

Emerging Cooking Solutions Zambia



Emerging
COOKING
SOLUTIONS

supamoto.co.zm



The Care Economy
Knowledge Hub

the-care-economy-knowledge-hub.org

Profiling Businesses in the Care Economy

The care economy consists of paid and unpaid labor and services that support caregiving in all its forms. In Africa, Asia and Latin America, women spend between three to five times as many hours on unpaid care and domestic work as men. This represents 80 percent of a household's total hours devoted to unpaid care work.

Care economy businesses can help recognize, redistribute, reduce and reward – also known as the 4 Rs – unpaid and paid care and domestic work in the following ways:



Recognize: Initiatives that increase visibility and recognition of paid and unpaid care and domestic activity as "productive" work that creates real value and contributes to economies and societies.



Redistribute: Services and initiatives that redistribute care work from individuals to public and private sector entities, and redistribute care and domestic work within the household.



Reduce: Products and initiatives that reduce the time spent on and burden of unpaid care and domestic work.



Reward: Products, services and initiatives that ensure that care and domestic workers are paid fairly and have professional growth potential. This provides them with financial reward and security.

The Care Economy Knowledge Hub aims to address the knowledge gap around care businesses by showcasing various business models and creating a resource base for relevant stakeholders. It also aims to raise awareness and increase knowledge of the state of impact-driven care economy business models and attract a broad range of funders to invest in care economy solutions by showcasing opportunities. These business profiles are intended to showcase said potential investment opportunities. They have been created from information and data provided by the business itself.

This project is supported by Canada's International Development Research Center, in partnership with the Soros Economic Development Fund at the Open Society Foundations. Building on their track record and commitment to transforming the care economy and mobilizing finance for gender equality, they have jointly launched this action research program to help transform the care economy through impact business and investment.

Executive Summary

Reduce

Emerging Cooking Solutions Zambia is a for-profit company that manufactures and distributes clean-burning stoves (branded SupaMoto®) and biomass-based cooking fuel to low-income families in Zambia. The company's products reduce the burden of unpaid care work by helping women and girls spend less time on sourcing firewood for cooking and heating. The products also help in reducing indoor air pollution and the cost of cooking, compared to traditional cooking methods (which use charcoal and firewood). For every 2 households that switch from charcoal to biomass pellets,¹ 6–8 tons of carbon emission is reduced annually. To date, the enterprise has served 8,500 customers in total: 7,500 customers in Zambia, 700 in Malawi and 300 in Mozambique. In 2021, the enterprise had a revenue of US\$ 1,036,060. Emerging Cooking Solutions has 85 full-time employees. The enterprise also has operations in Malawi and Mozambique.

Enterprise Stage:
Growth

Year Established:
2012



Enterprise Type:
For-profit

Women Owned/Led:*

- Founded by at least 1 woman
- At least 30% women in senior leadership
- Board of Directors comprised of at least 30% women

Company Contact

mattias@emerging.se

Mattias Ohlson, [LinkedIn Profile](#)

*According to 2X "women entrepreneurship" and "women leadership" criteria; [2X Challenge Criteria](#)

¹ The enterprise produces the pellets from biomass (branches, offcuts, sawdust) from the forestry plantations and myriad small saw millers. The enterprise processes the biomass (drying, chipping, hammer milling, pressing, cooling, bagging) into SupaMoto pellets. These pellets have increased thermal efficiency and are 33% cheaper compared to current average customer spend on charcoal.

1. About The Enterprise

1.1 Problem

Only 18% of households in Sub-Saharan Africa have access to clean fuel and technologies for cooking.² Studies indicate that 63% of households in peri-urban regions still rely on wood or charcoal as their main source of fuel for both cooking and heating.³ In Zambia, Malawi and Mozambique, more than 75% of their populations are dependent on solid fuels for cooking.⁴ Observational and time-use/diaries-based studies in Africa show that women in Sub-Saharan Africa spend nearly 12 hours per week collecting firewood. In urban areas, the time spent by women cooking each day is between 0.8–1.3 hours.⁵

In Zambia, 90% of households rely on wood to meet their energy needs,⁶ while 60% of the peri-urban households completely rely on charcoal.⁷ ⁸ Multiple studies have shown that unclean cooking has a wide-ranging impact on quality of life. The use of unclean fuels (such as charcoal) contributes to nearly 25% of the world's black carbon emissions. Black carbon has a warming capacity nearly 500–1,500 times higher than CO₂.⁹ According to the World Health Organization, it is estimated that in 2020, exposure to indoor air pollutants caused nearly 3.2 million deaths worldwide.¹⁰ Of these, 34% were in Sub-Saharan Africa. Additionally, 36% of deaths in Sub-Saharan Africa are children less than 5 years of age and women aged between 15–49.¹¹

