

Clean energy promotion through microfinance in Ethiopia

Final report

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Project end date: 30/04/2017

Grantee: Gaia Consulting Oy

Local Partners: Buusaa Gonofaa Microfinance SC; Harbu Micro Finance Institution Share Company; Specialized Financial & Promotional Institution (SFPI); Swan Management Plc

Other Partner: MicroEnergy International GmbH (MEI)

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1 Executive summary

The project established an innovative and replicable microcredit mechanism to source, finance, and deliver Clean Energy Technologies (CETs) to low-income households and micro, small, and medium enterprises (MSMEs) in Ethiopia.

The project enabled the MFIs to develop scalable clean energy-related businesses and offer various CETs to current and new clients. The business models developed during the project will allow 200,000 existing MFI clients to have access to CET credits, once the MFIs introduce the credits across their branches. During the project period, 30,000 MFI clients gained access to CET microcredits.

As part of the project, the entire supply chain for high-quality CET for low-income markets has been developed, including logistics, design of credit products, warranty and after sales services and monitoring. Also, partnerships between the MFIs and clean energy technology providers have been built, capacities of the management and staff at the organisations have been developed, and experiences in developing and executing the new credit mechanism have been shared. The project also studied ways to further scale up clean energy technology usage through innovative finance mechanisms in Ethiopia and other developing economies.

The project met its objectives and reached excellent results despite of external challenges including but not limited to national state of emergency and severe droughts. Furthermore, the project improved livelihoods and raised living standards through enabling the access of low-income households and microenterprises to reliable, affordable, and sustainable energy products and services. Gender equality was promoted through enabling access to CET to over 100,000 women in rural and peri-urban Ethiopia.

Subsequent to the careful development efforts, the new business model was launched and proven. During the short CET business launch phase, more than 550 MFI clients took a CET loan reaching more than 3000 direct beneficiaries. In addition, around EUR 10,000 (ETB 200,000) of savings were mobilized during the CET credit client acquisition process. Financing for more than 500 additional CET credits has been ensured for 2017. The total direct lifetime emission reductions gained through the project are estimated at 3500 CO₂t in 2016-2017, and the amount is expected to multiply shortly as the three MFIs establish CET credits throughout their branch networks.

The business mechanisms created at the three MFIs will allow more than 200,000 existing MFI clients to have access to CET products and services. The untapped target market of up to 70 million Ethiopians without access to electricity is a reason for other MFIs to replicate the CET business model in the country. To enable this, however, further support for business development is needed across the sector. At the global level, the up-scaling potential is enormous, while the business models are to be adapted to match with the local operating environments.

The project was implemented in an international consortium of Finnish (Gaia), Ethiopian (Buusaa Gonofaa, Harbu, SFPI and Swan Management) and German (MEI) partners. The project was financed through the 4th call of the Nordic Climate Facility (NCF), funded by the Nordic Developmental Fund (NDF) and managed by the Nordic Environmental and Finance Corporation (NEFCO) and co-financing from the project partners.

2 Assessment of implementation of the project

2.1 Implementation of Activities

Activity 1: Project Management and Quality Assurance (cross-cutting activity)

The international project partners Gaia and MEI jointly carried out the management and quality assurance (QA) of the project. Gaia was responsible for the overall project management, financial controlling, and QA of project outputs. MEI focused on detailed activity management and monitoring, as well as stakeholder management and mobilization of the technology providers.

Activity 2: Energy Needs Assessment and Market Segmentation

The most viable CET options to be offered through microcredit were studied through assessing the basic energy needs and ability and willingness to pay of the potential end-users.

For this purpose, the project consulted the MFI clients in the regions serviced by the 3 MFIs through more than 600 face-to-face surveys and 6 focus group discussions with 50 participants. The results of the assessment showed that while improved cooking stoves (ICS) have the highest energy saving and GHG emission reduction potential, solar home systems (SHS) scored highest in terms of end-user preferences and willingness to pay.

Activity 3: Technology and Supplier Selection

In order to identify the CET(s) most viable for being offered through microcredit, the project also evaluated the local availability and quality of different CETs and their providers.

Among the providers, the project partners identified and evaluated 25 solar and 100 ICS organizations operating in the regions where the three MFIs are active. Based on the pre-selection conducted, capacities and product portfolios of over 20 CET providers were studied and evaluated. Finally, 8 CET providers were identified as potential partners to the MFIs, and the participating MFIs negotiated and established contractual relationships with 1-2 providers each.

All 3 participating MFIs decided to launch the CET credits by offering solar technologies (SHS and pico PV/solar lanterns) through microcredit. The solar technology models offered during the launch phase included 1-4 lamp solar technologies with/without TV and radio from the brands Omnivoltaic (i.e., ovBeacon and ovPilot), Niwa, and Fosera.

In addition to the clients' shown interest and availability, solar technologies were selected based on lower business risk and better strategic fit compared to other CETs. All the MFIs are prepared to consider widening the selection of technologies to other CETs as the need and opportunities arise.

Activity 4: Design of Supply Chains

As part of the third phase of the project, cost efficient supply chains for solar CETs for each participating MFI were designed and established considering the differences of the operational models, infrastructures and geographical coverage of the operations of the MFIs and their partnering CET providers (Figure 1 and 2). At general level, the CET providers are normally responsible for the sourcing, physical delivery and installation of the CETs at the clients' premises while end-user financing and micro-credited CET sales are offered by the MFI. Marketing and end user training for technical, financial, and general aspects is jointly delivered by both the MFIs and the CET providers.

