed prior to request for issuance to cross-check this value with results from the field. This means the Validation DOE does not have to look into this issue anymore.*
>
> *Delivery of the VERs will be as per the actual savings, i.e. based on the results obtained with the new Kitchen Test. The savings will have to consider the lower bound and not the mean savings, as there is no basis for granting such a deviation from the methodology to this project activity solely. This topic needs to be discussed in the context of the revised version of the methodology. Only if and when approved will the 'mean approach' be applicable within project activities.*
>
> *... This approach above will be formulated as a Forward Action Request (FAR) within our formal registration review feedback once we will have received the complete version of your responses. The FAR will have to be taken care of by the contracted verifier at the time of verification.*

Subsequently, as part of its Final Registration Review, the Gold Standard issued a FAR as described above. The FAR reads as follows:

> *PP shall conduct a new Kitchen Test prior to first request for issuance in order to confirm the assumed annual emission savings per stove. This study will be a paired-sample test. The goal is to measure daily fuel consumption over a 4-day period in 50 households. First, stoves will be monitored before adoption of the La Justa 2x3, while the family uses a traditional fogon, and several weeks after the adoption of the La Justa 2x3, when the family is accustomed to its use.*

It should be understood that not only did the 2010 Paired Fuelwood Consumption Study meet the parameters of the Forward Action Request in detail, but the study even exceeded the Gold Standard's specifications in two areas: first, the sample size was larger (reaching n=55); and second, wood was weighed over a 5-day period (not just a 4-day period as requested by the Gold Standard), resulting in four 24-hour periods of fuelwood consumption data rather than 3.

The revised figure of 2.73 $mtCO_2e$ /year, and all baseline and project scenario data confirmed in the 2010 Paired Fuelwood Consumption Study, supercedes the previous projection of 2.23 $mtCO_2e$ /year as contained in the PDD as the 2010 Paired Fuelwood Consumption Study confirms accurate fuelwood savings at a much greater confidence level than any previously available data due to the large sample size and paired design.

LIST OF ANNEXES
Monitoring Report v.3

Annex #	*Formerly*	*File Name*	*Page Ref.*	*Description*
MR-01	Annex 1	MR01_Financing Plan rev.011211.xls	5, 30, 31	Carbon credits calculated based on net stoves in operation over the crediting period
MR-02	Annex 2	MR02_PM Fuel Usage Study Data 101510.xls	11, 23	2010 Fuelwood Consumption Study - Raw Data
MR-03	Annex 3	MR03_PM Fuel Usage Study Summary Report 101510.pdf	11	2010 Fuelwood Consumption Study - Summary Report
MR-04	n/a	MR04_PM Fuel Usage Study Data Sheet SPANISH.pdf	11	2010 Fuelwood Consumption Study - data collection sheet in Spanish
MR-05	Annex 17	MR05_PM Fuel Usage Study Data Sheet ENGLISH.pdf	11	2010 Fuelwood Consumption Study - data collection sheet in English translation
MR-06	n/a	MR06_PM Fuel Usage Study Guidelines.pdf	11	2010 Fuelwood Consumption Study - Guidelines provided by Prof. Robert Bailis
MR-07	Annex 16	MR07_Leakage-Sustainability Survey SPANISH.docx	15	Updated survey to assess leakage and sustainability (Spanish form)
MR-08	Annex 15	MR08_Leakage-Sustainability Survey ENGLISH.docx	15	Updated survey to assess leakage and sustainability (English translation)
MR-09	Annex 9	MR09_Sales Record 050109-113010.xls	16	Stove installation database for the First Monitoring Period
MR-10	Annex 4	MR10_Monitoring Data Combined.xlsx	16	All leakage and sustainability monitoring data reported to date, compiled together with qualitative fuelwood consumption data
MR-11	Annex 5	MR11_Employee Questionnaire Summary 2010.xls	17	Summary of Year 1 employee questionnaires
MR-12	Annex 6	MR12_Employee Questionnaire.doc	17	Sample employee questionnaire (in Spanish & in English translation)
MR-13	Annex 7	MR13_Quantitative Employment.pdf	17	Report on number of employees - Year 1
MR-14	Annex 11	MR14_Leakage Assessment.xls	25	Monitoring survey data with leakage information highlighted
MR-15	Annex 8	MR15_ER Calculations Rev.112410.xls	29, 31	Calculations for emission reductions per stove
MR-16	n/a	MR16_Training Brochure.pdf	18	Brochure given to beneficiaries upon training in stove use and maintenance

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History of the document

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption
01	6 October 2010	SGS review of basic format and underlying assumptions of monitoring plan
01	1 November 2010	Integration of results of 2010 Fuelwood Consumption Study; modification to emissions reduction of 2.73 $mtCO_2e$/yr.; insertion of monitoring data
01	30 November 2010	Integration of various parameter values as requested by SGS; addition of leakage and sustainability monitoring results as supporting data. Integration of final emission calculations for the First Monitoring Period as calculated by month.
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