Transforming the care economy through impact investing case study:

BURN Manufacturing

The Care Economy Knowledge Hub

the-care-economy-knowledge-hub.org

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FOREWORD

Vital for our society to function, the care economy – domestic work and caring for children, elderly people, and people with disabilities – as it is now, operates as one of the most pervasive structural barriers to women's economic autonomy and gender equality.

Erin Tansey

Across the world care work is mostly done by women and girls, who perform three-quarters of unpaid care work. Representing more than 11 percent of total global employment, paid care work is also a significant source of employment, particularly for women. However, these jobs are poorly paid, in positions that fall outside of formal employment structures, and insecure due to ingrained gender and racial biases and the work's perceived value. The precariousness of paid care work and the unequal distribution of unpaid care work restricts women's time and mobility, as well as their equal participation in social, economic, and political life. And this dynamic is unlikely to change without collective action. The climate crisis is increasing the demand for care and domestic work globally, while the COVID-19 pandemic generated a care crisis that exacerbated pre-existing gender inequalities.

Catherine Cax

Both formal structures and informal structures (norms) hold care economy inequalities in place. Gendered norms also shape national policies on how care work is recognized and valued, and how the responsibilities between families, governments, and the private sector are distributed.

While public investment and policies must be at the core of the solution, a renewed role for the private sector is crucial. Announced as a commitment at the Generation Equality Forum, in 2021 Canada's International Development Research Centre (IDRC) and the Open Society Foundation's impact investment arm, the Soros Economic Development Fund (SEDF), launched an action-oriented research initiative to help Transform the Care Economy through Impact Investing (TCEII). Through this partnership, IDRC continues to build on its commitment to transform the care economy and mobilize finance for gender equality.

Since its launch, a global consortium of partners has built an extensive knowledge and evidence base to mobilize capital and impact investment to address the care economy's challenges in emerging markets. The program is now launching a collection of 20 case studies on care economy social innovations and impactful businesses, which complements 59 business profiles and mapping of 165 market-based solutions operating in emerging markets in Latin America, Africa, and Asia. The TCEII program also involves care-economy businesses incubation and acceleration, research on regulatory frameworks and policies, awareness raising, and industry policy dialogues.

As we witness growing momentum and understanding of the urgency of addressing the care crisis, we hope these case studies on pioneering companies will help advance concrete strategies to move from awareness to action. These case studies help to demonstrate viable and impactful business models, ranging from building social security infrastructure to labor-saving products and services. They offer a unique and nuanced understanding of the businesses' theories of change and impact journeys. The case studies also help to share the lessons these innovators have learned on their pathways to scale, and it is our hope that they will attract more capital into the care economy for deepened impact.

We invite you to read this collection of case studies and engage with them, and the other resources and tools developed by the TCEII program, to mobilize investment into the care economy.

Together we can advance towards a care society where social innovation, entrepreneurship, and investment can be part of the solution for economic justice globally.

Erin Tansey

Sustainable and Inclusive Economies Director
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INTRODUCTION

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 3 to 5 times as many hours on unpaid care and domestic work as men. This represents 80% of a household's total hours devoted to unpaid care work.

Care economy enterprises 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 – the research pillar of the Transforming the Care Economy Through Impact Investing Program – 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.

A curated set of 20 business case studies, of which this case study is one, has been researched and written between October 2021 and January 2024. The case study businesses were selected out of a set of 165 businesses that were mapped between October 2021 and August 2022, and then a further 59 that were profiled between September 2022 and May 2023. They present a wide variety of different ways in which care work can be recognized, rewarded, reduced, and redistributed, from different sectors and different geographies, from different stages of the growth journey and different business models, from different products and services, and different impact pathways. Each case study was

written based on extensive desk-based research, including a literature review; a review of key business documents; a series of deep conversations with founders, CEOs, and key staff; and impact-focused qualitative research with 8 - 15 consumers of business products and services.