In case A, the partner CET provider organizes the whole supply chain: from CET sourcing to last mile distribution. In case B, the partner CET provider organizes the CET sourcing and transportation to MFI operational area, where the MFI coordinates the distribution to end-users (Figure 1).

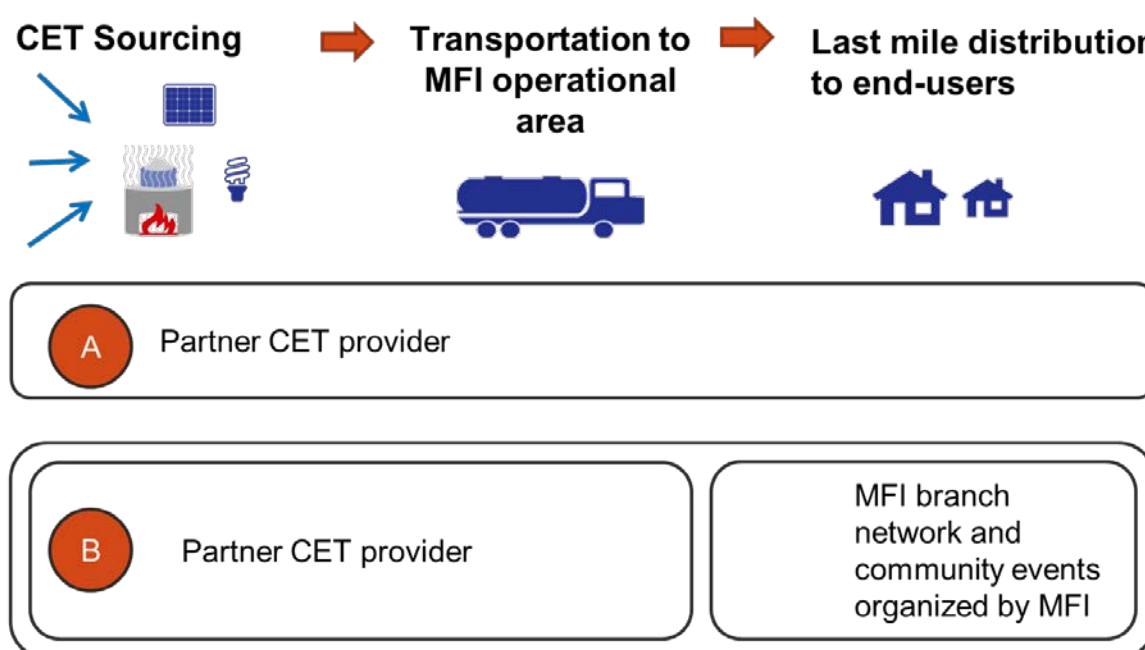


Figure 1. Types of Supply Chains selected by the MFIs for implementation

The CET distribution to the end-user is critical for the success of the CET credit line. The retail network of the CET provider, MFI branches and/or community events are used to market and promote the CETs as well as physically deliver them to users. Independent village electricians and/or staff from the CET providers take care of installation, repair, maintenance, and training the end-user to best benefit from the technology (Figure 2).

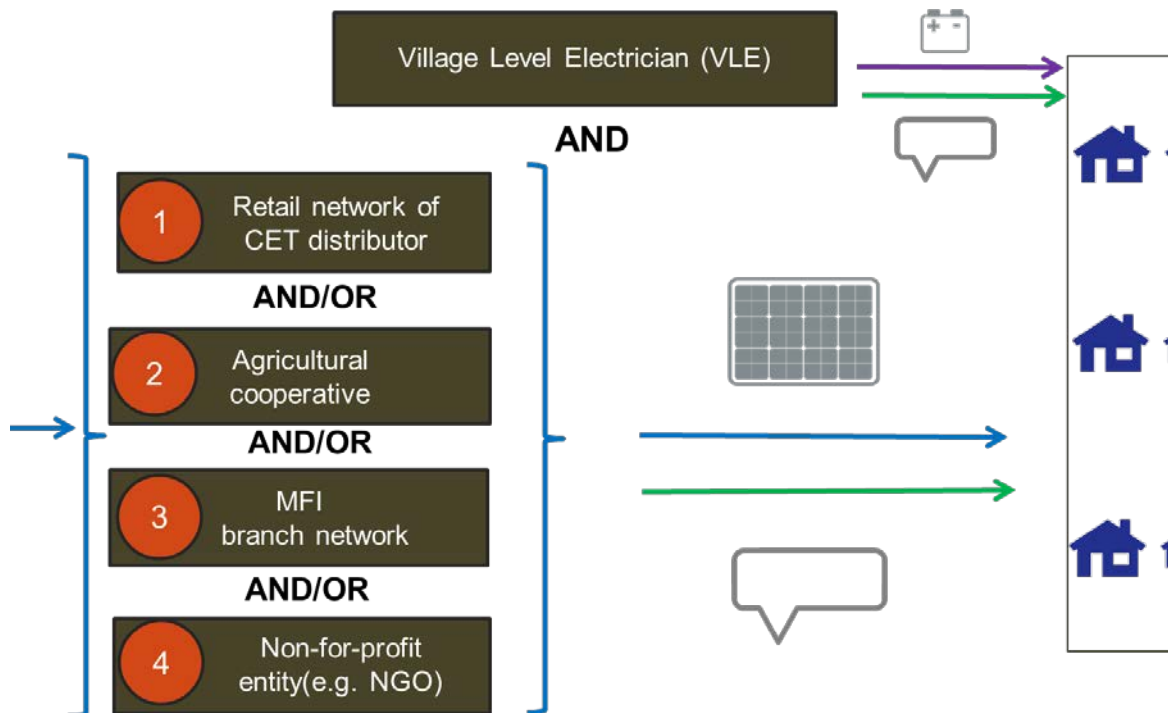


Figure 2. Last mile distribution channels selected by the MFIs for implementation

During the final phase of the project the supply chains were thoroughly tested, monitored and evaluated at 7 MFI branches participating in the business launch. Improvements based on the findings from the launching were made jointly by the MFIs and the CET providers as the sales progressed. Major focus was put on ensuring that the CET product and service delivery times translate in sustainable customer satisfaction.

