



CASE STUDY

ECOCA E-COOKER

AND ECOSYSTEM:

PESITHO & MERCY CORPS

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ACRONYMS

CIDI	Community Integrated Development Initiatives
DOAI	Disability and older age inclusion
EKF	Eksport Kredit Fonden (Denmark's Export Credit Agency)
FGD	Focus group discussion
GBV	Gender-based violence
HIF	Humanitarian Innovation Fund
J2S	Journey to Scale
KII	Key informant interview
NGO	Non-government organisation
PAYC	Pay-as-you-cook
VfM	Value for Money
VSLA	Village Savings and Loans Associations

CASE STUDY SERIES: CONTEXT AND APPROACH

Since 2011, our Humanitarian Innovation Fund (HIF) has been supporting increased innovation practice in the humanitarian system. This case study is one of four that have been produced to evaluate the HIF's portfolio of funded projects. These projects seek to deploy innovative approaches to addressing a specific humanitarian challenge aligned with one of HIF's four thematic funding priorities:

- Humanitarian Water, Sanitation and Hygiene (WASH)
- Gender-based Violence (GBV)
- Disability and Older Age Inclusion (DOAI)
- Accelerating the Journey to Scale

Each case study examines the **impact of the innovation** and aims to identify evidence at two levels:

- Primary:
 - Assessing the project's impact on humanitarian outcomes.
 - Evaluating the project's contribution to or influence on shifts in humanitarian policy and/or practice.
- Secondary:
 - Understanding the project's contribution to increased learning and evidence, driving adoption and scale, and what the Value for Money (VfM) is of the innovation.

They also consider briefly:

- the **approaches and tools** grantees have developed, tested and implemented to innovate in the humanitarian system and address one of the four priority areas
- future **scope, scalability and opportunities** to embed lessons learned and emerging best practices
- **changes, challenges and barriers** during the innovation process and how they can be overcome to inform further innovation.

The case studies seek to contribute to a better understanding of what successful innovation looks like in the humanitarian sector and identify ways to evolve, disseminate and sustain best practices and innovative programming.

CASE STUDY METHODOLOGY

This case study uses a qualitative approach. It begins with an explanatory analysis framework which looks at existing data and information (secondary data) from documentation such as regular reports submitted to the HIF.

The analysis framework is used to identify opportunities for building on existing information on outcomes using a primary data collection method: key informant interviews (KIIs).

A purposive sampling method was used to find informants with the greatest potential for sharing rich and relevant information on outcomes to shape future opportunities, scalability, policy, and practice. The use of primary and secondary data sources aims to reduce the risk of bias for comprehensively identifying the contribution of the innovation's activities towards achieving positive, negative, intended, and unintended outcomes and/or impact.

Bodhi Global Analysis, an independent consultancy firm, conducted the initial document review and additional data collection through KII. Based on the draft they produced, the Elrha team restructured and edited the document to complement the main findings identified with additional, recent information provided by our grantees. For this case study, Bodhi Global Analysis interviewed two key informants from the innovation team.

CASE STUDY LIMITATIONS

Only two grantee representatives were available for key informant interviews. Contacts for additional key informants were mentioned by one of the key informants interviewed, however, by the time this document was finalised, they were still awaiting approval from partners to share contact details. Finally, the case study relies on data provided by the innovation partners. The data has not been independently validated, as this would require extensive in-country primary data collection.

1. PROJECT OVERVIEW

Innovation	ECOCA e-cooker and Ecosystem
Lead organisation	Pesitho
Partners	Mercy Corps
Problem addressed/ Thematic focus	<ul style="list-style-type: none">• Refugee populations• Journey to Scale
Location	Bidibidi Refugee Settlement, Yumbe, Uganda
Supported from	December 2020 to November 2022
Total HIF funding received	£577,184

2. INNOVATION OVERVIEW

This case study evaluates the HIF-funded project **ECOCA scale in Uganda: Sustainable, affordable solar-powered electrical cookers for refugees**. The scale-up of the ECOCA was conducted in Bidibidi Refugee Settlement, Yumbe, Uganda.

