TUIK RUCH LEW IMPROVED COOKSTOVE PROJECT FOR LAKE ATITLAN

Document Prepared by Ava Scott, Candis Krummel, Andy Pethan, Dr. Jessica Kind

Project Title	Tuik Ruch Lew Improved Cookstove Project For Lake Atitlan
Version	1.5
Date of Issue	01-January-2021
Project Location	Sololá, Guatemala
Project Proponent(s)	Tuik Ruch Lew/Helping the Earth (TRL), Cameron Krummel, programdevelopment@trlearth.org, +502 4120-9086.
Assessor Contact	AENOR
Project Lifetime	01 September 2018 – 31 August 2039; 21-year lifetime
Monitoring Period of this Report	01 September 2018 – 09 Mar 2020
History of SD VISta Status	2018 Pilot Project Selection
Other Certification Programs	VCS
Expected Future Assessment Schedule	Initial validation and verification to be completed early 2020.

Contents

1 Summary of SDG Contributions

Table 1: Summary of SDG Contributions

Row number	Quantitative Project Contributions during Monitoring Period	Contributions during Project Lifetime	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Section Reference	Claim, Asset or Label
1)	The project **replaced 150 inefficient open cooking fires** with ONIL stoves. **150 additional families gained access to improved cookstove technology** and consequently reduced the	With the installation of **3,000** new ONIL stoves and completion of **2,100** energy efficiency improvements to existing ONIL cookstoves the project will: Provide **3,000** additional families	7.1	7.1.2 Proportion of population with primary reliance on clean fuels and technology	Increased	3.1 #1	Claim
			7.b	Expand infrastructure and upgrade technology for supplying modern and sustainable energy service	Increased	4.1 #2	Claim

	amount of non-renewable woody biomass they consumed. **150** additional families have greater access to basic services (clean cooking technology).	with access to improved cookstove technology Reduce the amount of non-renewable woody biomass consumed per family Provide families with greater access to basic services in the form of clean cooking technology Maintain all stoves for optimal performance	1.4	1.4.1 Proportion of population living in households with access to basic services	Increased	3.1 #1	Claim
2)	The project replaced **3 incandescent light bulbs with LEDs**.	With the installation of 2000 led light bulbs to replace incandescent light bulbs, the project will improve energy efficiency in beneficiary homes.	7.3	Number of light fixtures that undergo improvements in energy efficiency	Increased	3.1 #6	Claim
3)	Access to ONIL stove technology made the following possible: **41,235 USD in savings on firewood** and **7629 days saved in time** that would otherwise be used to collect wood	Implement activities to promote income increases through money and time saved using ICS Technology. The project will: Increase monthly income of families who purchase wood fuel by an average of	1.1	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)	Decreased	3.1 #3	Claim

		Q168.88/mo (about Q2027/yr or $261/yr) Save an average of 2 days/ week in time for families who collect firewood	1.2	1.2.1 Proportion of population living below the national poverty line, by sex and age	Decreased	3.1 #3	Claim
				1.2.2 Proportion of men, women and children of all ages living in poverty	Decreased	3.1 #3	Claim
4)	**150 additional households experienced a 99% reduction in household air pollution** and the associated health benefits.	Implement activities to decrease deaths associated with Household Air Pollution (HAP) and burns from open cooking fires. The project will: Reduce HAP by 99% in 3,000 homes through use of ONIL Stove, leading to: Reduced instance of acute respiratory infection Improved respiratory function Reduced risk of child/infant death by eliminating open fire	3.2	3.2.1 under-five mortality rate	Implemented activities to decrease	3.1 #1, #2	Claim
				3.2.2 neonatal mortality rate	Implemented activities to decrease	3.1 #1, #2	Claim
			3.4	*3.4.1 mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease*	Implemented activities to decrease	3.1 #1, #2	Claim
			3.9	3.9.1 mortality rate attributed to household and ambient air pollution	Implemented activities to decrease	3.1 #1, #2	Claim
5)	The project installed **17 additional British Berkefeld water filters**.	By enabling access to British Berkefeld water filters, the project will lower exposure to unsafe water for 300 families	3.9	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All	Implemented activities to decrease	3.1 #4	Claim

				(WASH) services)			
			6.1	6.1.1 Proportion of population using safely managed drinking water services	Increased	3.1 #4	Claim
6)	No change yet monitored.	By providing ONIL stoves that save money, time, and health costs, the project will decrease the amount of time that women spend on unpaid domestic and care work	5.4	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location	Implemented activities to decrease	NA	Claim
7)	The project enrolled **12 beneficiaries in TRL's savings program**.	Implement activities to increase access to financial institutions. The project will: Enable access to community-savings, micro-finance, or similar opportunities, enrolling 10% of families over the lifetime of the project in said programs.	8.1	8.10.2 proportion of adults (15 years and older) with an account at a bank or other financial institution or with a mobile-money-service provider	Increase	3.1 #5	Claim

8)	By **replacing inefficient open cooking fires with 150 ONIL stoves** and performing **energy efficiency improvements in 91** existing biomass cookstoves, the project will generate approximately **975 tCO2e of emission reductions** during the monitoring period	By replacing inefficient open cooking fires with 3,000 ONIL stoves and performing 2,100 energy efficiency improvements in existing biomass cookstoves, the project will generate approximately 38,056.82 tCO2e of emission reductions	13	Tonnes of greenhouse gas emissions avoided or removed	Decreased	VCS verification report for the first monitoring period	SD vista-labeled VCU
9)	By **replacing inefficient open cooking fires with 150 ONIL stoves** and performing **energy efficiency improvements in 91** existing biomass cookstoves, the project will provide for approximately **1026.7397 tonnes of savings in woody biomass**, equivalent to 5.64 ha of forest area.	By replacing inefficient open cooking fires with 3,000 ONIL stoves and performing energy efficiency improvements in existing biomass cookstoves, the project will provide for approximately 39,997.53 tonnes of savings in woody biomass, equivalent to 756,000 trees or 219.76 ha of forest area over the 21 year lifetime	15.1	15.1.1 Forest area as a proportion of total land area	Implemented activities to increase	*4.1 #1*	Claim
			15.2	15.2.1 Progress towards sustainable forest management	Implemented activities to increase	*4.1 #1*	Claim
			15.4	15.4.2 Mountain Green Cover Index	Implemented activities to increase	*4.1 #1*	Claim
			15.5	15.5.1: Red List Index	Implemented activities to increase	*4.1 #1*	Claim

2 Project Design

2.1 Project Objectives, Context and Long-term Viability

2.1.1 Summary of Project Sustainable Development Objective(s)

- Install an estimated 3,000 ONIL high-efficiency, clean burning ONIL cookstoves, providing families with greater access to basic services in the form of clean cooking technology, thus benefiting approximately 14,760 individuals (SDI 7.1.2, 7.b, 1.4.1), and provide an estimated 2,100 energy efficiency improvements to existing ONIL cookstoves to benefit approximately 10,332individuals (7.b).
    - Increase Tz'utujil Maya families' disposable income by reducing the amount of wood fuel purchased monthly. (SDI 1.1.1, 1.2.1, 1.2.2)
    - Increase Tz'utujil Maya families' disposable income by reducing the amount of time spent monthly collecting firewood, thus increasing time for income producing activities. (SDI 1.1.1, 1.2.1, 1.2.2)
    - Reduce total wood fuel usage in the project area to generate approximately 38,056.82 tco2e of emission reductions. (SDG 13)
    - Reduce demand for wood fuel and the resulting deforestation within the project area, thus contributing to: a net positive increase in (1) forest area as a proportion of total land area (SDI 15.1.1), (2) the mountain green cover index (SDI 15.4.2), and (3) progress towards sustainable forest management. (SDI 15.2.1) This progress will help conserve ecosystem biodiversity by providing for estimated 219.76 hectares of habitat for 67 species on the IUCN Red List of Threatened Species. (SDI 15.5.1)
- Reduce Household Air Pollution (HAP) by 99% in an estimated 3,000 households. (SDI 3.9.1)
    - Reduce instance of non-communicable respiratory disease, such as Chronic Obstructive Pulmonary Disease (COPD) among adult family members, particularly women and the elderly. (SDI 3.4.1)
    - Reduce risk of mortality among infants and children under five years of age due to (1) acute respiratory illnesses, such as pneumonia, the leading cause of mortality of children under five in Guatemala,[1] and (2) burns resulting from children falling into open cooking fires. (SDI 3.2.1, 3.2.2)
- Decrease the proportion of time Tz'utujil women spend on unpaid domestic and care work. (SDI 5.4.1)
- Increase the number of individuals with an account at a bank or other financial institution and increase financial literacy by enrolling beneficiaries and prospective beneficiaries in community savings programs. (SDI 8.10.2)

[1] Health in the Americas, 2012 Edition: Country Volume N ' Pan American Health Organization, 2012. P. 362. https://www.paho.org/salud-en-las-americas-2012/index.php?option=com_docman&view=download&category_slug=hia-2012-country-chapters-22&alias=132-guatemala-132&Itemid=231&lang=en

- Improve energy efficiency in an estimated 2000 beneficiary homes by providing LED light bulbs to replace incandescent light bulbs (SDG 7.3).