Each case study starts with a 1-page executive summary that provides "at a glance" information on the business and Section 1 provides an introduction. Section 2 describes the ecosystem within which the business operates. The business deep dive can be found in Section 3. Section 4 presents an impact deep-dive, including customers' own experiences of the care economy solution, and a unique set of qualitative impact data. Section 5 outlines the business's future plans in their look forward.

Shifting attention towards and investment in the care economy is one of the single most important actions that policy makers, investors, and community leaders can take to achieve gender, racial, and climate justice. We hope that these case studies contribute to the much-needed transformation in our economic and social systems.

Rebecca Calder
Principal Investigator, Transforming the Care Economy Through Impact Investing
Co-Founder and Co-CEO, Kore Global

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 are jointly supporting this action research program to help transform the care economy through impact focused business and investment. This case study is a joint research product, developed by a consortium led by Kore Global, including Intellecap, Core Woman, Busara, Sagana, and Volta Capital. Copy editing and graphic design were done by Big Blue Communications.

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Intellecap, Busara Center for Behavioral Economics, Kore Global. (2024). *Transforming the care economy through impact investing: BURN Manufacturing case study*. Kore Global, International Development Research Centre, and Soros Economic Development Fund.

1 - EXECUTIVE SUMMARY

BURN Manufacturing is a Kenyan for-profit enterprise that designs, manufactures, and distributes fuel-efficient cooking appliances. BURN's products reduce indoor pollution, household energy consumption, and expenditure for its customers and, as a result also reduce deforestation. The products reduce the burden of unpaid care work (mostly undertaken by women and girls), as they spend less time on sourcing firewood and cooking activities. Since its inception, the company has sold over 4.3 million stoves and saved households an estimated US$819 million in fuel costs. Further, since 2013, it has created over 2,500 indirect jobs via its production, supply chain, distribution networks, and retail points. In 2022, BURN Manufacturing generated US$27.9 million in revenue. It has 2,700 employees, 43% of whom are women. The company is seeking debt of US$25 million, equity of US$25 million, and carbon project finance of US$100 million.

BURN Manufacturing at a glance

Established	2011
Country of operations	Kenya
Offerings	Designs, manufactures, and distributes fuel and time-efficient cookstoves through distributors, supermarkets, micro-finance institutions, and authorized retailers. The company also sells carbon credits to corporations, institutions, and individuals.
Reach	Produced and distributed 4.3 million clean cookstoves to over 24 million people (since inception).
Staff	534 full-time employees
Revenue	US$27.9 million (2022)[1]
Investment to date	Not provided by the enterprise
Leadership	Peter Scott, Founder and CEO
Website	https://BURNstoves.com/

2 - ECOSYSTEM

2.1 Kenya: statistical snapshot

 Demographic information	**Total population** (World Bank, 2021): 53 million **Female population** (World Bank, 2021): 50.3% of total population i.e., 26 million **Urban & rural population** (World Bank, 2020): Urban (28%) | Rural (72%) **Population in different age segments** (*% of total population*) (World Bank, 2020) • 0-14 years: 38% • 15-64 years: 59% • 65 and above: 3%
 Unpaid care work	**Proportion of daily time spent on unpaid domestic and care work in urban areas** (Oxfam, 2021) • Women and girls: 5 hours | Men: 1 hour **Proportion of daily time spent on unpaid domestic and care work in rural areas** (Global Center for Gender Equality, 2022) • Household surveys in 2004-2006 in rural Kenya show that women devote nearly 6 times as many hours as men to cleaning the house, preparing meals, fetching water, and collecting firewood.
 Social & economic	**Literacy level** (Global Gender Gap Report, 2021) • Females (78.2%) | Males (85%) **Poverty** (Statista, 2022) • 17% of Kenya's total population lived in extreme poverty (less than US$1.9/day) as against the global poverty rate of 8.9%. In 2022, 7.8 million Kenyans in extreme poverty lived in rural areas, while 1.1 million lived in urban areas. **Formal & informal employment** (Statista, 2021) • Out of 18.3 million people employed in Kenya, 15.3 million people worked in the informal sector, and 3.1 million worked in the formal sector. **Gender-based violence** (Kenya-Demographic and Health Survey, 2014) • 45% of women aged 15-49 have experienced physical violence since age 15. **Gender-based violence** (UN Women Kenya, 2014) • 40.7% of ever-partnered women aged 15-49 experienced intimate partner physical and/or sexual violence at least once in their lifetime.