HUMANITARIAN PROBLEM BEING ADDRESSED

Across the globe, 2.8 billion people cook with traditional polluting fuels and technologies, costing the world more than \$2.4 trillion each year, driven by adverse impacts on health (\$1.4tn), climate (\$0.2tn) and women (\$0.8tn from lost productivity).¹ People living in rural, off-grid locations, particularly those in humanitarian settings, are disproportionately affected by inadequate access to clean cooking facilities. Insufficient cooking methods are on the rise in Uganda, which is expected to see its forest cover eradicated in 25 years, in part due to deforestation from firewood.² The need for safer and more effective cooking methods in Bidibidi Refugee Settlement is more significant than ever. Fuelwood is the most common source of fuel for cooking, and the time spent by women collecting it averages two to three hours per day. The use and depletion of natural resources is also causing tension between refugee and host communities.³

¹ The World Bank (2020). The State of Access to Modern Energy Cooking Services. Accessed [here](#) on 31 October 2022.

² National Environment Management Authority (NEMA) (2019). Environment Information Network Bulletin Issue 1. Accessed [here](#) on 31 October 2022.

³ Elrha (2020). First Sustainable Off-Grid e-Cooking Business in East Africa. Online article. Accessed [here](#) on 31 October 2022.

THE SOLUTION

The innovation is split into two parts: the ECOCA e-cooker and the ECOCA Ecosystem. The ECOCA e-cooker is a locally assembled, 100% solar-powered electric cookstove, providing a heating element for cooking as well as a renewable source of electricity for other appliances. The Ecosystem provides the framework for the e-cooker to be built, financed, assembled, sold, and serviced.⁴ The Journey to Scale project sought to test the ECOCA e-cooker and Ecosystem using a carbon credit scheme for subsidising unit costs. The innovation integrated a recurring part-payment method which can be spread out over a maximum of five years, and a new pay-as-you-cook (PAYC) model using a mobile top-up system in order to ensure affordability and uptake.

Users

The ECOCA is designed to cater for rural families, especially those using unsustainable cooking practices. The Journey to Scale project focussed on the following:

- People living in refugee camps
- Impoverished families in East Africa
- Families in East Africa using unsustainable or unsafe fuel sources for cooking

Design – The ECOCA e-cooker

The ECOCA e-cooker is made of eight subcomponents that, according to Pesitho, can be assembled in less than 10 minutes by trained local staff at the assembly centre in Lokopio, Uganda. It also allows local service technicians to monitor technical issues using a smartphone application.⁵

The ECOCA kit comes complete with a solar panel array, battery pack and two insulated cooking pots for keeping food warm for long periods of time. It also contains a torch and a lamp, both of which can be charged using the USB ports on the ECOCA base.⁶

The energy generated via the solar panel is stored in the battery. Each day, it can cover the power needs of a typical five-to-seven-member Bidibidi family – with

Figure 1: ECOCA's main components



⁴ Additional information provided by Pesitho, October 2022.

⁵ Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda – Learning report. Accessed [here](#) 31 October 2022.

⁶ ECOCA (December 2021). Report to Elrha.

enough energy to cook three meals, provide several hours of lighting for the whole household and charge small appliances such as mobile phones.⁷

A high up-front cost is a key inhibitor for the adoption of safer and more efficient cookstoves such as the ECOCA. Further, a lack of quality assurance and non-contextualised designs have led to community distrust in purchasing such appliances.⁸ Through this innovation project, Pesitho aimed to tackle both the upfront cost and the lack of trust by localising ECOCA assembly, sales, distribution and servicing whilst utilising a carbon credit scheme to finance a subsidised model of the ECOCA for families that could not afford the full-priced unit.

