
Mid-term Evaluation and Learning Exercise of the Guatemala Sustainable Cookstoves Project

Project Evaluation and Learning Exercises for the Mitigation Action Facility

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Final Report

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Preface

The Mitigation Action Facility is a joint initiative of the German Federal Ministry for Economic Affairs and Climate Action (BMWK), UK's Department for Energy Security and Net Zero (DESNZ), the Danish Ministry of Climate, Energy and Utilities (KEFM), the Danish Ministry of Foreign Affairs (MFA), the European Union and the Children's Investment Fund Foundation (CIFF). The Mitigation Action Facility evolved from the NAMA Facility, which was established in 2012. The Mitigation Action Facility's vision is to accelerate decarbonisation to keep temperature rises to below 1.5 degrees Celsius by financing measures that shift priority sectors in a country towards a sustainable, carbon-neutral pathway. All projects with an overall duration of more than three years are subject to a mid-term and a final evaluation and learning exercise.

The Technical Support Unit (TSU) functions as the secretariat of the Mitigation Action Facility. The TSU commissioned Dorsch Impact and Oxford Policy Management to conduct mid-term and final Evaluation and Learning Exercises (ELEs). Each ELE is conducted using the same Theoretical Framework (FW), which involves the application of a document review, participatory workshops, and stakeholder interviews to collect evidence about projects' results and lessons analysed using a Theory-based approach centred on the use of contribution analysis reinforced by elements of process tracing.

This document presents the findings of the **mid-term ELE of the project "Efficient use of firewood and alternative fuels in indigenous and rural communities in Guatemala"**. The report has been reviewed by Luca Petrarulo (Technical Lead, ELE project). For further information, please contact davita.steinemann@dorsch-impact.de.

Executive summary

This document presents the findings of the **mid-term Evaluation and Learning Exercise (ELE) of the Efficient Use of Firewood and Alternative Fuels in Indigenous and Rural Communities in Guatemala (Guatemala Sustainable Cookstoves) project**. The ELE was undertaken during the period January-May 2025. In accordance with its Terms of Reference, this ELE sought to address the following questions:

- Is the project achieving its planned results?
- Is the project starting to trigger transformational change?
- What can be learnt from the project so far?

More information about the focus of this ELE and the methodology followed can be found in Section 1.2, and Section 2, respectively. The rest of the executive summary provides the highlights of the ELE's findings and key lessons. Please refer to Sections 3 and 4 for the detailed findings and conclusions, and Section 5 for the full lessons and recommendations.

Introduction of the project

The Guatemala Sustainable Cookstoves project aims to deliver measurable greenhouse gas (GHG) emission reductions in the residential energy sector, addressing one of Guatemala's largest and most diffuse sources of emissions: unsustainable firewood use. Firewood accounts for nearly 70% of the national energy matrix and drives substantial emissions through forest degradation and inefficient combustion. The project targets a cumulative reduction of 0.9 million tCO₂e by promoting the adoption of 225,000 improved cookstoves (ICS) and enabling a broader shift to clean cooking technologies, particularly in five rural and indigenous departments.

Implemented over 2022–2027 with a budget of EUR 11 million from the Mitigation Action Facility, the project is led by the Inter-American Development Bank (IDB) and Alterna as the Implementation Organisations, and a network of partners including HELVETAS, Habitat para la Humanidad, FUNCAFE, Fundación Solar, Universidad de San Carlos, and Universidad Galileo.

The project seeks to transform the cookstove market ecosystem through three mutually reinforcing strategies: (1) stimulating demand via behavioural change and awareness campaigns; (2) strengthening supply through support to local manufacturers, technical standards, and financial access; and (3) creating an enabling institutional environment, including the development of stove certification systems, a Measurement, Report and Verification (MRV) system aligned with Guatemala's Nationally Determined Contribution (NDC), and pathways for carbon finance. Alongside emissions mitigation, the project aims to deliver significant co-benefits in terms of public health, gender equity, and forest conservation.

Highlights of the Evaluation's Findings and Lessons

The mid-term ELE found that the project has succeeded in establishing several foundational elements for a transformative shift in the clean cooking sector, but it has not yet translated these into sustained results. The project's Theory of Change remains conceptually valid and aligned with national policy priorities, and its focus on market-building, rather than donation, is widely seen as necessary to achieve durable emission reductions and behavioural change. However, mid-term evidence shows

that some underlying assumptions – particularly the pace of institutional change and the scale of behavioural shifts required to move away from donation-based models – have proven overly optimistic. As a result, many of the project’s causal pathways remain incomplete, and the current state of progress raises concerns about the feasibility of achieving the intended outcomes within the remaining timeframe.

Core enabling activities have been implemented. For instance, a national standard for ICS is under development through a participatory process; laboratory testing capacity is being strengthened with one lab operational but pending formal accreditation. However, a framework for the standard’s operationalisation and enforcement, i.e. an integrated quality assurance framework, has yet to be established. An MRV system design is progressing in coordination with national institutions but remains in the preparatory phase, with key implementation elements still pending. Financial instruments, including microcredit schemes and a voucher programme, had not delivered results by mid-term. No loans or incentives had reached users or manufacturers by mid-term, despite signed agreements with two financial institutions (MICOPE and Fundación Génesis Empresarial); implementation of the financial products was still pending, in part due to low interest and awareness among both groups.

Meanwhile, demand-side actions, such as behavioural change campaigns and community training, were launched but remain limited in coverage and disconnected from other project components. Manufacturers report that most sales still occur through institutional or donation channels, and the project's contribution to market expansion remains limited.

The ELE also found that strategic coherence and coordination have been uneven. Implementation has been fragmented across partners and regions. For example, the outreach campaign and training activities were carried out without coordination, with trained trainers unaware of the campaign content. These demand-side efforts were also not aligned with stove availability or the design of financing options. Similarly, stove testing was not connected to certification or quality assurance processes. As a result, opportunities for synergy, such as between outreach and finance, or between testing and certification, have not been fully leveraged.

The project’s visibility at the local level is low in many areas, and several actions have been delayed by internal governance bottlenecks or slow institutional engagement. Nonetheless, the ELE identifies early signals of institutional (national government) stakeholder buy-in, particularly around quality assurance and MRV. These signals suggest potential for system-level change, provided the project focuses its remaining efforts on coherent delivery, stronger institutional partnerships, and a tighter geographic and operational focus.

Summary of Lessons and Recommendations

The ELE identified key lessons for improving both the project’s current performance and the design of similar interventions. Coordination and sequencing are essential: the fragmented implementation of awareness, finance, and supply-side actions has reduced the project’s ability to generate demand or scale adoption. Financial mechanisms must be in place before or alongside outreach efforts, not after. Additionally, the choice of implementation roles must balance political considerations with operational readiness—delays in activating core instruments were linked to gaps in partner capacity. The ELE also highlights that the recently introduced (2024) gender equality and social inclusion

strategy should go beyond participation counts to address deeper structural barriers in access to finance, economic participation, and decision-making.

To address these challenges in the remaining project period, the ELE recommends prioritising tighter coordination across all components and partners, focusing implementation geographically to maximise impact, and accelerating the operationalisation of financial products. It also calls for stronger institutional engagement to sustain MRV and quality assurance systems, and greater involvement of local governments and community actors in outreach and long-term ownership. Certification efforts should be directly linked to market incentives and public procurement, and gender strategies should support concrete pathways to women's economic participation. For a full list of detailed recommendations, please refer to Section 5.2.

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List of abbreviations

BBC	Behavioural Change Communication
COGUANOR	Guatemalan Commission of Standards
Covid-19	Coronavirus Disease 2019
DMM	Municipal Women's Directorate
DMSAM	Municipal Directorate for Women and Special Groups
EEGSA	Empresa Eléctrica de Guatemala
ELE	Evaluation and Learning Exercise
ELEQ	Evaluation and Learning Exercise Question
EQ	Evaluation Question
FC	Financial Cooperation
FENACOAC	Federación Nacional de Cooperativas de Ahorro y Crédito
FUNCAFE	Fundación de la Caficultura para el Desarrollo Rural
GACC	Global Alliance for Clean Cookstoves
GESI	Gender Equality and Social Inclusion
ICS	Improved Cookstoves
IDB	Inter-American Development Bank
INAB	Guatemalan National Institute of Forests
MAF	Mitigation Action Facility
MARN	Ministry of Environment and Natural Resources
MSPAS	Ministry of Public Health and Social Assistance
MINEDUC	Ministry of Education
MFI	Microfinance Institution
M&E	Monitoring and Evaluation
MRV	Measuring, Reporting, and Verification
NDC	Nationally Determined Contributions

OECD DAC	Organisation for Economic Co-operation and Development's Development Assistance Committee
OPM	Oxford Policy Management
QA	Quality Assurance
QC	Quality Control
RAG	Red Amber Green
SEGEPLAN	Secretariat of Planning and Programming of the Presidency of Guatemala
TC	Technical Cooperation
ToC	Theory of Change
TS	Types of Sources
TSU	Technical Support Unit, Mitigation Action Facility
WTB	Water Boiling Test
WHO	World Health Organization

1 Introduction

This document presents the findings of the **mid-term Evaluation and Learning Exercise (ELE) of the project “Efficient use of firewood and alternative fuels in indigenous and rural communities in Guatemala” (Guatemala Sustainable Cookstoves)**. The ELE was undertaken during the period January-May 2025.

1.1 Overview of the project

According to the Project Proposal, firewood accounts for approximately 69.5% of Guatemala’s national energy matrix, making it the primary residential energy source¹. In rural areas, only about 17% of the population had access to clean cooking fuels in 2022, compared to 74% in urban areas². Between 2000 and 2022, Guatemala’s population grew substantially, while the absolute number of people with access to clean cooking technologies increased only modestly, particularly in rural areas³, and projections suggest that 65,000 new families per year may adopt firewood without interventions⁴. Guatemala’s national clean cooking access rate remains among the lowest in Latin America, comparable to Honduras, with rural areas mirroring Sub-Saharan Africa in this aspect⁵. This rural-urban divide is particularly acute in departments⁶ prioritised by the project, including Huehuetenango, San Marcos, Quiché, Alta Verapaz, and Chiquimula, where traditional biomass use remains pervasive.

Although emissions from firewood are considered biogenic and excluded from the national energy sector emission figures, the proposal highlights that the massive use of firewood has contributed to widespread reduction of forest cover and to related greenhouse gas emissions, with an estimated 8.7 million tonnes of CO₂ equivalent (tCO₂e) generated annually based on data from 2010 to 2015. Recent national data confirms that Guatemala lost approximately 1.8 million hectares of tree cover between 2001 and 2023, equivalent to nearly 49% of its total forest cover as reported in 2010⁷. Departments such as Huehuetenango, San Marcos, Quiché, Alta Verapaz, and Chiquimula — which the Project Proposal prioritises — are among those with the highest combined pressures of firewood deficit, poverty, and forest degradation (Figure 1). According to Guatemala’s Third National Communication on Climate Change, total national gross emissions amounted to approximately 59.23 million tCO₂e in

¹ While IEA data indicates that biofuels and waste account for approximately 60% of Guatemala’s total energy supply, firewood remains the dominant energy source in the residential sector, aligning with the Project Proposal’s estimate of 69.5%.

² WHO/World Bank (2024), Access to Clean Fuels and Technologies for Cooking dataset (rural and urban disaggregated data, extracted from uploaded Excel files).

³ WHO/World Bank (2024). Access to Clean Fuels and Technologies for Cooking Dataset (national, urban, and rural disaggregated access data, 2000–2022).

World Bank (2024). World Development Indicators: Population Total, Urban, and Rural for Guatemala (2000–2022).

⁴ IDB Blog (Inter-American Development Bank), Energy Division Blog Post (2020), on clean cooking interventions in Guatemala. URL: blogs.iadb.org.

⁵ WHO/World Bank (2024), Access to Clean Fuels and Technologies for Cooking dataset

⁶ The Republic of Guatemala is divided into 22 departments (Spanish: *departamentos*), which in turn are divided into 340 municipalities.

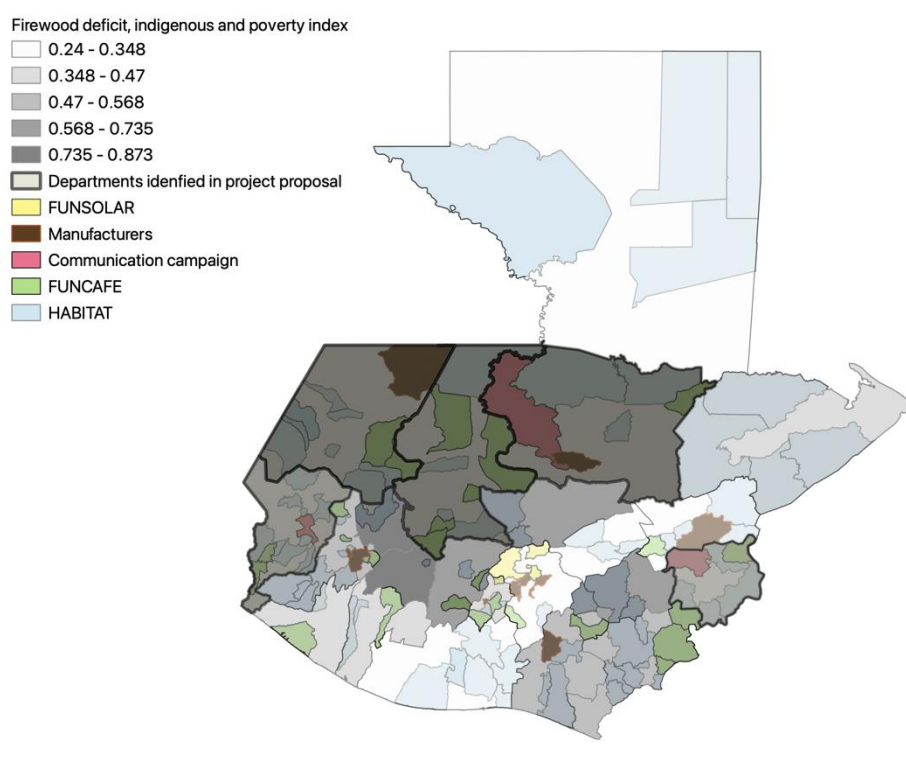
⁷ Hansen, M.C., Potapov, P.V., Moore, R., et al. (2023). Global Forest Change Dataset v1.9 (2000–2023). University of Maryland, Google, USGS, NASA. Accessed via Global Forest Watch (processed from downloaded raw data).

Universidad del Valle de Guatemala (UVG) (2014). Deforestación: Situación actual, causas, vacíos y estrategias. REDFIA/UVG

2016, with forestry and other land use contributing more than half of net emissions⁸. If considered, emissions from unsustainable firewood consumption would represent around **15%** of Guatemala's total gross emissions, underscoring the critical role of firewood reduction efforts in national mitigation strategies. Compared to most Latin American countries, where energy and industrial sectors dominate greenhouse gas (GHG) inventories, Guatemala's emissions profile is unusual: land use change and forest degradation remain the primary sources of emissions⁹, making sustainable biomass management a particularly strategic area for climate action.

Figure 1. Location of proposal priority departments and project activities

Own elaboration with QGIS 10 3.10.12-A Coruña, and data from GADM. (2023). Data base of Global Administrative Areas, version 4.1., project reports and ELE interviews, Instituto Nacional de Estadística (INE), 2024 and 2019, ENCOVI 2023 and Censo de Población y Vivienda 2018, INAB, URL-IARNA and FAO, 2012, Consumo y producción sostenible de leña en Guatemala: una fuente renovable de energía con alto impacto socioambiental.



Firewood use is deeply linked to broader socio-economic and environmental trends, including high levels of rural poverty, deforestation, and energy insecurity. Around 59.3% of the population lives in poverty and extreme poverty, with indigenous communities being disproportionately affected. Poverty rates are even higher in the departments prioritised by the project, which are among the poorest regions of the country, with approximately 78% of households living below the poverty line and more than a third in extreme poverty. The overreliance on firewood imposes substantial health, economic, and social costs, estimated at around USD 10 billion annually or about 3% of GDP, mainly

⁸ Ministerio de Ambiente y Recursos Naturales (MARN) (2021). Tercera Comunicación Nacional de Cambio Climático (3CNCC), República de Guatemala.