Women's work, labor, and entrepreneurship

Labor force participation (% of total labor force) (World Bank, 2021)

- Women: 49.6% | Male: 77%

Unemployment (World Bank, 2021)

- Total: 5.6%
- Women: 5.9% | Male 5.3%

Women entrepreneurship

- Licensed MSME ownership: (Kenya National Bureau of Statistics, 2016) Females (32.1%) | Males (47.7%)
- Unlicensed MSME ownership (Kenya National Bureau of Statistics, 2016): Females (61%) | Males (31.7%)
- Firms with female majority ownership, % of firms: (Global Gender Gap Report, 2021) 47.5%
- Firms with female top managers, % of total firms: (Global Gender Gap Report, 2021) 18.1%

Gender gap index score (Global Gender Gap Report, 2022)

- Total: 0.73 (0=unequal, 1=equal)

Financial inclusion (Central Bank of Kenya, 2019)

- 33.7% of women have bank accounts.

2.2 Context analysis

Macro context in Kenya

Kenya is one of the fastest growing economies in the African continent. With a gross domestic product (GDP) of US$113.4 million, the country is classified as a lower-middle income country.[2] Although economic growth slowed as a result of the COVID-19 pandemic, real GDP is estimated to have grown by 5% in 2023, as compared to 4.8% in 2022.[3] Agriculture is key to Kenya's economy, contributing 22% to its GDP[4] and generating 54% of total employment.[5] Approximately 72% of the Kenyan population (estimated 39 million)[6] lives in rural areas. Kenya, especially rural Kenya, has high levels of poverty and illiteracy. More than 8.9 million Kenyans live in extreme poverty, and an estimated 3.5 million Kenyans face acute food insecurity.[7] Of the extremely poor, nearly 7.7 million live in rural areas and lack access to basic services (water, sanitation, and electricity).[8] More women than men live in extreme poverty (18% of the total female population compared to 16% of the total male population), and almost 80% live below or near the poverty line.[9] Kenya's rural areas are characterized by the large number of households headed by women (36%) i.e., single mothers, widowed women, divorced women, or women whose husbands are working away from home.[10]

In 2020, 62.7% of rural areas had access to electricity.[11] However, over 90% of the rural population and 75% of all Kenyan households still cook over traditional cookstoves using wood or charcoal as fuel, because they are easily available and affordable compared to alternatives.[12] These traditional stoves consume a large amount of fuel, contribute to deforestation and lead to increased health costs for households.[13] WHO data suggests that smoke and indoor pollution have resulted in an estimated 23,000 deaths in Kenya in 2020 alone.[14]

Care economy context

While women all over the globe bear disproportionate responsibility for unpaid care work, this workload is far more time consuming and difficult to undertake while living in poverty, conditions in which most African women live.[15] In urban Kenya, on average, women and girls spend nearly 5 hours per day on domestic care activities, compared to only 1 hour for men.[16] In rural areas, unpaid domestic work is even more laborious and time consuming due to limited access to public services and labor-saving technologies.[17]

Most households in Kenya use inefficient biomass-based traditional cookstoves for cooking.[18] These cooking methods result in longer cooking times, with women spending more than 4 hours cooking every day.[19] Moreover, these appliances cause smoke and indoor pollution, resulting in respiratory diseases (stemming from partially combusted firewood), the third-highest cause of premature deaths in Kenya.[20] In addition, kerosene used in cooking causes burns and poisonings, particularly for women and children (40-60% of pediatric poisoning cases in Kenya are due to kerosene).[21] The use of firewood as fuel also increases the risk of gender-based violence for women and girls, as they typically gather firewood in secluded spots like bushes and forests where they are vulnerable to attacks.[22]