Figure 2 describes the ECOCA Ecosystem at the beginning of the Journey to Scale project. As shown, the priorities of the project for the Ecosystem were to establish the independent company ECOCA East Africa (EEA), train the retailer network that would distribute and service the product, create the sustainable funding model through investors and carbon credits and test and implement the system.⁹

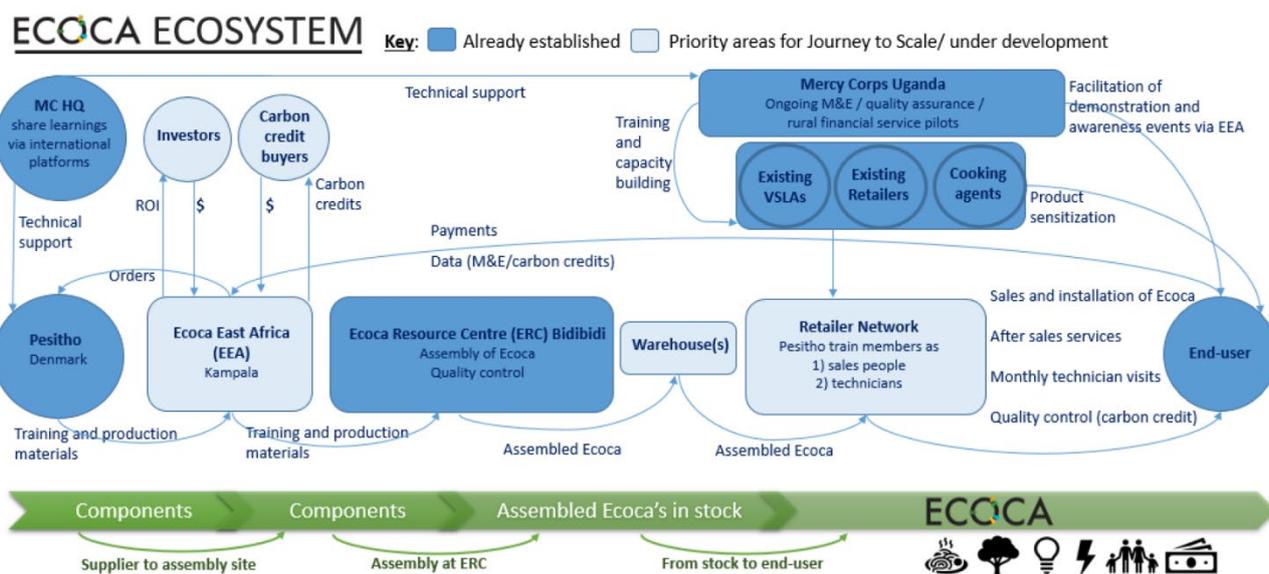


Figure 2: ECOCA Ecosystem

Source: Pesitho Application for Journey to Scale 2020

Delivery model

Pesitho aimed to deliver the product to refugee families and vulnerable host families using a subsidised pricing model, which could be paid over a repayment plan that could be between one and five years long. During the project, Pesitho also developed a Pay-as-you-cook (PAYC) unit, which would allow users to pay to use the device as and when they needed it, using a similar system to a mobile top-up. This

⁷ ECOCA (December 2021). Report to Elhra.

⁸ Elhra. First Sustainable Off-Grid E-Cooking Business in East Africa. Accessed [here](#) 31 October 2022.

⁹ Pesitho Application for Journey to Scale (2020).

approach would increase affordability for families that could not afford to purchase the product.

The product was to be subsidised by a carbon credit scheme. However, during the project, the methodology was changed and the ECOCA was recategorised¹⁰ under a new one which reduced the number of carbon credits for each unit from five to two. To make up for the shortfall, we, and other humanitarian donors such as Caritas, have provided part of the funding for the subsidised units. New guidance was issued in September 2022,¹¹ which Pesitho believe will result in the reinstatement of the original number of carbon credits that were available to the ECOCA;¹² this is explained in greater detail further below in the case study.

Once finance for the units is secured, the component parts are manufactured in China and then shipped to Uganda, where they are delivered to the ECOCA Resource Centre just outside of Bibibidi Refugee Camp, northwest Uganda. The resource centre is a cooperative set up with the support of Caritas. The cooperative consists of thirty local people who were trained by Pesitho to assemble the component parts into the final ECOCA kit.