⁹ *Ibidem*; IPCC (2019). Special Report on Climate Change and Land; UNEP (2022). Emissions Gap Report for Latin America.

through health impacts, time loss, and environmental degradation¹⁰. In terms of health outcomes, Guatemala fares especially poorly in regional comparison: in 2019, household air pollution was responsible for approximately 60 deaths per 100,000 inhabitants, placing Guatemala among the highest mortality rates from indoor air pollution in Latin America, and well above countries such as Mexico, Peru, and Colombia¹¹. According to World Health Organization (WHO) data, the health burden is nearly equally distributed between men and women.

Guatemala has addressed this situation through successive policy frameworks and strategies. Since 2013, Guatemala has enacted a Climate Change Law, developed a National Strategy for Firewood Production and Use (2013), submitted the first project concept to the United Nations Framework Convention of Climate Change (UNFCCC) Nationally Appropriate Mitigation Action (NAMA) Registry (2014), followed by the 2015 Intended Nationally Determined Contribution (INDC), 2018 National Climate Change Action Plan, National Low-Emission Development Strategy (LEDS), and Guatemala's 2021 updated Nationally Determined Contribution (NDC), all emphasising the need to reduce firewood consumption through, among others, the promotion of improved cookstoves (ICS) and alternative technologies.

ICS are designed to burn biomass fuels more efficiently and cleanly than traditional open fires or rudimentary stoves. Typically constructed with enclosed combustion chambers and chimneys, ICS significantly reduce indoor air pollution, lower fuel consumption, and mitigate environmental degradation.

Guatemala has a long history of ICS initiatives, dating back to the 1970s. Various programmes have promoted models such as the "Lorena" and the "*plancha*" stoves (in-situ construction), mostly through donations. Despite these efforts, sustained adoption has remained limited. Challenges identified include:

- **Cultural and functional misalignment:** Many ICS designs did not align with local cooking practices or household needs, leading to limited use or abandonment.
- **Economic barriers:** High upfront costs and a lack of financing options made ICS inaccessible for many low-income families.
- **Lack of awareness:** Insufficient education on the health and environmental benefits of ICS hindered behavioural change.
- **Market fragmentation:** Absence of standardised quality control and certification led to variability in stove performance and user trust.
- **Dominance of donation-based models:** Donations distort consumer expectations, reduce willingness to pay, undermine ownership and therefore the upkeep of ICS, ultimately making the development of a sustainable cookstove market more complicated.

The Guatemala Sustainable Cookstoves project addresses the aforementioned barriers by promoting the adoption of ICS and alternative clean cooking technologies through a comprehensive market-building approach rather than donation, aiming to stimulate demand through awareness campaigns,

¹⁰ World Bank, ESMAP, MECS (2022). The Clean Cooking Planning Tool.

¹¹ World Health Organization (WHO) (2024). Deaths Attributed to Household Air Pollution Dataset

expand supply by strengthening manufacturers and distribution networks, and foster an enabling environment through the development of national standards, certifications, and MRV systems.

It was first submitted to the Mitigation Action Facility (MAF) (then NAMA Facility) in 2018 as an implementation instrument of Guatemala's 2014 NAMA on sustainable firewood use. The Project Proposal was developed following a Detailed Preparation Phase (DPP) conducted between 2017 and 2018, which included multi-stakeholder consultations and technical studies on financial mechanisms, stove standards, and MRV design.

Implementation began in late 2022 and is scheduled to continue through 2027. The project is financed by the MAF, with the Inter-American Development Bank (IDB) acting as the Implementation Organisation. In the initial proposal, the Ministry of Economy's National Competitiveness Programme (PRONACOM) was designated as the Implementing Partner for the Technical Cooperation (TC) Component, but was later replaced. The 2019 Project Proposal envisaged the engagement of FUNDESA (*Fundación para el Desarrollo de Guatemala*) as an implementing partner. However, FUNDESA's statutes and governance structure, oriented towards policy advocacy rather than project execution, prevented it from fulfilling the fiduciary and procurement requirements necessary for direct management of donor-funded activities. Consequently, Alterna was selected as a second Implementation Organisation. Alterna is responsible for the day-to-day implementation of the project and manages a network of executing partners, including HELVETAS, Habitat for Humanity, FUNCAFE, Fundación Solar, and academic institutions. Academic collaboration initially involved the University of San Carlos of Guatemala (USAC), which was temporarily unable to participate due to internal disruptions. During this period, Universidad Galileo was engaged but did not complete any tests, and its involvement diminished. USAC later resumed activities and took over stove testing, while Galileo submitted a revised testing schedule for 2025. Key national institutions also contribute to the project's delivery. The Ministry of Environment and Natural Resources (MARN) plays a central role by providing official endorsement, oversight, and political support, ensuring that the project aligns with Guatemala's national climate commitments and meets MAF's requirements. The National Standards Agency (COGUANOR) further supports the development and implementation of stove testing standards and, later, certification for ICS.

The impact and outcomes of the project

The Guatemala Sustainable Cookstoves project aims to achieve long-term impacts by reducing GHG emissions, improving public health, and decreasing firewood consumption through the widespread adoption of ICS and alternative clean cooking technologies. The project specifically targets the sales, installation, and adoption of 225,000 ICS, contributing to an estimated reduction of 0.9 million tCO₂e in the residential energy sub-sector by the end of its implementation period. In addition to climate mitigation, the project seeks to generate important socio-economic, health, and environmental co-benefits, particularly for approximately 471,000 rural and indigenous people, mainly women and children, living in poverty. To realise these impacts, the project pursues specific outcomes focused on expanding the use of ICS in households and developing a sustainable, market-driven ecosystem for clean cooking solutions. Intermediate Outcomes are included to bridge the link between Outputs and final Outcomes: by raising consumer awareness and willingness to pay, facilitating access to financing for households and enterprises, and strengthening the quality and reliability of technologies through standardisation and certification systems. These Intermediate Outcomes are essential to ensure that

project Outputs—such as awareness campaigns, financial mechanisms, and certification protocols—translate into sustained market behaviour and widespread adoption, ultimately enabling the project's transformational objectives.

In 2023, the IDB submitted an amendment request to the MAF Technical Support Unit (TSU) proposing adjustments to the project. The request sought approval for conceptual changes to the Financial Cooperation (FC) Component, notably the introduction of a Credit Result-Based Financing (C-RBF) mechanism alongside the original guarantee scheme, and the linking of manufacturer incentives to credit provision. These adaptations aimed to address financing barriers encountered in the development of credit lines together with microfinance institutions (see sections 3.2.1. and 3.2.3). The TSU recommended approval of the proposed financing adjustments. However, a parallel request to officially revise the project's targets—reducing the number of installed ICS from 225,000 to 94,500 units, and the expected emission reductions accordingly—was not accepted.

The original causal pathways

To progress from the initial problem and barriers identified to the achievement of the outcomes presented, the project ToC foresees 7 causal pathways, which are illustrated in **Overview of the Original Causal Pathways of the Project. Overview of the Original Causal Pathways of the Project**

The ELE has identified the following causal pathways sustaining each of the seven Intermediate Outcomes and final Outcomes of the project:

- **Causal pathway supporting Intermediate Outcome 1: Households with financial capacity gain access to microcredit, enabling them to purchase ICS.** By establishing a Clean Results-Based Financing (C-RBF) mechanism, creating guarantee funds, and promoting tailored financial products for ICS purchasers, the project would reduce financial barriers for households with repayment capacity (FC Output 1). Access to microcredit would enable a

greater number of households to invest in improved cookstoves, expanding market demand (Intermediate Outcome 1). This financial accessibility would be critical to scaling adoption and supporting the achievement of the FC Component Outcome, which aims to upscale ICS production and adoption.

- **Causal pathway supporting Intermediate Outcome 2: The voucher system effectively lowers financial barriers for households to adopt alternative clean cooking technologies.** Through the design and implementation of a targeted voucher scheme incentivising the purchase of alternative clean cooking technologies, the project would directly reduce the upfront cost for low-income households (FC Output 2). By lowering the financial threshold, the voucher system would make clean cooking solutions more affordable and accessible, stimulating adoption among populations that would otherwise remain excluded (Intermediate Outcome 2). This mechanism would complement credit-based strategies and broaden the consumer base, contributing directly to the FC Component Outcome of scaling up ICS production and adoption.
- **Causal pathway supporting Intermediate Outcome 3: ICS manufacturers experience enhanced access to capital, enabling investment in production scale-up, innovation, and business expansion.** By developing guarantee funds or loan facilities tailored to ICS manufacturers and promoting dedicated financial products, the project would enhance manufacturers' access to working capital and investment finance (FC Output 3). This financial support would enable manufacturers to scale up production, invest in product innovation, and expand their business operations (Intermediate Outcome 3). Strengthening the supply side of the ICS market would be essential to meeting growing consumer demand, thereby contributing directly to the FC Component Outcome of upscaling ICS production and adoption.
- **Causal pathway supporting Intermediate Outcome 4: Increased adoption and proper use of ICS.** Through the development and implementation of a Behavioural Change Communication (BCC) strategy, consumer training programmes, awareness campaigns, and technical capacity development among sales and financial advisors, the project enhances households' knowledge, motivation, and skills regarding ICS use (TC Output 1). This would lead to increased adoption rates and proper usage of ICS technologies (Intermediate Outcome 4). Achieving this change would be essential for creating a robust demand base, directly contributing to the establishment of a thriving clean cooking market, as targeted under the TC Component Outcome.
- **Causal pathway supporting TC Intermediate Outcome 5: Enhanced market trust and transparency due to the establishment of clear quality standards and certification processes for ICS.** Through activities supporting the adoption of a national ICS norm, the certification of a national laboratory as a testing centre, and the establishment of a standardisation and labelling scheme, the project would create a transparent and trusted framework for product quality (TC Output 2). Clear standards, credible certification processes, and labelling mechanisms would foster consumer confidence and incentivise manufacturers to maintain higher product standards (Intermediate Outcome 5). The enhanced trust would be fundamental for developing a sustainable and competitive ICS market, thus contributing to the achievement of the TC Component Outcome.
- **Causal pathway supporting Intermediate Outcome 6: Manufacturers adopt improved production processes, increasing efficiency and innovation in the ICS supply chain.** By improving business capacities, supporting innovation in manufacturing processes,

incentivising model evaluation, and rewarding high-performing manufacturers, the project strengthens the capacities of ICS producers (TC Output 3. Enhanced efficiency, quality, and innovation within the manufacturing sector increase the supply of affordable and reliable ICS technologies (Intermediate Outcome 6). This would contribute directly to the development of a sustainable ICS market, reinforcing the broader objective set under the TC Component Outcome.

- **Causal pathway supporting Intermediate Outcome 7: ICS MRV reported into the NDC catalyses access to climate finance, e.g., carbon credits.** Through the design and implementation of a Monitoring and Evaluation (M&E) and Measurement, Reporting and Verification (MRV) framework, independent audits, and systematic reporting activities, the project would ensure that verified emission reductions from ICS adoption are captured and reported under Guatemala's NDC framework (TC Output 4). This transparent reporting system would enable the project and national stakeholders to access climate finance mechanisms, such as carbon markets, supporting the financial sustainability of clean cooking initiatives (Intermediate Outcome 7). This would strengthen the enabling environment necessary for a thriving ICS market, in direct support of the TC Component Outcome.

1.2 Focus of the Evaluation and Learning Exercise

In accordance with its Terms of Reference, this ELE seeks to address the following General ELE Questions (ELEQs):

- Has the project been achieving its results?
- Has the project started to trigger transformational change?
- What was learnt from the project so far?

The ELE also considers the following additional questions:

- How to ensure implementation of the FC Component/financial mechanism with about 2 years remaining?
- The FC component has almost a 2-year delay regarding the initial planned implementation start. What are the lessons learnt to improve the buy-in of partner financial institutions?

The General ELEQs presented above were broken down and operationalised into Specific ELEQs that are answered in this report. In

Table 1, the General and Specific ELEQs are mapped against the Organisation for Economic Co-operation and Development's Development Assistance Committee's (OECD DAC) evaluation criteria¹², which are widely used as international standards for evaluations of development interventions. Reference to the relevant report section where each ELEQ / evaluation criterion is treated is also given. Finally, the specific ELEQs were broken down further into sub-questions, which are included in the official ELE Matrix, approved by the MAF TSU, and reported in Annex B.

¹² Relevance, Effectiveness, Efficiency, Impact, Sustainability. The ELE Team added a 6th criteria, namely Learning.

Table 1. General and specific ELE questions and their link to the ELE Report sections

General ELE Question	Specific ELE Question	Evaluation (relevant section)	criteria (ELE Report section)
Is the project achieving its planned results?	To what extent does the project address an identified need?	Relevance (Section 3.1)	
	To what extent has the project been achieving its intended intermediate outcomes (and unintended ones)?	Effectiveness (Section 3.2)	
	To what extent has the delivery of the outputs been timely and to expected quality standards?	Efficiency (Section 3.3)	
Is the project starting to trigger transformational change?	What evidence is there that the project is likely to contribute to the intended impact in the ToC (incl. transformational change)?	Impact (Section 0)	
	What is the likelihood that the outcomes will be sustained after the end of the project funding period?	Sustainability (Section 3.4.3)	
What has been learnt from the project so far?	What key lessons can be learnt to the benefit of this or other projects funded by the Mitigation Action Facility in achieving their results?	Learning (Section 5.1)	

1.2.1 The MAF Transformational Change Measurement Framework

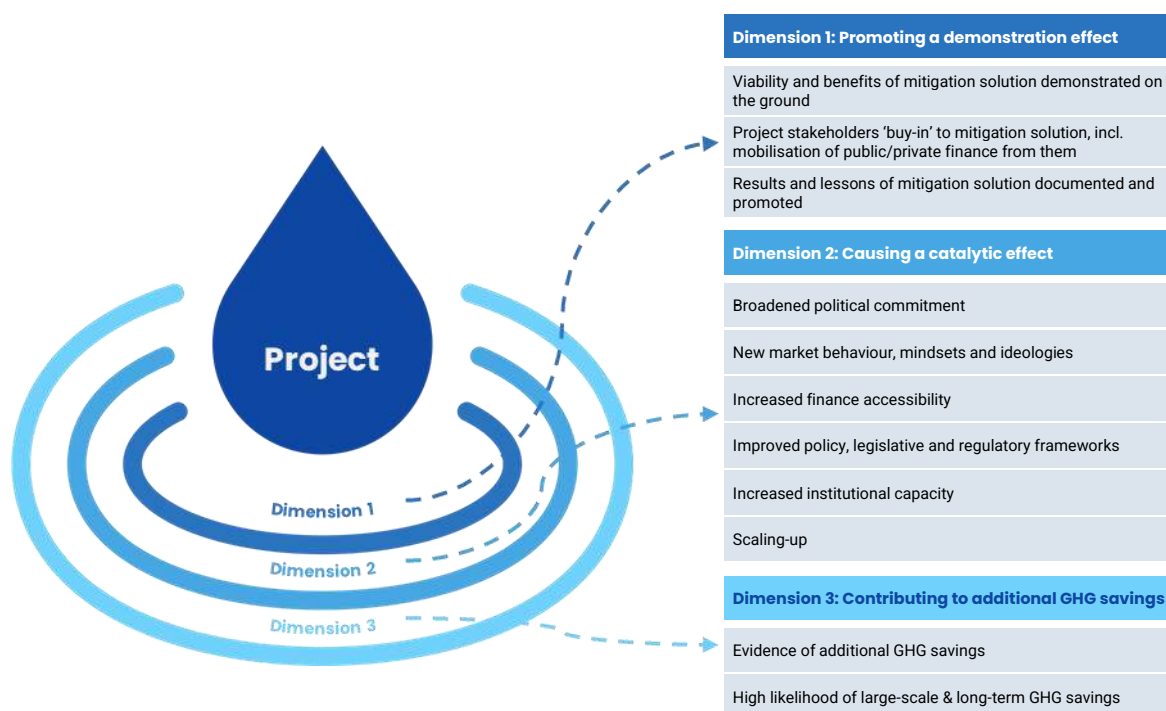
Some words need to be spent on the concept of transformational change, which is included in the General and Specific ELEQs. The enabling of transformational change is one of the key aims of the Mitigation Action Facility and, therefore, of projects. The Mitigation Action Facility defines Transformational Change as “*Catalytic change in systems and behaviours resulting from disruptive climate actions that enable actors to shift to carbon-neutral pathways*”¹³. The MAF Theory of Change explains how transformational change is expected to be achieved through its outputs and outcome. The Theory of Change is broad, and there are different ways in which transformational change can be achieved through the projects.