An estimated 300 British Berkefeld Water Filters will be distributed, providing 300 families with access to clean drinking water and lowering exposure to unsafe water and corresponding risk of illness and/or death. (SDI 3.9.2, 6.1.1)

2.1.2 Description of the Project Activity

The TRL Improved Cookstove (ICS) Project promotes 4 project activities: (1) introduction of high-efficiency, biomass-fired project devices to replace open cooking fires; (2) provision of energy efficiency improvements in existing biomass-fired cookstoves; (3) distribution of British Berkefeld water filters; and (4) replacement of incandescent light bulbs with LEDs. With over 30 years of experience, the Tuik Ruch Lew (TRL) team has enabled greater access to the projects chosen ICS technology, ONIL stoves, in the Lake Atitlán basin, mainly serving Tz'utujil Maya communities. In September of 2018, the commencement of project activities one and two, marked the start of the SD VISta pilot project: TRL's Improved Cookstove Project for Lake Atitlán. At later dates, TRL began two other project activities, detailed below.
TRL uses an innovative digital platform to execute the project, including its educational program, and to monitor and evaluate the project's success. Using Samsung tablets, TRL's Outreach Team administers various surveys and questionnaires built in Kobo Toolbox to track project objectives and beneficiary information (see section 3.3). The four project activities are as follows:

(1) Introduction of high-efficiency, biomass-fired devices to replace open cooking fires

ONIL stoves cost Q1,200/ea, including procurement and installation. TRL subsidies make them available to our beneficiaries for Q350. The project includes an innovative educational component to empower our mostly female clientele to preserve indigenous cultural cooking traditions while adopting this new technology. The price of Q350 per stove was maintained due to its accessibility and, combined with our educational program, its ability to accelerate the uptake of the technology, promote responsible ownership, and ensure long-term stove maintenance. Our Technology Adaptation Specialist's (TAS) experience as a chef and community nutritionist, and her many years' experience cooking on the stove, makes her the perfect person to impart new cooking techniques for traditional foods. Because she can communicate with beneficiaries in their native language, she can easily communicate the significance of the stove's positive environmental impacts and obtain a commitment from the beneficiary to its correct usage.
TRL aims to install approximately 120-150 ONIL stoves per year over the project period of 21 years. All stoves will be maintained for optimal performance.

TRL's digital monitoring platform tracks ONIL stove condition and net social and environmental impacts. Intake questionnaires gather general demographic information and baseline data for each family participating. Maintenance questionnaires and surveys are then administered over a multi-visit follow-up schedule, detailed in section 3.3. Within this schedule, our Outreach Team provides a unique educational component: ample environmental education alongside technological adaptation support.

Two surveys have been designed in-house: Adoption Metrics and Female Empowerment. Additionally, TRL uses the Poverty Probability Index (PPI) to track project participant

poverty levels over time. The PPI is a ten-question survey designed and statistically validated for international organizations to use in tracking and combating poverty.[2] PPI questionnaires are country specific and compare responses to a scorecard, which then compares beneficiary responses against national and international poverty lines.[3] TRL also asks beneficiaries select questions from The St. George's Respiratory Questionnaire and Clean Cooking Alliance indicators to monitor and evaluate health outcomes. The St. George's Respiratory Questionnaire, designed by St. George's University in London, England, is also statistically backed and has been approved for randomized controlled therapy trials as well as population surveys.[4] Each survey has a "prior" and "post" version to establish a baseline scenario and identify changes that take place during the project lifetime. The "prior" and "post" versions are conducted for each additional instance of project activity one, one year apart. Each additional instance for project activity one (e.g., ONIL stove installed) mandates a minimum of five visits in the home of the beneficiary in the first year of installation.

The ONIL stove was selected based on the following criteria:

Durability – stoves previously installed are still functioning correctly after more than 15 years of use. The stoves can be maintained easily and TRL's stove servicing program is included in the cost of the stove. Our beneficiaries purchase replacement parts at cost and perform other maintenance upon request.

Heat Transfer – heat is evenly distributed across the full breadth of the metal plate.

Insulation – stoves cannot radiate too much heat as day-time temperatures are high year long, but must be able to heat the home at night. The stoves have insulated cement walls that make them warm to the touch while in use, reducing risk of burns.

Mobility – stoves can be easily relocated if the family moves or builds a new kitchen.

Efficiency – the stove is 70% more efficient in the use of wood fuel[5] than an open fire (1) reducing time and/or money spent by families in firewood collection/purchase and (2) lowering wood fuel demand and consequently slowing local deforestation rates.

Health Benefits – the stove provides for a 99% reduction in HAP, compared to open cooking fires.

Value – other, similar stove designs are more expensive than the ONIL stove we promote, despite the fact that the construction of TRL's ONIL stove is customized to our specific requirements based on our beneficiaries' needs (i.e., more durable construction, metal plancha ideal for culturally specific culinary needs, use of a chimney, interior design radiates heat well after fire is out). The design is standard, however cookstoves are manufactured in-country, and thus customized by the manufacturer to suit the needs of families in rural Guatemala.

Uptake – The ONIL stove design is suited to local indigenous cooking practices and is thus culturally, widely accepted in the service area.

In addition to the installation of stoves and trainings, TRL has joined a number of promotional initiatives to improve family economies and alert the community to the dangers of open fire cooking and the benefits of ICS and other environmental technologies.

[2] https://www.povertyindex.org/about-ppi
[3] See SD VISta PD V 1.4
[4] http://www.healthstatus.sgul.ac.uk/sgrq

[5] https://www.helpsintl.org/communitydevelopment

Our goal is to expand access to the ONIL cookstove and spread knowledge of TRL's work as an environmental, not-for-profit organization.

(2) Provision of energy efficiency improvements in existing biomass-fired cookstoves

TRL provides energy efficiency improvements to any existing biomass-fired cookstove in the project area that is performing poorly due to damage and/or degradation (see VCS Project Description, section 1.11). The energy efficiency improvements TRL will have performed over the 21-year project lifetime. Existing biomass-fired cookstoves that undergo energy efficiency improvements receive a modified visit schedule:

First Visit: Provision of energy efficiency improvement
After a damaged, underperforming existing device is identified, TRL performs the energy efficiency improvement on the same day, once provided with beneficiary permissions and project consents. A TRL technician removes all components from the interior of the old ONIL stove, saving only the metal inlet and exhaust if they are in good condition. Next, they assemble and install a new ONIL stove combustion chamber while the TAS explains the importance of preserving the stove's internal mechanisms to provide for future efficient and proper function. The technician scrapes the cook surface clean from the lime build-up over time that inhibits effective heat transfer.[6] Once installed, the TAS reviews best-use techniques to ensure environmental and health benefits for as long as possible. The TAS completes the corresponding questionnaire.

Additional Visits (1,3, 5, and 7 years after provision of energy efficiency improvement):
The Outreach Team returns after one year, and then, to a random sampling of ONIL stoves on a biennial basis. The team addresses any issues with the improved ONIL stove, performs maintenance, and answers beneficiary questions. At this time, the TAS verifies contact information and reminds families of stove parts prices.

TRL also provides visits upon request, outside of the schedule described, for both project activities one and two.

(3) Distribution of British Berkefeld water filters

Over time, the TRL ICS Project has expanded to include additional activities designed to address the project area's environmental and sustainable development challenges. TRL offers British Berkefeld water filters to beneficiaries. The water filters provide access to safe, clean drinking water -- a resource largely inaccessible in beneficiary homes. We charge beneficiaries Q300 per filter. British Berkefeld water filters provide beneficiaries water that is less wasteful than drinking from plastic bags, safer than drinking tap or lake water, which is contaminated by fecal matter, and more cost-effective than buying larger water jugs. Our follow-up program is designed to monitor and evaluate whether families use their filter, prefer them over other options, and are using best maintenance practices. We also make sure that families return to us once a year to replace their filter candle for Q125 to ensure that the water filter is working at capacity. Both the filter and candle are sold to beneficiaries at-cost. Project activity results are entered in Samsung tablets and organized and analyzed on our cloud-based servers.

[6] As the metal *plancha* (griddle) degrades over time, beneficiaries typically add a calcium-based substance to the cooking surface to prevent tortillas from sticking. This substance ultimately builds up, reducing heat transfer.

(4) Replacement of incandescent light bulbs with LEDs

TRL also distributes LED light bulbs to beneficiaries. In most cases, this involved replacing incandescent light bulbs with LEDs. However, if a client has a dead lightbulb of any kind (including CFL or LED), we will also offer them a LED. For each LED light bulb that replaces an incandescent bulb, the project avoids an estimated 0.03468 tonnes of CO2 from being released into the atmosphere each year.[7] Families save roughly Q200 per light bulb per year (depending on the fluctuating price of electricity), improving family economies. We offer LED light bulbs at-cost for Q15.[8] We educate beneficiaries on the environmental and financial benefits of using LED light bulbs and other ways that household electricity consumption can be minimized. Our follow-up program records kilowatt hours (kWh) used per month and changes in energy bill costs. Project activity results are entered in Samsung tablets and organized and analyzed on our cloud-based servers.
In Santiago Atitlán, open fire cooking, lack of access to safe, potable drinking water, and limited knowledge of energy efficient technologies like LEDs present complex health, socio-economic, and environmental challenges to local communities. The traditional method of cooking over an open fire brings great risk of burns, acute respiratory infections, eye irritation, and chronic obstructive pulmonary disease (COPD) resulting from decades of exposure to wood smoke. Particularly for women and children, multiple studies show high correlations between smoke exposure from a variety of home cooking sources and increased death rates. Worldwide, acute respiratory infection is a leading cause of death in children under five contributing to an estimated 11–22% of deaths among children under five.[9] EPA researchers estimate the lifetime cancer risk from wood smoke to be 12 times greater than from a similar amount of cigarette smoke.[10] "Solid fuels emit particulates and harmful gases when burned, causing elevated levels of indoor exposure that can reach 10-20 times above safe limits. Women, children, and the elderly are particularly exposed. The result is acute respiratory infections, chronic obstructive pulmonary disease (such as bronchitis), eye problems, and cancer of the lungs. Burns from open fires pose another significant health hazard."[11] In Guatemala, acute respiratory infections are prevalent among 20.1 percent of children under five.[12] In 2015 the mortality rate for children under the age of

[7] "Electricity-specific emission factors for grid electricity" p. 20 table: Emissions per kWh of electricity consumed (value for Guatemala)
https://ecometrica.com/assets/Electricity-specific-emission-factors-for-grid-electricity.pdf

[8] https://www.ecoluxlite.com/home/index.php?option=com_virtuemart&view=productdetails&virtuemart_product_id=996&virtuemart_category_id=35&Itemid=386

[9] Tomczyk, S., McCracken, J.P., Contreras, C.L. et al. Factors associated with fatal cases of acute respiratory infection (ARI) among hospitalized patients in Guatemala. BMC Public Health 19, 499 (2019) doi:10.1186/s12889-019-6824-z. Accessed 8 Nov. 2019.
https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-019-6824-z

[10] What You Should Know About Residential Wood Smoke Pollution,
https://www.marincounty.org/-/media/files/departments/cd/buildingsafety/woodsmokedocformarinplanning.pdf. Accessed 8 Nov. 2019.

