



Empowering Communities through Local Innovation:

Sunken Limited's Journey in Transforming Clean Cooking Solutions in Kakuma



About SNV

SNV is a global development partner, deeply rooted in the countries where we operate. We are driven by a vision of a better world: **A world where across every society all people live with dignity and have equitable opportunities to thrive sustainably.** To make this vision a reality, we need transformations in vital agri-food, energy, and water systems. SNV contributes by strengthening capacities and catalysing partnerships in these sectors. We help strengthen institutions and effective governance, reduce gender inequalities and barriers to social inclusion, and enable adaptation and mitigation to the climate and biodiversity crises.

Building on 60 years of experience we support our partners with our technical and process expertise and methodological rigour. We do this in more than 20 countries in Africa and Asia with a team of approximately 1,600 colleagues. By being adaptable and tailoring our approaches to these different contexts, we can contribute to impact at scale, resulting in more equitable lives for all.

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About the Humanitarian Market-Based Energy Access Project

The EnDev refugee component being implemented by SNV in Kenya from June 2023 to December 2024 is a continuation and a scaling up of the Humanitarian Market Based Energy Access (MBEA II) project completed with support from EnDev in the previous phase. The project is facilitating market development for the energy sector with a focus on the Kakuma refugee camp, the Kalobeyei settlement camp, and the host communities. The focus on refugee settings will contribute to poverty alleviation through EnDev's agenda to leave no one behind.

The overall aim of the project is to support market development to accelerate access to appropriate, reliable, and affordable energy services for households, and micro, small- and medium-sized enterprises (MSMEs) by strengthening supply and enhancing uptake of quality off-grid solar-powered systems and clean cooking solutions, resulting in improved livelihoods, increased productivity, employment creation, and increased incomes, therefore contribution towards the nation's economic development.

Through a market-based approach, the project is anchored on the private sector specifically the stoves and solar supply side actors (including manufacturers, producers, and their local distribution teams and partners such as stockists, sales agents, technicians, and resellers/ last mile entrepreneurs (LMEs), to facilitate market development for energy access technologies targeting households and businesses. As well as facilitating awareness creation and access to user credit/finance to support full acceptance of the energy technologies and enhance their purchase and use in the refugee market.

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Introduction

Access to clean cooking solutions is a significant challenge in many refugee camps and low-income areas, where traditional cooking methods often lead to health problems, environmental degradation, and economic hardship. SNV's energy sector is dedicated to developing inclusive markets for sustainable energy and promoting equitable livelihoods. Through the Humanitarian Market Based Energy Access (MBEA) project, funded by Energising Development (EnDev); SNV has played a key role in transforming energy markets in the Kakuma Refugee Camp, Kalobeyei Integrated Settlement and the host community in Kakuma town.

The Endev MBEA project addresses key barriers in the distribution and adoption of clean cooking technologies; and uses the market-based approach that focuses on both supply and demand. On the demand side, the project creates awareness through various outreach activities, while on the supply side, it increases the capabilities of private sector entities, including

manufacturers and distributors, through capacity development and technical support.

Private sector partners are crucial in the production and distribution of clean cooking technologies, with the project actively supporting and enhancing their business models. In the clean cooking sector, the project has established the local production of improved cookstoves (ICS) and is now planning to introduce higher-tier cooking (HTC) stoves. Sunken Limited, a key partner in Kakuma, specialises in producing and distributing multi-purpose energy-saving and improved cookstoves. With project support, the company established a stove production unit (SPU) in Kakuma that uses local raw materials, making stoves more affordable for low-income households and contributing to an inclusive energy market.

The improved cookstoves at the Sunken SPU Store Unit in Kakuma. These stoves enhance fuel efficiency and reduce smoke emissions, supporting sustainable and healthier cooking for the community.



Establishment of the stove production unit

Phase 1 Initial set-up

Before Sunken's SPU was established in Kakuma, stove production in Kakuma was mainly driven by humanitarian efforts, with the United Nations High Commissioner for Refugees (UNHCR) working alongside local NGO's like Lokado. However, the demand for efficient cookstoves far exceeded the supply. The imbalance between supply and demand provided an opportunity for some entrepreneurs who imported Kenya Ceramic Jikos (KCJs) from Nairobi and Kisumu. Although these stoves addressed some of the demand issues, they encountered challenges with durability and efficiency. Additionally, inconsistent supply due to challenges related to transport and logistics further exacerbated their reliability.