² The World Bank. (2020). *Access to clean fuels and technologies for cooking (% of population) – Sub-Saharan Africa*. <https://data.worldbank.org/indicator/EG.CFT.ACCS.ZS?locations=ZG>

³ Maria, Paula. (2020). *The heat is on: Managing wood fuel sustainably in Sub-Saharan Africa*. <https://forestsnews.cifor.org/65959/the-heat-is-on-managing-wood-fuel-sustainably-in-sub-saharan-africa?fnl=en#:-:text=In%20Africa%2C%20around%2063%20percent,fuel%20for%20cooking%2C%20FAO%20reports>

⁴ Aemro, Y. B., Moura, P., & de Almeida, A. T. (2021). Inefficient cooking systems a challenge for sustainable development: a case of rural areas of Sub-Saharan Africa. *Environment, Development and Sustainability*, 23(10), 14697–14721.

⁵ Dalberg. (2018). *Cleaning up cooking in urban Kenya with LPG and bio-ethanol*. <https://dalberg.com/our-ideas/cleaning-cooking-urban-kenya-lpg-and-bio-ethanol/>

⁶ Silimina, D. (2020). *Up in flames*. D+C – Development + Cooperation. <https://www.dandc.eu/en/article/zambian-poor-are-increasingly-subject-fire-hazards-charcoal-and-firewood-they-use-heating>

⁷ Tembo, S., Mulenga, B., Richardson, R. (2018). Electricity access and charcoal consumption among urban households in Zambia. *Development Southern Africa* 36(5), 585–599. https://www.researchgate.net/publication/327404987_Electricity_access_and_charcoal_consumption_among_urban_households_in_Zambia

⁸ USAID. (2021). *Alternatives to Charcoal*. United States Agency International Development/Zambia Tetra Tech/ARD. https://pdf.usaid.gov/pdf_docs/PA007PMG.pdf

⁹ UNEP. (2021). *Seven things you should know about household air pollution*. <http://www.unep.org/news-and-stories/story/seven-things-you-should-know-about-household-air-pollution>

¹⁰ World Health Organization. *Household air pollution and Health*. (2022). <https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health>

¹¹ Onyinyechi, B. Orish, E. (2020). Exposure to wood smoke and Associated Health effects in Sub-Saharan Africa: A Systematic Review. *Annals of Global Health* 86(1), 32. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7082829/>

Research conducted by Emerging Cooking Solutions shows that low-income households in Zambia spend around 20% of their monthly income on purchasing cooking fuels, while middle-income households spend 7-20%. Typically, low and middle-income households have to travel 1-2 km daily to purchase charcoal for cooking. It has also been observed that high upfront costs of clean, cookstoves, as well as lack of access to debt financing, exclude low and middle-income households without the financial means to purchase cookstoves in one large payment. Lack of access to clean cooking technologies also impacts other areas of women's empowerment. A regional analysis has found a positive correlation between the introduction of efficient cooking stoves and female workforce participation. While there is a low short-term impact on workforce participation, long-term analyses show that enhanced time efficiency leads to greater possibilities of women participating in the formal workforce.¹²

1.2 Solution

Emerging Cooking Solutions offers “SupaMoto” clean-cooking stoves and biomass cooking fuel (pellets) to low and middle-income (urban and peri-urban) households in Zambia. The enterprise manufactures pellets from biomass waste (branches, offcuts, sawdust) and forestry plantations in Zambia.¹³ Households pay an upfront subscription fee of US\$ 6.80 for the stove and a subscription fee of US\$ 7.30 per month (for 30 kg of pellets). The enterprise starts making a profit after 18 months of paid subscription.¹⁴ Households can place orders for pellets using their mobile phones and they are delivered free-of-charge directly to their address. This reduces the time women and girls spend sourcing fuel for cooking.

The enterprise also offers after-sales services with a 3-year warranty and free repairs of the cookstoves in case of any damage. It provides customers with ongoing training, maintenance, and services to ensure continued operation and correct use of the stove. Emerging Cooking Solutions has developed the firmware that controls the stove's electronic board, the server-side software, and a communications protocol that enables the communication between the stove and the enterprise's servers. This provides the enterprise with real-time information about how the stoves are used. This also enables the enterprise to disable cookstoves in cases where the households do not continue to pay for the pellet subscription service.