¹³ https://mitigation-action.org/wp-content/uploads/Mitigation-Action-Facility_TC-factsheet.pdf<https://www.nama-facility.org/concept-and-approach/transformational-change>

Figure 2 illustrates three dimensions that interact and reinforce each other to produce project-induced transformational change. Each project will work on different elements of the three dimensions to define its own pathway to or “recipe” for transformational change. A more detailed explanation of the ELEs’ Transformational Change Measurement Framework (TCMF) summarised in

Figure 2 is presented in Annex A.

Figure 2. Transformational Change Measurement Framework



Transformational change is not expected within the lifetime of the project. Instead, there should be clear signs and evidence that it is likely in the mid- to long-term (e.g. 10 years). By the end of the project, Dimension 1 (demonstration effect) should be at an advanced stage, Dimension 2 (catalytic effect) and Dimension 3 (additional GHG savings) at an interim stage. Dimensions 1 and 2 ‘lock in’ the pathway to achieving the additional GHG savings, meaning this looks inevitable, or at least very highly likely, in the future. Table 2 below summarises what is expected at the mid- and end-point of the project. **The ELE team has used these to assess the project’s progress towards its impact in Section 3.4.**

Table 2. Expectation of project-induced transformational change stages at mid-point and end-point

Dimension	Expectation at project’s mid-point	Expectation at project’s end-point
1: Promoting a demonstration effect	Interim stage: the project has made initial yet tangible progress in demonstrating the mitigation solution ; for instance, it shows strong buy-in from the project partners alongside evidence on the ground of the solution’s applicability and effectiveness, although not at the scale expected by the end of the project..	Advanced stage: the concrete demonstration of the mitigation solution in the project context is in an advanced stage with little doubt that it will be completed or has already been completed, and the full results and lessons of the solution’s demonstration have been documented and disseminated.
2: Causing a catalytic effect	Early stage: the project has laid the foundations for causing a catalytic effect , for example, by engaging a broader group of stakeholders, setting up capacity-building activities, or assessing the key legislative or	Interim stage: the project is starting to cause a catalytic effect in the project context, for example, by showing some evidence of shifts in market behaviour, more favourable legal and

Dimension	Expectation at project's mid-point	Expectation at project's end-point
	regulatory gaps in place for the broad uptake of the mitigation solution.	regulatory frameworks, or scaling up of the mitigation solution.
3: Contributing to additional GHG savings	None: the project should have prepared a clear and realistic plan for achieving such transformation, but it would be too early to expect this to have yet resulted in any additional GHG savings.	Early stage: the project has laid the foundations for causing additional GHG savings , and this may have resulted in some actual savings (but not at a large scale), but more importantly, there should be clear evidence that points towards additional GHG savings happening in the mid to long term.

2 Methodological approach

The mid-term ELE comprises four main phases: inception, fieldwork, analysis, and reporting.

Inception phase (January-February 2025)

The inception phase involved the definition of the ELE matrix, including the ELE questions, data collecting methods, and identifying respondents among the three main groups: project team, project stakeholders, and third parties. Project team respondents are those parties directly involved in the implementation of the project, in this case, the two Implementation Organisations the IDB and Alterna.

Contrary to the broader engagement of national institutions envisioned in the original Project Proposal, only two national government organisations have any significant presence in the project: MARN and COGUANOR. The Proposal gives MARN a central role in the project, ensuring that the project activities align with national environmental and climate strategies and being the key government counterpart for the integration of the project's Measuring, Reporting and Verification (MRV) system with the National Climate Change Information System (SNICC). Together with COGUANOR, it leads the national standards formalising process for ICS. Other stakeholders implement activities on behalf of and with funding from the project. These entities are non-governmental organisations, such as Habitat para la Humanidad, HELVETAS, FUNCAFE and Fundación Solar. In addition, while being project beneficiaries, the ELE considers the two main microfinance institutions (MFI) involved with the project, MICOOPE and Génesis Empresarial, as project stakeholders. Likewise, the ICS laboratory hosts the Universidad de San Carlos de Guatemala (USC) and Universidad Galileo (see section Limitations), which are project stakeholders for the ELE.

Given their central role in the ICS market, the ELE considers ICS manufacturers to be project stakeholders even though they are also beneficiaries of the capacity development and financial services developed by the project.

Finally, the ELE considers ICS promoters, participants in awareness-raising events, current and potential ICS users, retailers, and local officials as "third parties." The denomination does not imply their lesser importance but recognises their interests and stakes, which differ significantly from those of the project and stakeholder teams. This distinction is fundamental to the ELE methodology, as the strength of the evidence is gauged by the number and diversity of sources of the three kinds, as depicted in Table 5.

Fieldwork (10-21 March 2025)

The fieldwork started with a kick-off workshop on March 10th, 2025, involving the project team, comprised of the staff of the two Implementation Organisations. The Implementation Organisations, with support from the implementing partners, HELVETAS and Habitat para la Humanidad, facilitated the necessary contacts for the other interviews. In total the ELE team conducted 29 interviews, including individual semi-structured interviews (11), group interviews (9), focus group discussions (4), and conversations with market actors (ICS users, retailers, and manufacturers) in-situ (5) (see section Limitations), comprising 33 institutions or organisations and 93 people, of which 56 (60%) were

women. Additionally, a survey was administered to 441 ICS promoters and people trained by the project, of which 110 (25%) submitted an answer. The number of organisations and individuals interviewed is listed in Table 3.

The interviews were conducted in Guatemala City (13), and the departments of Jutiapa (1), Chiquimula (4), and Alta Verapaz (8), and online with participants located outside Guatemala (2) and in Sacatepéquez department (1).

The fieldwork was concluded on March 21st, 2025, with a validation workshop in which the ELE team presented and discussed preliminary ELE results with Implementation Organisations representatives. However, the ELE mission was prolonged until April 2nd, 2025, to accommodate three further interviews with key stakeholders.

Table 3. Overview of the number of interviews and interviewees by sampling category

	Project Team	Project Stakeholders	Third Parties	TOTAL
No. organisations	2	22	9	33
No. interviewees	15	69	9	93

Analysis (March-April 2023)

The ELE team consolidated the interview notes and documentation in an evidence map, identifying common themes and evaluating the evidence to address the evaluation questions, thereby confirming the existence or lack of evidence for the project's ToC causal pathways. The main steps undertaken during the analysis phase are summarised in Table 4.

Table 4. Summary of the ELE Analysis Methodology

Integrating Primary & Secondary Data	Evaluating the Strength of Evidence	Draft Contribution Story
Tailor analytical tools	Assess strength of evidence of common themes	Draft contribution stories in the ELE report for each ELEQ and causal pathway
Tidy up notes	Identify concurrent / alternative explanations in ToC causal pathways	Final QC / QA
Data mining and evidence mapping from interviews and docs along ELEQs	Agreement on contribution of NSP vs Context	
Extract positive and negative common themes for each ELEQ	Perform process tracing formal tests of causal pathways	

Integrating Primary & Secondary Data	Evaluating the Strength of Evidence	Draft Contribution Story
Consolidate and cross-check common themes	Develop figure with RAG rating of causal pathways	
1st Quality Control (QC) / Quality Assurance (QA)		

Table 5. Scorecard for assessing the strength of evidence

		Variety (number of types of sources (TS) reporting the evidence)		
		1 TS only	2 TSs	3 TSs
Quantity (number of sources reporting the evidence)	1 interview only	Single source		
	2 interviews	Weak evidence	Medium evidence	
	3+ interviews	Medium evidence	Strong evidence	Very strong evidence

Reporting (April 2025)

The ELE team prepared a draft report during April 2025, which was submitted to the TSU on May 2, 2025. The TSU, the project team, and the MAF Board provided comments to the report, which were used to prepare the final report.

2.1 Limitations

The total rural population of the five departments prioritised by the project is 4.64 million people. To get a sample of the rural residents and potential ICS users in the project's target departments, the ELE team intended to include individual interviews and focus group discussions (FGD) with ICS users and other community representatives and local government officials where project actions had taken place. However, the project team expressed concerns about the confidentiality of ICS users they had listed, as manufacturers provided them under confidentiality agreements. Moreover, the project expressed concerns about involving local officials to avoid misunderstandings and raising expectations of an ICS donation initiative. Even today, ICS are normally associated with donations (see section 3.2.4).

The ELE team understood and respected the project's concerns. To capture the voice of communities and ICS users, the Project Partners identified and convened community members and local officials involved in project activities, with which the ELE team conducted FGD and administered 441 surveys (110 answers). Additionally, the ELE team interviewed a reduced sample of ICS users, municipal officials and retailers contacted independently and outside the project frame based on the team's knowledge of the ICS "ecosystem" (see Section 1.1 for the history of ICS projects in Guatemala).

At the start of the project, the University of San Carlos of Guatemala (USAC) was identified as a strong candidate for hosting the national laboratory for ICS evaluation due to its experience, equipment, and past involvement in stove testing, including support from GIZ and USAID. However, internal political issues at USAC prevented progress throughout 2023. As a result, the project team sought alternative partners and assessed several institutions, including Universidad Galileo. Following consultations, the Energy Resources Institute (IRE) of Universidad Galileo was selected as the most viable partner due to its technical experience in the energy sector and willingness to collaborate. An international expert supported IRE with a diagnostic and capacity-building process. By the end of 2023, IRE staff had completed initial on-the-job evaluations of two ICS models using the Water Boiling Test (WBT), and the project had finalised terms of reference for contracting IRE to evaluate over 20 ICS models in 2024. However, some project stakeholders indicate that Galileo University, a private higher education institution, has seemingly disengaged with the project after flooding reportedly destroyed or damaged facilities planned to host the ICS testing laboratory in 2024. Despite reportedly having submitted a modified schedule to begin stove evaluations in Q3 of 2025 in the aftermath of the flood, Galileo University did not reply to repeated requests for an interview with the ELE team. . Hence, the ELE team based its findings and conclusions on the project’s Causal pathway supporting “Intermediate Outcome 6: Enhanced market trust and transparency due to the establishment of clear quality standards and certification processes for ICS” on interviews with USAC representatives, the project’s ICS international expert and project documentation.

3 Key Findings

In this section, the ELE Team presents the main findings of the ELE. These are structured according to the ELE Questions in

Table 1. At the beginning of each section, a Red-Amber-Green (RAG) rating of the strength of the project’s contribution story to the ToC and the OECD DAC criteria is included, following the scale: Good / Very good = Green; Problems = Amber; Serious deficiencies = Red; Not enough evidence to rate = Grey.

3.1 Relevance of the project

Relevance	1. To what extent does the project address an identified need?
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The project’s Theory of Change is grounded in comprehensive research and aligns with national policies. Analysis by the ELE team indicates that the objectives of the Guatemala Sustainable Cookstoves project are highly relevant to various stakeholders, particularly the populations in the prioritised departments of Alta Verapaz, Quiché, Huehuetenango, San Marcos (mostly indigenous, Mayan-speaking population¹⁴), and Chiquimula (characterised by semi-arid conditions and high vulnerability to droughts¹⁵) (see Figure 1).

The project’s Theory of Change remains conceptually valid, addressing critical national needs related to firewood consumption, GHG emissions, poverty, health impacts, and gender inequalities. It aligns with national policy priorities, particularly through the development of the National Improved Cookstove Standard, and by working with MARN toward integration of the project’s MRV system into the National Climate Change Information System. However, mid-term evidence shows that some underlying assumptions – notably the pace of institutional engagement and the time required for market uptake – have proven overly optimistic. Combined with delivery challenges, these factors have delayed progress along several causal pathways. For example, MRV activities had only just begun at mid-term.

Some project stakeholders perceive that recent policy changes have introduced a greater emphasis on climate change programmes that favour the donation of cookstoves, which may complement but differ from the project's market development strategy. The current government climate change strategies and objectives reflected in the 2024–2028 Government Plan and the 2024–2032 Institutional Climate Change Agenda align with broader climate and energy goals and are consistent with the climate change policy framework, including Guatemala's NDC, presented in Section 1. Although the 2018 National Climate Change Action Plan does not explicitly mention the adoption of ICS, Guatemala has a National Action Plan for Clean Cookstoves and Fuels, which remains in effect.

Since its design in 2018, the project has spanned three government administrations and two electoral processes without these changes affecting its relevance. The original Project Proposal envisioned strong institutional coordination through the Interinstitutional Table for Sustainable Firewood Use (commonly known as the “*Mesa de Leña*”), involving key ministries such as MARN, INAB, MIDES, and MSPAS. This mechanism, which is no longer active, was expected to support field-level

¹⁴ Instituto Nacional de Estadística (INE), XII Censo Nacional de Población y VII de Vivienda 2018, Guatemala.

¹⁵ World Bank Group. 2018. Climate Change Knowledge Portal: Guatemala Country Profile. Washington, D.C.: World Bank. Available at: https://climateknowledgeportal.worldbank.org/sites/default/files/2018-10/wb_gfdr climate_change_country_profile_for_GTM.pdf.

implementation and integrate the project within national health, environment, and social protection agendas. However, the ELE team found that neither central nor local government actors were actively engaged. According to multiple sources, this limited engagement stemmed in part from concerns about confusion with donation-based programmes. Nonetheless, the absence of sustained sensitisation and mobilisation of these actors—especially regarding the project’s market-based approach—represents a missed opportunity to scale adoption and achieve installation targets. That said, national government involvement was maintained through MARN and CONGUANOR, which are playing an active role in the development of the MRV system and the ICS quality standards, respectively. For this reason, the ELE team does not share the assertion made in the 2023 Annual Report, which states that governmental transitions have impacted the overall project implementation context.

While the project documentation highlights the contribution of ICS adoption to GHG emission reductions, this aspect was not the prominent benefit expressed by the interviewed beneficiaries and stakeholders. Several project team members and project stakeholders recognised that ICS reduce household smoke exposure and improve the health of families, particularly for women and children. Some sources also noted that ICS adoption contributes to reducing firewood use and supports environmental sustainability by helping to mitigate deforestation and forest degradation.

The project solutions to expand coverage of ICS respond to the needs and demands of beneficiaries and stakeholders. Project team members, stakeholders, and third parties interviewed agree that guaranteeing access to ICS contributes directly to addressing urgent health and environmental problems. Project strategies — including awareness campaigns and the development of the ICS market — respond to the recognised needs for reducing firewood use and mitigating health risks, particularly among women and children.

The barriers identified in the original Project Proposal, such as communication and coordination among market agents, financial access for consumers and manufacturers, cultural barriers, and institutional weaknesses, remain valid. Stakeholders highlighted the need to strengthen further coordination between stove manufacturers and financial institutions and to support the creation of more accessible and sustainable financial products for ICS users and manufacturers. Better cultural adaptation of messages and strategies could enhance the project's perception and effectiveness in rural areas. The communication and behavioural change campaign sparked initial interest among women and local authorities. In particular, community actors expressed appreciation for efforts to communicate in Mayan languages and engage the local population to promote the inclusion of rural and indigenous communities and to respect their cultural diversity. Nevertheless, a majority of stakeholders felt that further efforts are needed to strengthen the project’s connection with rural and indigenous communities and to enhance the relevance and effectiveness of its communication strategies.

The project action remains relevant to the indigenous communities in rural areas living in poverty and extreme poverty conditions in the departments of Alta Verapaz, Quiché, Huehuetenango, San

Marcos, and Chiquimula¹⁶ identified in the Project Proposal. However, as the project started implementing field activities in late 2024, Project Partners mainly acted in areas where they had conducted activities under previous initiatives, including all 22 departments of Guatemala. Analysis of training participants reveals that, **while the target departments were represented, substantial participation also came from other departments**, including Baja Verapaz, Guatemala, El Progreso, Quetzaltenango, Santa Rosa, Totonicapán, and Sololá. Specifically, around 11.8% of participants were from San Marcos, 3.6% from Quiché, 3.2% from Huehuetenango, and 4.8% from Alta Verapaz (Figure 1).