Lack of access to clean cooking technologies also impacts other aspects of women's empowerment. A regional (long-term) analysis shows that enhanced time efficiency leads to greater possibilities of women participating in the workforce.[23] A study by Oxfam also shows that access to time and labor-saving equipment such as fuel-efficient stoves and solar lamps make unpaid care tasks less time-consuming and tedious.[24] However, the adoption of labor-saving technologies is limited because of a lack of awareness of their benefits, high costs, prevalence of traditional practices and beliefs, and lack of after-sales services for these technologies. In Kenya, most low-income households do not have the financial capacity required to procure energy-efficient technologies, labor-saving equipment, or get a grid connection and LPG cylinder.[25]

Market opportunity

Kenya is considered a pioneer in cookstove adoption in East Africa, due to its private-sector-led growth and the country's business-friendly policies and regulations.[26] Cookstove adoption has been accelerated by innovative business models utilizing pay-as-you-go, mobile money, and last-mile distribution. There has also been a rise in off-grid solar companies and microfinance institutions acting as distributors of cookstoves and other cooking solutions.[27] The country stands out as having the most enabling market environment for improved cookstoves in the region, with clean cooking technologies being promoted by many government agencies, development partners, NGOs, and community organizations since the early 1980s.[28]

Kenya also has a favorable ecosystem that bolsters technology adoption. For the last

30 years, the improved cookstove stoves (ICS) sector has grown in Kenya, with the uptake of entry-level ICS estimated between 1.5 to 3.1 million cookstoves.[29] In addition, regulatory measures such as eliminating 16% VAT on efficient biomass stoves, increasing kerosene costs, reducing import duties on fuel-efficient stoves from 25% to 10%, and removing excise duty on ethanol for cooking and heating have worked in tandem with the market to create a favorable environment.[30]

The existence of a relatively large consumer segment that currently uses traditional fuel sources (wood, charcoal, and kerosene) creates a substantial potential market for cleaner fuels such as LPG for 14.5 million Kenyans.[31] For instance, it is estimated that LPG's potential market consists of nearly 14.5 million Kenyans and demand for LPG for cooking has steadily risen, from 740 barrels a day in the early 1980s to about 9,990 barrels a day in 2021.[32] This growth has been supported by rising urbanization and programs such as the National Oil corporation's 'Gas Yetu Mwananchi Project', which provides low-income households with subsidies for purchasing LPG stoves as well as 6 kilograms of LPG cylinders at a discounted price.[33] Based on an estimated average annual growth of 14%, Kenya is expected to have 70% LPG penetration by 2030.

3 - BUSINESS DEEP DIVE

3.1 Business headline

BURN Manufacturing (BURN) is a for-profit enterprise that designs, manufactures, and distributes wood, charcoal, LPG and electric cookstoves - which are more time-efficient and thermally efficient than traditional cookstoves - to low-income families across Africa. BURN cookstove's design cuts fuel consumption by more than half and reduces expenditure on cooking for poor urban households and rural households. Reduced emissions, as well as the use of cleaner fuels, also reduce health risks and associated costs. BURN's stoves are made in a modern, manufacturing facility that is capable of making 1 stove every minute. These stoves are sold through online retailers, physical supermarkets, microfinance institutions (MFIs), and social distributors. BURN also provides delivery and after-sales services, including repair, warranty (for up to 1 year) and replacement. The company manufactures 4 types of cooking stoves for domestic use, and charcoal stoves (known as the Jikokoa Pro) for large businesses such as restaurants, hotels, and churches.