[11] Household Fuel Use and Fuel Switching in Guatemala June 2003 ....
http://documents.worldbank.org/curated/en/255351468771351289/text/272740ESMAP0Te1361030Household0fuel.txt. Accessed 28 Mar. 2019.

[12] "Desigualdades en salud en Guatemala" P. 21
https://www.paho.org/gut/index.php?option=com_docman&view=download&category_slug=publications&alias=793-desigualdades-en-salud-en-guatemala&Itemid=518

five in Guatemala related to respiratory infections like influenza or pneumonia was 36.4 (deaths per thousand live births).[13]
The TRL ICS Project was formed after becoming aware of these risks. The goal has always been to identify ways to combat the ill-effects of open fire use while confronting local ecological threats and improving family economies. TRL enables access to technology and education that empowers our beneficiaries to overcome these challenging circumstances. Other family members and neighboring families also share in the benefits.
TRL staff have maintained a strong commitment to the community and its indigenous culture. Because TRL must work within the framework of an impoverished, often semi-illiterate community, we have never been able to implement a payment schedule, a sliding payment scale, or signed documentation. We instead have opted for a one-time base charge for all community members. Consent to the project is obtained through a verbal agreement with the beneficiary at the time of the site visit. This structure is built on years of trust earned among local residents and enables TRL to expand its programs to confront additional environmental challenges within the project area.

2.1.3 Implementation Schedule

The following implementation schedule reflects past and future development activities and accomplishments, based on the current, TRL ICS Project plans.

Date	Milestone(s) in the Project's Development and Implementation
21 September 2015	TRL files to become a registered Guatemalan nonprofit dedicated to the implementation of sustainable solutions to the environmental, health, and development challenges that threaten indigenous livelihoods in the Lake Atitlán drainage basin.
June 2016	TRL applies and is approved for collaboration with Princeton in Latin America, set to receive Fellows on a yearly basis.
October 2017	TRL sends final grant report to Journey Latin America detailing project activities concluding five-year grant cycle.
January 2018	A $14,000 unrestricted donation is made to support operating costs of TRL.
February 2018	TRL is accepted into Verra's Sustainable Development Verified Impact Standard (SD VISta) pilot project.
July 2018	TRL accepts first Princeton in Latin America (PiLA) fellow for 2018-2019 cycle.
1 September 2018	Project Start Date: Project Activities commence with a new series of ONIL stove installations and energy efficiency improvements in existing biomass-fired cookstoves under the new, TRL Improved Cookstove Project for Lake Atitlan.
November 2018	Implementation of digital survey system begins with mobile platform Kobo Toolbox.
19 February 2019	A $30,000 unrestricted donation is made to TRL to benefit stove project.

[13] Pan American Health Organization. PLISA: Health Information Platform for the Americas. Mortality data: leading causes of death, Guatemala, 2015 [Internet]. Washington, D.C.: PAHO; 2016. Available from: https://hiss.paho.org/pahosys/lcd.php Accessed on 12 May 2020.

March 2019	A $10,000 unrestricted donation is made to support operating costs of TRL.
March 2019	Seattle International Foundation (SEAIF) and TRL begin coordinated partnership enabling TRL to use SEAIF as a fiscal agent, thus expanding institutional funding access.
May 17 2019	TRL begins the distribution of British Berkefeld water filters as an additional project activity.
October 2019	TRL receives an in-kind donation of 100 LED light bulbs and completes its first installation in a beneficiary's home, commencing the start of a 4th project activity.
September 2019	TRL has installed 153 ONIL stoves
October 2019	TRL receives an in-kind donation of 100 LED light bulbs and completes its first installation in a beneficiary's home, commencing the start of a 4th project activity.
December 2020	TRL has installed an additional 60 ONIL stoves, distributed additional 5 water filters, and enrolled another 2 families to the microsavings program
December 2021	TRL will have installed an additional 150 ONIL stoves, distributed additional 15 water filters, and enrolled another 20 families to the microsavings program
December 2022	TRL will have installed an additional 150 ONIL stoves, distributed additional 15 water filters, and enrolled another 20 families to the microsavings program
August 2024	Next monitoring period report
August 31 2039	This 21-year project cycle concludes positively, affecting the health and economic status of residents of Sololá department.

2.1.4 Project Proponent

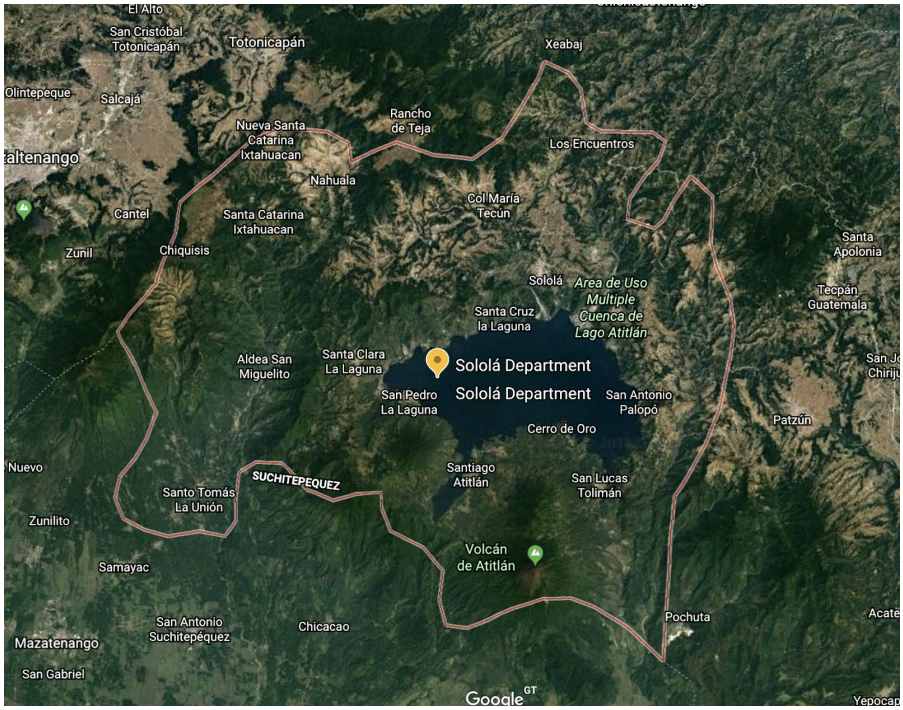
Organization Name	Tuik Ruch Lew/Helping the Earth (TRL)
Role in the Project	Primary Project Proponent
Contact Person	Cameron Krummel
Title	Administrative Director
Address	Canton Xechivoy, Santiago Atitlán, Sololá Guatemala, +502 7933 - 3061, programdevelopment@trlearth.org, trlearth.org
Telephone	+502 7933 - 3061
Email	programdevelopment@trlearth.org

2.1.5 Other Entities Involved in the Project

No other entity is involved in the TRL ICS Project.

2.1.6 Project Location

The project takes place within the Sololá Department (14.70°N, 91.25°W), which includes the Lake Atitlán Basin, a nature preserve. 14°38'17.63"N, 91°13'44.44"W are the coordinates of Santiago Atitlán, headquarters of the project. See KML file. The photo situates Lake Atitlán in the Sololá Department and outlines the project area. The project office is located in the town of Santiago Atitlán at the south end of the lake.



2.1.7 Project Description Deviations

No project description deviations were applied during this monitoring period.

2.1.8 Threats to the Project

Human-Induced threats

Threat: Cultural worldview limits reception of ONIL stove as a larger fire is seen as superior (PA1).

Solution: Continue to employ Tz'utujil educators to explain the depth of the project in participants' native language and from their cultural perspective.

Threat: Stove owners alter the stove itself so that it no longer functions as designed, or owners refuse to maintain their stoves to function properly (PA 1 and PA 2).

Solution: (1) Improve our screening process as to who receives an ONIL stove, i.e., people who are committed to using the ONIL stove to accomplish the SDGs. (2) Educate stove recipients about best use practices and environmental and economic benefits and share tips to help families adapt more quickly to the change in technology. (3) Foster feelings of

responsibility for stoves through the subsidised Q350 charge for a new ONIL stove or Q60 charge for a new combustion chamber. Thus beneficiaries are only paying a part of the entire stove installation and monitoring costs of Q1200. Research showed that once people partly pay the Q350 for the ONIL stove, they gain the feeling of ownership and therefore will care better for their belongings. During the monitoring period, 31 families received full subsidies for their ONIL cookers as they were unable to afford even the subsidised price of Q350. (4) Maintain an intensive schedule of information dissemination about the importance of the ONIL stoves and how they must be used appropriately to achieve the benefits, both for people and the planet, using social media outlets. Continue to provide maintenance when needed so to avoid frustrations with stove performance.

Threat: U.S. trade-war reduces availability of supplies, increasing price for the foreseeable future. This includes supplies for stoves, replacement parts, water filters or LEDs (PA 1, PA 2, PA 3, PA 4).

Solution: These impacts have already been seen (e.g., local fabricators cannot get quality metal to make replacement parts). Price changes have not, and will not, be passed on to TRL beneficiaries because TRL's financial structure enables the organization to offset these costs using a mix of funds generated from private donations, other forms of institutional funding and upon completion of VCS, carbon markets.

Natural threats

Threat: Climate change and deforestation make firewood an untenable source of fuel (PA 1 and PA 2).
Solution: Although scarcity would seem to support the use of the ONIL stove, at some point the economy of obtaining firewood could make other fuels a more sustainable option. TRL's environmental education program is designed to encourage sustainable management of natural resources. The organization will continue to encourage discussion and action around the design of sustainable forest management programs in the region. Our goal is to support local efforts to organize community forestry models. We will continue to participate in local meetings and contribute to the development of a collective conscience among project participants and the rest of the community to sustainably manage local forests.