After the project period the supply chains will be adapted to fit the different characteristics of the other MFI branches where the CET microloans get introduced.

Activity 5: Integration of CET credit lines into the MFIs portfolio

Each MFI developed and officially approved a CET credit product policy that fits into its strategy. This included credit characteristics and terms, operational procedures for credit disbursement and joint work with CET providers, staff training and marketing and sales. To share insights on critical issues from other markets, the international project partners produced and shared a number of guidance documents for the MFIs' use. The MFI strategies and plans were further developed based on the feedback and performance during the CET business launch phase.

To incorporate the CET credit products into the MFI organigrams, the MFIs appointed 1-2 staff members from the Operation and/or Business Development departments to take care of their coordination and implementation.

To ensure the sustainability of the CET business mechanism over time, a number of workshops, on-the-job trainings and targeted advisory was organized for MFI and CET provider management by the international project partners. In turn, the core staff from the MFIs and CET providers provided training and capacity building to MFI loan officers and other relevant personnel within the MFIs. All in all, the project trained over 70 MFI staff members at the head quarter and branch levels at different elements of the CET-related business. Special attention in the training of sales staff was paid on taking gender issues in consideration, and specific marketing material was produced and distributed to encourage women to engage in CET.

Activity 6: Emission monitoring and innovative financing mechanism assessment

A review of innovative financing mechanisms potentially suitable for the MFIs use included two climate financing mechanisms, the Clean Development Mechanism (CDM) and voluntary carbon markets. Trainings and guidelines for climate financing were produced for MFI staff use, and a study of the functionality of mobile tools in the contexts of credit mechanisms and emission monitoring was produced.

During the project, the World Bank (WB) launched a Programme of Activities (POA), *Ethiopia Off-Grid Renewable Energy Program*, under the Clean Development Mechanism (CDM). The PoA is directly linked to a USD 20M credit line earmarked for microfinancing clean energy technologies and provided by the Development Bank of Ethiopia (DBE) from WB funds. All CET products financed with funds from the DBE CET credit line will automatically be registered under the CDM project developed by WB. The carbon financing received from the CDM project will be channeled to subsidizing the replacement batteries of the solar home system batteries and providing some after sales services for the technologies registered under the project. Through this channel also most of the MFI clients served through the project will benefit from the CDM mechanism.

At the end of the project two out of the three participating MFIs have access to DBE/WB funds for their CET lending. As part of the project process, the MFIs' product monitoring systems were ensured to fulfil the monitoring requirements of the WB CDM project. Also, the MFIs' capacities for making use of additional financing mechanisms such as voluntary carbon markets and utilising mobile banking as a tool for impact monitoring were strengthened.

2.2 Deviations from the Planned Activities

All project activities took place as planned.

In addition to the project activities, MEI facilitated selected MFI management and staff members to participate in exposure visits to Bangladesh. The visits allowed the three MFIs to have first-hand information about microfinancing CET in another developing context. The visits were organized through external financing from a non-governmental organization with previous experience in collaborating with the MFIs.

The project timeframe and geographical scope experienced certain revisions due to severe droughts and civic unrest in Oromia region that lead to a national state of emergency in 2016.

The unrest also posed significant pressure on the existing operations of the MFIs, and many MFI branches were temporarily shut down and experienced severe delays in service deliveries in 2016-2017.

2.3 Achievement of Outputs and Objectives

Planned Objectives and Outputs	Indicator(s):	Achievement of the objectives and outputs:
Overall objective: Contribute to the reduction of GHG emissions, promote inclusive green growth, reduce poverty by stimulating sustainable private sector business development, and improve access to reliable, affordable, climate-friendly and sustainable energy products and services.	<ul style="list-style-type: none"> • Direct and indirect GHG reductions • Proportion and change of CET provider sales through MFI activities • MFIs budget available for CET loans • Number of low income households and microenterprises that have installed CET 	<ul style="list-style-type: none"> • 3,500 tCO₂e GHG emissions avoided. A minimum of 150,000 tCO₂e additional reductions expected. • Monthly average Sale growth rate of around 40% • EUR 100,000 disbursed by the MFIs (June 2017), EUR 190,000 (ETB 5M) reserved for CET credits for 2017 from the DBE CET credit line. • 556 low income households and microbusinesses installed CETs (June 2017).
Output 1: A well-functioning business mechanism is established for procuring, financing and delivering CET that covers CET providers, MFIs and their clients. CET access is enabled for 125,000 clients from the three MFIs	<ul style="list-style-type: none"> • Number of MFI clients (households and microenterprises) 1) having access to 2) who have taken CET loans • Number of CET sold through MFI loans • CET provider sales through microcredit as proportion of total sales per provider • CET loan portfolio as proportion of total branch loan portfolio per MFI 	<ul style="list-style-type: none"> • At the end of the project 30,000 MFI clients had access to the CET credit line (clients in piloting MFI branches). The business models developed allow access for more than 200,000 MFI clients once the three MFIs have introduced the business model in all branches. • 556 MFI clients (both existing and new, individual and group loans) took a loan and got a CET • CET providers' sales through microcredit were around 80% of the total sales of the specific CET type during the launch period • The CET loan portfolio represents around 5% of the total portfolio of the branches involved in the CET business launch phase.
Output 2: The most viable technology options from the pre-selected list are selected and respective CET providers are identified to promote wider use of CET within the outreach regions of the MFIs.	<ul style="list-style-type: none"> • Household and microenterprise willingness and ability to pay for CET 	<ul style="list-style-type: none"> • Households were found willing to pay for SHS and PV lamps (average price EUR 180), and able to pay for these CET based on energy savings and income trends