In 2023, BURN introduced 2 new products as part of its tech-enabled electric cooking (e-cooking) suite across Kenya. These e-cooking products (the ECOA Electric Induction Cooker and the ECOA Electric Pressure Cooker) are Africa's first locally designed and assembled modern e-cooking products. Both products include Internet of Things (IoT) sensors, which enable the enterprise to effectively provide end-to-end customer service, and monitor real-time energy consumption. These products offer households a more cost-effective and sustainable cooking solution. BURN's electric induction cooker is sold with induction-ready cookware, which includes a pot (6-liter and 8-liter variants) and a frying pan manufactured at BURN's manufacturing facilities in Kenya. These products are being introduced in markets that have high levels of urban grid connectivity and where electric cooking is cheaper than charcoal so that households can easily make the transition to clean fuels. Within such markets, these products are being made available to low-income, grid-connected households in urban and rural areas as well as to small-scale restaurants. Moreover, BURN and Modern Cooking Facility Africa (MCFA) have entered into a strategic partnership in 2023 to provide 456,000 clean cooking appliances, mostly in the form of its e-cooking range, across the Democratic Republic of Congo, Kenya, Mozambique, Tanzania, and Zambia by 2027. The partnership is expected to benefit 2.8 million people and create 2,200 jobs.[34]

BURN's value proposition is that it provides affordable and accessible clean cooking options for low-income households. BURN has partnered with MFIs and credit cooperative societies to provide financing to make cookstoves more affordable for its customers. It also sells carbon credits to subsidize the cost of its cookstoves, making stoves that cost upwards of US$40 available for US$3-US$5 to its customers.[35] BURN has also introduced an innovative

pay-as-you-cook financing model for its electric stoves, so that customers can buy their cookstoves through a small upfront payment, followed by weekly installments using their mobile phones. It typically takes customers about a year to reach full ownership, after which they can save around US$3 each week on fuel (which eventually adds up to a 50% reduction in household fuel costs per year) and reduce their annual CO2 emissions by up to 5 tons. A key reason for the popularity of BURN's products is that its products are designed to take consumer feedback into account. BURN's first product, the Jikokoa stove, was designed with inputs from Kenyan women, and its subsequent product iterations have incorporated feedback on design, color, and packaging from users.