In summary, despite political transitions, the project remains highly relevant to national policies and local community needs, particularly among vulnerable indigenous and rural populations. Strategies have addressed critical health and equity challenges effectively and have contributed to environmental goals. Persistent barriers in coordination, financing, and cultural adaptation are recognised, as well as a certain dilution of the Proposal’s original geographical focus, but they do not undermine the strong alignment between project objectives and stakeholder needs. Therefore, **the mid-term ELE rates the project’s relevance as “Green” on the RAG scale.**

3.2 Effectiveness of the project

Effectiveness	2. To what extent has the project been achieving intended intermediate outcomes (and unintended ones)?
	Intermediate Outcome 1: Households with financial capacity gain access to microcredit, enabling them to purchase ICS
	Intermediate Outcome 2: The voucher system effectively lowers financial barriers for households to adopt alternative clean cooking technologies
	Intermediate Outcome 3: ICS manufacturers experience enhanced access to capital, enabling investment in production scale-up, innovation, and business expansion
	Intermediate Outcome 4: Increased adoption and proper use of ICS
	Intermediate Outcome 5: Enhanced market trust and transparency due to the establishment of clear quality standards and certification process for ICS
	Intermediate Outcome 6: TC3 Enhanced ICS manufacturers’ capacities
	Intermediate Outcome 7: Accountability of results and climate financing catalysed by M&E and MRV systems

3.2.1 Intermediate Outcome 1: Households with financial capacity gain access to microcredit, enabling them to purchase ICS

Due to several implementation challenges, the development of instruments to offer microcredit to financially capable households with repayment capacity remains ongoing. A key issue has been the

¹⁶ Instituto Nacional de Estadística (INE). 2019. XII Censo Nacional de Población y VII de Vivienda 2018: Resultados Nacionales. Guatemala City, Guatemala: INE. Available at: <https://www.ine.gob.gt/sistema/uploads/2019/07/12/QV5eRfBqVjqmH4Hbczevlv5VZ4nJBpyd.pdf>.

Instituto Nacional de Estadística (INE). 2015. Encuesta Nacional de Condiciones de Vida ENCOVI 2014: Resultados Principales. Guatemala City, Guatemala: INE. Available at: <https://www.ine.gob.gt/sistema/uploads/2015/12/16/00-JC6v1oe68y7puhqqs33r0c80hpm9fi.pdf>.

initial reluctance of savings and loan cooperatives affiliated with the National Federation of Savings and Credit Cooperatives FENACOAC/MICOPE¹⁷ to participate. Their hesitation was primarily due to the small size of the loans, high operational costs, and the perceived risk associated with the target population.

The cooperatives initially requested that the project assume at least 75% of the risk through the guarantee fund established under the MAF design. Following negotiations, the MAF Board agreed for the project to cover 50% of the risk, with the remaining 50% shared equally between FENACOAC and the participating cooperatives. FENACOAC's Board of Directors has now formally approved the federation's participation in the microcredit initiative.

At present, two cooperatives have agreed to offer microcredit in their Sololá and San Juan Sacatepéquez operational areas. It is important to note that **these locations fall outside the five departments originally prioritised by the project.** Furthermore, awareness and behavioural change campaigns have not been implemented in these departments, which may limit uptake and the overall impact of the intervention. **MICOPE, IDB, and Alterna are finalising the operational and administrative details necessary to activate the loans, which are expected to become available within two months.** Engagement with MICOPE began in 2024, two years after the project's launch. This late start, combined with various implementation hurdles, has contributed to delays in executing this component.

In parallel, **the project has engaged Génesis Empresarial, Guatemala's largest microfinance institution,** to develop a similar credit product targeting end users. Discussions began in late 2023, with a small pilot launch expected in the second half of 2025. Génesis plans to offer ICS loans bundled into broader household financing packages, working with select manufacturers and field partners. Like MICOPE, Génesis is operating under the same financial architecture proposed in the original design, with both channels expected to complement each other across distinct geographic and client segments.

Although the proposal defines the target group as rural and indigenous households with repayment capacity—supported by prior segmentation and demand studies—several stakeholders still expressed uncertainty about who qualifies in practice. During interviews, some raised concerns that neither the geographic deployment of the financial products nor the behavioural campaigns were aligned with the intended beneficiaries.

Based on the delays in engaging financial institutions, the late operationalisation of microcredit instruments, and the limited geographic overlap with originally prioritised departments, the ELE team assigns an Amber rating to the effectiveness in achieving Intermediate Outcome 1. While significant groundwork has been established and loan activation is anticipated soon, the desired financial access for households was not realised by mid-term. Additionally, difficulties in providing demand-side support in new areas may further impact uptake.

¹⁷ MICOPE is the brand name used to represent the national network of affiliated cooperatives under FENACOAC and not an acronym

3.2.2 Intermediate Outcome 2: The voucher system effectively lowers financial barriers for households to adopt alternative clean cooking technologies

In 2021, Fundación Solar led a pilot initiative (not part of the MAF-funded project) requested by the IDB and co-designed with a WHO-affiliated partner. The pilot was implemented in two communities—San Juan Sacatepéquez (Sacatepéquez) and Santa Cruz Chinautla (Guatemala)—reaching 80 households. Of these, 30 received only electric pressure cookers (Instapot-type)¹⁸, and ten received a “combo” package including both the cooker and a single-burner induction stove with a compatible cookware set in each community. The seven-month pilot included weekly follow-ups, community engagement, and cooking demonstrations. **An ex-post evaluation conducted 18 months later found sustained adoption and positive reception:** households reportedly stopped purchasing firewood, with monthly savings of GTQ 350–400, while electricity bills increased only marginally by GTQ 40–50.

Building on this success, the project plans to scale up the initiative to 2,000 families across four municipalities of the departments of Guatemala and Sacatepéquez¹⁹ with support from Empresa Eléctrica de Guatemala (EEGSA). The scale-up includes a USD 50 voucher incentive per household and access to credit via EEGSA’s financing arm, Consíguelo, with repayments managed through parallel billing linked to electricity payments. Fundación Solar is responsible for technical implementation, while Alterna will serve as the executing unit. However, as of the mid-term evaluation, the scale-up phase had not yet launched due to management changes within EEGSA and delays in finalising formal agreements.

Based on the successful completion of a pilot project, the sound design of the voucher and credit strategy, and the absence of implementation at mid-term, the ELE team assigns a Grey rating to the effectiveness in achieving Intermediate Outcome 2. While preparatory activities have been completed and prospects for future contribution appear positive, no vouchers were distributed by the time of this evaluation. Therefore, there is insufficient evidence to assess whether the project has effectively lowered financial barriers for households.

3.2.3 Intermediate Outcome 3: ICS manufacturers experience enhanced access to capital, enabling investment in production scale-up, innovation, and business expansion

The project includes dedicated funds to provide credit to ICS manufacturers, supporting working capital, equipment purchases to expand production capacity, and the implementation of commercial strategies. Two parallel financing channels are under development.

¹⁸ Instapot-type: Refers to electric pressure cookers with programmable settings, commonly used for fast and energy-efficient meal preparation. These devices combine multiple cooking functions (e.g. pressure cooking, slow cooking, steaming) and are widely recognised under commercial brands such as “Instant Pot.”

¹⁹ The pilot municipalities—Chinautla, Chuarrancho, San Juan Sacatepéquez (all in the Department of Guatemala), and Santo Domingo Xenacoj (in Sacatepéquez)—differ significantly from the original project target departments in terms of urbanisation, socioeconomic profiles, and infrastructure, particularly regarding electricity access. The higher electricity access in the pilot municipalities presents a strategic opportunity to introduce and scale electric cooking technologies, such as induction cookstoves and electric pressure cookers.

The first is led by Alterna, which has designed a manufacturer loan facility based on its Catalyzer Fund²⁰ model, incorporating flexible repayment structures. The facility will be deployed through a trust with Financiera Industrial, targeting qualified manufacturers with validated business growth plans. At the time of the mid-term evaluation, the credit instrument had still not been launched. The first disbursements of up to USD 50,000 per manufacturer, are expected in May–June 2025, with Alterna estimating that up to five manufacturers²¹ may qualify in this initial tranche. A second round of financing is under consideration for 2026. Loans will carry a two-year repayment period and are expected to bear interest rates in the 8%–12% range, comparable to commercial credit terms.

In parallel, according to the ELE interviews, Génesis Empresarial is developing a separate revolving credit facility for ICS manufacturers, focusing on loan terms related to working capital and distribution support. Interest rates are expected to be approximately 3.5% monthly on the daily balance, in line with Génesis' broader lending portfolio. By early 2025, Génesis had advanced to stage three of their internal selection process, with 3–4 manufacturer loans planned for 2025 and up to 5–6 more in 2026. **However, during the evaluation, it was noted that several manufacturers were still unaware of the existence of the Génesis loan facility, pointing to a communication gap and reinforcing the early stage of engagement.**

Some manufacturers have opted to seek commercial credit independently, citing delays and administrative burden as barriers to accessing project-supported financing. With only two years of implementation remaining, the disbursement window is increasingly compressed, and the risk of underutilisation remains.

Based on the ongoing finalisation of the credit instruments, the absence of disbursements by mid-term, and evidence that some manufacturers have sought commercial loans due to delays, the ELE team assigns a Grey rating to the effectiveness in achieving Intermediate Outcome 3. While preparatory work is advancing, there is currently insufficient evidence to demonstrate enhanced access to capital for manufacturers through the project.

3.2.4 Intermediate Outcome 4: Increased adoption and proper use of ICS

In the Project Team's Annual Reports 2023 and 2024 submitted to the TSU, a total of 38,420 ICS were reported as sold and distributed through project activities. However, only 4,184 units (10.9%) were reported by 6 manufacturers, including household-level information. The remaining 34,236 units were also reported by manufacturers but lack end-user information, as they were sold through distributors or bulk sales for donation and cannot be verified at the household level. The reported figures do not conclusively reflect whether the sales were directly attributable to the project's interventions, **as while the project provides capacity-building support to participating manufacturers, attribution of sales of 4,184 units would require additional evidence, such as**

²⁰ Catalyzer Fund model: A financing approach developed by Alterna that provides flexible, revenue-based loans to early-stage social enterprises. It combines capital access with tailored business support and allows repayment terms to adapt to the cash flow of each enterprise.

²¹ Five out of fifteen manufacturers are now working with the project. These fifteen manufacturers are not the totality of ICS manufacturers in Guatemala but represent the vast majority of current ICS production. They reflect a comprehensive representation of the known sector at baseline, i.e., the full group of ICS manufacturers identified by the project in 2017–2018.

comparative sales trends before and after support or more extensive validation across sales channels.

Manufacturers generally did not observe significant increases in sales attributable to project activities. One manufacturer, however, reported a total increase of 2,500 units linked to interest generated during a project event where the ICS model was showcased. Moreover, the project has barely interacted with and has not mobilised distribution agents, despite some awareness-raising actions without much impact, according to stakeholders. Stakeholders and third parties emphasise the importance of considering the distribution and retail network, whether it is organised by the manufacturer, independent retailers and hardware stores, non-government entities (included those associated with the project), or retail chains..

Of the 30,071 ICS reported in 2024, whether this total includes 20,000 units delivered to a government ministry remains unclear. Investigations revealed that these stoves were stored in a warehouse and had largely not been distributed to households. The ministry placed a request via *GuateCompras*, Guatemala’s government procurement platform, to arrange the transportation of “stove parts” for field distribution.

The Implementation Organisations noted that government donation programmes create challenges when attempting to stimulate a market based on direct sales. However, some project stakeholders disagree with this perspective. For instance, one interviewee cited experience promoting plastic water storage tanks, where selective donations helped generate market interest. The project includes a partial donation scheme in which ICS will be donated to schools, primarily private institutions linked to coffee plantations²² selected by project partner FUNCAFE to strengthen ICS educational activities **it should be noted that the government’s ICS procurement was neither influenced by the project nor incorporated stove testing or quality standards promoted by the project, and we were informed that the stove model will be selected by the implementing organisation, not by the women that prepare the school meals**

Figure 3. Improved cookstoves on display at manufacturer showrooms, implementing partner’s facilities and roadside shop



The intermediate outcome of generating and expanding the ICS market has not been achieved by mid-term, likely due to delays in project components designed to stimulate demand. Given the

²² FUNCAFÉ (Fundación de la Caficultura para el Desarrollo Rural) is directly linked to ANACAFÉ (Asociación Nacional del Café de Guatemala), which is Guatemala’s national coffee producer association, representing over 125,000 producers, 97% of whom are smallholders. Its members cultivate approximately 305,000 hectares of coffee nationwide. FUNCAFÉ is its rural development foundation.

current trajectory and the remaining implementation period, it appears highly unlikely that the project's overall target of 225,000 ICS sales will be met.

The project has supported a range of educational and communication initiatives to stimulate the adoption and proper use of ICS, which have, however, not been coordinated. HELVETAS implemented a mass communication and behavioural change campaign structured around the AIDA model (Attention, Interest, Desire, Action), generating some awareness at the community level, particularly among women. Habitat para la Humanidad delivered user training sessions to promote the correct usage and maintenance of ICS units, with reportedly high participant engagement. These sessions were delivered through existing community volunteers, members of local Habitat committees, who were trained as ToTs for this project and already play a key role in Habitat's broader housing and improvement initiatives. However, ELE interviews with trained **volunteers revealed that many of them did not use ICS themselves.** This gap may undermine their ability to convincingly convey the benefits of the technology, particularly in communities where, according to third-party interviews, purchase decisions are often motivated by seeing the stoves in use and hearing about their advantages from trusted users.

FUNCAFE has been contracted for a community-based educational programme, but by the time of the evaluation, no community-level activities had been implemented. Instead, the intervention focused on educational activities in FUNCAFE-affiliated schools. There is very limited geographical overlapping, and, according to stakeholders, no coordination with other project awareness, promotion or capacity development efforts in the project's primary target population in the five core departments.

Stakeholder feedback suggests that although there may be slight improvements in awareness and knowledge, the vast majority, especially local authorities and field actors, remain unaware of the project's educational and awareness initiatives. There is currently no verifiable evidence that these measures have converted awareness into increased demand for ICS units. Several sources noted that communication efforts, although necessary, are insufficient to generate sustained behaviour change or large-scale adoption unless combined with accessible financing mechanisms or incentives.

Based on the limited and largely unverifiable increases in ICS sales attributable to the project, and the fact that the bulk of the reported sales still respond to donation schemes, the significant delays in implementing behavioural change activities and financing mechanisms, the lack of effective community-level engagement through educational initiatives, and the current trajectory falling far short of achieving the sales target, the ELE team assigns a Red rating to the effectiveness in achieving Intermediate Outcome 4.

3.2.5 Intermediate Outcome 5: Enhanced market trust and transparency due to the establishment of clear quality standards and certification process for ICS

The development of a national standard for stove testing in Guatemala is actively progressing, marked by the convening of 42 weekly multi-stakeholder meetings. This collaborative process includes participation from academic institutions, government entities, stove manufacturers, consumer representatives, and international organisations. The aim is to establish a robust and context-specific testing standard for ICS based on international standards.

It was reported that in Guatemala, the process of creating or adapting pre-existing standards typically spans up to two years and focuses exclusively on developing testing protocols, not certification. Once finalised and officially recognised, the stove testing standard will initially be voluntary. Both the Annual Report 2024 and COGUANOR note that a public institution must formally adopt and enforce the standard through the appropriate legal channels for it to become mandatory. The IDB and COGUANOR further explained that **the process to certify ICS models is a separate undertaking that would require additional funding and time**. MARN expressed strong support for institutionalising the standard, viewing it as essential for restoring market trust. This trust was compromised by past stoves marketed as ICS that consumed more firewood than traditional practices. Additionally, stakeholders emphasised the need for regulating public procurement and pointed out that the certification process would require separate steps, additional resources, and time.

Figure 4. Stove water boiling test at USAC testing facilities



Since the standard has not yet been finalised and approved, and according to the Project Team, there has been no effort to socialise it to end users, this limits its immediate potential to enhance market trust. Several manufacturers view the laboratory testing positively, recognising it as a tool for improving product quality, differentiating their products, and strengthening marketing claims. Similarly, third-party stakeholders noted that laboratory testing could significantly enhance consumer

trust if test results are clearly communicated and linked to tangible household benefits such as fuel savings, ease of use, or improved safety. However, many sources stressed that technical indicators like particulate matter (PM) emissions are not major factors influencing consumer purchasing decisions. Practical aspects, such as convenience, operating costs, and user experience, are considered far more critical in driving adoption. Additionally, multiple stakeholders observed that laboratory testing will only have a transformative impact if it leads to formal certification processes or is adopted as part of mandatory national standards.

Acknowledging the significant advancements in creating a national stove testing standard via an engaging process, yet understanding that the standard is still not finalised, adopted, or communicated to end users, and that market trust remains unconfirmed, the ELE team assigns an Amber rating to the effectiveness in reaching Intermediate Outcome 5. The foundations for future impact have been established, but the intended result has only been partially achieved at mid-term.

3.2.6 Intermediate Outcome 6: Enhanced ICS manufacturers' capacities

Figure 5. Manufacturer's workshop



Since 2023, ICS manufacturers have participated in a series of workshops aimed at enhancing their capacity to identify market opportunities, develop financial statements, and create two-year business plans, with a view to promoting their growth and sustainability. A second phase of the programme introduced specialised topics such as accounting, cost analysis, marketing, and branding. The overarching goal was to support the manufacturers' commercial and financial development, with ongoing guidance from a consultant hired specifically for this purpose. Of the 13 manufacturers initially engaged, eight successfully completed the full series of workshops.