Output 3: 2 cost efficient supply chains per MFI are designed and established for the selected technology/ies; 500-2000 devices are adopted through CET loans.	<ul style="list-style-type: none"> • Number of CET supply chains per MFI • Number of CET sold through MFI loans 	<ul style="list-style-type: none"> • 2 supply chains per MFI • 556 CET sold through MFI loans
Output 4: 3 MFIs are supported in the design and integration of CET loan products into operations and organizational strategies	<ul style="list-style-type: none"> • Number of MFIs to design CET loan product • Number of MFI and CET provider personnel trained in clean energy finance 	<ul style="list-style-type: none"> • 3 MFIs designed a CET loan product • Around 80 people from the MFI and CET provider personnel were trained in clean energy finance
Output 5: 1-3 innovative financing instruments are assessed to enable CET scale-up, project's sustainability, and contribution to country's NAMA and NAPA	<ul style="list-style-type: none"> • Number of assessed financing mechanisms • Number of feasible financing mechanisms 	<ul style="list-style-type: none"> • 2 financing mechanisms were assessed • Currently participation in a CDM project run by WB and DBE is considered feasible for the MFIs.

3 Climate change

The project contributed to Ethiopia's emission reduction priorities and voluntary international climate change mitigation commitments, and was aligned with its national climate policy, the Climate Resilient Green Economy Strategy (CRGE) (2008-2030).

The project contributed to climate change mitigation by reducing GHG emissions from energy generation through replacing unsustainable energy sources by renewable options. The project generated direct GHG emission reductions of 3,500 tCO₂e through CET products financed in 2016-2017¹. A minimum of 150,000 tCO₂e more are expected to be avoided thanks to further up-scaling of the credit lines within the three MFIs during ten years after project completion. The potential indirect emission reduction potential gained through replication of the business model in other Ethiopian MFIs can be estimated at more than 2 000 000 tCO₂e.

ewill be again multiplied when the business concept is replicated to other MFIs in Ethiopia and elsewhere in the developing world.

The CET microcredit business models developed during the project help MFI clients to build up and secure their assets and establish or develop their businesses, thereby strengthening their resilience and adaptive capacities and better protecting them against increasing climate risks. The project also contributed to improved local livelihoods and built social capital

¹ Calculation based on AMS I.A. v16 methodology considering the lifetime emission reductions (expected lifetime 20 years) of the CET products sold in the piloting MFI branches. Direct emission reductions gained through the project multiply shortly as CET credit sales increase through business expansion to the other branches of the participating MFIs.

through business development, both critical components of overall climate resilience in Ethiopia.

It is worth noting that impacts of climate change are already visible in MFI's daily business. For example, changing weather patterns and severe draughts are decreasing MFI clients' ability to pay back their existing loans threatening the overall business of the MFIs. Introduction of the CET credits thereby strengthens also MFIs' own capacities to tackle climate related risks through strengthening their clients' resilience to the changing climate.

4 Development impacts and cross-cutting issues

The project created business models that will enable over 100,000 **women** to have access to CET within the three MFIs. The use of CETs reduces the women's exposure to smoke and improving their livelihoods through offering new income generating opportunities. The CETs benefit the whole family, including men, through improved livelihoods and decreasing dependency on expensive fossil fuels. The project activities also encouraged women to take responsibility in energy purchases within rural households, and special marketing material was produced and distributed to raise awareness of the benefits of CET among women.

By making CET affordable through targeted microfinance products, the project facilitated energy access that in turn can **reduce poverty** through improved livelihoods and providing new income-generating opportunities. The MFIs offer diversified loan products and targeted small loan sizes in response to the financial needs of the very low-income households. The business models created have also created new jobs within the MFIs and CET providers, and will generate new work opportunities for thousands of rural people through increased productive time and improved access to new electric applications. During the project period the piloting activities had more than **3000 direct beneficiaries** in rural Ethiopia through the CET products sold.

The use of kerosene for lighting in indoor environments in Africa creates air pollution associated with increased risk of respiratory, cardiovascular and ocular diseases especially in women and children. By enabling end-users to purchase solar lighting, the project helped **decrease health risks** by replacing harmful energy sources with cleaner alternatives.

Technology and innovation play a fundamental role in wealth creation, quality of life, real economic growth, and transformation in any society. The project promoted access to high-quality CETs, local technology production and promotion, as well as facilitated local technology know-how.

The project employed a bottom-up approach by starting with an in-depth demand assessment and thus **addressed local culture and needs** to ensure sustainable and appropriateness of the business mechanisms created.

Data variable	Measured/ calculated/ estimated	Recording frequency	Results
Total number of MFI clients having access to green credit lines	Measured	Continuous	30,000 during the project period, 200,000 once business models applied in all branches.
Total number of CET sold through green credit lines	Measured	Continuous	556
Total number of women having access to affordable CET through CET loans	Measured	Continuous	18,000 during the project period, 100,000 once business models applied in all branches.