Research conducted by the enterprise shows that purchasing 30 kgs of pellets is at least 33% cheaper than purchasing charcoal. Apart from the costs saved, the cookstoves also save time spent by women on cooking, as the stoves are more efficient compared to ordinary or open-air cooking with wood. SupaMoto cookstoves (and the clean pellets) burn efficiently and reduce indoor air pollution, which has severe health effects. Health effects have particularly been noted amongst vulnerable populations, such as children and adolescent girls.

¹² Uchenna, E., & Oluwabunmi, A. O. (2020). *Cooking technology and female labor market outcomes in sub-Saharan Africa*. *African Development Review*. doi:10.1111/1467-8268.12468

¹³ Waste materials from pine and eucalyptus plantations.

¹⁴ The subscription fee for the stove is one-time and households do not pay any additional rental charges per month.

1.3 Customer Segment

Customer Segment	Product / Service Provided	Paid / Unpaid
Low-income households (earning less than US\$ 56 per month) and middle-income households (earning between US\$ 56-US\$ 169 per month)	Clean cookstoves, with a monthly subscription of biomass pellets	Paid The households pay an upfront fee of US\$ 6.80 to rent the clean stove and subscribe to purchasing 30 kg of pellets per month (US\$ 7.30). The on-going subscription for pellets enables the enterprise to provide the stove at a small rental fee.
Local entrepreneurs who sell pellets to households in their vicinity	Biomass pellets that are compatible with any stove	Paid The enterprise provides entrepreneurs with pellets at a 20% discount.

1.4 Team And Governance Structure

In Zambia, the enterprise has 85 full-time employees, 25% of whom are women. The full-time employees include: the CEO, COO, Operations Senior Manager, Sales and Aftersales Manager, Senior Production Manager, Fintech Manager and Senior Accountant. Other members of the team are working in the factory producing pellets, with sales or after-sales, distribution, or administration. The enterprise has a management board of 5 members, 20% of whom are women.

1.5 Enterprise Policies

Policy	Yes / No
Overall HR Policy	Yes
Equal pay for equivalent work policy	Yes
Non-discrimination / Equal employment opportunity / Diversity and inclusion policy (gender, LGBTQ, PWD, etc.)	Yes

Policy	Yes / No
Anti bullying and sexual harassment policy / Respectful workplaces	Yes
Whistleblower policy / Employee grievance mechanism	Yes
Maternity / Paternity leave policy	Yes
Safeguarding policies for vulnerable groups (children, elderly, PWDs)	No
Safeguarding policies for the environment or to reduce detrimental impact on the environment (covers reducing carbon footprint, reduced water consumption etc.)	Yes

2. Impact

2.1 Mission Statement

The enterprise's mission is to offer the Zambian population a locally produced, affordable, and efficient cooking solution using pellets from waste biomass and gasifying stoves.

2.2 Intended Impact

Emerging Cooking Solutions **reduces** the burden of unpaid care work by helping households and other beneficiaries spend less time on sourcing fuel and cooking. This is achieved by replacing traditional cookstoves and fuels, such as charcoal and firewood.

2.3 Monitoring And Measurement

The enterprise measures the reach of its services on a weekly basis by tracking the following indicators:

- Pellets sold (in kgs)¹⁵
- Number of customers (subscription model) in Zambia
- Payments made per month
- Customer usage through records of cooking and charging events¹⁶
- Stock volumes

¹⁵ This is a proxy for replacing charcoal.

¹⁶ The enterprise's IoT platform captures customer usage and charging events in snippets. This helps the enterprise understand stove usage and also serves as a form of verification for the sale of carbon credits.

The enterprise has developed the firmware controlling the stove's electronic board, the server-side software, and a communications protocol. This enables the communication between the stove and the enterprise's servers and provides the enterprise with real-time information on how the stoves are used.

2.4 Results To Date

This section provides an overview of the enterprise's results:

- Pellets sold (in kgs): Over 3 million
- Number of customers (subscription model) in Zambia: 1,000
- Payments made per month: US\$ 30,000
- Customer usage through records of cooking and charging events:¹⁷ 30 million

Emerging Cooking Solutions Zambia is aligned with the following Sustainable Development Goals (SDGs):



¹⁷ The enterprise's IoT platform captures customer usage and charging events in snippets. This helps the enterprise understand stove usage and also serves as a form of verification for the sale of carbon credits.