After assembly, the product is sold either through the retailer network or by the resource centre itself. The retailer network is a group of fifteen local staff who are paid for selling and servicing the ECOCA units. Customers purchase the subsidised units through a payment plan, the costs of which are detailed in the following section. The retailers are provided with a per unit fee of 15,000 UGX (£3.48) when the sale is agreed, another 15,000 UGX when the payment plan comes to an end and 1,000 UGX (£0.23) per month for each unit that they are monitoring.

The monitoring visits enable the retailers to collect the fees and the user data for Pesitho to analyse. It also provides an opportunity for the retailer to activate the unit for another month, which prevents customers from paying the initial fee and then refusing to pay the monthly repayments.¹³

Pesitho are developing a separate retailing model involving Village Savings and Loans Associations (VSLAs). This will substitute the retailer network for the VSLAs, who will loan money to their members so that they can purchase the ECOCA. The VSLA would then act in a similar way to the retailers, collecting the monthly data and payments. This model was originally intended to be implemented during the Journey to Scale project but will likely not be ready to implement before the grant end date.¹⁴

¹⁰ Gold Standard (2021). Methodology for Metered & Measure Energy Cooking Devices. Accessed [here](#) 31 October 2022.

¹¹ AMS-I.E.: Switch from non-renewable biomass for thermal applications by the year. Accessed [here](#) (September 2022).

¹² Additional information provided by Pesitho (October 2022).

¹³ Additional information provided by Pesitho (October 2022).

¹⁴ Additional information provided by Pesitho (October 2022).

As part of the innovation project, Mercy Corps commissioned a mixed-method quasi-experimental study to understand the willingness and potential ability of refugees in Bidibidi Refugee Settlement to pay for safer and more sustainable cooking appliances such as ECOCA. The affordability study was conducted among approximately 670 refugees and host community members, five VSLA groups and six solar energy traders and mobile network providers within Bidibidi Refugee Settlement, home to over 200,000 refugees.¹⁵ Nearly all (97%) of focus group discussion (FGD) and KII participants¹⁶ expressed interest in owning – and a willingness to pay for – the ECOCA at the subsidised price.¹⁷

Cost ¹⁸

The units sold during the Journey to Scale project use the following pricing structure:

- Full one-time payment of 700,000 UGX (£162.42)
- All payment plans have a 200,000 UGX (£46.41) down payment and then the following monthly costs:
 - One year: 52,000 UGX (£12.07) monthly – total cost 772,000 UGX (£179.13)
 - Two years: 27,000 UGX (£6.26) monthly – total cost 821,000 UGX (£190.50)
 - Three years: 19,000 UGX (£4.41) monthly – total cost 865,000 UGX (£200.71)
 - Four years: 15,000 UGX (£3.48) monthly – total cost 905,000 UGX (£209.99)
 - Five years: 13,000 UGX (£3.02) monthly – total cost 967,000 UGX (£224.37)

HIF SUPPORT FOR THE SOLUTION

ECOCA e-cooker was first piloted in Myanmar and Uganda in 2019¹⁹, and when Pesitho was awarded a HIF Scale grant in 2020, it enabled them to pilot the pay-as-you-cook' model at scale.²⁰ The model that is now used is significantly different to the one first piloted in 2019. It now features specific cooking methods for different food types, such as beans, allowing users to cook meals more efficiently than the previous model, which could only be turned off or on. During the HIF grant, the funding has allowed Pesitho to pivot its original business model significantly due to the change in the carbon credit methodology. The carbon credits were originally

¹⁵ United Nations High Commissioner for Refugees (UNHCR) (2021). Uganda Refugee Statistics Map. Accessed [here](#) 31 October 2022.

¹⁶ Note: no further information relating to whether this figure is based on the total sample population or of specific zones, or how many people this represents, is mentioned in the ECOCA Final Report (December 2021).

¹⁷ ECOCA (December 2021). Report to Elrha.

¹⁸ Additional information provided by Pesitho (October 2022).

¹⁹ PESITHO – Application (September 2020).

²⁰ Key informant interview. 17 August 2022.

intended to cover two-thirds of the cost of the ECOCA: five carbon credits were calculated to be generated per unit sold. This model was plausible for achieving market sustainability without the need for donor funding, however, in 2021, there was a change to the global carbon credits methodology²¹, which meant that the credits were reduced to two. The new methodology determined the emission reduction by calculating the presumptive energy output of the ECOCA; the more energy it produced, the more emissions it was assumed to have saved.