As an additional incentive, manufacturers who provided data on stove sales, households served, and feedback on the programme were granted access to other project services, including credit facilities, networking opportunities with project allies, and enhanced brand visibility at behavioural

change events and related initiatives. However, manufacturers have highlighted the need for further incentives to encourage more active participation and information sharing.

Feedback from manufacturers was mixed. Many expressed scepticism regarding the usefulness of the workshops in the absence of a robust market for ICS, noting that without greater end-user financing options and successful demand stimulation and financial options, the commercial advice alone would have limited impact. Several manufacturers also pointed out that the workshops did not sufficiently account for differences in business maturity: while less experienced enterprises found the training highly beneficial, more established businesses found the sessions less relevant to their operational realities.

Based on the successful delivery of capacity-building workshops for ICS manufacturers, the positive impact observed among less experienced businesses, and the mixed reception among more established manufacturers, compounded by the absence of a strong parallel market stimulation, the ELE team assigns an Amber rating to the effectiveness in achieving Intermediate Outcome 6. The intended outcome of broadly enhancing manufacturers' capacities has been partially achieved at mid-term.

3.2.7 Intermediate Outcome 7: Accountability of results and climate financing catalysed by M&E and MRV systems.

The MAF Board instructed the project not to pursue the sale of carbon credits and that the MRV process would be used solely to quantify emissions reductions. Selling verified carbon credits would require beneficiaries — in this case, groups of manufacturers — to monitor stove performance and provide ongoing maintenance, with associated auditing costs estimated at approximately USD 15,000 per cycle.

Microsol, the technical partner supporting the MRV process, noted that most participating manufacturers lack the necessary sales volumes and financial capacities to pursue Gold Standard certification or to benefit meaningfully from selling carbon credits. Two manufacturers currently participating in the project have successfully certified projects and accessed climate finance, while a third manufacturer, not engaged with the project, also benefited from similar mechanisms. Field data is to be collected through an application owned by Microsol, with subsequent verification required. Microsol is expected to submit a separate financial proposal to cover verification activities.

Stakeholders expressed concern regarding the institutional capacity of national agencies to manage the MRV process effectively. Relevant institutional stakeholders acknowledged that their current data management systems would need to be upgraded to capture MRV data appropriately and integrate it into the country's NDC reporting system.

Although the project has developed field data capture tools and initiated preparatory work for emissions quantification, the MRV process has not yet been operationalised. As such, there is insufficient evidence at midterm to assess the achievement of TC Intermediate Outcome 4. Therefore, the ELE team assigns a grey rating to the effectiveness in achieving TC Intermediate Outcome 4.

Overall, while the project has made progress in preparing financial instruments, developing technical standards, and supporting manufacturer capacity, the achievement of intended Intermediate Outcomes remains limited at mid-term. Three Intermediate Outcomes are rated Amber, reflecting significant implementation delays and partial achievement; three Intermediate Outcomes are rated Grey, indicating that implementation was not sufficiently advanced to assess results; and one critical Intermediate Outcome, the expansion of ICS adoption, is rated Red, reflecting serious deficiencies. Given the failure to achieve key intended results, particularly regarding market expansion and ICS adoption, the ELE team assigns a Red rating to the Effectiveness criterion.

3.2.8 How external factors impacted the project's effectiveness

The Project Team has consistently reported that several external events contributed to delays and difficulties in project execution, as documented in Annual Reports. The period between project design, approval, and funding extended over seven years, during which key actors, such as the Firewood Discussion Table (*Mesa de Leña*) and the Clean and Efficient Cookstove Cluster ceased to exist.

Among the factors that influenced the slow onset of the project is the Covid-19 pandemic, which disrupted project inception and delayed coordination with key actors, including stove manufacturers and financial institutions. Some project sources also referenced political transitions in 2019 and 2023 (See section 3.1) as contextual factors, though the ELE found no evidence that these led to severe disruption. For instance, stakeholders reported the continuation of policy dialogue platforms such as the Mesa Técnica Ambiental, where topics including forest degradation, air quality, and GHG mitigation are discussed. This forum appears to have succeeded the Firewood Commission²³ cited in the original proposal, which was envisioned as a coordination mechanism for the project. However, the Mesa Técnica Ambiental has not interacted with the project. Electoral transitions have not affected collaboration with the two most engaged public institutions, MARN and COGUANOR. Moreover, presidential transitions happen predictably in Guatemala every four years, and political tension is not unlikely at any given moment²⁴.

While a stove testing laboratory had been previously established at the University of San Carlos of Guatemala (USAC) with support from GIZ, USAID-LEDS, UNDP, and guidance from the Global Alliance for Clean Cookstoves (GACC), internal institutional issues at USAC emerged shortly after the project's launch, limiting its ability to contribute effectively. Laboratory technicians had received some level of prior training, but project engagement was subsequently affected. In contrast, efforts to establish a new laboratory at Galileo University encountered infrastructure limitations. **Previous initiatives, including a GACC-supported effort to develop a national stove testing standard, had also**

²³ The proposal anticipated a supporting role for the Firewood Coordination Mechanism (*Mesa de Leña*), led by the Ministry of Energy and Mines (MEM), in sharing information with municipalities and coordinating awareness-raising efforts, with participation from the Ministry of Environment and Natural Resources (MARN), the Ministry of Education (MINEDUC), the Ministry of Public Health and Social Assistance (MSPAS), and the National Forest Institute (INAB). However, no interaction with this body—or its apparent successor, the Mesa Técnica Ambiental—was documented during project implementation.

²⁴ During the ELE mission, nationwide protests against road safety regulatory reforms caused severe traffic disruption and chaos throughout the country yet did not affect ELE's planned meetings with project stakeholders and public officials.

laid the groundwork for engagement with COGUANOR, easing communication and understanding around the need for formal testing protocols.

Regarding material costs, steel prices experienced significant fluctuations between 2018 and 2024. Steel components account for approximately 50% to 75% of the material costs in ICS manufacturing. In 2018, the average price of hot-rolled coil (HRC) was approximately USD 685 per tonne, increasing to USD 915 per tonne later that year due to tariffs. Prices peaked in 2021 at around USD 1,612 per tonne, before declining to an estimated USD 886 per tonne in 2023 and USD 660 per tonne in 2024, according to Reuters. Although these figures represent the United States market, they directly influence steel prices in Guatemala, given that most steel is sourced from US subsidiaries in El Salvador or from Mexico.

3.3 Efficiency of the project

Efficiency

3. To what extent is the relationship between inputs and outputs timely and to expected quality standards?

Most stakeholders reported that the resources allocated to their initiatives were adequate and within budget. However, the delayed inclusion of many actors in project implementation has limited the outcomes achieved to date. Stakeholders anticipate that significant results may begin to emerge during the second half of 2025.

The Project Team noted that the MAF TSU introduced Gender Equality and Social Inclusion (GESI) reporting requirements in 2024 following the TSU's request in mid-2023. Additional indicators have subsequently been added, increasing the complexity of reporting. **The Project Team emphasised that the original project design did not include GESI-specific activities or outcome reporting, making it challenging to fully address the new requirements.**

Concerns were also raised regarding the sequencing and integration of project components. Several stakeholders observed that activities were often implemented primarily to fulfil reporting obligations, rather than following a logical or strategic rollout. Stakeholders mentioned that some activities may have proven to have more impact, resulting in increased sales, if all components had been ready and integrated into the activities.

Regarding budget utilisation, manufacturers highlighted that project activities were dispersed across a wide geographical area without sufficient coordination or complementarity, limiting the potential to generate a meaningful market impact. Furthermore, **manufacturers** noted that they were **not involved in the design of many project components** and believed that greater consultation could have significantly enhanced intervention effectiveness.

Financial execution data indicate that, by the end of 2024, the project had executed a total of EUR 1,570,704.00 across both Components, representing approximately 14.3% of the total approved budget of EUR 11 million. The majority of the project budget was assigned to the FC Component, specifically to guarantee funds intended to support user microcredit. However, this Component has experienced significant delays in activation, largely due to protracted negotiations with participating savings and loan cooperatives. As a result, only a small portion of the FC Component budget (EUR

178,156.27) had been disbursed by the end of 2024, and no credits for end-users had yet been approved. Table 6 summarises the cumulative financial execution across the project period:

Table 6. Cumulative financial execution

Year	2022	2023	2024
Total cumulative expenditure (EUR)	261,223	688,521	1,570,704
Total cumulative execution rate (%)	2.4%	6.3%	14.3%

Additionally, Alterna reported that, given the limited time remaining for project implementation, credits offered to manufacturers have been capped at USD 50,000 with a two-year repayment period, compared to the original plan of USD 100,000 over a longer term. Even with this adjustment, uptake has remained low. Manufacturers expressed scepticism about taking on new debt to expand production or distribution, given their post-pandemic weakened financials, and that market-stimulating activities carried out by the project have been delayed and largely ineffective to date. Some manufacturers opted to seek working capital from local banks or impact funds independently, citing the complexity and delays of accessing credit through the project.

From 2021 through 2023, expenditures were entirely under the TC Component, totalling approximately EUR 1.57 million. In 2024, the project began disbursing funds under the FC Component, particularly through Output 6 (guarantee fund for manufacturers) and Output 8 (result-based incentives). However, no incentives have yet been awarded, and relevant targets have not been achieved. Technical Cooperation expenditures in 2024 were significantly higher than in prior years and covered activities such as the behavioural change strategy, capacity development for manufacturers, MRV system implementation, and administrative and coordination costs for both Alterna and IDB.

The EUR 1.57 million cumulative expenditure includes all programmatic expenditures, administrative fees, and partner execution costs, reconciling reported values across IDB's SAP-based financial statements (USD), Alterna's field-level execution logs (EUR), and the narrative and financial sections of the Annual Reports.

To sum up, although resources allocated to the project were broadly considered adequate, significant inefficiencies have been observed in their utilisation. By the end of 2024, only 14.3% of the approved budget had been executed, with major delays in activating core financial instruments such as the user credit guarantee fund and manufacturer credit lines. Activities are often prioritised to fulfil reporting obligations over following a logical sequencing aligned with market development needs. Efforts to strengthen distribution networks and stimulate market demand were insufficiently integrated or coordinated, limiting the strategic use of resources.

Nevertheless, the activation of credit mechanisms anticipated in 2025, ongoing behavioural change campaigns, and the potential strengthening of field coordination offer opportunities for partial recovery. Given these factors, the ELE team assigns an Amber rating to the Efficiency criterion, recognising both the significant challenges and the remaining scope for improvement.

3.4 Impact of the project

Impact

4. What evidence is there that the project is likely to contribute to the intended impact in the ToC (incl. transformational change)?

3.4.1 Dimension 1: Promoted a demonstration effect

Viability and benefits of the mitigation solution demonstrated on the ground

The project has initiated efforts to demonstrate the viability and benefits of ICS, but results at mid-term remain inconclusive. Based on 30,071 ICS reported sold in 2023 and 2024, a cumulative 106,652 tCO₂e in direct GHG reductions was claimed (M1 Indicator, Annual Report 2024). Still, stakeholder interviews and project reports indicate that a large proportion, potentially up to two-thirds, of these stoves may correspond to a 20,000-unit government procurement order reported in GuateCompras, which was not coordinated with the project (see Section 3.2.4). This creates uncertainty around the attribution of sales to the project's intended mechanisms. Of the 38,420 ICS reported as sold through project activities, only 10.9% (4,184 units) are accompanied by household-level data reported by manufacturers through project monitoring tools. This subset forms the basis for the estimate of 19,097 individuals (3,891 households) counted as direct beneficiaries under the M2 Indicator (Annual Report 2024). While this figure is internally consistent with the project's assumptions, it remains based on self-reported data and has not been independently verified at scale. Importantly, although these sales were reported using project tools, their attribution to project interventions cannot be confirmed without further evidence, such as analysis of sales trends before and after project support, or independent validation of causal links. In 2024, a field validation pilot covering 63 households across four departments confirmed that 100% had an ICS installed, and data collection included indicators on appropriate use. Yet, while project training has stressed the benefits of ICS use, including health, safety, savings, and functionality, the ELE could not find confirmation of its uptake by communities and, according to stakeholder and third-party interviews and surveys, it has yet to have any impact on project actions on ICS demand. The project also develops and adapts web-based tools, including offline geolocation features, to support household-level reporting. Still, broader population-level confirmation of sustained use and satisfaction remains pending. Interviews indicate that new ICS users are gained through contact and the demonstration of benefits and functionality by trusted users. However, most trained community members and project partners surveyed do not use ICS.

Figure 6. Improved cookstove user (Alta Verapaz)



Results of the mitigation solution are documented and promoted

The project has initiated several efforts to promote ICS, but their reach and coherence remain limited. The “Respirá Tranquilo/a” behavioural change campaign, which deployed multi-channel messaging (radio, social media, public events), reportedly reached over 121,000 families, and launch events in late 2024 engaged manufacturers, local officials, and community stakeholders. However, the ELE found no verifiable evidence that these activities led to increased ICS demand, and many trained community actors and municipal partners reported limited awareness of the campaign. While project materials, including a dedicated website and printed brochures, were produced, these did not visibly emphasise the project’s mitigation results or link messaging to available financing mechanisms or stove suppliers.

Training initiatives proceeded in parallel. Habitat para la Humanidad trained over 300 women as community promoters, but few were observed to be actively using or promoting ICS at mid-term. FUNCAFE was contracted to deliver educational content in schools, though this had not begun by the evaluation. **Across stakeholder interviews, a consistent concern was raised: that outreach, training, and supply-side interventions were fragmented, regionally scattered, and lacked a coordinated communication strategy.** As a result, while dissemination activities have occurred, the project has not yet demonstrated an integrated, strategic effort to communicate and promote the benefits and results of the mitigation solution in a way that could enable replication or scaling.

Project stakeholders’ buy-in to the mitigation solution

Stakeholder buy-in to the project’s core solution, a market-based transition to ICS, remains fragmented and uneven at mid-term. A notable achievement lies in the sustained engagement of ICS actors in the development of national testing norm based on ISO 19867 (Water Boiling Test) adapted to the Guatemalan context. Over 40 multi-stakeholder sessions convened by COGUANOR, with participation from MARN, academic institutions, and manufacturers, created a collaborative process culminating in a technically validated draft. At the time of the evaluation, the draft’s core text had been agreed and annexes were being finalised to complete the process. However, the proposed norm remains voluntary and will require formal legal adoption to ensure enforceability. While some institutional actors view its eventual implementation as critical to building market trust and improving public procurement, manufacturers interviewed did not directly associate standard-setting with commercial expansion strategies. Their concerns remain more closely tied to unresolved barriers such as low end-user demand, weak distribution infrastructure, and lack of access to credit.

At the time of the evaluation, none of the project’s financial mobilisation indicators had been met. No public (M4 Indicator) or private (M5 Indicator) co-financing was recorded, and no credit disbursements had been made to either consumers or manufacturers. Microfinance institutions cited risk and low returns as key deterrents, and only two cooperatives had agreed to participate, both outside the five priority departments. The manufacturer loan facility—still under development—is not expected to issue loans until mid-2025, and several manufacturers have sought alternative commercial loans due to delays and limited engagement.

Manufacturers expressed limited confidence in the commercial viability of ICS under current market conditions. Institutional and NGO orders continue to dominate the market, with over two-thirds of sales in 2023–2024 attributed to such channels. This structural reliance weakens incentives for private investment and market-building. Stakeholders noted that participation in standard-setting exercises, while useful, does not substitute for actionable shifts in market demand or financing conditions. As such, the project has yet to catalyse the behavioural and financial commitment required for transformational change across the ICS value chain.