3. Financials

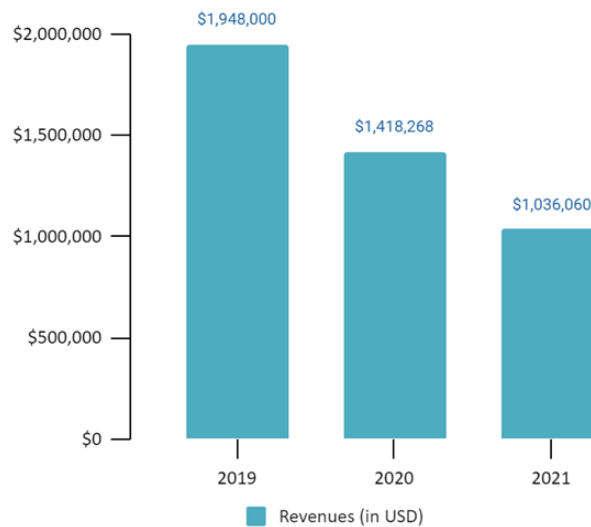
3.1 Financial Status

The enterprise is financially sustainable. This table summarizes the financial status of the enterprise's operations in Zambia:

<i>Particular (Amounts in USD)</i>	FY2019	FY2020	FY2021
Total Revenue ¹⁸	1,948,000	1,418,268	1,036,060
Total Expenses	1,617,000	1,339,590	1,010,956
EBITDA OR Profit/Loss	331,000	78,678	25,104
EBITDA Margin	17%	6%	2%

3.1.1 Revenue Streams

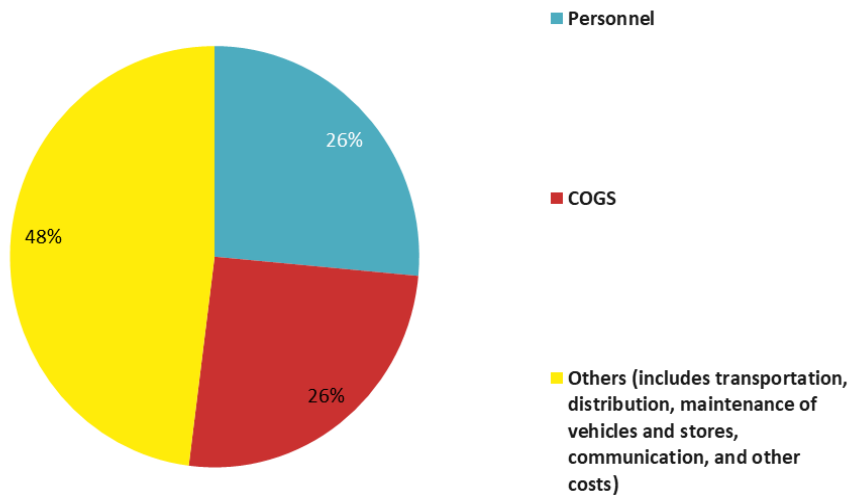
The enterprise receives revenue from the sale of goods and services, as well as grants. The goods and services include the sale of cookstoves, membership fees for cookstoves, and the sale of pellets. The majority of revenue is obtained from the sale of pellets. It is currently estimated that 60% of revenues are from the sale of goods and services and 40% is from grants.



¹⁸ Please note that revenue includes revenue from sale of products / services and grants.

3.1.2 Expenses

The following pie-chart provides an overview of expenses in the year 2021.



3.2 External Funding Sources (Past and Current)

- In 2022, the enterprise received a grant of US\$ 230,000 from USAID’s Alternatives to Charcoal (A2C) program to drive growth in Zambia.
- For the period 2019–23, the enterprise received a grant of US\$ 1 million from EEP S&EA to expand its operations.
- For the period 2017–23, the enterprise received a grant of US\$ 2.3 million from Beyond the Grid Fund Zambia for the sale of clean cookstoves and solar home systems.¹⁹

3.3 Challenges Faced In Accessing Capital

- **Time taken to raise capital:** The enterprise has observed that fundraising is a time-consuming process. The management team must spend a significant amount of time on activities related to fundraising.
- **Limited availability of risk capital:** The enterprise has observed that there are a limited number of investors that are keen to provide risk capital to undertake activities in research and development, which is needed to enhance stove design and efficiency. Investors are more likely to fund the working capital needs of the business.
- **Lack of preferred collateral:** In Zambia, mainstream financiers (mainly banks) prefer collateral such as government bonds or land. However, the enterprise can only provide assets (such as equipment) as collateral.