To address these challenges, the MBEA project took a phased approach to establish a local SPU. The first phase in 2018 focused on constructing a temporary facility, procuring basic stove production equipment, and training artisans from both the refugee and host communities. 15 artisans (13 male and 2 females) were trained on Jiko Kisasa stove production by Keyo Pottery Enterprises. Within the same phase, the strategy involved engaging women and youth as stove promoters to sell "naked liners" (unclad stove linings), but this approach was not yielding the intended result because many areas had already received free stoves from UNHCR.

To enhance the marketability of the stoves, and address the adoption challenge, the project shifted its focus to the production of multi-purpose liners with metal cladding. The project also supported the construction of a kiln for firing the liners, giving artisans hands-on experience in stove production

Despite its achievements, the production facility encountered several challenges, including insufficient storage space and a low-roofed storage room that led to heat buildup, causing cracks and damage to the liners. This cracking significantly impacted the quality of the products being sold. Additionally, the facility's shade was constructed with local materials susceptible to wear and tear, requiring frequent repairs and maintenance.

Phase 2: Expansion and Training

In 2019, the project moved to the second phase, which involved constructing a larger, permanent SPU facility.

This phase faced significant challenges, particularly related to land ownership in Turkana County, where land is held in trust by the community through the county government. Obtaining consent from the community was a complex process, further complicated by concerns over potential land ownership disputes in the future.

Despite these hurdles, the project successfully trained 28 additional artisans in metal cladding fabrication, liner production, firing, and assembling various stove models, including KCJ and UHAI charcoal stoves.

Additionally, the project provided training for artisans covering metal cladding fabrication, liner production, firing, and assembling. A total of 28 artisans (5 females and 23 male) were trained in the production of KCJ and UHAI charcoal stoves. The improved stoves were selected to reduce competition with the multi-purpose stoves provided by UNHCR to refugees when they arrive at the camp. Additionally, these stoves are readily available in the market for all residents around Kakuma.

Phase 3: Transition to Sunken Limited: A new model for sustainable production

Initially, the project intended for trained artisans to form an entity to manage stove production as a community enterprise. However, most artisans preferred employment over entrepreneurship, compelling the project to revise its strategy. Sunken Limited was selected through a competitive process to operate and manage the SPU.

Sunken Limited took on the production of multi-purpose stoves with higher efficiency, capable of using both firewood and charcoal. The project supported Sunken by providing working capital, equipping the SPU with advanced machinery, and helping develop a strategic business plan. Additionally, the unit was equipped with basic mechanization, such as the installation of moulding tables capable of accommodating 10 moulding liner machines, fabricating machines for various moulds, and construction of a second kiln. A stove production expert was equally seconded to the SPU to train and mentor artisans, ensuring the stoves met quality standards.

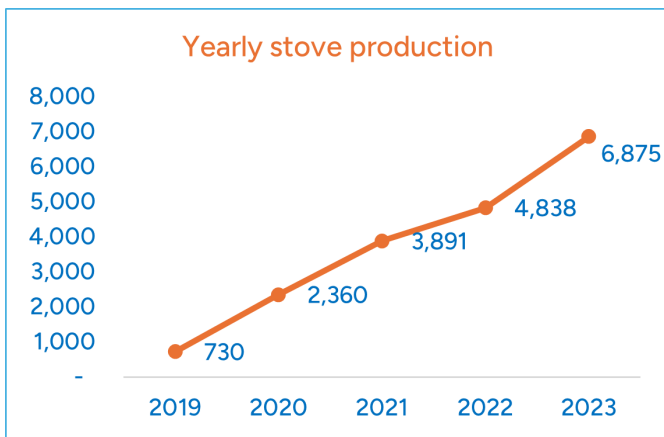
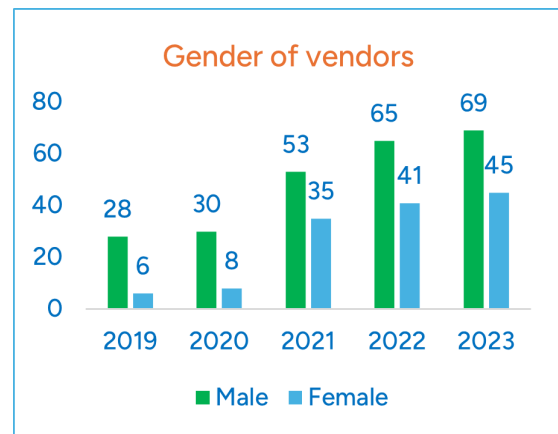