5 Assessment of the results and impacts of the project

5.1 Relevance

The project directly contributed to the achievement of the Sustainable Development Goal 7 (SDG7) – universal access to affordable, reliable and clean energy, as well as to SDG8 (Decent work and economic Growth), SDG9 (Industry, innovation and infrastructure), SDG11 (Sustainable cities and communities) and SDG13 Climate action. The project was also in line with the national development strategies of Ethiopia, including the Climate-Resilient Green Economy (CRGE, 2008-2030) and the Growth and Transformation Plan I and II (GTP I and II, 2010-2015, 2016-2020).

The project was relevant to the needs and interests of the groups it targets:

- Low-income populations in Ethiopia lack access to CETs due to high upfront costs and lacks of well-functioning supply chains in rural and peri-urban areas. At the same time, CETs can play a major role in addressing the structural issues related to energy poverty in Ethiopia. The project made CETs affordable and accessible through targeted micro-credit products and establishment of supply chains.
- The constantly growing Ethiopian microfinance sector drives MFIs to achieve economies of scale and broaden their geographic and financial service coverage. The project enabled 3 MFIs to develop and offer CET microcredits promoting the development of commercial ties with CET providers and creating competitive advantages compared to other MFIs in Ethiopia.
- High-quality CET providers in Ethiopia face growing competition from low-cost counterfeit options available at the local market. The CET microcredits developed enable high-quality CET providers to expand their market outreach and offer reliable, durable

and high-quality products and services to low-income populations with limited or no previous access to the technologies.

5.2 Effectiveness

The project achieved its overall objective of contributing to GHG emission reductions in Ethiopia through stimulating sustainable private sector business development, and improving access to reliable, affordable, climate-friendly and sustainable energy products and services. Major factors contributing to the good overall effectiveness and achievement of project goals included 1) establishing a clear joint vision among the project partners, 2) identification and allocation of appropriate management resources for project execution and 3) balanced execution with a “learning approach” and continuous attention to feedback and advice from project stakeholders.

Provision of the CET credits does not only improve the livelihoods of the MFI clients, but it also increases the trustworthiness of the clients in the eyes of the MFIs. Through offering CET credits, the MFIs have been able to decrease the risk of their overall credit portfolios.

5.3 Efficiency

The use of multilateral climate finance to create a sustainable business mechanism for disbursement of CETs among low-income populations promotes a multiplier effect of the initial investment through improved livelihoods and community resilience, new business opportunities and climate change mitigation.

Through efficient use of resources and competences, the project enabled the MFIs to make use of international level expertise in business model development and energy technologies, and to match it with their own professional experience from the financial sector.

5.4 Impact

The project enabled three Ethiopian MFIs to establish sustainable business models for provision of CET microcredits. Also selected CET providers were trained and encouraged to match their business with MFI structures allowing the overall CET business in Ethiopia to grow.

The business models developed during the project allow 200,000 existing MFI clients to have access to CET credits in the coming months, once the MFIs introduce the credits across their branches. During the launching phase, 30,000 MFI clients gained access to CET microcredits and more than 550 low income households and MSME purchased and installed reliable and climate-friendly energy products. Through the CET credits the MFIs received hundreds of new client applications, and they also mobilized around EUR 10,000 (ETB 200,000) of savings as part of the CET credit client acquisition process.

All the project partners gained new knowledge and experience which can be transferred and adapted to other local and international contexts benefitting millions of people across the developing world. Gaia and MEI are building new projects based on the findings of this project,

and the participating MFIs have expressed their interest to continue collaboration with the project partners in other fields of business development.

5.5 Innovativeness and learning

The innovativeness of the project lies in bridging existing businesses in microfinance and CET supply and building business models that rely on these new partnerships. The experiences gained during this project allow highlighting some lessons learned, including:

- **Building business models** is about understanding and developing sustainable incentives for all stakeholders. Having the potential market and partners ready is only a beginning for creating sustainable business.
- **Bridging the businesses of different sectors** requires common goals, time, trust and commitment. Communication and sharing of hopes and concerns among business partners is crucial for success.
- **The sustainability of the climate benefits and the upscaling potential of the business model is interlinked with the viability of the business benefits.** In a business of small margins, identifying opportunities to harness economies of scale are essential.
- **Exchange of experiences between project partners but also other projects located in different contexts strengthen capacities over the borders.** Facilitating sharing of lessons learned with the project partners and CET microfinancing projects in Bangladesh enabled the MFIs to broaden their understanding of the opportunities and critical issues related to micro-financing CET.

The innovativeness and results of the project have been disseminated through a variety of channels. In 2016 the project was nominated as the Best Climate Practice by the International Center for Climate Governance (ICCG), and in 2017 the Energy Globe Foundation selected the project as the Ethiopian National Energy Globe Award winner^{2, 3}.

The project results have also been presented in a number of events, including but not limited to the 2016 UNDESA conference in Addis Ababa on Powering the Future We Want⁴; the Mobilizing Paris seminar organised by the Nordic Council of Ministers in Helsinki in November 2016, and the 2017 lecture series held at the Technical University of Berlin on Sustainable Energy Education and Research for All (SEER4All)⁵.