Based on the evidence reviewed, the project is assessed to be at the “Early Stage” of Dimension 1. However, the current Transformational Change Measurement Framework expects projects to reach the “Interim Stage” by mid-term (see Table 2 in section 1.2.1). Foundational activities have been initiated, including support to manufacturers, awareness campaigns, and institutional engagement in norm development. However, these efforts remain fragmented, and key elements of the mitigation solution—the development of a functioning ICS market—are not yet tangibly demonstrated. Attribution of ICS sales to project support is limited; demand-side financing mechanisms are delayed; and most stakeholders, including manufacturers and community partners, have not demonstrated strong buy-in. Evidence of the solution’s applicability or effectiveness in real-world conditions is sparse, and behavioural change among target populations remains elusive. As such, **the project has not yet reached the level of demonstration required for the interim stage and remains in an early phase of implementation.**

3.4.2 Dimension 2: Caused a catalytic effect

Broadened Political Commitment

The project has generated limited signals of political commitment beyond its core implementation partners. The most visible engagement has occurred through the active participation of MARN and COGUANOR in the ICS standard development process. However, no additional public policies, financing programmes, or institutional mandates have emerged to support the large-scale adoption of ICS or their integration into broader energy, health, or environmental strategies. Coordination with local governments and legislative actors has yet to materialise, and political commitment remains largely confined to the technical level. **As such, the project has not yet catalysed the type of cross-sectoral alignment or high-level political support needed to mainstream clean cooking solutions at scale.**

New Market Behaviours, Mindsets, and Ideologies

The project has not yet induced a shift in market behaviour among manufacturers, distributors, or consumers. Although some manufacturers expressed interest in expanding distribution networks, this has not yet translated into sustained commercial activity. Distribution support has remained minimal compared with the ambitious multi-tiered distribution strategy outlined in the Project Proposal, which included partnerships with national hardware brands, demonstration centres, and local street vendors. In practice, promotional materials have largely been shared passively via WhatsApp or through one-off events, and the ELE team could not find evidence that project-supported distribution chain or retailer engagement has had any material impact on sales. Most ICS units continue to be sold either locally, near the manufacturers' base, or through institutional buyers, including NGOs and government programmes. Donation channels remain the dominant route to market.

Stakeholders noted that end-user willingness to pay remains fragile, not necessarily because of ongoing donation expectations, but due to the widespread perception that ICS offer limited value for money compared to similarly priced items such as mobile phones. In short, the original demand-side and distribution barriers identified in the Proposal persist, and market behaviours have not yet shifted in a way that would support sustainable, large-scale adoption of ICS.

Increased Finance Accessibility

By mid-term, the project had not yet catalysed access to credit for either consumers or manufacturers. No loans had been disbursed, and Mandatory Indicators M4 and M5 (mobilised public and private finance, respectively) remained at zero. Systemic barriers, including the lack of credit history among target groups, high transaction costs, and limited trust in financial institutions, continue to constrain participation. Although groundwork has been laid through preliminary agreements with financial institutions such as FENACOAC-affiliated cooperatives and *Génesis Empresarial and Banco Industrial*, delays in execution mean that financial accessibility for households and producers has not yet improved.

Improved Policy, Legislative, and Regulatory Frameworks

The project's primary contribution in terms of regulatory strengthening is the participatory development of a national ICS testing norm. This standard, once finalised, could provide a technical foundation for future regulation of ICS procurement, manufacturing, and labelling. **However, by mid-term, the norm remained under review and had not yet been approved.** As developed under the national standards system, it will remain voluntary unless formally adopted through governmental

agreement or other legislative measures. While a roadmap for certification and labelling exists, the institutional mechanisms for enforcement, such as mandates for public procurement or national certification, are still pending. Moreover, no integration of ICS into broader public health, energy, or environmental policy has occurred to date.

Increased Institutional Capacity

The project has supported laboratory partners at USAC and Galileo University through the ICS norm development process and targeted capacity-building. By 2024, both laboratories had received technical assistance and training on ICS testing protocols based on ISO 19867-1, and were equipped to carry out emissions, efficiency, and safety evaluations. **However, systemic institutional challenges persist.** The USAC laboratory remains underutilised, in part due to manufacturers' limited incentives to voluntarily test their stoves, and concerns remain about the long-standing political instability at the university. At Galileo, the IRE had begun implementing stove evaluations when its facilities were severely damaged during the rainy season, delaying testing operations until at least Q3 2025. Moreover, IRE's commitment to the project must be reevaluated (see Section 2.1).

The MRV system, designed by MICROSOL, has made substantial progress in 2024, with alignment to Gold Standard²⁵ methodology and coordination with MARN and SNICC. However, it is not yet operational, and key deliverables such as the baseline, monitoring tools, and public consultation are still underway. Stakeholders expressed concern about the readiness of public institutions to absorb, maintain, or utilise the MRV system due to staffing limitations and weak data infrastructure. Training and coordination are underway, but the institutional architecture needed to govern or scale ICS deployment, particularly in terms of stove certification, MRV ownership, and national data integration, remains underdeveloped.

Scaling-Up

There is currently little evidence of spontaneous or project-driven scaling of the ICS solution. While manufacturers reported a 35% increase in ICS sales in 2024 compared to 2023, this growth cannot yet be directly attributed to project interventions. No jurisdictional expansion, national policy replication, or integration into broader sectoral strategies has taken place.

Some foundations for scaling have been laid, including the participatory development of a national ICS testing norm and the preliminary design of financial mechanisms such as credit lines and a voucher scheme. However, as of mid-term, these enabling elements remain pre-operational, and no significant political, financial, or institutional shifts have materialised. The project has yet to catalyse an enabling environment or system-level momentum that would support national rollout or long-term, transformational impact.

Based on the evidence reviewed, the project is assessed to be at the "Early Stage" of Dimension 2, in line with the minimum expectations outlined in the Transformational Change Measurement

²⁵ Gold Standard is a globally recognized certification standard for climate and sustainable development projects, originally established by WWF and other international NGOs in 2003. It ensures that projects deliver credible greenhouse gas (GHG) emission reductions and contribute to the Sustainable Development Goals (SDGs). Gold Standard Foundation, www.goldstandard.org

Framework (5.2.3). While initial steps have been taken across all six components: political commitment, market behaviour, finance accessibility, policy frameworks, institutional capacity, and scale-up, progress remains partial, pre-operational, and fragmented.

At mid-term, the project has facilitated some technical-level engagement, notably through MARN and COGUANOR in the ICS standard development process, but this has not yet translated into inter-institutional alignment or new public mandates. Market behaviours remain largely unchanged: most ICS are still delivered through donation channels, and end-user willingness to pay remains low due to persistent perceptions of poor value for money. Financial accessibility has not yet improved, no loans have been disbursed, and financial institutions remain hesitant despite preliminary agreements.

In terms of regulatory strengthening, the draft ICS testing norm is an important milestone, but it remains voluntary and unadopted, with no integration into broader energy, health, or environmental policies. Institutional capacity-building efforts, especially with USAC and IRE, have faced delays and external setbacks, and key systems such as MRV are not yet operational. Finally, there is no evidence of jurisdictional or sectoral scale-up of the ICS solution. While foundational elements have been introduced, such as norm development and financial instrument design, they remain incomplete, and the project has yet to catalyse systemic momentum or high-level institutional commitment for long-term transformation.

3.4.3 Dimension 3: Contributed to additional GHG savings

At mid-term, the project shows no measurable signals of indirect or sustained GHG savings beyond its immediate interventions. Reaching the mitigation goal of 464,969 tCO₂e by the project's conclusion, alongside an estimated additional 1.85 million tCO₂e of long-term reductions, equivalent to nearly **30%** of Guatemala's conditional NDC target, appears increasingly unlikely due to slow ICS deployment.

Nevertheless, the project still holds the potential to set a strong foundation for long-term emissions abatement. These reductions are premised on the transformation of an already existing ICS market, rather than building a market from scratch. Given that rural firewood consumption remains a significant and persistent source of emissions in Guatemala, and that the rural population continues to grow, the relevance and scale of the intervention remain clear. Should the enabling structures, including the MRV, finance, and institutional coordination and standards, be fully realised, the groundwork laid by the project could indeed result in additional, large-scale, and sustained GHG savings beyond the project period.

In this sense, two project results look particularly crucial for contributing to long-term GHG emissions according to the stakeholders interviewed: the MRV system and the ICS certification programme.

The **MRV system**, under development in alignment with SNICC and international standards, is expected to allow future quantification of ICS-related reductions and support access to climate finance. Similarly, the **ICS standard**, while voluntary, could play a critical role in improving stove quality and buyer confidence if supported by certification and public procurement frameworks. These mechanisms, if institutionalised and scaled, could support Guatemala's long-term emissions reduction trajectory and leave a durable climate legacy beyond the project's lifetime.

In summary, the ELE assigns an Amber rating to the Impact criterion, based on the project's self-assigned M3 score of 2 ("Early Stage") and supporting evidence. While the project has taken steps toward transformational change, such as advancing an MRV system aligned with SNICC, developing a national ICS testing norm, and designing financial mechanisms, none of these are yet operational. There is no evidence of policy replication, systemic scaling, or institutional anchoring. As a result, the project's long-term mitigation impact remains largely aspirational at mid-term.

3.5 Sustainability of the project

Sustainability

5. What is the likelihood that the outcomes will be sustained after the end of the project funding period?

Institutional ownership has begun to take shape in select areas but remains inconsistent across actors and components. For example, COGUANOR have actively contributed to the development of the ICS norm, MARN is expecting MRV alignment with national systems, and USAC has engaged in building laboratory testing capacity, completing evaluations for multiple stove models. However, risks related to USAC's institutional stability persist. However, many other partners were only recently engaged, and coordination remains fragile across levels and sectors. As described in Section 3.2.5, the stove testing standard is not yet finalised, and MRV systems are still in the pre-operational phase. The participation of the laboratories remains uncertain, with Galileo reportedly disengaged and USAC constrained by internal governance issues (see Section 2.1). Engagement with key delivery partners, such as *Habitat para la Humanidad and Fundación Génesis Empresarial*, only progressed in late 2024 with field implementation, including ToT training, initiated in December 2024. The national behaviour change campaign was launched between September and December 2024, while the FUNCAFE school-based education component had not yet begun at the time of the mid-term evaluation.

There is limited evidence of formal mandates, dedicated budgets, or institutional strategies to sustain activities beyond the project period, particularly among municipal and decentralized actors. Most interviewed stakeholders, particularly at the municipal or community level, reported no independent strategies, budgets, or mandates to carry on ICS promotion or monitoring. Their involvement to date was largely project-driven and would likely not continue in the absence of external support.

Several actors viewed the project's support to distribution channels as limited, while also expressing interest in developing their own networks. While some vendors and manufacturers expressed willingness to expand or formalise their own distribution strategies, they noted that current project support, such as materials sent via WhatsApp, was not sufficient to build a sustainable system. Without stronger support for sales infrastructure, distribution remains a weak link in the ICS value chain.

Several stakeholders expressed frustration at the project's slow pace and limited visibility, especially given its long gestation and substantial funding. The project has been in preparation since 2015, with extensive consultations carried out in 2017 and 2018, including multi-stakeholder workshops, financial product validation sessions, and national demand studies. The first formal Proposal was submitted in 2019. With a total grant envelope of EUR 11 million from the Mitigation Action Facility, a comparatively generous budget by regional standards, some respondents questioned

whether the project's achievements to date are commensurate with its scale. Comments referenced delays, low public profile, and limited tangible progress in deployment or financial access mechanisms and raised concerns about the mismatch between ambition and execution.

The coexistence of donation-based and market-based models remains ambiguous, with some actors perceiving tension and others seeing complementarity. Several respondents expressed concern that poorly coordinated public or NGO stove donations could undermine consumer willingness to pay in project-targeted areas. This concern is heightened by the limited reach and unclear targeting of the project's behavioural change efforts. Although the "*Respirá Tranquilo/a*" campaign was launched in late 2024, the ELE found no verifiable evidence that it led to increased ICS demand. Many municipal partners and community promoters reported little or no awareness of the campaign or its messaging, and project materials did not strongly link behaviour change to financing options or local suppliers. While the campaign was designed to elevate ICS as an aspirational product and help reconcile supply-side and demand-side strategies, the project has not clearly articulated how donation and market-based models are expected to coexist or evolve over time.

Some actors identified hybrid delivery models involving organisational buyers and community-level financing as promising for long-term sustainability. In several cases, stoves were sold to organisations that managed local delivery, sometimes combining credit, donations, or bundling with other home improvements. These approaches were seen as relieving manufacturers from managing last-mile logistics while still supporting commercial transactions, offering a pathway to scale that fits the Guatemalan context.

While the project has initiated key steps toward sustainability, such as developing institutional capacities, aligning MRV systems with national platforms, and piloting delivery models involving organisational buyers, these signals remain uneven and fragile at mid-term. Most actors lack plans, resources, or mandates to continue project activities beyond the funding period. Distribution channels are underdeveloped, and the coexistence of donation and market-based models remains unresolved. Nevertheless, early institutional buy-in, the existence of a functioning ICS market, and the emergence of hybrid approaches offer a foundation that could be strengthened moving forward. **Overall, sustainability appears possible but not yet probable without additional strategic support, justifying an Amber rating.**

3.6 Gender equality and social inclusion

Relevance

Prior to the development of the Gender Equality and Social Inclusion (GESI) Action Plan, gender considerations were indirectly integrated into the project design through the natural focus of ICS interventions on women, who constitute the primary users and promoters of this technology. During the evaluation, 60% of interviewees and survey participants (out of 95 respondents) were women, while 73% of participants in training activities led by Habitat were also women.

The project's communication and behaviour change campaigns recognised that while women are the primary beneficiaries, experiencing improvements in health, safety, and time savings, men often control household financial decisions. As such, messaging targeted both women (to raise awareness

of benefits) and men (to encourage financial prioritisation of stove acquisition). **Local actors confirmed that women are the most visible beneficiaries, as they are primarily responsible for cooking activities, and that the improved stoves provide tangible health and safety benefits. However, it was also noted that adoption may be lower among older women accustomed to traditional cooking practices, suggesting a need for differentiated messaging by age group.**

The project initially lacked gender-specific indicators or structured mechanisms for monitoring GESI Outcomes. To address this, the IDB engaged a consultant to develop the GESI Action Plan, finalised in December 2024. **The Plan introduced quantitative indicators to track women's participation across project activities, including training sessions, credit uptake (once operational), and behaviour change initiatives.**

As the GESI Action Plan was only finalised late in the project period, its operational use remains nascent. While it provides a structured framework for enhancing GESI monitoring, tangible evidence of its integration into project delivery was still limited at the time of the evaluation. Full mainstreaming of GESI considerations across activities will likely depend on effective application of the Plan during the remaining implementation period.

Effectiveness

Progress toward achieving the GESI Action Plan targets is ongoing but remains partial at the mid-term point. Under the FC Component, financial mechanisms to support access to cookstoves for women and vulnerable groups are under development, with agreements nearing finalisation with two microfinance institutions. However, actual disbursement and uptake of credits have not yet commenced. Under the TC Component, the behaviour change campaign and training of trainers (ToT) initiatives have reached a majority female audience, but significant gaps remain: training materials were predominantly developed in Spanish, limiting accessibility for indigenous-language speakers, and material kits distributed to trainers were insufficient to fully cascade knowledge across communities.

On manufacturing and market access, women's economic opportunities have been promoted indirectly through the strengthening of ICS manufacturers and sales networks, but direct support for women entrepreneurs remains limited. Overall, delays in key activities, financial product operationalisation, and incomplete adaptation of materials to local contexts have constrained the full realisation of GESI outputs to date.

No distinct GESI-focused pilot activity separate from mainstream project operations was implemented during the evaluated period. GESI efforts were embedded within broader outreach, training, and behavioural change initiatives rather than being launched as dedicated pilots. Consequently, there was no structured pilot model available for evaluation or for consideration for scaling up.

Nevertheless, the project generated some unintended positive outcomes for women and socially excluded groups. Women's visibility increased through their roles as community promoters and outreach facilitators, contributing to informal income opportunities and enhancing their social recognition within local contexts. Additionally, some actors reported shifts in community attitudes, with greater acceptance of women's agency in financial and household decision-making processes.

However, these changes remained largely informal, limited in scale, and disconnected from formal employment structures or systemic GESI mainstreaming strategies.

Moreover, the ToT programme has empowered a large number of rural women as community trainers and information multipliers, potentially enhancing their leadership roles and visibility at the community level beyond the immediate scope of cookstove adoption. Additionally, early indications from field activities suggest growing awareness among male household heads regarding the health and financial benefits of ICS, which may gradually shift intra-household decision-making dynamics.

However, broader cultural barriers, such as the limited financial decision-making power of women and strong traditional attachment to firewood use, continue to pose structural challenges that the project alone cannot fully address. No systematic evidence yet confirms a transformational shift, but these early signals suggest pathways that could be strengthened with more targeted support in the remainder of the project implementation.

Impact

The project has promoted awareness among women and contributed to basic engagement with financial concepts, but has not yet translated these into structured financial capability or access. Women are active participants in project outreach and implementation, especially in community promoter roles. These roles offer visibility and may help shift perceptions about appropriate gender roles in the energy or household appliance sectors.