Threat: Climate change negatively affects agricultural yields, reducing reliable income streams in the local community and thus availability of funds to purchase ONIL stoves, replacement parts, water filters and/or LEDs (PA 1, PA 2, PA 3, PA 4). Such circumstances contributed to installation numbers in the fall of 2019 when the corn crop produced yields lower yields than.
Solution: Encourage project participants to enroll in the TRL savings program. With access to savings, project participants will be less vulnerable to the economic consequences of a failed crop or other agricultural challenges brought about by climate change. Additionally, TRL will support local coordinated efforts to develop strategies for climate resilience. Our environmental education platform seeks to strengthen environmental values among project participants, empowering them to be leaders of such efforts in the area.

2.1.9 Benefit Permanence

The TRL ICS Project focuses on a program of education and supports a system of maintenance that helps extend the lifespan of the environmental technologies deployed.

Through the first five home visits made to families that receive an ONIL stove, beneficiaries learn how to extend the life of the ICS technology, which parts will need scheduled maintenance, how to clean stoves to ensure proper airflow, and what cooking techniques can be used to protect and preserve stove components. Since TRL's founding, the organization has outsourced manufacture of custom stove parts to increase quality and reduce beneficiary costs. TRL's dedication to free maintenance while selling replacement parts at-cost has increased demand for maintenance from not only TRL beneficiaries, but beneficiaries of other ONIL stove projects in the region. As a result, our organization is helping ensure that stoves installed over 15 years ago continue to function efficiently ensuring benefit permanence.

To ensure the project's long-term viability and the permanence of ICS and other program benefits, TRL has made progress towards the following long-term aims during the monitoring period:

1) Continue to enroll women in the TRL savings group, working to improve financial literacy. During the monitoring period, **13 women joined TRL's savings program**.
2) Enable access to other environmental technologies that provide for financial savings among beneficiaries. During the monitoring period **3 LEDs**, and **17 water filters** have been provided to beneficiaries.
3) Target grants and other institutional funding sources to address costs associated with the most vulnerable beneficiaries. During the monitoring period TRL has successfully secured institutional funds, and crowd-funded to secure subsidy funds.

2.2 Stakeholder Engagement

2.2.1 Stakeholder Consultation and Adaptive Management

Stakeholder engagement is an ongoing and steadily improving process. Even if the four project activities do not require the approval of governing bodies, TRL is constantly engaging with their local community. TRL team's integration into the community has enabled them to gain valuable feedback through community meetings and conferences, as well as in an unofficial capacity, through casual conversations with stakeholders.

TRL's consultation activities are as follows:

Table 2: Overview of Stakeholder Consultation Activities

Stakeholder Group	Stakeholder	Consultation Activities
Affected Parties	Current Beneficiaries	- Household Visits / Surveys - Public Events / Expositions - Open Office
	Potential Beneficiaries	- Household Visits / Surveys - Public Events / Expositions - Open Office
	Local Firewood Vendors	- Public Events / Expositions
Other Interested Parties	Project Donors	- Public Events / Expositions - Annual Report - Regular Newsletter - TRL's Social Media Communication
	Religious Groups	- Public Events / Expositions - Annual Reports published on the TRL's website - TRL's Social Media Communication
	Governmental authorities	- Public Events / Expositions - Annual Reports published on the TRL's website - TRL's Social Media Communication
	Environmental public-sector Agencies	- Public Events / Expositions - Annual Reports published on the TRL's website - TRL's Social Media Communication
	Academic Institutions	- Public Events / Expositions - Annual Reports published on the TRL's website - TRL's Social Media Communication - Research Collaboration
	Local NGOs	- Public Events / Expositions - Annual Reports published on the TRL's website - TRL's Social Media Communication

	Media	- Public Events / Expositions - Annual Reports published on the TRL's website - TRL's Social Media Communication

Household Visits / Surveys

TRL has engaged with the beneficiaries and their families by household visits, where the TAS is explaining the benefits of the four different project activities.

During the monitoring period, TRL has conducted about 380 household visits of which 152 resulted in a ONIL stove installation. Furthermore, the following household surveys have been conducted during the monitoring period:

1. Survey during the ONIL stove installation: 152
2. Survey 1 week after the ONIL stove installation: 150
3. Survey 3 month after the ONIL stove installation: 90
4. Survey 1 year after the ONIL stove installation: 21

Public Events / Expositions

To engage with a wider range of stakeholders, especially with those identified as Other Interested Parties, TRL regularly attends public events and expositions to present the four different project activities. These platforms give TRL the opportunity not only to engage with stakeholders but also to regularly evaluate the project activities based on the community and stakeholder needs. Moreover, TRL also provides **group educational seminars** to introduce beneficiaries from lesser frequently served areas to the environmental technologies offered by TRL.

During the monitoring period, TRL has presented the different project activities in the following events:

1. Two training events were held for **ODIM[14] (Organization for the Development of the Indigenous Maya)** in San Pablo on 12. December 2019, where the TRL team demonstrated the functionality of the ONIL stoves.
2. On 3rd of March 2020 TRL was invited to present the ONIL stove project to another local NGO (**Pueblo a Pueblo[15]**), where TAS explained the health and environmental benefits on the ONIL stove. Other project activities have been addressed but were not of major focus on this occasion.
3. An **education and publicity event** was held by TRL in San Pedro La Laguna in July 2019 for a focus group. The focus group consisted of 10 Tz'utujil women (**beneficiaries**) in San Pedro La Laguna handpicked by one of our board members who lives in the city. Our outreach team was explaining the benefits of two project activities, the improved cookstove and the water filter. Based on that event, 5 women joined the stove program.
4. TRL held several **demonstration events for potential donors**, where the project activities have been explained and demonstrated. As a result, TRL received donations for the ONIL stove project.

[14] http://www.odimguatemala.org
[15] https://www.puebloapueblo.org

a. On 29.03.2019 a group of american donors visited Santiago Atitlan. TRL organised a demonstration event to explain the benefits of the ONIL stove and the importance of water filters.
b. On 14.03.2019 TRL held a demonstration event in one of the beneficiaries houses to show to 13 potential donors how the ONIL stove works and what impact it makes to the livelihood of the people in Santiago Atitlan.
c. On 28.03.2019 TRL held another demonstration event, where the ONIL stove and the water filter was shown to 12 potential donors.
d. On 06.01.2020 TRL invited a potential donor for a tour in Santiago Atitlan, where the community was shown and where the different project activities have been demonstrated on site.

Open Office

TRL has an Open Office policy to expand its informal consultation activities to reach more stakeholders. From Monday to Friday (9am to 4:30pm), interested stakeholders can come to TRL's open office and engage with the TRL's team, asking questions about the four different project activities and get information about the benefits of these respectively. TRL's office is located centrally in Santiago Atitlan, no more than 2 walking minutes from the market. The front of the office building shows the logo and the two of TRL's project activities (figure 4). This attracts people and stimulates discussions.

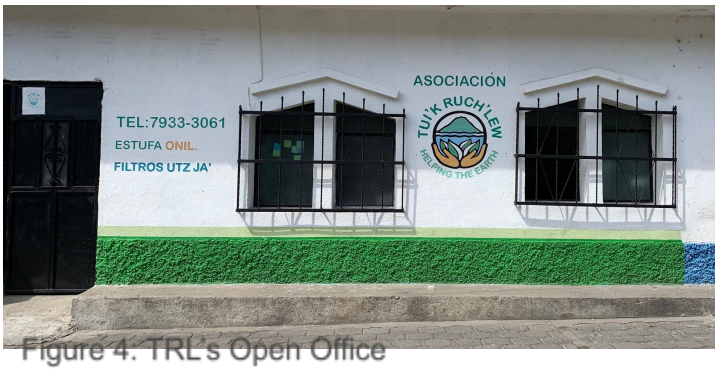


Figure 4: TRL's Open Office

During the monitoring period, we have had about 10-15 potential beneficiaries per week. These are people coming to the office asking for the different projects TRL is having. Therefore, we assume that during the monitoring period, TAS has been engaging with about **900 potential beneficiaries**. This engagement is of informal nature.

Interaction through publications

TRL engages with several stakeholders (see table 2) through annual reports published on the organisation's website (www.trlearth.org), regular newsletter, and TRLs social media communication. Our interactions in numbers:

- Two **annual reports** have been published on the TRL's website for the monitoring period.
- 22 **newsletters** have been sent through Mailchimp to project donors and friends of the organisation during the monitoring period. TRL reached **1,387 potential donors** during the monitoring period.
- Several **social media posts** have been published on the following platforms:
  - TRL's website
  - Instagram (english and spanish bilingual platform to engage with current beneficiaries, potential beneficiaries, project donors, and local NGOs)

- Facebook (english and spanish bilingual platform to engage with current beneficiaries, potential beneficiaries, project donors, and local NGOs)
- YouTube Channel (spanish and tz'utujil bilingual platform to engage with current beneficiaries, potential beneficiaries, project donors, academic institutions, local NGOs, and local media)
- LinkedIn (english platform to engage with project donors and to attract potential donors)

2.2.2 Anti-Discrimination

TRL is dedicated to supporting diversity and has a strict policy prohibiting any form of discrimination or harassment. Both are grounds for dismissal from employment. We pride ourselves on a staff and Board that include male, female, indigenous, foreign, and LGBTQ members.

The Guatemalan Work Code states: (Article 14 bis.) "Discrimination is prohibited on the grounds of race, religion, political creeds and economic situations, education, culture, entertainment or commerce that works for the use or benefit of workers, in companies or work property sites. In particular, in the status of workers in general." TRL abides by all Guatemalan labor laws.

The project welcomes any individual who requests our services and commits to the stated terms and conditions of project participation. TRL's focus is on the realization of the benefits to be attained and not who is receiving them.

These policies were enforced throughout the monitoring period.