² <http://www.iccgov.org/en/observatories/best-climate-practices/>

³ <http://www.energyglobe.info/participation/>

⁴ https://sustainabledevelopment.un.org/content/documents/12051Concept%20Note_Energy%20Grant%20Seminar_12%20May%202016.pdf

⁵ http://www.tu-berlin.de/ztg/microenergysystems/menue/mes_conferences/symposium_2017/

6 Sustainability and potential for scaling up and follow-up investments

The CET business proved profitable and financially sustainable and the MFIs management and key staff are willing to further invest in the development and execution of the CET micro-credit business. The MFIs' green portfolio is expected to be further enlarged with additional CET types and models.

To scale up the business mechanism within the 3 MFIs, access to working capital for CET microcredit disbursement is a critical success factor. During the project, the MFIs secured additional working capital for scaling-up the CET business from the Development Bank of Ethiopia (DBE). The MFIs also use their traditional sources of finance to enable further disbursements of CET microloans beyond the project period. Access to additional finance from local commercial banks and international donors (e.g. in the form of loans, grants and guarantees) would increase the outreach of the business mechanism.

The huge untapped target market of up to 70 million Ethiopians without access to electricity, the availability of DBE credit lines for MFIs for renewable energy projects as well as the proven business case are reasons for other Ethiopian MFIs to have already started to replicate this business model. Successful replication of the business mechanism does, however, require investments in capacity building among MFIs and their stakeholders.

Several international organizations and MFIs across the world have expressed their interest in replicating the business models in Ethiopia and elsewhere in the developing world. The project partners look forward to further collaboration to share the lessons learned and to make CET credits available to millions of people more in need of affordable and clean energy solutions.

7 Financial reporting

Table 1. Costs and financing.

Or- ganiza- tion	Costs, EUR	Financing, EUR														
		NCF	Grantee		MEI		Buusaa		Harbu		SFPI		Swan		Revenues from the project	Total
			Cash	In-kind	Cash	In-kind	Cash	In-kind	Cash	In-kind	Cash	In-kind	Cash	In-kind		
Gran- tee	136142,14	117000	0	19142,13											0	136142,14
MEI	180100,76	161600			0	18500,76									0	180100,76
Buusaa	46645,31	11800					26948,92*	7896,38							0	46645,31
Harbu	78909,32	10200							42139,41*	26569,91					0	78909,32
SFPI	79147,99	11800									49806,54*	17541,45			0	79147,99
Swan	15033,33	13500											450	1083,33	0	15033,33
Total	535978,84	325900	0	19142,13	0	18500,76	26948,92	7896,38	42139,41	26569,91	49806,54	17541,45	450	1083,33	0	535978,84

* The cash contributions from the MFIs include disbursed credits worth 104,000 EUR by the end of the project.

8 Conclusions and recommendations

The CET microcredit business models developed during the project create a **chain of benefits** among the MFI clients, the MFIs and their partners, as well as the Ethiopian society. Improved access to reliable and affordable clean energy **improves livelihoods** and **generates income opportunities for low-income households** in Ethiopia. While the CET credits widen the product portfolio of the MFIs, the improved livelihoods of the MFI clients also improve their credit worthiness and therefore **reduce the overall business risk of the MFIs** enabling the institutions to further invest in expanding their microfinancing services. As the microfinance sector and CET markets grow, new business opportunities are created within the clean energy sector contributing to employment and tax revenues at national scale.

Despite of the vast market for CET in Ethiopia and the clear need for affordable financial solutions to meet it, the number of good examples of micro-financed CET solutions remains limited in the country. This is largely due to the **challenges in making the business interests and operational practices of MFIs and CET providers to meet**. The project partners look forward to supporting also other MFIs in building business models for CET credits in Ethiopia and globally.

The CEPM project has shown that by investing time and expertise in business model development, these **barriers can be overcome** and **new business created** benefitting not just the business operators involved, but also the society at large. MFIs play an important role in the **development of emerging markets**, and it makes sense to broaden their capacities to meet other needs but the demand for cash among their clients. The **immediate tasks** required to strengthen microfinancing of CET at the national level include **extended business development support** for other Ethiopian MFIs and strong technical support for MFIs already active in CET business. Providing financing is not enough, but building the means for making use of it are required in order to meet the needs of the clients in a sustainable way.

Growing the micro-financed CET markets also requires further inputs in awareness raising among the client base and business model development support for the organisations willing to be involved. Collaboration with other stakeholders, such as NGOs and government bodies promoting CET can benefit the business and its clients. High quality and well serviced products are a key to sustainable business that grows from the good experiences of the clients.

The **CEPM project met its targets** in spite of challenges related to political instability, state of emergency, severe draughts and delays in access to finance. Thanks to the NCF funded project, the three Ethiopian MFIs are now equipped with **knowledge, business models, partnerships, experience and motivation** to make CET available and affordable to their increasing number of clients. This is, however, hopefully just the beginning of a **market revolution** where interlinking micro-financing and sustainable technologies benefits millions of people living in the developing world. Both Gaia and MEI hope to continue helping this revolution drive forward.