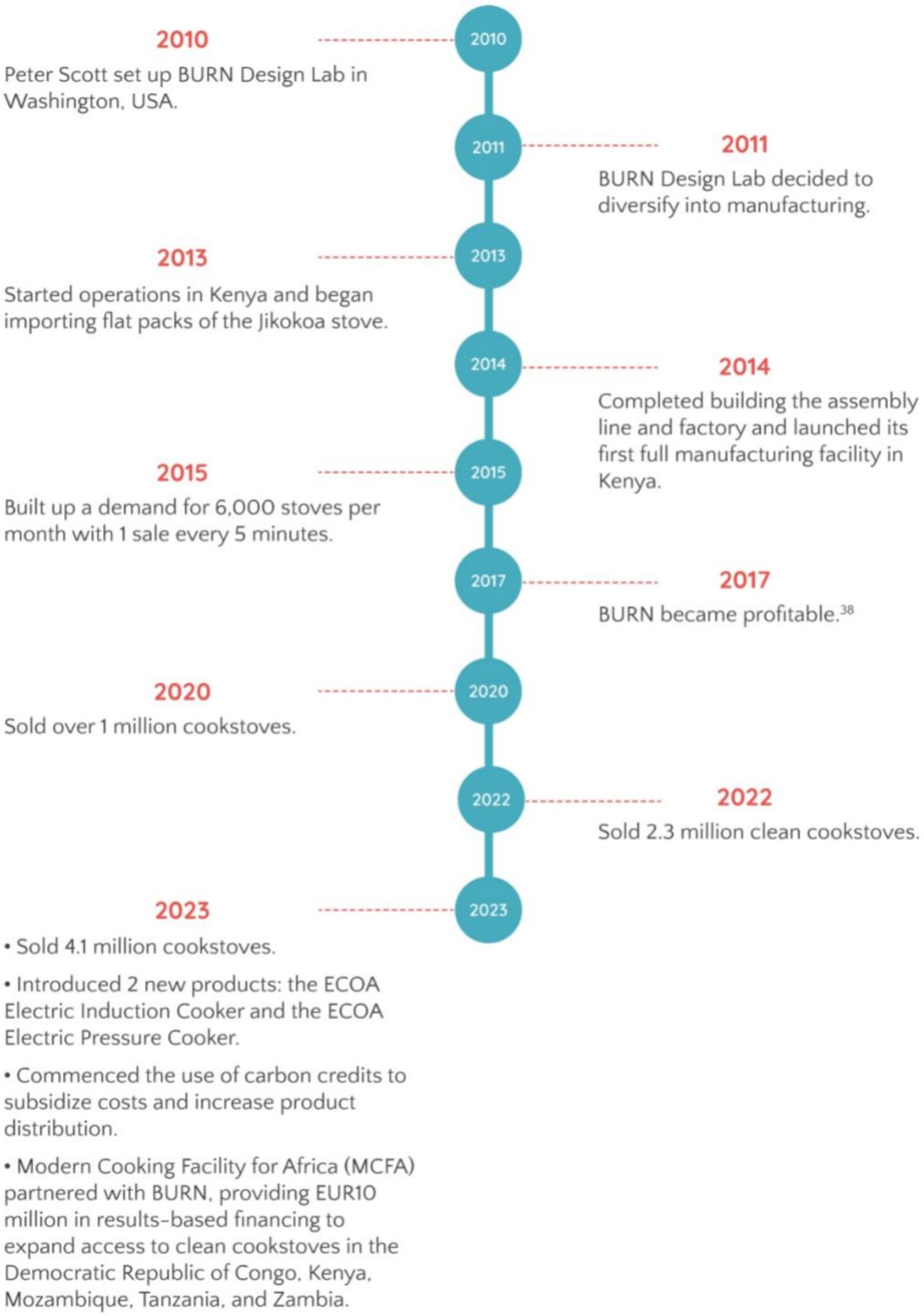
BURN leverages carbon financing, and in 2022 entered into a partnership with Carbon Neutral Royalty (CNR), under which CNR will finance BURN's manufacturing and distribution in exchange for a share of the carbon credits generated through the production of cookstoves.[36] The availability of carbon financing has enabled the enterprise to scale significantly, by expanding manufacturing capacity and reducing the price of its stoves. BURN's carbon projects are verified under Gold Standard's new metered methodology, which includes the live tracking of stove usage to ensure that high-integrity carbon credits are delivered. BURN projects have issued 4 million credits to date. BURN is one of the only carbon project developers in Africa that covers the full carbon value chain, from project design and in-house monitoring to credit issuance. In addition, BURN's stoves have been independently verified as the most fuel-efficient natural-draft biomass stoves in the world, according to an independent study conducted by UC Berkeley and the University of Chicago.[37] As Africa's only vertically integrated modern cookstove facility in Africa, BURN undertakes every step from product conceptualization to delivery, in-house, and has won multiple awards (such as the Bloomberg New Energy Finance Award, Swiss Energy and Climate Summit award, Ashden Clean Energy for Women and Girls Award, Global LEAP Affordability award) for its innovation and environmental and social impact.

BURN has established several partnerships with distributors, and it continues to expand its database every year. One such innovative partnership has been with M-Kopa Solar, a company that sells home solar power systems for household lighting and charging needs (including radios and televisions). Under M-Kopa's payment model, customers can opt to pay 40 cents a day for a year to buy a solar power system that typically costs US$200. M-Kopa uses power as collateral to encourage customers to make their payments on time, such that if customers do not make timely payments, the power system shuts down automatically. Once payments for the solar power system are completed, M-Kopa offers customers the option to continue paying 40 cents a day to also buy a Jikokoa stove. This partnership with M-Kopa has been very successful for both companies.