Figure1 The increase in stove production over the years



Building a thriving local community

Over the past six years, the SPU has made significant contributions to the local economy in Kakuma. The production capacity has expanded from 150 units per month in 2018 to 700 units per month, meeting the growing demand for ICS. The SPU now employs 16 staff members and supports over 114 vendors, including 69 men and 49 women, who serve a population of over 300,000 people across Kakuma and Kalobeyei.

The SPU's business growth and Sunken vibrant expansion strategy has led to increased revenues and additional funding from various sources. This has enabled the acquisition of land and the establishment of a new SPU facility equipped with water. These efforts have not only met the growing market demand for improved stoves but have also contributed to local economic development by providing training and employment opportunities for the community.

Lessons Learnt

The implementation of energy-related projects in Kakuma and Turkana has revealed several critical factors for success. These lessons underscore the importance of community

engagement, adaptable business models, reliable infrastructure, and continuous capacity building to ensure the sustainability and growth of stove production initiatives.

1. Community Engagement: Successful energy-related investments in Kakuma and Turkana require early and continuous consultation with all stakeholders, especially the community that owns the land. Building positive relationships with the community is crucial for sourcing raw materials and labour and ensuring smoother operations.

2. Flexible Business Models: The transition from a group-based stove production model to contracting a private sector entity like Sunken Limited highlights the need for business models that adapt to local preferences and capacities. The preference for employment over entrepreneurship among artisans was a key factor in this shift.

3. Infrastructure and Resources: Adequate infrastructure, including production space, reliable water supply, and access to raw materials, is essential for the success of stove production units. Addressing these challenges is critical to maintaining production efficiency and product quality and underscores the need for resource

4. Training and Capacity Building: Continuous training and capacity building are essential for maintaining production quality standards and meeting market demand. Sunken Limited's experience highlights the importance of continuous skill development and social support to improve staff welfare and reduce turnover.

Recommendations

To ensure the long-term success and sustainability of the stove production unit (SPU), several key strategies must be implemented. Each of these actions is crucial for addressing the challenges faced by the SPU and positioning it for future growth. They include:

1. Enhancing Community Engagement: Focus on building strong relationships with local leaders and community members from the outset. Addressing concerns early on will help prevent conflicts and ensure the SPU integrates smoothly into the community, facilitating more effective project implementation.

2. Investing in Infrastructure: Prioritize the development of permanent, well-equipped production facilities with reliable water supply. Improved infrastructure is essential for boosting production efficiency and maintaining the high quality of stoves.

3. Expanding Training Initiatives: Implement comprehensive training programs, including ongoing refresher courses and social support initiatives. Enhancing staff welfare and reducing turnover through continuous skill development is critical to the long-term success of the SPU.

4. Promoting Innovation and Diversification: Strengthen the research and design unit to drive ongoing innovation and the creation of new stove designs. Expanding the product range will help meet diverse market needs and enhance the SPU's competitive edge.

5. Developing a Feedback Mechanism: Establish a robust system for collecting customer feedback and monitoring product satisfaction. This will enable timely adjustments to stove designs and production processes, ensuring products consistently meet user needs and expectations.

Challenges and Future Outlook

Despite its successes, Sunken Limited has faced challenges, particularly in scaling production to meet the high demand for stoves. Land ownership issues and difficulties in securing raw materials have caused delays and conflicts, impacting the company's performance. Additionally, logistical challenges, such as water scarcity and high staff turnover, have hindered production efficiency.

To overcome these challenges, it is essential to continue investing in infrastructure, community relations, and staff development. By addressing these issues, Sunken Limited can scale up production to meet market demand, ensuring the continued success and growth of the SPU.

Conclusion

The case of Sunken Limited demonstrates the power of local innovation in transforming energy access in refugee and low-income settings. Through strategic partnerships, community engagement, and a commitment to capacity building, the SPU in Kakuma has not only met the demand for clean cooking solutions but also contributed to local economic development. As the SPU continues to grow, its success offers valuable lessons for similar initiatives in other regions.



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