¹⁹ Please note that the enterprise sold solar home systems from 2016–22.

- **Cash-flow challenges:** The business model results in high capital expenditure, as the stoves are provided to the customers without any upfront payment. Further, inflows are protracted due to the small monthly payments received from the sale of pellets. Consequently, the enterprise faces cash-flow challenges and requires investments to accelerate growth.

4. Path To Scalability

4.1 Potential Avenues For Growth

Emerging Cooking Solutions Zambia has identified the following avenues for growth:

- **Scale-up production of pellets:** The enterprise aims to scale up its production of pellets to 25,000 tons per year. Furthermore, it aims to diversify the raw materials used to produce pellets by adding agro-waste feedstock. This will consequently reduce its dependence and price sensitivity to feedstock from plantation forestry residue.
- **Enhance pellet distribution:** The enterprise aims to expand its pellet distribution by increasing its storage capacity and the number of depots and distribution vehicles.
- **Increase the number of customers served:** The enterprise aims to expand the number of customers served in existing regions of Zambia. It also aims to expand its operations in other regions of Zambia. In the next 5 years, it intends to serve 43,000 customers through its subscription model.
- **Increase revenue from carbon credits:** The enterprise aims to generate revenue from carbon credits. It has already started the process of registering a Program of Activities with Gold Standard Foundation, using the enterprise's "Methodology for Metered and Measured Energy Cooking Devices." The enterprise is also exploring the issuance of credit based on digital data. This would potentially shorten the time of carbon credits from 18 to 24 months after generation, which would instantly and positively impact the enterprise's cash flow.
- **Establish franchise models in other countries:** The enterprise aims to create a franchise model in other African countries. It would provide franchisees with cookstoves that are enabled to capture carbon credits and/or the IoT platform to monitor carbon credits. So far, 2 enterprises in Africa have acquired and integrated the enterprise's IoT platform into their clean cooking operations. These enterprises pay an on-boarding fee for using the IoT platform and then pay an on-going subscription fee (per customer, per month).

4.2 Risks And Challenges

- **Financing challenges:**

The enterprise struggles to obtain required capital, as fundraising is a time-consuming process. Currently, the enterprise cannot offer collateral to mainstream financiers. Thus, the enterprise needs high cash flow.

- **Operational challenges:**

- **Sourcing raw materials for pellets:** The enterprise uses local waste biomass feedstock to manufacture pellets. The enterprise, therefore, faces the risk of increasing biomass feedstock prices if the demand for such feedstock increases. To counter this, the enterprise aims to diversify feedstock to agro-waste.
- **Manufacturing:** The enterprise has faced challenges in accessing spare parts and batteries within the country.
- **Logistics:** The enterprise faces challenges in obtaining quality transportation to sustain its operations. It is seeking additional feedstock collection trucks, pellet delivery trucks, and electric last-mile delivery (3-wheeler bikes).
- **IT:** The enterprise aims to change its customer resource management software to increase operational efficiencies. With the new software, the enterprise is expected to save US\$ 2.52 per customer, per year.

4.3 COVID-19 Impact On The Enterprise

Due to restrictions on mobility imposed during the COVID-19 pandemic, the enterprise's operations were adversely impacted. The enterprise faced challenges with supply chain disruptions and increased prices of raw materials. To address this increase in costs, some management team members worked for free during this period.

4.4 Support Received To Date

The enterprise has received the following support:

- In 2022, the enterprise received pro-bono legal support from Sidley Austin, a legal firm based in the USA.
- In 2022, the enterprise received support from USAID's Alternatives to Charcoal (A2C) program. This included the development of the electronics boards and Stove Use Monitoring (SUM) capability. Further, they provided training to enhance the enterprise's ability for fundraising and promoted SupaMoto products to consumers in Zambia.
- In 2022, the enterprise received support from GET.invest for financial modeling and fundraising.
- In 2021, the enterprise received some support from the Clean Cooking Alliance to design cookstoves and customer surveys.

4.5 Inputs Required For Growth

Financial

- In 2023, the enterprise is seeking US\$ 2 million in equity or quasi-equity. These funds will be used to meet the working capital needs of the enterprise.

Non-Financial

- **Technology support:** The enterprise is seeking IT development support to further enhance its IoT platform.
- **HR:** The enterprise is seeking to hire a CFO to support investment-ready preparedness and finance functions.
- **HR:** The enterprise is seeking to hire a Logistics Manager to improve operations for procurement of raw materials used to manufacture pellets, as well as the distribution of stoves and pellets.