BURN also collaborates with the local community and stakeholders to ensure the successful adoption of its clean cooking solutions. User education is a key focus and the enterprise's field agents create consumer awareness of the benefits of clean cooking and demonstrate the advantages of BURN stoves in local markets. Interested customers are then signed up

and the stoves are delivered to them. Throughout the process, BURN maintains regular touchpoints with the users through community activators who organize events to engage with the community.

BURN Manufacturing's journey[38]



3.2 Founder story

BURN Manufacturing was founded by Peter Scott in 2010. Peter studied history at the University of British Columbia between 1986 and 1990. After finishing his studies, Peter traveled through the Democratic Republic of Congo and witnessed widespread deforestation caused largely by the demand for wood for charcoal production. Devastated by the extent of destruction he saw, Peter dedicated himself to reducing deforestation in Africa. In 1997, Peter undertook a Diploma in Stove Design and began specializing in designing fuel-efficient cookstoves. He then went on to work as a biomass energy consultant for 6 years, and eventually set up his own firm, BURN Design Lab, to design fuel-efficient cookstoves, in 2010. Soon after, in 2011, Peter set up a sister company for producing cookstoves, BURN Manufacturing. He partnered with accomplished designers and engineers who were committed to designing fuel-efficient cookstoves to end deforestation and reduce health risks for communities that relied on firewood and charcoal for cooking. In 2012, BURN Design Lab received a US$120,000 grant from the Washington Global Health Foundation to design a low-priced cookstove. Eventually, in 2013, BURN's flagship Cookstove, the Jikokoa, or the 'saving stove,' that consumed 50% less charcoal than traditional cookstoves, was born out of these efforts. Initially, BURN imported parts from China and assembled the cookstoves in Kenya. However, with US$1 million in financing from General Electric and a US$3 million loan from the Overseas Private Investment Corp (OPIC), a US-based development finance institution (now replaced by the United States Development Finance Corporation), Peter was able to set up a full-fledged manufacturing facility in Kenya. At this time the cost of a BURN stove was approximately US$40.[39]

Recognizing that its primary customers were women and that one of the largest barriers for them to purchase its cookstove was the upfront payment required, BURN began targeting 'chamas,' informal community-based financial groups typically run by women. The enterprise believed that targeting chamas could potentially lead it to new customers through informal networks. BURN set up several financing mechanisms for women in chamas to purchase its stoves. Women could access credit through the chamas, through BURN, or through third-party mobile credit. The enterprise initially reached out to chama members over a call, but realized this was ineffective in generating interest and started sending sales agents to pitch its products in person. Typically, 45% of women purchased stoves on chama credit and 55% on credit through BURN, with virtually no takers for mobile credit given the high rates of interest. However, there were several challenges to accessing customers through chamas. Sales agents had to travel long distances, multiple times to meet groups, deliver products and collect payments. Further, there were long lead times, often several months, between a sales pitch and the eventual purchase of stoves by chama members. Despite this, chamas played a significant role in BURN's growth, as they would often connect the enterprise to other chamas, or lead to a large number of purchases. Although BURN had originally planned to recruit volunteer 'ambassadors' from within

chamas to act as sales agents, it realized that many women did not stay engaged or did not have the skills necessary to market its products.

BURN also began identifying 'super consumers' and trained them in small business entrepreneurship to act as 'Champions' for the enterprise, marketing its stoves within their communities. These champions were effective in connecting with potential customers, as they came from the same community and earned a commission from the sale of BURN's cookstoves. However, sales through such champions declined once they had exhausted their networks. Eventually, BURN began focusing on marketing largely through sales agents employed full-time by the company. These agents train and support distribution partners and pitch to new customer segments.