ANNEX 1 UPDATED LOGICAL FRAMEWORK MATRIX

Narrative Summary	Objectively Verifiable Indicators (OVIs)	Means of Verification (MOVs)	External Factors (Assumptions)
<p>Overall Objective</p> <p>Contribute to the reduction of GHG emissions, promote inclusive green growth, reduce poverty by stimulating sustainable private sector business development, and improve access to reliable, affordable, climate-friendly and sustainable energy products and services.</p>	<ul style="list-style-type: none"> • Direct and indirect GHG reductions • Change in household and microenterprises' income • Proportion and change of CET provider sales through MFI activities • MFIs budget available for CET loans • Number of low income households and microenterprises that have installed CET 	<ul style="list-style-type: none"> • GHG MRV system • MFI Management Information Systems (MIS) • Project M&E system • Official statistics (e.g. National household survey) and MFI surveys 	<ul style="list-style-type: none"> • Sustainable private sector business development continues to contribute to poverty reduction
<p>Purpose</p> <p>Enable 125,000 clients of Ethiopian micro-finance institutions (MFI) (80,000 women) to access CET by establishing a sustainable business mechanism that is able to facilitate scale-up for CET dissemination.</p>	<ul style="list-style-type: none"> • Number of MFI clients with CET access • Number of women to take out CET credit 	<ul style="list-style-type: none"> • MIS 	<ul style="list-style-type: none"> • MFI clients are willing to pay for CET through better access to finance • Private sector continues to regard clean energy as an attractive market opportunity

<p>Output (Results)</p> <p>OP1. A well-functioning business mechanism is established for procuring, financing and delivering CET that covers CET providers, MFIs and their clients.</p> <p>CET access is enabled for 125,000 clients from the three MFIs.</p>	<ul style="list-style-type: none"> • Number of MFI clients (households and microenterprises 1) having access to 2) who have taken CET loans • Rate of repayment of CET loans • Number of CET sold through MFI loans • Number of customer complains related to MFI service and CETs • CET provider sales through microcredit as proportion of total sales per provider • CET loan portfolio as proportion of total branch loan portfolio per MFI 	<ul style="list-style-type: none"> • MIS • CET provider performance reports • Customer Satisfaction Surveys conducted by the MFIs • Collection of client complaints and feedback 	<ul style="list-style-type: none"> • Private sector continues to regard clean energy as an attractive market opportunity • Political environment is favorable both towards CET and MFIs offering CET • CET providers have the capacity and the willingness to participate • MFI clients are willing to pay for CET through microfinance
<p>OP2. The most viable technology options from the pre-selected list are selected and respective CET providers are identified to promote wider use of CET within the outreach regions of the MFIs.</p>	<ul style="list-style-type: none"> • Energy savings per CET through technology substitution • Household and microenterprise willingness and ability to pay for CET • Technical feasibility of CET in different climatic zones/regions 	<ul style="list-style-type: none"> • In-depth energy needs analysis and market segmentation study • CET provider interviews • Official statistics • Notes from expert observations 	<ul style="list-style-type: none"> • Demand for pre-selected technologies for consumptive and productive usage remains as estimated in the pre-feasibility study

<p>OP3. 2 cost efficient supply chains per MFI are designed and established for the selected technology/ies; 500-2000 devices are adopted through CET loans.</p>	<ul style="list-style-type: none"> • Number of CET supply chains per MFI • Number of CET sold through MFI loans • Operational margins and growth rates of • CET providers 	<ul style="list-style-type: none"> • MIS • CET provider interviews and performance reports • Operational manuals, flowcharts, MoUs between MFIs and CET providers. • Customer Satisfaction Surveys conducted by the MFIs • Continuous collection of client complaints and feedback 	<ul style="list-style-type: none"> • MFI clients are willing to pay for CET through better access to finance
<p>OP4. 3 MFIs are supported in the design and integration of CET loan products into operations and organizational strategies</p>	<ul style="list-style-type: none"> • Number of MFIs to design CET loan product • Proportion of CET loan portfolio of total branch loan portfolio per MFI • Number of MFI and CET provider personnel trained in clean energy finance • Number of energy officers per MFI • Other key financial performance indicators 	<ul style="list-style-type: none"> • Project milestone reports • MIS 	<ul style="list-style-type: none"> • The operating environment for private financial institutions in Ethiopia remains positive.

<p>OP5. 1-3 innovative financing instruments are assessed to enable CET scale-up, project's sustainability, and contribution to country's NAMA and NAPA</p>	<ul style="list-style-type: none"> • Number of assessed financing mechanisms • Number of feasible financing mechanisms 	<p>Innovative financing feasibility assessment report</p>	<ul style="list-style-type: none"> • Climate financing has the potential to enable the up-scaling of the CET promotion business mechanism
<p>Activities (presented per output)</p> <p>1.1 Develop a business mechanism that ensures cost effectiveness, profitability, and customer satisfaction</p>	<p>Please refer to the OVIs for Output 1 above</p>	<p>Please refer to the MOVs for Output 1 above</p>	<ul style="list-style-type: none"> • Private sector continues to regard clean energy as an attractive market opportunity • Political environment is favorable for CET • CET providers have the capacity and the willingness to participate
<p>2.1. Quantify and qualify the energy needs of current and potential MFI clients</p> <p>2.2. Estimate energy savings, climate change mitigation and adaptation and environmental impact per CET</p> <p>2.3. Identify, evaluate and make a final selection of CET providers</p>	<p>Please refer to the OVIs for Output 2 above</p>	<p>Please refer to the MOVs for Output 2 above</p>	<ul style="list-style-type: none"> • Demand for pre-selected technologies for productive usage remains as estimated in 2013
<p>3.1. Adapt or design supply chain(s) for the selected CET (s)</p>	<p>Please refer to the OVIs for Output 3 above</p>	<p>Please refer to the MOVs for Output 3 above</p>	<ul style="list-style-type: none"> • CET providers have enough capacity: inventories and can reach easily end users