The previous methodology measured the emission reduction by calculating the fuel switch – in this case, the shift from firewood to the e-cooker, and the emissions that were therefore not produced. This new methodology reduced the carbon credits received, as the ECOCA does not produce vast amounts of energy but does significantly reduce the need for firewood. The current subsidised model with the reduced carbon credit only works if it is subsidised or by profits made from selling the ECOCA at full price to consumers who can afford it. However, this makes the full-price model less competitive.

Pesitho is currently exploring other funding models, such as the PAYC, whilst continuing to pursue the carbon credit scheme and delivering on their other activities, such as establishing a retailer network and the independent ECOCA East Africa company and codifying their supply chain.

INNOVATION PROJECT LIMITATIONS

As a result of the innovation project starting at the onset of the COVID-19 pandemic in 2020, many initial processes were delayed and/or restricted. For example, the innovation team experienced long waiting times in international shipping systems, and some project workspaces were temporarily transformed into quarantine centres.²²

In addition, Pesitho were subject to a substantial price increase for all components of the ECOCA to enable set-up, most notably for solar panels and electrical parts. A country lockdown was enforced in Uganda from June to July 2020, which caused delays in conducting any market assessments and establishing retailer networks.²³

²¹ Gold Standard (2021). Methodology for Metered & Measured Energy Cooking Devices. Accessed [here](#) 31 October 2022.

²² Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda – Learning report. Accessed [here](#) 31 October 2022.

²³ PESITHO (December 2021). Interim report 4.

3. OUTCOMES AND IMPACT

Summary table

Outcome/output	Result
Reach	210 subsidised units have been sold through the retailer network. 1,000 commercial units are being readied to be supplied with a loan scheme from Denmark's Export Credit Agency to Community Integrated Development Initiatives (CIDI) Uganda. 575 subsidised units were delivered in 2021, funded by Caritas as part of their 'Willingness to Pay' study in Uganda. ²⁴ 1,400 subsidised units, partly funded by Caritas, will be delivered in 2023.
Anecdotal testimony	Anecdotal testimony describing the benefits of the ECOCA can be found on the Pesitho website .
Anecdotal evidence of improved wellbeing	Reports of the following improvements: less back pain from carrying wood; increased time for income-generating activities; profits made from charging the devices of local community members; not needing to sell as many food rations to get by as they used to; less risk of burning down their home. ²⁵
Health / Environment	ECOCA households show 86% less CO (ppm) emissions and 51% less particulate matter (ppm). ²⁶
Average savings	Refugees can expect to make savings of between £2 and £4 a week, dependent on which repayment plan they accept, and £6 per week once they have paid off the ECOCA entirely. ²⁷
Retailer network income	Members of the retailer network will earn 90,000 UGX (£21.18) per unit sold. ²⁸
ECOCA Resource Centre income	The cooperative is paid 11,000 UGX (£2.59) for each assembled unit and 2,000 UGX (£0.47) per month for tracking per unit. ²⁹

REACH

In 2022, 210 ECOCA e-cookers were supplied to the retailer network, who sold the units in Bibibidi Refugee Settlement camp within the first week of their delivery. The fifteen retailers recruited for the network have benefited from the employment this

²⁴ Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda – Learning report. Accessed [here](#) 31 October 2022.

²⁵ Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda – Learning report. Accessed [here](#) 31 October 2022.

²⁶ Modern Energy Cooking Services (MECS) (2020). [MECS-TRIID Project Report \(public version\)](#).

²⁷ Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda – Learning report. Accessed [here](#) 31 October 2022.

²⁸ Additional information provided by Pesitho (October 2022).

²⁹ Additional information provided by Pesitho (October 2022).

activity has generated through the income they earn by selling and tracking the units. Currently, the retailer network does not have any stock to sell; Pesitho are aiming to supply them with more units but do not yet have an agreement in place on order sizes.