2.2.3 Worker Training

New Hire and Onboarding Procedure

Policy brief & purpose

Our New Hire policy refers to TRL's efforts to help new employees and/or volunteers settle in their new position. We provide new hires with the necessary information and training to perform their job to the standards set by TRL. TRL employees facilitate new hires' and/or volunteers' adaptation to TRL and Santiago, Atitlan.

Scope

This policy applies to all employees/volunteers, including to those who recently received and accepted an offer of employment from us or an offer to volunteer.

Policy elements

Our onboarding efforts aim to:

(1) Integrate new employees/volunteers into the culture of both TRL and Santiago Atitlan

(2) Provide useful information about their position and TRL's expectations

(3) Inform our new hires/volunteers about employee orientation, organizational culture, mission, and procedures

(4) Train new employees/volunteers in field work conduct

Actions

We have implemented steps to fine-tune and document in detail our onboarding goals. Some steps refer to the period before the new hire's first day and some refer to their first months on the job.

Before a new hire starts work

(1) The Administrative Director should:
    (a) Announce our new member's start date to TRL staff and in correspondence with the President of the Board.
    (b) Prepare our new member's workspace with all equipment and material necessary.
(2) The Program Developer should:
    (a) Enter our new member's information in our company database and set up their individual emails, accounts, and phones.
    (b) Create an orientation program specific to this member, including activities, timelines, participants, and documentation.

After a new member starts work

(1) The Program Developer should:
    (a) Coordinate appropriate training presentations and programs
    (b) Review TRL's mission statement, values, and goals.
    (c) Introduce the new member to the code of conduct including conduct in the field.
    (d) Review our Public Relations policies including photos taken while in the field and other considerations.
        (i) For example, no photos taken on the job may be used for personal use without Program Developer approval.
    (e) Introduce the new member to the project sites and safety considerations while in the field and to the various projects undertaken at TRL.
    (f) *New hires ONLY* Inform the new-hire of the probationary period (3 months)
(2) The Lead TAS should:
    (a) Coordinate supervisory field work
(3) The Administrative Director should:
    (a) Arrange a morning meeting to welcome the new member on their first day
    (b) Show new members to their workstation and help them familiarize themselves with their surroundings.
    (c) Present important documents to review (Operations Manual, previous reports etc.). This paperwork must be kept at a bare minimum so as not to overwhelm a new member.
    (d) Give short presentations so the new member can become familiar with our mission, procedures, values, and policies.
    (e) Explain the first week, mandatory field work, etc.
    (f) The first few days our new member spends in our organization are important to help them settle in. TRL will:
        (i) Assist in building a communication network (who to contact for what, who to report to etc.)

(ii) Ease new members into their new position by assigning simple but meaningful work from the start. New members should not have to deal with urgent work or duties not involved in their job description during their first days.
(iii) Arrange for our new member to shadow colleagues during their work so they can get hands-on experience on how things are done.
(iv) Assign a mentor.

We want individuals who are joining our team to feel respected and valued early on. The appropriate supervisor can implement onboarding activities that aren't included in this policy. We encourage collective activities because they help new members feel part of the TRL team.

New members may need more than a few days to fully grasp their responsibilities and learn to be productive in their new workplace. Onboarding may continue until the individual feels sure they can function independently.

Key stakeholders (i.e., Team members) involved in carrying out project activities include the positions of **Technology Adaptation Specialist** (TAS) and **Technician**.

The **position of TAS** is trained through shadowing the current Lead TAS on field visits. This position requires an employee who (1) uses and cherishes her ONIL stove, (2) has an assertive personality, (3) respects cultural norms in traveling about the community and entering the homes of potential and current beneficiaries, (4) is literate and speaks Tz'utujil and Spanish, (5) is open to new ideas and information, (6) is an honest, responsible, and independent worker, and (7) understands the mechanical functioning of the ONIL stove. The person must be able to present to an audience. In a culture where corruption is pervasive and accepted, personal recommendations are of the highest importance. The TAS position offers individuals the opportunity to improve their computational skills and expand their depth of environmental knowledge.

The position of **Technician is** also learned by accompanying a current Technician. This position requires many of the same characteristics as the TAS, in addition to which the installer must (1) have a personality that inspires confidence and trust and is courteous, (2) be able to carry loads of nearly 100 pounds and do simple construction tasks, and (3) be able to understand the mechanical functioning of the ONIL stove and its assembly. Finding a person who can be trusted to work competently and reliably on their own is often difficult. To be confident that this employee will uphold certain standards in interacting with vulnerable populations, it is critical that TRL is well acquainted with and has full trust in this worker.
TRL takes pride in its multilingual, multicultural office environment. To exercise sensitivity and foster an inclusive work environment, team meetings and office-wide communications are conducted in Spanish. Onboarding and training are conducted in the native language of the new team member, whether it be Tz'utujil, Spanish, or English, to facilitate a smooth transition into the new work environment.
This process was executed for new hires throughout the monitoring period.

2.2.4 Equal Work Opportunities

TRL is dedicated to being an equal opportunity employer as defined by the ILO: This fundamental convention defines discrimination as any distinction, exclusion, or preference made on the basis of race, colour, sex, religion, political opinion, national extraction, or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation. The ILO requires ratifying states to declare and pursue a national policy designed to promote, by methods appropriate to national conditions and practice, equality of opportunity and treatment in respect of employment and occupation, with a view to eliminating any discrimination in these fields. This includes discrimination in relation to access to vocational training, access to employment and to particular occupations, and terms and conditions of employment. The proceeding Guatemalan national policy says: the Guatemalan Labour Code (*Código de Trabajo*, Decree 1441) (Labour Code) [prohibits] discrimination based on sex, race, religion, political beliefs, economic situation, schooling, or any other cause, which may have a detrimental effect on access to employment.[16]

In the Tz'utujil culture, jobs are often passed through family members who have proven to be trustworthy and efficient workers. Since this project involves working with vulnerable populations, employability is highly dependent on the reliability and professionalism of employees. Employees must have a deep understanding of cultural nuances relevant to the community served and an ability to work independently. TRL requires a thorough understanding of the applicant's ability to fulfill the requirements of the position, both in their relationship to the community and their level of education.
When recruiting, TRL aims to prioritize hiring local community members. We remain dedicated to offering new opportunities to our project beneficiaries as TRL expands operations and job openings arise.

These policies were enforced throughout the monitoring period.

2.2.5 Workers' Rights

Each of our workers has a contract that states his/her rights and obligations. In Guatemala, the labor laws favor the employee and reputable organizations work hard to comply with these laws, which are enforced by the Ministry of Labor (MINTRAB).

These policies were enforced throughout the monitoring period.

2.2.6 Occupational Safety Assessment

Members of TRL's Outreach Team must be Tz'utujil-speaking people and residents of the community. As a result, they are familiar with the community in which they are about to work. They are also the best equipped to determine the risks to their safety due to the following occupational safety hazards unique to this community.

Robbery is the most common crime in our town. In the local community, there exists what is known as envidio, or envy. TRL outreach employees must always be very careful not to display any material evidence of success and maintain a humble profile. Our Outreach Team, the Installer and TAS, always travel in groups of two and work only during daylight to prevent theft. These team members were involved in the distribution of ONIL stoves for

[16] https://www.mintrabajo.gob.gt/index.php/documentacion/leyes-ordinarias See appendix 3.

many years before the official formation of TRL, and they have not experienced an incident in the 15 years they have been doing this work in the community.

Extortion is a very common crime in Guatemala. As such, organizations tend to keep their financial information out of public view. TRL distributes ONIL stoves only in-line with demand and does not buy large quantities of stoves for storage. Part of the qualifications of our TAS and Installer are that they understand these intricacies and work to avoid publicizing the financial situation of TRL.

Kidnapping for monetary reward is common in Guatemala. Thus, if the financial details of a project are publicized, the employees become targets for kidnapping. TRL does not actively publicize the total amount of our funding within our community to avoid drawing attention to the organization as a target.

As most workers at TRL have lived in the community for a number of years, they already possess the skills to avoid the dangers outlined above. TRL's current PiLA fellow was selected partially based on her extensive experience living and working in Latin America in low-income settings. Part of a Fellow's integration into the community involves time spent both in the office and in the field. In field training, Fellows learn the safety measures necessary to have a positive experience during their time with TRL. TRL employees work together to assess and avoid danger situations. Examples include working in teams when in the community, not carrying large sums of cash or valuables, and not publishing detailed financial information on the internet.
In addition to the risk of crime, the work of the Installer can be physically challenging. Tuk Tuks (small, three-wheeled vehicles) are used to transport the stoves to the beneficiary's dwelling. At times, the road may end quite a distance from the home, and the large parts must be carried to the building. TRL works to make sure families have at least one family member available who is strong enough to assist with the lifting required.

These policies were enforced throughout the monitoring period.

2.2.7 Feedback and Grievance Redress Procedure

No grievances were reported during the monitoring period. TRL maintains a contact form on our website that is accessible in both Spanish and English. Completing this form generates an email to our program developer who responds personally. In the event of a grievance, the TAS logs it in her documents to be addressed either at the following staff meeting or immediately, depending on the urgency. This process was adhered to throughout the monitoring period.

2.2.8 Stakeholder Access to Project Documentation

The first draft of this monitoring report completed a public comment period. Links to the VCS and SD VISta documentation have been posted on our website.

2.2.9 Information to Stakeholders on Assessment Process

In addition to an enhanced focus on verbal communication among staff and local community members, TRL will include direct links to monitoring reports on our website once the final version is approved. TRL has posted annual reports online as well. Project descriptions will be available on our website and we will publish links to these materials on Facebook upon approval.

During 2018 and 2019, TRL has been distributing handouts about the assessment process to local NGOs, beneficiaries, local governmental authorities, and people interested in an ONIL stove. Major distribution of this educational material happened in a community event in early 2020 before the pandemic started.