Attitudes toward home chores are evolving, with some actors observing that men are increasingly willing to support household tasks, including cooking, especially when modern technologies like ICS or electric stoves reduce the workload or risk. At the community level, increasing joint decision-making and shifting household dynamics are reported. These changes, while not directly caused by the project, represent an enabling context that the project could have more explicitly leveraged through its GESI approach.

However, machismo remains present and problematic. Several local-level actors acknowledged that patriarchal attitudes persist, especially among municipal leadership.

In terms of the policy and legal environment, no project-led influence on financial or regulatory frameworks related to gender equity has been observed. Financial product design remains in early stages, and gender considerations are not embedded in policy discussions around financial inclusion.

The project has generated informal, temporary income opportunities for women acting as field promoters or trainers. These roles, while offering short-term earnings and some community recognition, do not yet constitute stable employment or represent a scalable model of job creation. Women were also included as campaign beneficiaries, but this group was not linked to economic opportunities, nor were they positioned to play a more active economic role in the ICS value chain. This aligns with the GESI commitment to train women, leaders and volunteers in the promotion of ICS stoves including the installation, use and maintenance of ICS, which aims to build women's capacity even if such roles have not yet translated into stable or scalable employment opportunities.

There is some early evidence of interest in structuring employment roles for women in stove manufacturing and distribution, but this has not evolved into systemic labour market change. Formal job creation remains modest and largely self-reported by project-affiliated manufacturers.

More broadly, gender-responsive employment or procurement strategies have not been developed or institutionalised. No indications were found of broader policy shifts, public-private agreements, or private sector commitments that would suggest emerging support for gender-balanced employment in the ICS sector.

4 Conclusions

Now that the evidence collected and analysed by the ELE has been explored, this section goes back to the project’s Theory of Change to test to what extent the original causal pathways and assumptions behind them (see Section 1.1) have held.

Figure 7. Overview of Project Causal Pathways Assessment at Mid-Term

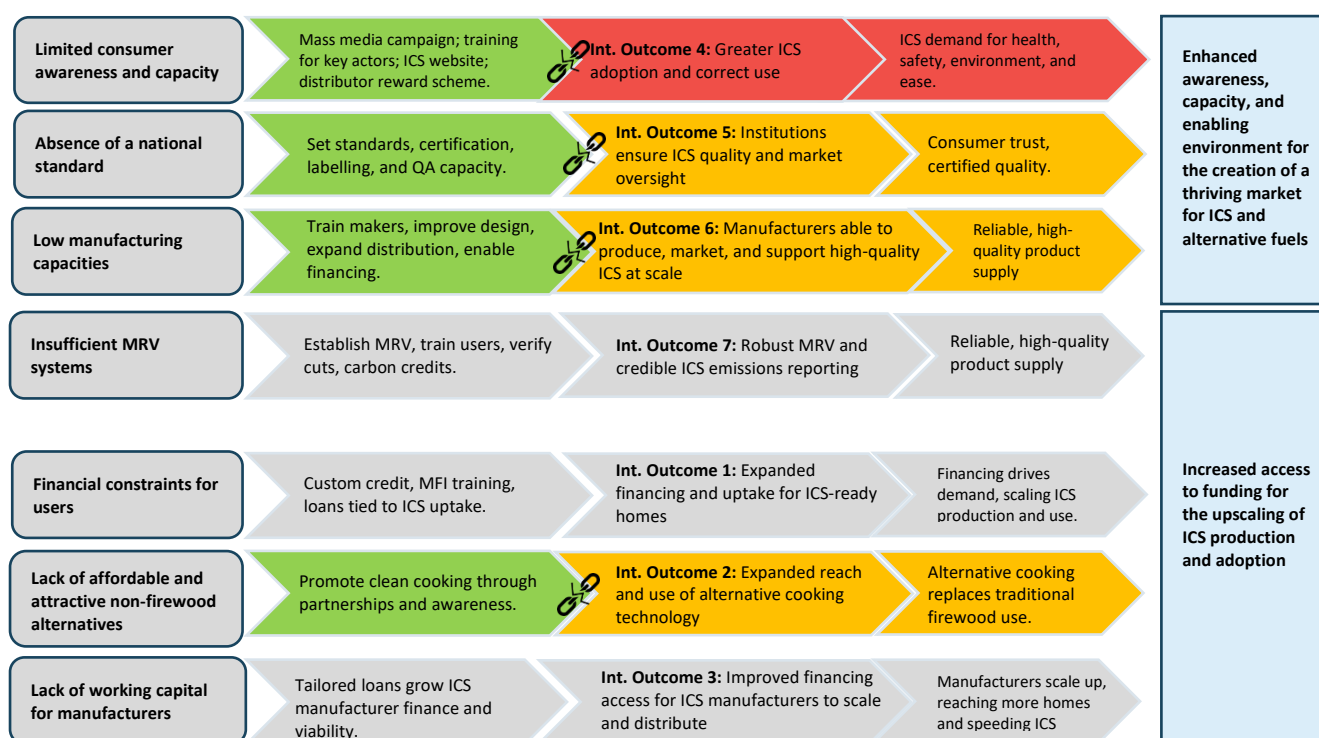


Figure 7 presents an overview of the progress of the project along its ToC causal pathways towards its intended outcomes. The RAG rating uses the same scale as the previous section (i.e. Good / Very Good = Green; Problems = Amber; Serious deficiencies = Red; Not enough info to rate = Grey) and the colours of the Intermediate Outcomes’ shapes are the same colours used in Section 3.13.2 to rate the project’s effectiveness for each Intermediate Outcome. This is to be read as an assessment of the project’s situation at mid-term.

Figure 7 shows that, although the project succeeded in advancing several preparatory activities across both the technical and financial components, significant delays and implementation challenges have hindered the achievement of key Intermediate Outcomes at mid-term.

Regarding the FC Component, the intended mechanisms to improve access to financing for households and manufacturers had not yet materialised at mid-term. Regarding microcredit for households (Intermediate Outcome 1), while the executing agency has established the foundation through negotiations with the federation of cooperatives (FENACOAC/MICOOPE) and their expertise, leading to a preliminary agreement with two cooperatives, loan disbursements have yet to begin. More critically, the design of the microcredit instruments has proven unappealing to potential borrowers due to factors such as loan size, costs, and conditions, as well as to participating financial

institutions that have indicated high operational costs and increased perceived risks. These issues raise significant concerns about the potential uptake and effectiveness of the microcredit mechanism once it becomes operational.

Similarly, efforts to enhance access to capital for manufacturers (Intermediate Outcome 3) had not yet produced tangible results. Although the project, through Alterna and Genesis Empresarial, advanced the design of a credit instrument to support manufacturers' working capital and investment needs, no credits had been disbursed by mid-term. The offer process faced challenges related to timing, procedural complexity, and terms perceived as unattractive by some manufacturers, several of whom chose to seek commercial loans instead. With limited time remaining in the project implementation period and modest credit amounts envisioned, the potential to significantly impact manufacturers' expansion and innovation plans appears constrained.

To promote alternative cooking technologies through the voucher system (Intermediate Outcome 2), the Project Team completed a small pilot, demonstrating that households could transition away from firewood use and achieve significant cost savings by adopting electric cooking technologies. However, by mid-term, no vouchers had been distributed. Implementation of the scale-up phase was delayed due to changes in management at the electricity utility partner (EEGSA), and the project was still awaiting renewed collaboration to proceed. Therefore, there is not enough evidence at this time to assess whether the project will effectively lower financial barriers to adopting cleaner cooking alternatives.

Concerning the TC Component, the project supported various educational and communication initiatives, developed testing standards, and conducted manufacturing capacity-building activities. However, these efforts have not yet translated into widespread ICS adoption or a fully functional enabling environment, a notable concern given that only two years remain in the project's implementation period.

In terms of increased adoption of ICS (Intermediate Outcome 4), despite reporting over 38,000 ICS units sold and distributed through project activities by mid-term, only about 11% of these units could be independently verified, and attribution to the project's interventions remains unclear. A significant portion of the reported sales appears linked to a government procurement unrelated to the project's quality and standards efforts. Manufacturers generally did not report substantial increases in sales attributable to the project, with minimal exceptions. While deployed, awareness and behavioural change activities were fragmented across different implementing partners, lacked coordination, and often failed to reach the project's primary target areas. Stakeholder feedback indicated that awareness and knowledge improved marginally but did not generate sustained demand for ICS, particularly without accessible financing mechanisms or incentives.

Work to develop a national stove testing standard progressed significantly through a highly participatory process involving multiple stakeholders. While the standard was neither finalised nor adopted at mid-term, the foundations for future improvements in product quality and market trust (**Intermediate Outcome 5**) were established. Nonetheless, without consolidating the testing laboratory and, more importantly, formal adoption, certification, or widespread socialisation among consumers, the immediate impact of the testing work on market dynamics remains limited.

The project also delivered capacity-building workshops for ICS manufacturers, focusing on business development and marketing to improve the production processes, increase efficiency and innovation in the ICS supply chain (Intermediate Outcome 6). Feedback was mixed: less experienced manufacturers found the training beneficial, while more established businesses questioned its relevance given the absence of strong market demand. Manufacturers emphasized that without parallel improvements in consumer financing and market stimulation, technical and business advice alone would have limited commercial impact.

Finally, efforts to establish an MRV system to quantify emissions reductions were underway but not operational by mid-term. Although data collection tools had been developed and field data capture initiated, the MRV process had not progressed to verifying emissions reductions or integrating results into national climate reporting frameworks, which, in theory, would catalyse access to climate finance, e.g. carbon credits (Intermediate Outcome 7).

External factors played a significant role in shaping project Outcomes. The extended timeline between design and implementation led to the disappearance of key institutional platforms such as the Firewood Discussion Table and the Cookstove Cluster. The Covid-19 pandemic caused delays and affected supply and demand dynamics, including financial institution engagement. Steel price fluctuations added financial strain to ICS manufacturing. On the positive side, pre-existing awareness of the need for stove testing norms and earlier dialogue with COGUANOR helped ease initial communication. However, the development of the national ICS testing norm required the full reactivation of stakeholder engagement and technical procedures from the ground up, as the formal process was relaunched in 2024.

Overall, the TC Component's Outputs have laid important groundwork, but the causal pathways leading from Outputs to Intermediate Outcomes and transformational change remain fragile and incomplete. Structural challenges on both the supply and demand sides, compounded by external factors, have delayed or diluted progress toward the project's intended market transformation goals.

5 Lessons and recommendations

5.1 Key lessons

The evidence gathered during the ELE, along with the key findings presented in Section 3 and the conclusions in Section 1, have been used by the ELE Team to draw the lessons below.

5.1.1 Lessons for the Project Team to achieve the goal of the project

1. Early and strong coordination is essential to generate synergies. The fragmentation of communication, behaviour change, financing, and manufacturing support activities reduced the project's potential to stimulate adoption and market growth. A critical lesson is the importance of sequencing and aligning interventions across components and actors from the outset. Early and sustained coordination — including local government actors, community leaders, manufacturers, and financial institutions — is essential to achieve the synergy necessary for systemic change.

2. Integrating financial access and behaviour change is fundamental. The project experience shows that financing mechanisms for end users and behaviour change initiatives must be deployed in a coordinated and timely manner. Awareness campaigns without accessible financing options often fail to convert interest into action. Financial strategies must be operational and integrated with outreach activities to maximise effectiveness in stimulating demand.

3. Gender strategies must address structural barriers, not just participation. Counting women's participation in activities is insufficient to advance gender equality. Future efforts must embed strategies that address underlying inequalities in access to resources, decision-making, and benefits. Gender integration must aim to create tangible shifts in power dynamics, not just representation. These strategies could be included in the campaign and media messaging.

4. Laboratory testing must be systematically connected to market and communication strategies. While the establishment of laboratory testing capacity is valuable, its impact remains limited unless results are translated into actionable improvements in products, communications, and public procurement frameworks. Testing must be positioned as part of a broader system linking product quality, consumer trust, and market transformation. Also, manufacturers need to understand the barriers their ICS models currently face in accessing existing distribution networks and utilising laboratory testing in research and development to overcome these barriers.

5.1.2 Lessons for the Mitigation Action Facility for improving other or future projects' design and implementation

5. Implementation roles ought to be legally and operationally feasible, not just politically strategic. The feasibility of implementation arrangements should be reassessed not only during proposal development but also before execution, especially if years have passed or financial instruments are involved. Implementation Organisations should establish clear internal protocols for vetting

institutional partners, confirming financial delivery structures, and proactively managing delayed transitions. Without such measures, even technically sound designs risk faltering at start-up.

In the Guatemala Improved Cookstoves project, the implementing partner's role changed repeatedly across three rounds of proposals. The 2018 proposal designated the National Competitiveness Program (PRONACOM); the 2019 proposal replaced it with the Foundation for the Development of Guatemala (FUNDESA), a high-profile private sector platform. However, neither had the legal and fiduciary capacity to manage financial instruments required under the FC Component. By 2021, a third partner, Alterna, was introduced, chosen for its operational capacity to manage a guarantee fund through a pre-existing trust model.

Yet even after Alterna's designation in 2021, the project did not begin implementation until late 2022. During this critical window, the IDB, as Implementation Organisation, did not appear to reassess stakeholder readiness or push forward preparatory actions, despite already known implementation risks. The Annual Report 2023 acknowledges that the time between design and implementation created a mismatch between market assumptions and real conditions. In particular, Guatemala's macroeconomic environment had changed significantly: inflation rose, risk aversion deepened, and MFI reassessed their willingness to participate in small-scale rural credit delivery. The Covid-19 pandemic compounded these dynamics by weakening manufacturers' liquidity, delaying field activities, and disrupting coordination platforms that had existed at the time of design.

5.2 Recommendations

5.2.1 Recommendations to the Project Team to achieve the goal of the project

1. Strengthen coordination across project components and actors. The evaluation found that **fragmentation between components reduced the effectiveness of the project's market-building strategy. A shared coordination space would allow for greater sequencing and synergy among field actions.** The Project Coordination Unit at Alterna, with participation from all implementing partners, the IDB country team, and key stakeholders, including HELVETAS, Fundación Solar, FUNCAFE, and financial institutions, could consider establishing a technical-level coordination mechanism (e.g., a technical committee or working group) to ensure alignment across all project components. This would particularly apply to communication and behavioural change, credit access, manufacturer and distributor support, and outreach to be established immediately and operationalised throughout the remainder of the project implementation period. This mechanism should facilitate regular, structured information-sharing and activity alignment across implementing partners and delivery actors.

2. Reactivate and engage professional and public-private platforms. Facilitated by the two Implementation Organisations, and with the support of all project partners, the project could consider supporting the reactivation or formalisation of sector-level platforms such as the *Gremial de Fabricantes de Estufas Mejoradas* (Improved Stove Manufacturers Association) and promote inclusive public-private dialogue spaces where manufacturers, MFI, NGOs, and relevant public agencies jointly plan and implement context-specific market strategies. These platforms can serve as channels for sharing information, coordinating distribution strategies, aligning financial product design, and improving market responsiveness. Collaboration with large-scale retailers and financial actors should be pursued through these platforms, rather than bilaterally, to ensure sector-wide participation. The

project could consider initiating stakeholder mapping and platform consultations by Q4 2025, with at least one coordinated dialogue or platform event held before mid-2026.

3. Strengthen implementation of the GESI Action Plan by moving beyond participation metrics. The project should integrate indicators that track progress toward reducing structural inequalities in access to credit, decision-making roles, and economic benefits. Activities could target women leaders, MFIs, retailers, manufacturers, and community members, and include initiatives promoting women's roles in distribution and manufacturing, as well as gender-sensitive messaging aligned with broader outreach campaigns.

4. Fully leverage local promoters formed in ToTs with improved materials and training. Equip local promoters with accurate, context-adapted information on stove types, prices, financing options, and benefits. Beyond improving the materials as demanded by the project-trained ICS promoters, the project can consider coordinating with partners in ensuring that promoters have a more direct experience with the ICS than through the current short training. Most promoters do not use or have access to ICS, while the ELE team found that direct experience in a potential user's environment (relatives, neighbours) is often the key deciding factor for acquisition.

5. Focus geographically to maximise impact. The project made a compelling case for geographical focus that has been lost in favour of expediency in starting the implementation of long-delayed actions. However, concentrating efforts in the originally prioritised departments can generate stronger, cumulative results in core communities.