As part of the 'Willingness to Pay' study conducted by Caritas Denmark, Caritas Uganda and CIDI, 575 vulnerable families also bought the ECOCA in 2021. Caritas are expanding the programme, with an additional seven hundred units to be delivered in early 2023 and 700 more towards the end of 2023. These are sold directly from the ECOCA Resource Centre, which is located just outside of the refugee settlement, 30% of which goes to host families, whilst the remaining 70% goes to refugees. For the Caritas part-funded units, the tracking and monitoring is conducted by staff from the Resource Centre.

Pesitho are also developing the full-priced commercial side of the ECOCA. They are working with Denmark's Export Credit Agency to obtain a loan for CIDI to buy 1,000 of the full-priced commercial units. They are also in the final stages of a deal with a fish farm in Kenya to purchase four hundred full-priced units. The full-priced commercial arm of the ECOCA Ecosystem is separate from the subsidised model, however, Pesitho considers it an important part of building a sustainable business model, as explained in an informant interview: "If we can build a commercial part of the business that retails at full price, this will generate a flow of goods into Uganda and create a healthy cashflow, creating a strong foundation for the company, meaning we are less (or not at all) reliant on grants etc. for survival. We can then take bigger risks with a stable business base. We can also reduce costs in the NGO and subsidised project with a more functional supply chain, so the whole process is cheaper due to scale."³⁰

OUTCOMES FOR PEOPLE AFFECTED BY CRISIS

Reduced cooking costs for refugees

Figures from the Caritas 'Willingness to Pay' study show that, on average, refugees can expect to make savings of between £2 and £4 a week, dependent on which repayment plan they choose, and £6 per week once they have paid off the ECOCA entirely.

Income generation and other benefits

In 2021, 575 vulnerable families, 315 of whom were refugees from Bidibidi Refugee Settlement, received an ECOCA and took part in the Caritas 'Willingness to Pay' study, which demonstrated several benefits. As a result of using the ECOCA, the average time spent collecting firewood was reduced by 39 percentage points among refugees, while 17% of the study participants had also used the ECOCA for generating income by, for example, offering mobile phone charging services to

³⁰ Additional information provided by Pesitho (October 2022).

neighbours via the use of the ECOCA built-in USB ports. On average, they earned approximately UGX 30,000 (£7.26) per month. By using the ECOCA to heat their homes and charge their phones, participants saved an average of 5,000 UGX (£1.21) per week.

Supply network

By the time the project had reached its mid-way point in 2021, Pesitho were able to expand their supply chain of ECOCA's to reach other countries (such as Kenya).³¹ Moreover, they developed the supply chain so that the assembly, retail and monitoring components of the ECOCA Ecosystem could be implemented by their independent partners in Uganda through the ECOCA East Africa company. Staff based in the retailer network and the Resource Centre earn an income as detailed in the table above, however, these earnings are intermittent, as deliveries of the ECOCA are not regularly taking place.

At full scale, Pesitho believe that one person can monitor 200 units a month, which would mean that a member of the retailer network could earn 200,000 UGX (£46.78) a month through tracking on top of the sales fees, however, this relies on a steady flow of units to Uganda.

Currently, the fifteen retailers have sold 210 units between them and will earn an average of 14,000 UGX (£3.27) a month and, by the end of the five-year tracking period, will have earned an average of 1,260,000 UGX (£294.72) each, including the sales fees. Pesitho hope to be able to provide more units to the retailer network to increase this figure.³²

4. VALUE FOR MONEY (VfM)

The Foreign, Commonwealth & Development Office's (FCDO) '4Es' VfM criteria are used as the framework for the VfM assessment in this case study:

- **Economy:** Are we (our agents) buying inputs of the right quality at the right price?
- **Efficiency:** How well are we (our agents) converting inputs into outputs? ('Spending well')
- **Effectiveness:** How well are the outputs produced by an intervention having the intended effect? ('Spending wisely')
- **Equity:** How fairly are the benefits distributed? To what extent will we reach marginalised groups? ('Spending fairly')

³¹ PESITHO (December 2021). Report to Elrha.

³² Additional information provided by Pesitho (October 2022).