2.3 Project Management

2.3.1 Avoidance of Corruption

As a small nonprofit, TRL staff maintain the highest standards of transparency. The organization uses an external accountant who manages our accounts and organizes all receipts and other financial documents. In addition, TRL employs an auditor to guide the association in its transactions – our first external audit will be completed in 2020. To maintain transparency, TRL publishes annual reports on our website. The organization complies with all Guatemalan laws against favoritism, cronyism, or nepotism.
The project proponents and all connected with TRL are actively involved out of dedication to the protection of our environment as well as a desire to share the benefits created by the project with the Tz'utujil Maya people of Lake Atitlán.
These policies were enforced throughout the monitoring period.

2.3.2 Recognition of Property Rights

We will install a stove only at the property owner's invitation. Most often the home is built on property acquired through inheritance. The project does not infringe or interact with property rights. After delivery and payment, the ONIL stove is the sole property of the owner – TRL relinquishes all claims.[17]
Due to past experience with illegitimate projects that solicited identifying information from community members for the sake of theft, there is a high level of distrust between community members and new NGOs. The members of our community will not sign documents and are extremely suspicious of any unknown person asking them for information.
All beneficiaries verbally consent to take part in the project during the first site visit. The act of purchasing the ONIL stove and verbally agreeing to several consents constitutes a formal agreement between TRL and the new owner.
These policies were enforced throughout the monitoring period.

2.3.3 Free, Prior and Informed Consent

FPIC does not apply to the project activities since they do not infringe on or otherwise concern land rights.

2.3.4 Restitution and/or Compensation for Affected Resources

Our project does not affect any party's access to resources or their lands.

2.3.5 Property Rights Removal/Relocation of Property Rights Holders

[17] With the exception of an agreement that allows TRL to claim Sustainable Development Benefits and/or Verified Carbon Units.

ONIL stove installations do not impede on the land or property rights of a beneficiary. After installation, TRL forfeits any future claim to the stove as property, and beneficiaries can withdraw from the project at any point without punity. Part of participation in the project includes terminating the use of open cooking fires. To ensure the project does not infringe on cooking activities important to Tz'utujil Maya culture, the TAS guides new families through the adjustment period from three-stone fires to a clean cookstove based on her own experience. Beneficiaries learn how traditional meals can be prepared using the new ICS technology. Our lead TAS's expertise as a community nutritionist is applied daily to her work with beneficiaries to aid in this transition. This procedure was adhered to throughout the monitoring period.

2.3.6 Identification of Illegal Activities

Extortion is a very common crime in Guatemala. As such, organizations tend to keep their financial information out of public view. TRL distributes ONIL stoves only on demand. It does not buy large quantities of stoves for storage. Part of the qualifications of our TAS and installer are that they understand these intricacies and work to avoid publicizing the financial situation of TRL.
Robbery is the most common crime in our town. Our outreach workers, the installer and TAS, always travel in groups of two and work only during daylight to prevent theft.
TRL purchases made with an association check must have two signatures of the administrator and treasurer. Funds can be accessed only if these two members agree.
This procedure was adhered to throughout the monitoring period.

2.3.7 Ongoing Conflicts or Disputes

This issue is not applicable to our project as the installation of ICS technology does not affect property rights or property disputes.

2.3.8 National and Local Laws and Regulations

In 2016 Tuik Ruch Lew became a registered Guatemalan nonprofit, adhering to the registration process and all subsequent local and national laws governing nonprofit activities in the country. TRL abides by all Guatemalan Labor Laws as written in the Guatemalan Employment Code, and Laws for Protected Areas. These laws were adhered to during the monitoring period.

2.4 Grouped Projects

During the monitoring period, the project ensured that inclusion of all new project activity instances abided by the following eligibility criteria.[18]

Project Activity One: Introduction of high-efficiency biomass fired project devices to replace open cooking fires			
Criterion		Achieved by:	Justification:
(1)	Adopt and implement the project activities in	Forecasted instances (e.g., ONIL stove installs)	150 instances of PA 1 added during the monitoring period were implemented in the manner

[18] Developed per requirements detailed in the SD VISta Standard, v1.0

	the same manner as specified in the project description.	will be implemented in the manner described in SD VISta PD V 1.4, Section 2.1.2. At this time and for forecasted instances, no other project device type will be used, other than ONIL stove technology.	described in SD VISta PD V 1.4, Section 2.1.2.
(2)	Meet the applicability conditions as defined in CDM AMS-II.G. Small-scale Methodology: Energy efficiency measures in thermal applications of non-renewable biomass (Version 11.1, Section 2.2).	New instances will meet all applicability conditions listed in VCS Project Description, Section 3.2.	150 instances met all applicability conditions specified in the VCS Project Description, Section 3.2. See VCS Monitoring Report V 1.2.
(4)	Are subject to the same processes for stakeholder engagement described in the project description.	New instances will be installed only when the same stakeholder engagement processes detailed in the SD VISta PD V 1.4 Section 2.2 have been executed. Every beneficiary will participate in the same consultation process described.	The same stakeholder engagement process accompanied all 150 new instances added during the monitoring period. All beneficiaries were consulted per the procedures described in section 2.2.
(5)	Are subject to the same processes for respect for rights to lands, territories and resources – including free, prior and informed consent.	All new instances will be installed only when TRL has performed the processes required per the SD VISta Standard, v1.0 section, Section 2.4.	All 150 new instances added during the monitoring were installed only when TRL had performed the processes required per the SD VISta Standard, v1.0 section, Section 2.4.
(6)	Have similar monitoring elements to those set out in the project description.	All new instances will undergo equivalent monitoring procedures as described in the SD VISta PD V 1.4 Section 2.1.2.	All 150 new instances underwent equivalent or similar monitoring procedures as described in Section 2.1.2. Note, monitoring procedures for certain SDGs were not developed and implemented until after the project start date (SDG 5 for example). Therefore, SDG claims are only made on the

			achievements of the project that have sufficient monitoring data to date. Future monitoring reports will reflect more complete data sets and survey results, as described in the PD.

Project Activity Two: Energy efficiency improvements in existing biomass-fired cookstoves			
Criterion		Achieved by:	Justification:
(1)	Adopt and implement the project activities in the same manner as specified in the project description.	Forecasted instances (e.g. energy efficiency improvements in existing ONIL stoves will be implemented in the manner described in the SD VISta PD V 1.4 Section 2.1.2. At this time and for forecasted instances, no other project device type will be used, other than ONIL stove technology.	During the monitoring period all 91 energy efficiency improvements in existing devices were implemented in the manner described in the SD VISta PD V 1.4 Section 2.1.2.
(2)	Meet the applicability conditions as defined in CDM AMS-II.G. Small-scale Methodology: Energy efficiency measures in thermal applications of non-renewable biomass (Version 11.1, Section 2.2).	New instances will meet all applicability conditions listed in VCS Project Description, Section 3.2.	91 new instances added during the monitoring period met all applicability conditions specified in the VCS Project Description, Section 3.2. See VCS Monitoring Report V 1.2.
(3)	Are subject to the same scenarios at project start with respect to stakeholders' well-being as determined for initial project instance(s).	The project shall add new instances only within the Sololá Department thus subject to the baseline scenario described in the SD VISta PD V 1.4 Section 2.1.8 and causal chain outlined in section the SD VISta PD V 1.4 2.1.9. Thus all new instances will affect stakeholder's well-being in a manner	All 91 new instances added during the monitoring period were/are within the Sololá Department thus subject to the baseline scenario described in the SD VISta PD V 1.4 Section 2.1.8 and causal chain outlined in the SD VISta PD V 1.4 Section 2.1.9. Thus all new instances added during the monitoring period have affected stakeholder's well-being in a manner equivalent to those approved at the time of validation, per the SD VISta Standard, v1.0

		equivalent to those approved at the time of validation, per the SD VISta Standard, v1.0 Section 3.1.	Section 3.1.
(4)	Are subject to the same processes for stakeholder engagement described in the project description.	New instances will be installed only when the same stakeholder engagement processes detailed in the SD VISta PD V 1.4 Section 2.2 have been executed. Every beneficiary will participate in the same consultation process described.	The same stakeholder engagement process accompanied all 91 instances added during the monitoring period. All beneficiaries were consulted per the procedures described in section 2.2.
(5)	Are subject to the same processes for respect for rights to lands, territories and resources – including free, prior and informed consent.	All new instances will be installed only when TRL has performed the processes required per the SD VISta Standard, v1.0 section, Section 2.4.	All 91 new instances added during the monitoring were installed only when TRL had performed the processes required per the SD VISta Standard, v1.0 section, Section 2.4.
(6)	Have similar monitoring elements to those set out in the project description.	All new instances will undergo equivalent monitoring procedures as described in the SD VISta PD V 1.4 Section 2.1.2.	All 91 new instances underwent equivalent monitoring procedures as described in Section 2.1.2. SDG claims are only made on the achievements of the project that have sufficient monitoring data to date.

Project Activity Three: Distribution of British Berkefeld Water Filters			
Criterion		Achieved by:	Justification:
(1)	Adopt and implement the project activities in the same manner as specified in the project description.	Forecasted instances (additional water filters) will be distributed in the same manner specified in the SD VISta PD V 1.4 Section 2.12	All 17 water filters distributed during the monitoring period were distributed in the same manner specified in the SD VISta PD V 1.4 Section 2.12.
(2)	Are subject to the same scenarios at project	The project will add new instances only within the Sololá Department thus	All 17 water filters distributed during the monitoring period were only distributed within the Sololá Department and thus were/are

	start with respect to stakeholders' well-being as determined for initial project instance(s).	subject to the baseline scenario described in the SD VISta PD V 1.4 Section 2.1.8 and causal chain outlined in the SD VISta PD V 1.4 Section 2.1.9. Thus, all new instances will affect stakeholder's well-being in a manner equivalent to those approved at the time of validation, per the SD VISta Standard, v1.0 Section 3.1.	subject to the baseline scenario described and have affected stakeholders' well-being in a manner equivalent to those approved at the time of validation.
(3)	Are subject to the same processes for stakeholder engagement described in the project description	New instances will be added only when the same stakeholder engagement processes detailed in the SD VISta PD V 1.4 Section 2.2 have been executed. Every beneficiary will participate in the same consultation process described.	The same stakeholder engagement process accompanied all 17 instances added during the monitoring period. All beneficiaries were consulted per the procedures described in section 2.2.
(4)	Are subject to the same processes for respect for rights to lands, territories and resources – including free, prior and informed consent.	All new instances will be distributed only when TRL has performed the processes required per the SD VISta Standard, v1.0 section, Section 2.4.	All 17 new instances added during the monitoring were installed only when TRL had performed the processes required per the SD VISta Standard, v1.0 section, Section 2.4.
(5)	Have similar monitoring elements to those set	All new instances will undergo equivalent	All 17 new instances underwent equivalent or similar monitoring procedures as described in

	out in the project description.	monitoring procedures as described in the SD VISta PD V 1.4 Section 2.1.2.	Section 2.1.2. SDG claims are only made on the achievements of the project that have sufficient monitoring data to date.