6. Clarify and strengthen the role of local governments and community actors. The Project Team, with the coordination and support of all project partners, could consider engaging municipal actors, including Women's Directorates (*Direcciones Municipales de la Mujer*, DMM) and Municipal Environmental Units (*Unidades de Gestión Ambiental Municipal*, UGAM), as strategic allies in outreach and behavioural change. Coordination with local governments can be quite complex and comes with its own risks, such as political co-option and various demands. However, their essential role in promoting clean cooking is something that cannot be outsourced or ignored. The project should consider positioning these actors as institutional partners, not simply logistical counterparts, through joint planning sessions, targeted training, and clear role articulation in ICS promotion.

7. Improve financial mechanism design and implementation. Although the current financial mechanism has been carefully designed and approved by the MAF to ensure fiduciary compliance and provide better access than conventional MFI products, its perceived complexity and low uptake indicate the need for complementary solutions. The project could explore more flexible, partner-driven mechanisms that are easier to implement and more attractive to end users. For example, this might include:

- Leveraging credit products already in use by project partners, such as MFIs or cooperatives;
- Supporting manufacturer-led financing schemes;
- Reducing administrative burdens for end users, including the documentation and time required to access finance.

These complementary mechanisms should aim to maintain fiduciary rigour while increasing uptake, boosting competitiveness, and enhancing the user experience, particularly for dispersed rural clients and small-scale vendors.

8. Translate laboratory testing results into practical market improvements. The success and sustainability of laboratory testing, along with its relevance to manufacturers and consumers, rely on the development of a regulatory framework for ICS quality. Therefore, the project should consider creating a structured plan that links lab testing outcomes to product development, public communications, and quality certification efforts. This approach could also help manufacturers access financing to implement product improvements based on laboratory feedback. Additionally, the project should intensify efforts to establish a reliable "official" laboratory, ideally certified, within a private or public institution capable of conducting ICS tests. While the Universidad Galileo appears to be disengaged from the project, the University of San Carlos faces challenges due to its statutory situation and frequent closures related to political protests, making it a less viable option for a sustainable ICS laboratory.

9. Behavioural change and communication efforts could emphasise the benefits that resonate most strongly with households and manufacturers, such as health improvements and fuel savings—while still linking these to the project's broader climate and sustainability objectives.

5.2.2 Recommendations to the Project Partners for supporting the success of the project

9. Reinforce institutional leadership and financial ownership for long-term sustainability. The MARN could consider assuming a more proactive role in ensuring that the MRV system developed under the project is fully integrated into national climate infrastructure, notably the SNICC. This requires not only technical alignment but also the early identification of institutional mandates, budget requirements, and sustainable financing pathways beyond donor support. MARN should move from a position of passive technical support to proactive institutional stewardship of emissions data, in line with its national responsibilities. Simultaneously, COGUANOR, while rightly focused on developing the voluntary ICS testing norm, could consider actively coordinating with MARN to establish a pathway for institutionalising the norm into relevant policy or regulatory frameworks. Adoption cannot remain an abstract or voluntary aspiration. Regulatory and market integration must be planned jointly by the relevant public bodies. As the agencies entrusted with climate policy and standardisation, MARN and COGUANOR are best placed—and indeed expected—to jointly lead the transition from technical development to institutional ownership and sector-wide adoption.

5.2.3 Recommendations to the Mitigation Action Facility

10. Consider GESI-related expectations and indicators in the approved Action Plan that are clearly linked to outcome-level results. The TSU could support the project by reviewing and refining the current GESI framework to better reflect transformative objectives, including measurable improvements in women's access to economic opportunities, leadership roles, and equitable benefit-sharing across the cookstove value chain.

Annex A Capturing Project-induced Transformational Change

Final version of the Transformational Change Measurement Framework to be added after finalised and approved by TSU.

Annex B Evaluation and Learning Exercise Matrix

This evaluation and learning exercise matrix is based on the Theoretical Framework provided (version April 2025). It is a working tool that allows the evaluators to focus on a feasible target and assemble information for each question that can be synthesised in the final report, hence creating an integrative overview of the project at large.

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
			1 RELEVANCE		
1	<p>1.1 To what extent does the project address an identified need?</p> <p>1.2 To what extent were GESI considerations integrated into the design and delivery of the project? Did the project develop a relevant GESI Action Plan?</p>	<ul style="list-style-type: none"> The project's ToC is based on solid research and aligned with national policy The project solutions to expand coverage of improved cookstoves (ICS) respond to explicit or implicit needs and demands by beneficiaries and stakeholders The project selected the intervention area (5 departments) based on appropriate criteria and consultation The project has identified relevant GESI actions and is implementing them 	<ul style="list-style-type: none"> National authorities (e.g. ministries), experts (e.g. academic institutions), civil society (including community associations) and local authorities (e.g. municipalities, COMUDES, COCODES) implicitly (in non-project documents or statements) or explicitly (project design consultations, monitoring and evaluation) express the need to increase coverage of ICS for their effects on firewood consumption (and hence mitigation of GHG emissions and forest degradation, and increased household income) and household air pollution (and 	<ul style="list-style-type: none"> Project team Project stakeholders Third parties 	<ul style="list-style-type: none"> Interviews Focus group discussions Document analysis

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
			<p>thus improvement of health and health cost reduction) in the selected geographical departments.</p> <ul style="list-style-type: none"> ▪ The project is suitably designed to meet the expressed needs of the actors mentioned above. ▪ The project can have incidence in improving gender-balanced access to financial products and improving the well-being of vulnerable population groups (e.g. rural indigenous population) 		
			2 EFFECTIVENESS		
2	<p>2.1 To what extent has the project been achieving intended intermediate outcomes (and unintended ones)?</p> <p>2.2 Did the project achieve GESI outcomes and otherwise address the needs of women</p>	<p>Technical component</p> <ul style="list-style-type: none"> ▪ Increasing consumer and retailer awareness of benefits and capacity to use and maintain ICS ▪ At the time of the evaluation, there is significant progress in the ICS certification and labelling process, and the capabilities of the certification laboratories have been improved or are very likely to be improved within the year. 	<p>Technical component</p> <ul style="list-style-type: none"> ▪ The project is enhancing awareness, capacity, and enabling environment for the creation of a thriving market for ICS and alternative fuels by contributing to: <ul style="list-style-type: none"> ○ Increased adoption and proper use of Improved Cookstoves (ICS). ○ Enhanced market trust and transparency due to the establishment of clear quality standards and 	<ul style="list-style-type: none"> ▪ Project team ▪ Project stakeholders 	<ul style="list-style-type: none"> ▪ Interviews ▪ Focus group discussions ▪ Document analysis

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
	<p>and socially excluded groups?</p>	<ul style="list-style-type: none"> ▪ ICS manufacturer's capacities for business models and ICS evaluation are being enhanced ▪ Alternative, low-carbon, fuel cooking solutions, including electric stoves, are being promoted ▪ An MRV system is being developed and will likely start implementation before project closure <p>Financial component</p> <ul style="list-style-type: none"> ▪ The project has engaged with relevant finance and microfinance institutions to develop financing mechanisms for manufacturers, retailers and consumers ▪ The project has designed and is implementing, or is likely to start soon implementing a voucher scheme for the purchase of alternative cookstoves <p>Cross-cutting issues</p> <ul style="list-style-type: none"> ▪ The project has not caused any adverse environmental or social externality (unintended outcome) 	<p>certification processes for ICS</p> <ul style="list-style-type: none"> ○ Increased efficiency and innovation in the ICS supply chain ○ ICS MRV reported in the NDC catalyzes access to climate finance, e.g. carbon credits <p>Financial component</p> <ul style="list-style-type: none"> ▪ The project is increasing access to funding for the upscaling of ICS production and adoption by contributing to: <ul style="list-style-type: none"> ○ Increased access by households with financial capacity to microcredit, enabling them to purchase (ICS) ○ Enabled access to a voucher system that effectively lowers financial barriers for households to adopt alternative clean cooking technologies ○ enhanced access to capital by ICS manufacturers, enabling investment in production 		

ELEQ No.	Evaluation Question	Evaluation criteria	Original hypotheses	Who can answer this question	Source of information Data gaps
		<ul style="list-style-type: none"> ▪ The project has emphasized women empowerment issues as outlined in the Project Proposal (households with women with independent income are more likely to acquire an ICS, and women and children are most affected by household air pollution due to unimproved firewood stoves) 	<p>scale-up, innovation, and business expansion</p> <p>Cross-cutting issues</p> <ul style="list-style-type: none"> ▪ The project considers possible environmental and social externalities and takes steps to enhance (positive externalities) or mitigate (negative externalities) them ▪ The project can have incidence in improving gender-balanced access to financial products and improving the well-being of vulnerable population groups (e.g. rural indigenous population) 		

			3 EFFICIENCY		
3	To what extent is the project delivering results in a timely and economical way?	<ul style="list-style-type: none"> ▪ The project design assessed alternative methods to replace solid cooking fuel, guided by thorough research and stakeholder feedback. ▪ The project delivers its planned outputs in a timely manner, adapts to the changing political and macroeconomic environment, and uses the allocated resources. ▪ The project management regularly and effectively addresses implementation risks, including those identified in the Project Proposal: <ul style="list-style-type: none"> ○ Market Distortion by Donations ○ Ineffective Distribution Channels ○ Insufficient Institutional Capacity for M&E and MRV Systems ○ Macro-economic changes affecting market stability 	<ul style="list-style-type: none"> ▪ The project is the most cost-effective approach to mitigate CO₂e emissions from firewood and abating household air pollution, as opposed to other alternatives available on the market. ▪ The project design is the most cost-effective alternative to increase ICS coverage ▪ The project's human and financial resources and their allocation are appropriate to deliver the intended results and respond to implementation challenges, including changes in the political and macroeconomic context • The project governance mechanism (steering committee, institutional links) enables project implementation and results to be achieved within the project's implementation timeframe. 	<ul style="list-style-type: none"> ▪ Project team ▪ Project stakeholders 	<ul style="list-style-type: none"> ▪ Interviews ▪ Document analysis ▪ Focus group discussions

			4 IMPACT		
4	<p>4.1 What evidence is there that the project will likely contribute to the intended impact in the ToC (incl. transformational change)?</p> <p>4.2 Has the project enabled better gender-balanced access to financial products?</p> <p>4.3 Has the project increased income opportunities or, ideally, stable and/or formal employment for women and marginalised groups?</p>	<ul style="list-style-type: none"> ▪ There are interim signals of the viability of the project's technical and financial solutions and their adoption by project stakeholders ▪ There are early signals of ICS market expansion due to increased awareness, capacity and access to finance provided by the project) ▪ There are early signals of the intended improved gender-balanced household decision-making due to project trainings, awareness campaigns and access to financial services. ▪ There are early signals that the households fuel costs decreases are likely to be sufficient to impact the household budget positively ▪ There are early signals of formal employment creation in the improved cookstove (ICS) value chain. 	<ul style="list-style-type: none"> ▪ Early signals of ICS market expansion suggest a trajectory towards the abatement of 0.9 Mt CO₂e and improvement of household air quality due to project contribution can be documented ▪ Early signals that wider adoption of ICS through an improved ICS market can lead to improvements in indoor air quality and diminish firewood collection time investment ▪ Early signs that household savings are leading to increased productive investments or income-generating activities. ▪ Increased consumer demand for ICS, driven by awareness campaigns and financial incentives, will incentivize manufacturers to scale up production and distribution 	<ul style="list-style-type: none"> ▪ Project team ▪ Project stakeholders 	<ul style="list-style-type: none"> ▪ Interviews ▪ Document analysis ▪ Focus group discussions

			5 SUSTAINABILITY		
5	What is the likelihood that the outcomes will be sustained after the end of the project funding period?	<ul style="list-style-type: none"> The project has considered risks to and drivers of sustainability of results and has at least outlined measures to mitigate risks or enhance sustainability drivers 	<ul style="list-style-type: none"> Sustainability risks and drivers can be identified at this stage The project can have an incidence in mitigating identified cultural barriers related to gender roles in firewood collection and exposure to indoor air pollution 	<ul style="list-style-type: none"> Project team Project stakeholders Third parties 	<ul style="list-style-type: none"> Interviews Document analysis Focus group discussions
			6 LEARNING		
6	What key lessons can be learnt to the benefit of this or other projects funded by the Mitigation Action Facility in achieving their results?	<ul style="list-style-type: none"> The project monitors and documents progress towards outcomes 	<ul style="list-style-type: none"> Lessons learned can be outlined at this stage 	<ul style="list-style-type: none"> Project team Project stakeholders Third parties 	<ul style="list-style-type: none"> Interviews Document analysis Focus group discussions

Annex C List of ELE sources

C.1 Internal documents

1. NAMA Support Project Proposal Efficient use of firewood and alternative fuels in indigenous and rural communities in Guatemala, Submitted by the Inter-American Development Bank (IDB) and Fundación para el Desarrollo de Guatemala (FUNDESA) (2019)
2. NAMA Support Project Proposal Efficient use of firewood and alternative fuels in indigenous and rural communities in Guatemala, Submitted by the IDB (2023)
3. Assessment of NAMA Support Project Guatemala Cookstoves Joint assessment (2019)
4. Technical Note. Explanations on the IDB approved documents in relation with the NAMA Support Program (NSP). (2021)
5. Project "Efficient use of fuelwood and alternative fuels in indigenous and rural communities in Guatemala"- Amendment Request No.78 (2023)
6. Communications between BID and TSU regarding proposed amendments to the MAF Project Proposal (NAMA Support Project Proposal) of the Guatemala Cookstoves project.
7. NAMA Facility NSP Annual Report 2022 (Guatemala Cookstoves project)
8. Mitigation Action Facility Project Annual Report 2023 (Guatemala Cookstoves project)
9. Mitigation Action Facility Project Annual Report 2024 (Guatemala Cookstoves project)
10. Efficient Use of Fuelwood and Alternative Fuels in Indigenous and Rural Communities in Guatemala (project) Gender Equality and Social Inclusion Gender Assessment and Action Plan for the Mitigation Action Facility
11. Principales conceptos del Programa GU-G1004 Análisis Unidad Ejecutora del Programa (Marzo 2025)
12. HELVETAS, Estrategia de Comunicación y Cambio de Comportamiento Alterna BCC Marzo 2025 (Presentación para BID/ Alterna)
13. FUNCAFE, Consultoría para el Fortalecimiento de capacidades ambientales e incorporación de energías limpias y eficientes en las comunidades educativas, Febrero 2025
14. FUNCAFE, Guia Ambiental y de Eficiencia Energética para Padres de Familia
15. FUNCAFE, Guia Ambiental y de Eficiencia Energética para Educación Primaria
16. FUNCAFE, Modelo Educativo ERA
17. Hábitat para la Humanidad, Programa de Capacitación a Mujeres Líderes y Emprendedoras

18. Hábitat para la Humanidad, Programa de Capacitación a Capacitadores
19. COGUANOR, Sistema Nacional (Guatemala) de Calidad (presentación)

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C.3 List of organisations interviewed

Institution	Position
Project Team	
Inter-American Development Bank	Delivery Organisation
Alternativa	Executing Entity for Technical and Financial Components
Project Stakeholder	
COGUANOR	Implementing partner
FUNCAFE	Implementing partner
Fundación Solar	Implementing partner
Hábitat para la Humanidad	Implementing partner
HELVETAS	Implementing partner
MARN	National Ministry responsible for the project
MICROSOL	Implementing partner
Universidad de San Carlos de Guatemala (USAC)	Implementing partner
FENACOAC/ MICOOPE	Microfinance Institution
Génesis Empresarial	Microfinance Institution
Quantum Energy	ICS manufacturer
Ecocomal	ICS manufacturer
Buenos Vecinos Empresa Socia	ICS manufacturer
Construmentales Los Angeles	ICS manufacturer
ALER	ICS manufacturer
Energy	ICS manufacturer
Soluciones Apropriadas	ICS manufacturer
ICS promoters (ToTs) Jutiapa	ICS promoters
ICS promoters (ToTs) Alta Verapaz	ICS promoters
Third Party	
BCC launch event participants	BCC launch event participants
Ecofiltro	ICS manufacturer
Department of Alta Verapaz	Local government
DMM/ DMSAM (Chiquimula)	Local government
ICS promoters (ToTs) Jutiapa	ICS promoters
ICS promoters (ToTs) Alta Verapaz	ICS promoters
ICS users Alta Verapaz (2)	ICS users
Influencer Alta Verapaz	Influencer (participated in BCC launching event)

Institution	Position
Retailers Chiquimula (3)	Retail/ Hardware store
Retailers Alta Verapaz (1)	Retail/ Hardware store