ECONOMY

Extensive financial modelling and piloting at different price-points and repayment terms have been conducted as part of this innovation project. According to a report produced by Caritas Denmark in 2021,³³ the costs of producing the units and unit price are sufficient to meet demand.

Furthermore, the ECOCA has not only cut electricity costs almost completely for users but also provided an unintended source of income generation, as demonstrated in the previous section of the report. The study conducted by Caritas also demonstrated that 97% of respondents would be willing to pay for the ECOCA at the subsidised price, which was further demonstrated by the two hundred recently delivered units being sold within the first week of their delivery.

The Caritas 'Willingness to Pay' study also demonstrated the refugees' ability to afford the repayment plan. During the first months of the pilot implementation period, the repayments superseded expectations. In Yumbe, by June 2021, 65% of the households that had purchased the ECOCA (two months after sales were initiated) had paid several months in advance, and by August 2021, more than half (51%) of the 442 Yumbe beneficiaries had paid up their full share of the product price; the majority of these beneficiaries had chosen a one or two year repayment plan.

EFFICIENCY

The decrease in carbon credits, as well as the production and delivery delays due to COVID-19, contributed to a significant reduction in the number of units produced through the Journey to Scale project. The carbon credit reduction heavily limited the scalability of the innovation, as it had to rely on humanitarian donations to deliver a subsidised product. Now, past the major impacts of COVID-19 on global supply chains, delivery and production are available to Pesitho at scale where funding is available.³⁴

Whilst the reduction in carbon credits has been a major setback for Pesitho, it has encouraged them to adapt their financing model and find new ways of working. The team's preferred solution is still to use carbon credits to subsidise the product, and Pesitho are currently working to put together a case to have the method by which their carbon credits are calculated changed.

Pesitho have also explored the possibility of selling full-price ECOCA's to cover the cost of subsidising the product to more vulnerable groups, although they

³³ Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda – Learning report. Accessed [here](#) 31 October 2022.

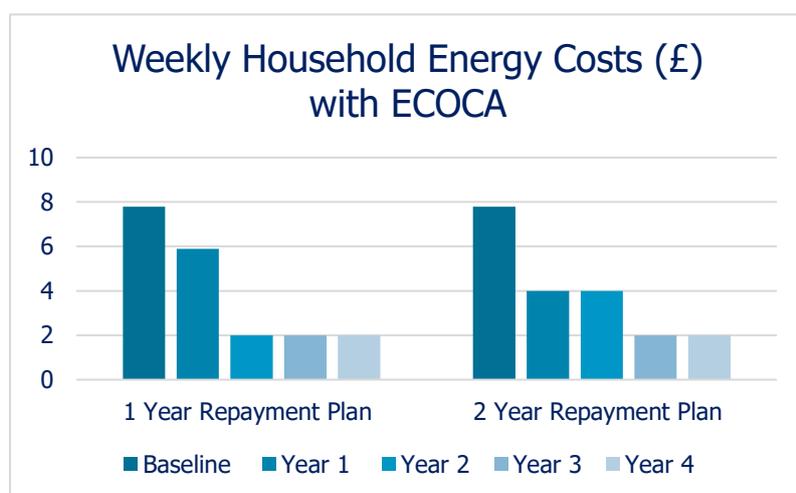
³⁴ Additional information provided by Pesitho (October 2022).

acknowledge that this would reduce its competitiveness, and so this is not the preferred option for the team.

Pesitho have also developed a PAYC model; the first units capable of using this model have been delivered, and data from them is expected toward the end of 2022. This could enable those who cannot afford the monthly pricing model to use the ECOCA on a PAYC model.

EFFECTIVENESS

Outcome/output	Result
Total energy savings (cooking, lighting, and charging combined)	70% average energy reductions amongst the study participants who were refugees. ³⁵
Income generation	An average of £7.50 a month is made by those refugees engaging in income-generating activities. ³⁶
Average savings	Refugees can expect to make savings of between £2 and £4 a week, dependent on which repayment plan they choose, and £6 per week once they have paid off the ECOCA entirely. ³⁷



The figures in the table above from the Caritas 'Willingness to Pay' study conducted in 2021³⁸ demonstrate the effectiveness of the innovation at not only reducing costs for refugees but also providing a potential source of income for them.