Project Activity Four: Replacement of Incandescent Light Bulbs with LEDs			
Criterion		Achieved by:	Justification:
(1)	Adopt and implement the project activities in the same manner as specified in the project description.	Forecasted instances (additional LEDs/CFLs) will be distributed only in the same manner specified in the SD VISta PD V 1.4 Section 2.12.	All 3 LEDs added during the monitoring period were only counted as additional instances if they were distributed in the manner specified in the SD VISta PD V 1.4 section 2.12.
(2)	Are subject to the same scenarios at project start with respect to stakeholders' well-being as determined for initial project instance(s).	The project will add new instances only within the Sololá Department thus subject to the baseline scenario described in the SD VISta PD V 1.4 Section 2.1.8 and causal chain outlined in the SD VISta PD V 1.4 section 2.1.9. Thus, all new instances will affect stakeholder's well-being in a manner equivalent to those approved at the time of validation, per the SD VISta Standard, v1.0 Section 3.1.	All 3 LEDs distributed during the monitoring period were only distributed within the Sololá Department and thus were/are subject to the baseline scenario described and have affected stakeholders' well-being in a manner equivalent to those approved at the time of validation.
(3)	Are subject to the same processes for stakeholder engagement described in the project description.	New instances will be added only when the same stakeholder engagement processes detailed in Section 2.2 have been executed. Every beneficiary will participate in the same consultation process described.	The same stakeholder engagement process accompanied all 3 instances added during the monitoring period. All beneficiaries were consulted per the procedures described in section 2.2.
(4)	Are subject to the same processes for respect for rights to lands,	All new instances will be distributed only when TRL has performed the	All 3 new instances added during the monitoring were installed only when TRL had performed the processes required per the SD

	territories and resources – including free, prior and informed consent.	processes required per the SD VISta Standard, v1.0 section, Section 2.4.	VISta Standard, v1.0 section, Section 2.4.
(5)	Have similar monitoring elements to those set out in the project description.	All new instances will undergo equivalent monitoring procedures as described in the SD VISta PD V 1.4 Section 2.1.2.	All 3 new instances underwent equivalent or similar monitoring procedures as described in the SD VISta PD V 1.4 Section 2.1.2. SDG claims are only made on the achievements of the project that have sufficient monitoring data to date.

3 Benefits for People and Prosperity

3.1 Impacts on Stakeholders

Impact #1	Access to ONIL ICS
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Beneficiaries, beneficiaries' families
Resulting Change in Well-being	150 families now have less reliance on wood fuel to meet equivalent thermal energy needs for cooking purposes, freeing up time/money for other economic activities (see impact #3), health benefits from reduced smoke in home (see impact #2), traditional tortilla making is preserved. Increased access to sustainable energy technology and clean cooking technology.

Impact #2	Reduced exposure to HAP and other dangers associated with open-fire cooking
Type of Impact	Positive, predicted, direct
Affected Stakeholder Group(s)	Beneficiaries, beneficiaries' families,
Resulting Change in Well-being	Each stove provides for the following improved health outcomes: lower risk of developing COPD, less instances of acute lower respiratory illness, improved overall respiratory health. Lower risk of deaths of children under five from falling into open cooking fires. Lower risk of neonatal deaths resulting from dangerous levels of exposure to HAP for pregnant women. Benefits are felt by 150 families.

Impact #3	Reduced fuel wood expenditure
Type of Impact	Positive, predicted, direct

Affected Stakeholder Group(s)	Beneficiaries, beneficiaries' families
Resulting Change in Well-being	Money saved for families that regularly purchase their wood fuel, time saved for other economic activities for families that collect their wood. 150 families have benefitted.

Impact #4	Fewer wood vendors
Type of Impact	Negative, predicted, indirect
Affected Stakeholder Group(s)	Local firewood vendors
Resulting Change in Well-being	Survey period for this impact started in February 2020 as this certification is an emerging process. Due to the lack of surveys, there is not enough data yet. This impact will be included in the next monitoring report.

Impact #5	Less time spent on unpaid domestic and care work.
Type of Impact	Positive, predicted, direct
Affected Stakeholder Group(s)	Beneficiaries
Resulting Change in Well-being	Survey period for this impact started in February 2020 as this certification is an emerging process. Due to the lack of surveys, there is not enough data yet. This impact will be included in the next monitoring report.

Impact #6	Increased access to safe drinking water
Type of Impact	Positive, predicted, direct
Affected Stakeholder Group(s)	Beneficiaries, beneficiaries' families,
Resulting Change in Well-being	During the monitoring period, a total of 17 water filters have been distributed.

Impact #7	Reduced electricity expenditure
Type of Impact	Positive, predicted, direct
Affected Stakeholder Group(s)	Beneficiaries, beneficiaries' families
Resulting Change in Well-being	Reduced electricity expenditure through money saved on energy bills, made possible by transitioning from incandescent light bulbs to LEDs. 3 bulbs have been installed.

Impact #8	Increased access to local microcredit or community savings opportunities.
Type of Impact	Positive, predicted, direct
Affected Stakeholder Group(s)	Beneficiaries
Resulting Change in Well-being	Financial savings encouraged and made possible by TRL's community savings group. Low-income beneficiaries can access TRL's savings program. They can then allocate savings towards additional environmental technologies or other empowering goods and services (e.g. education). 13 individuals have enrolled during the monitoring period.

3.2 Stakeholder Impact Monitoring

The TRL ICS project uses a results-based framework that allows TRL to track short-term and long-term success and make necessary changes to improve the project results. The project tracks client information and VCS required data and parameters for Project Activities One and Two, through the combination of the digital survey platform, KoBo Toolbox, and a cloud-based server. Using in-house designed surveys that account for cultural nuances relevant to our beneficiary base, the Outreach Team gathers data in beneficiary homes (offline) using a tablet over the course of a multi-year visit follow-up schedule. Maintenance and educational services are also included on these visits, conducted entirely in the native language of the beneficiary. Once connected to WIFI at the end of each day, an Outreach Team member will sync the tablet, uploading survey results to the cloud. TRL conducts data validation after every round of data collection to ensure accuracy. When non-conformances arise, the Outreach and Program Development team discuss the reasons for such and plan to ensure monitoring activities abide by the validated monitoring plan. The quality of data collected that coincides with non-conformances is

internally evaluated, and excluded if incomplete or inaccurate. The principle of conservativeness is applied in these evaluations.[19]

(PA 1) Introduction of high-efficiency biomass-fired project devices to replace open cooking fires

Pre-evaluation/Site Visit

TRL's Outreach Team visits the home of the prospective beneficiary and evaluates the installation site. The TAS explains the nature of the stove project and discusses project commitment in Tz'utujil. Should the TAS determine that the prospective beneficiary is a probable adopter and if they consent to project requirements regarding participation in the program, installation is scheduled within a week. The TAS completes the corresponding questionnaire and conducts one of the following surveys using the Samsung tablet.[20]

Survey: Adoption Metrics, PPI, Health

Installation (1-7 days after site visit)

A TRL Technician assembles and installs the ONIL stove while the TAS explains the function of its internal mechanisms. Thus, beneficiaries can better understand how preserving the parts and aerodynamics of the model is essential for efficient and proper function. Once installed, the TAS teaches beneficiaries how to use the new appliance. Our approach uses participatory learning methods to help beneficiaries in their transition. Most commonly, this includes a hands-on tortilla making demonstration. Beneficiaries learn how to properly load wood fuel into the cookstove's combustion chamber. The TAS will respond to any doubts or questions and leave a contact number where she can be reached should future concerns arise. Before completing the visit, the TAS ensures that the beneficiary is confident and capable to prepare meals on their new improved cookstove. The TAS completes the corresponding questionnaire.

Third Visit (1 week after installation)

The TAS conducts follow-up visits with families one week after installation. This is the most critical visit because it is during this time that frustration with the new technology may arise. The TAS demonstrates additional best use practices to help facilitate the adaptation, provides support to the women who cook, and troubleshoots emerging problems. The team offers solutions and collects feedback from our beneficiaries. Our Programs Team aggregates, analyzes, and applies this feedback to adjust our project to best suit the community at large. The TAS completes the corresponding questionnaire and conducts TRLs Female Empowerment survey, if applicable.[21]

Surveys: Female Empowerment

Fourth Visit (Three months after installation):

[19] Per the VCS standard section 2.2.1
[20] Surveys are administered to a representative sample of project beneficiaries.
[21] Surveys are administered to a representative sample of project beneficiaries.

The Outreach Team returns to check in on ONIL stove functionality and technology adaptation. The TAS works with families to ensure cooking is problem free and reviews basic maintenance techniques. Data are collected on stove condition. If maintenance is required, our technician will perform maintenance free of charge and provide replacement parts at-cost. The TAS completes the corresponding questionnaire. Families are encouraged to give feedback to help us fine-tune the project, collected in the comments section of the questionnaire. The TAS completes the corresponding questionnaire and conducts TRLs Female Empowerment survey, if applicable.[22]

Fifth Visit (One year after installation):

The Outreach Team returns for their final planned visit in the first year of installation. Stove maintenance is performed if necessary and questions and concerns that have arisen since the fourth visit are addressed by the TAS. Proper care is taken to ensure that beneficiaries know how to contact TRL should they need future assistance or maintenance, a lifetime commitment of the TRL ICS Project. The TAS reminds families of stove parts prices. The TAS completes the corresponding questionnaire, including verification of contact information.