3.2. Build capacity of CET providers to serve the MFI operating regions			
4.1. Incorporate CET loan product into MFI structure 4.2 Provide training to MFI personnel 4.3 Develop CET loan product that fits into the MFIs' strategy	Please refer to the OVIs for Output 4 above	Please refer to the MOVs for Output 4 above	<ul style="list-style-type: none"> MFI clients are willing to pay for CET through better access to finance
5.1 Develop a preliminary MRV system to track GHG emission reductions 5.2 Review available innovative financing mechanisms; 5.3 the feasibility of 1-3 5.4 Assess the functionality of mobile tools in the contexts of credit mechanisms and emission monitoring	Please refer to the OVIs for Output 5 above	Please refer to the MOVs for Output 5 above	<ul style="list-style-type: none"> Climate financing has the potential to enable the up-scaling of the CET promotion business mechanism

ANNEX 2 PICTURES



Figure 1. Installation of a solar home system by a staff member of a CET provider.
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Figure 2. An MFI client just signed a contract for a CET loan with an MFI credit officer.
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Figure 3. CET installation at an MFI client by CET provider staff members.
Copyright: Gaia Consulting Oy



Figure 4. CET promotional event at an MFI branch
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Figure 5. During a promotional event, staff members from a CET provider and MFI jointly explain the benefits of CETs to potential clients.
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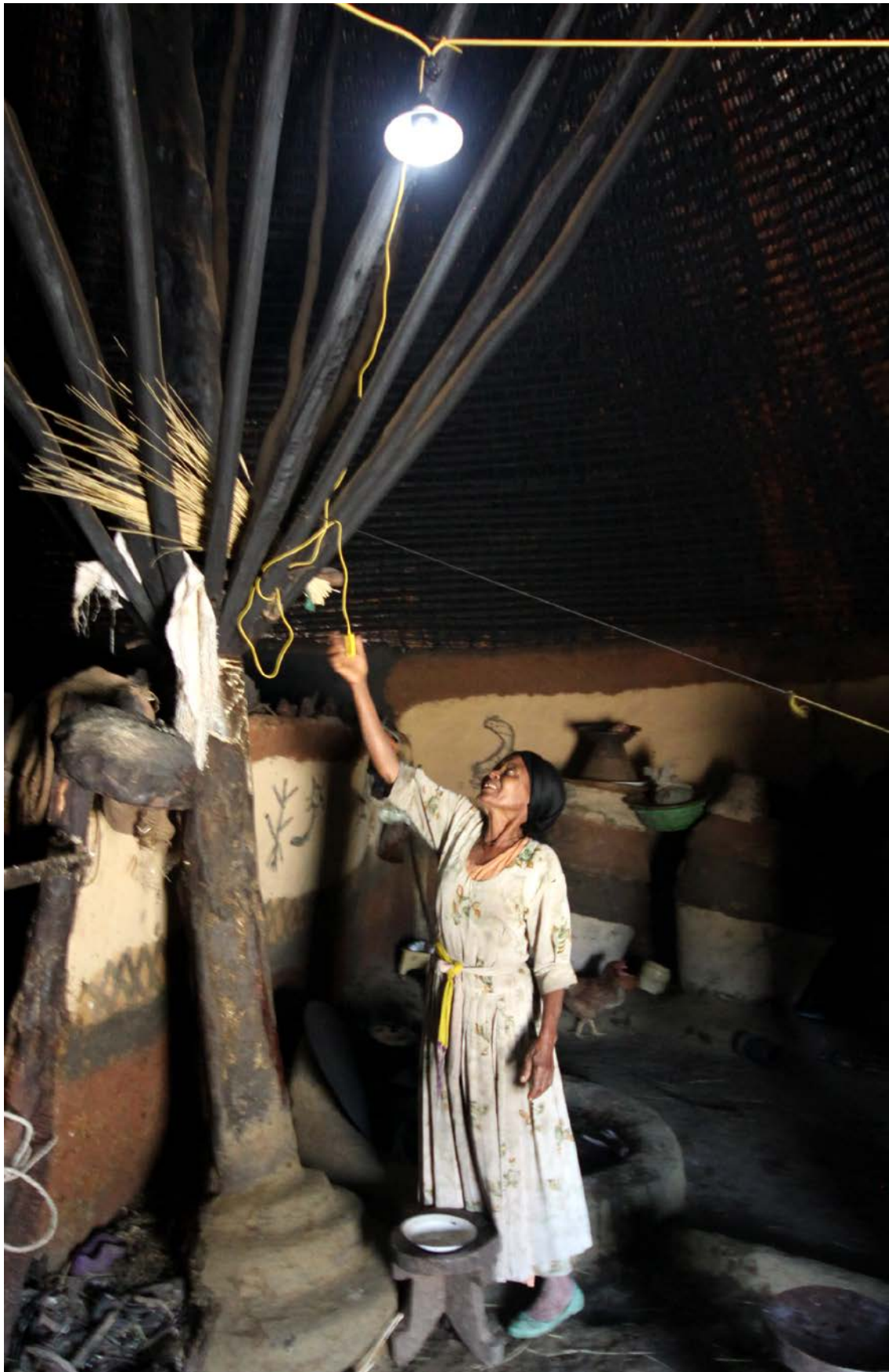


Figure 6. MFI client turns on her newly installed solar home system.
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Figure 7. MFI client showcases the solar-powered TV she got with her micro-financed solar home system.
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Figure 8. The children of an MFI client show their household's new solar-powered lighting.
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Figure 9. International and local partners in the CEPMP project discuss with MFI clients about their new solar systems and their benefits.
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Figure 10. A small solar panel installed on the roof of a typical Ethiopian house.
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