³⁵ Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda – Learning report. Accessed [here](#) 31 October 2022.

³⁶ Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda – Learning report. Accessed [here](#) 31 October 2022.

³⁷ Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda – Learning report. Accessed [here](#) 31 October 2022.

³⁸ Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda – Learning report. Accessed [here](#) 31 October 2022.

EQUITY

The ECOCA is aimed at the most vulnerable communities in Uganda, specifically women and girls who are responsible for collecting firewood and cooking. Further, indirect beneficiaries, including extended family members and other inhabitants of the settlement, gained from the ECOCA by using them to charge mobile phones. Some owners and their families have used the ECOCA to charge mobile phones as a source of income generation.³⁹

The ECOCA is also being trialled with less vulnerable groups based in East Africa with a full pricing model – for example, the deal with community-integrated development initiatives mentioned previously. This full pricing model is an important part of making the entire Pesitho funding model sustainable and will help the company to deliver subsidised units to those with more acute needs.

CONCLUSION

Pesitho's evidence suggests that for refugees, the ECOCA cookstove model offers good value for money compared to traditional wood-fired cookstoves.

However, more research is needed to compare ECOCA with other similar solutions. As it scales, Pesitho must ensure that it tracks outcomes per individual user to allow for better comparison with other alternatives to wood-fired cooking.

Additionally, Pesitho will need to experiment and build further evidence on business models for delivering the intervention in an efficient and cost-effective way that ensures equity in access.

5. THE FUTURE: EMERGING LESSONS AND OPPORTUNITIES

DEMAND

Pesitho have found that demand is higher than they anticipated, demonstrated by the studies that were conducted and through the speed at which units have been sold once delivered. Pesitho have also generated stronger than expected demand for the full-priced model, although these deals have not been signed yet.

SUPPLIER NETWORK

Pesitho have established a model which enables them to sell the entire set up process as well as the distribution and sales of the ECOCA model. The ECOCA Resource Centre assembles the product and conducts after-sales support for technical issues, free of charge. The retailer network provides a model for selling, distributing, and tracking the units. This allows Pesitho to have a more significant

³⁹ Key informant interview. 18 August 2022.

impact on the local economy than if they were selling the units directly to consumers. The component parts, however, will continue to be made in China due to the technical expertise required for manufacturing.⁴⁰

CHALLENGES OF SCALING THE ECOCA

Pesitho are working toward a vision to positively affect more than 200,000 households of approximately 1.2 million people across ten countries in Africa and Asia by 2035. In total, Pesitho and their Journey to Scale innovation partners aim to save over 900,000 tonnes of CO₂ and 200 million kilograms of fuelwood each year thereafter. However, this vision faces challenges in finding a sustainable business model which can support a subsidised product, and for scaling at the level of that vision to be possible, Pesitho will need to be successful in reinstating the carbon credits.

Without the carbon credit scheme working as initially intended, Pesitho will need to find humanitarian donors to subsidise the ECOCA, reducing its scaling potential, or use the full-priced model to fund the subsidised one, reducing the competitiveness of the full-priced units.

FUTURE OPPORTUNITIES

The ECOCA has demonstrated its effectiveness at reducing emissions and costs to vulnerable families affected by crisis and has evidence to reinforce this. This has attracted the interest of the Danish government, as well as the European Union – they have contacted Pesitho to set up loan funds for developing the clean cooking market in Uganda. As Pesitho further demonstrate the effectiveness of the ECOCA, they hope to bring in more interest and funding to expand its reach.⁴¹

A learning study is due to be completed in 2022/2023 to understand the effectiveness of the ECOCA and its ability to create green jobs for young people.⁴²

⁴⁰ Additional information provided by Pesitho (October 2022).

⁴¹ Additional information provided by Pesitho (October 2022).

⁴² Caritas (February 2022). ECOCA: Willingness-to-Pay among Vulnerability Groups in Uganda in Uganda – Learning report. Accessed [here](#) 31 October 2022.