Surveys: Adoption Metrics, PPI, Health

Additional Visits (3, 5, and 7 years post installation):

The Outreach Team returns to a random sampling of ONIL stoves on a biennial basis. Visit structure is parallel to the fifth visit. Stove condition is monitored and recorded in the corresponding questionnaire. TRL also conducts maintenance visits as requested by the beneficiary.

Surveys: Female Empowerment (3 years after installation), PPI (5, 7 years after installation)

(PA 3) Distribution of British Berkefeld water filters

Distribution

Using the samsung tablet, and a digital survey platform, the TAS collects beneficiary information, including the number and location of filters in circulation. Results are uploaded to a cloud-based server. TRL also solicits feedback through stakeholder interviews, asking beneficiaries why prefer British Berkefeld filters over other options.

Follow up (1 year after distribution)

To ensure that the water filter is working at capacity, beneficiaries are prompted once a year to replace their filter candle for Q125. TRL staff return to a random sampling of households to monitor filter condition and ensure beneficiaries are using best maintenance practices. Additional visits are administered upon request.

(PA 4) Replacement of incandescent light bulbs with LEDs

The following objectives must be measured, monitored, and evaluated:

[22] Surveys are administered to a representative sample of project beneficiaries.

- Prevent an estimated .03468 tonnes of CO2 from being released into the atmosphere each year.
- Save roughly Q200Q per light bulb per year, increasing family economies.*
- Educate beneficiaries on the environmental and financial benefits of replacing incandescent light bulbs with LEDs.
- Affect behavioural change by educating beneficiaries on the environmental and financial benefits of household energy savings, as they pertain to other appliances. *We review the three energy bills at installation and compare them to the bills prior to installation to calculate energy and financial savings.[23]

Achievements Monitored from September 1 2018 - March 9 2020:

- By replacing inefficient open cooking fires with 150 ONIL stoves and performing energy efficiency improvements in 91 existing biomass cookstoves. **Monitored by: TAS completed the corresponding questionnaire. Data was uploaded to Client Database and synced automatically.**
- 39,834.98 USD in savings on firewood made possible by access to ONIL stove technology. 7,132 days saved in time that would otherwise be used to collect wood, made possible by access to ONIL stove technology. **Monitored by: TAS administered digital surveys that recorded whether clients collected or purchased firewood. Data was uploaded to Client Database and synced automatically. Dollar and time values were calculated by Program Development Team using average firewood prices and estimated savings in time.[24]**
- 17 additional British Berkefeld water filters were installed. Monitored by: Direct reporting from TAS. Client Database by Program Development Team. **To be monitored via digital survey platform during next monitoring period.**
- 13 beneficiaries enrolled in TRL's savings program. Monitored by: Direct reporting from TAS. **To be monitored via digital survey platform during next monitoring period.**
- 3 incandescent light bulbs replaced with LEDs. Monitored by: Direct reporting from TAS. Entered in Client Database by Program Development Team. **To be monitored via digital survey platform during next monitoring period.**

3.3 Net Positive Stakeholder Well-being Impacts

All of the impacts identified generate a positive impact, thus; these sustainable development outcomes have produced net positive impacts for the project's stakeholders:

- A higher proportion of the population now lives in a household with access to basic services and will primarily rely on clean fuels and technology to prepare meals. Open cooking fires have been eliminated in the homes serviced.

[23] If beneficiary does not have bills on hand, we ask them to self-report their energy costs. In these cases, KWH are not monitored.

[24] Calculations Spreadsheet is presented to the VVB

- Beneficiaries below the international and national poverty lines now have a greater capacity to save money that would otherwise be spent on energy bills/wood fuel, and/or time that would otherwise be spent collecting wood. This is especially relevant for the rural areas TRL serves.
- Fewer individuals are now at risk of death attributed to household and ambient air pollution as they will no longer be at risk of cardiovascular diseases, cancers, or chronic respiratory diseases that are caused by exposure to HAP.
- Fewer pregnancies are now at risk of ending prematurely due to complications arising from exposure to HAP.
- Fewer children under-five are now at risk of falling into open cooking fires.
- Female beneficiaries are now spending a lower proportion of time on unpaid domestic and care work. This impact is being monitored since February 2020 and will be backed up by data in the next monitoring report.
- A higher proportion of the population is now using safely managed drinking water and fewer individuals are at risk of death resulting from water-borne illnesses caused by consuming unsafe water.
- A higher proportion of the population now has access to an informal financial institution in the form of TRL's Savings Program.

3.4 Net Negative Stakeholder Well-being Impacts

The impact "Fewer wood vendors" generate a negative impact as the reduced consumption of firewood reduces the demand and therefore the business activity of wood vendors. It is worth mentioning here, that almost half of our stove users are collecting the wood in the surrounding forests and that the wood vendors only represent a fraction of the population. Thus, the negative impact on their livelihoods is outweighed by the positive impacts described in section 3.3. Moreover, as TRL will provide more job opportunities the more stoves are installed, this negative impact will be mitigated by the provision of new job opportunities as stove builders and stove installers within the organization of TRL.

4 Benefits for the Planet

4.1 Impacts on Natural Capital and Ecosystem Services

Impact #1	Avoided deforestation of forested area due to wood fuel savings made possible by ONIL ICS
Type of Impact	Positive, predicted, indirect
Affected Natural Capital and/or Ecosystem Service(s)	Biodiversity and Species Richness, Soil and Water Conservation
Resulting Change in Condition	Slow the negative annual net change rate of forest area in the project area, increasing forest area as a proportion of total land area. Generate progress towards sustainable forest management and the conservation of a mountain ecosystem, enabling the following ecological benefits: 5.64 ha of forests conserved that provide for biodiversity and species richness, and soil and water conservation. These forests provide natural habitat for over 65 species on the IUCN Red List of Threatened Species.

Impact #2	Reduced demand for non-renewable woody biomass made possible by ONIL ICS
Type of Impact	Positive, actual, direct
Affected Natural Capital and/or Ecosystem Service(s)	Biodiversity and Species Richness, Soil and Water Conservation
Resulting Change in Condition	By slowing the consumption of wood fuel for cooking purposes, households require less non-renewable woody biomass. The resulting drop in demand slows deforestation, thus increasing the renewable energy share in the total final energy consumption of the project area.

4.2 Natural Capital and Ecosystem Services Impact Monitoring

In addition to monitoring the number of project devices operating in each year, for both Project Activity One and Project Activity Two, TRL will monitor the following to evaluate the net ecological impact of the project:

(PA1)

Prior to installation: Survey the amount of woody biomass used for fuel wood to meet thermal energy needs for meal preparation using an open cooking fire

1-year follow-up: Survey the amount of woody biomass used for fuel wood to meet thermal energy needs for meal preparation using an ONIL stove

Survey Value: 641.1685 tonnes

(PA2)

Prior to energy efficiency improvement: Survey the amount of woody biomass used for fuel wood to meet thermal energy needs for meal preparation using a damaged existing biomass-fired device

1-year follow-up: Survey the amount of woody biomass used for fuel wood to meet thermal energy needs for meal preparation using an Improved ONIL stove

Value: 385.5711497 tonnes

Survey data is then used with Global Forest Watch data to calculate the ha of forest area that would otherwise have been logged for wood fuel. This value can be used for evaluations against the following metadata:

- Indicator 15.2.1: (1) Forest area annual net change rate (2) Above-ground biomass stock in forest.
- Indicator 15.4.2: Trends in the Mountain Green Cover Index.
- Indicator 15.5.1: Trends in Red List Index, specifically for the 65 species currently on the IUCN Red List that rely on forests in the project area for habitat.

The TAS was responsible for collecting survey data and the Program Development team was responsible for revising the data, completing and reporting all relevant calculations.

Hectares: 5.64[25]

4.3 Net Positive Natural Capital and Ecosystem Services Impacts

The 5.64 ha of forests conserved will provide for a net positive ecological impact on the natural capital in the project area. This area will thus continue to provide the following ecosystem services: habitat for biodiversity, soil and water conservation and carbon sequestration. Without the project activities, this area of forest would be logged for wood fuel, and thus unable to provide for the ecosystem services detailed in section 4.1. No negative environmental impacts have been identified for the monitoring period, thus; the net impact for natural capital and ecosystem services is positive.
This MR concludes the first monitoring period, from September 1, 2018 to March 9, 2020. 150 additional instances of the first project activity and 91 of the second project activity have been commissioned at various points over the course of the 1.5-year monitoring period, and have been monitored to ensure they are operating to date. Together, the two project activities have generated 975 tCO2e GHG emission reductions over the first monitoring period.

[25] Calculations spreadsheet is presented to the VVB

5 Optional: Climate Module

See VCS Monitoring Report V1.2.

5.1 Monitoring

5.1.1 Results of Monitoring

See VCS Monitoring Report V1.2.

5.1.2 Monitoring Plan

See VCS Monitoring Report V1.2.

5.1.3 Dissemination of Monitoring Plans and Results

See VCS Monitoring Report V1.2.

5.2 Net Emission Reductions and Removals

5.2.1 Baseline Emissions

Not applicable. See VCS Monitoring Report V1.2.

5.2.2 Project Emissions

Not applicable. See VCS Monitoring Report V1.2.

5.2.3 Leakage

Not applicable. See VCS Monitoring Report V 1.2.

5.2.4 Net GHG Emission Reductions and Removals

Together, project activity one and project activity two have generated an calculated 975 tCO2e GHG emission reductions over the first monitoring period. See VCS Monitoring report 1.2 for calculations of the net GHG emission reductions and/or removals during the monitoring period in metric tonnes of CO_2e.