Through its various marketing efforts, BURN Manufacturing realized that affordability was a key challenge to growth and consumers were only willing to pay about US$12 or less for the more fuel-efficient BURN cookstoves. BURN was able to leverage funding as well as manufacturing advancements to bring down the cost of the stove to $10 for its consumers. Since 2022, BURN has focused on participating in voluntary carbon markets and uses the carbon offsets generated through the use of its stove to obtain carbon financing (US$37 million in 2022), which it utilizes to further subsidize the cost of the stove such that customers can buy fuel-efficient cookstoves for as little as US$3-US$5. In 2023, BURN also set up a second manufacturing facility in Kenya expanding its production capacity to 400,000 stoves a month.

> *I've always been concerned about the state of the planet, so it wasn't a total curveball, but I've wholeheartedly dedicated my life to saving forests in Africa ever since, and it wasn't until 1997 that I realized I could do that with cookstoves.*
>
> **Peter Scott, Founder & CEO, BURN Manufacturing.**[40]

3.3 Business model

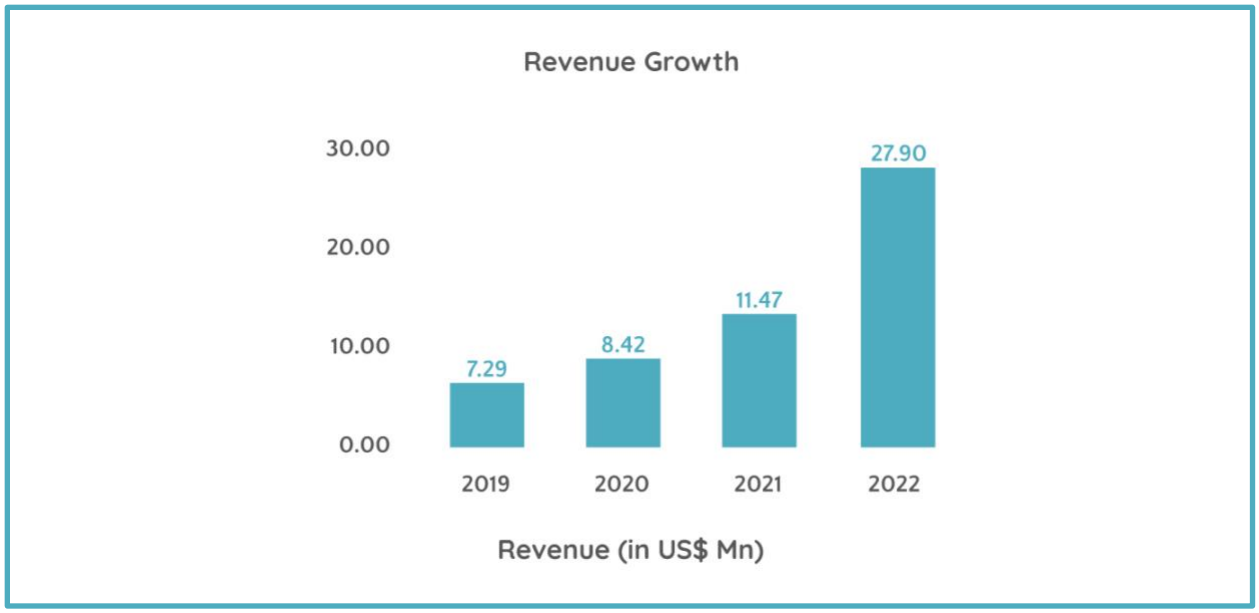
Customer segment	**Low- and middle-income households:** The company targets low- and middle-income urban household consumers for their charcoal and LPG cookstoves and low-income rural households for their wood-based fuel-efficient cookstoves. It has also introduced its electric appliances in areas where electricity is readily available. Customers can purchase these cookstoves from supermarkets, distributors, MFIs, and authorized retailers. **Businesses:** BURN manufactures commercial scale charcoal stoves for establishments such as restaurants, hotels, and churches. Customers can purchase these cookstoves from various distributors such as online and offline retailers, supermarkets, etc. **Corporates:** BURN sells carbon credits to corporates through 1-time purchases and monthly subscriptions. These credits can be purchased from BURN's website and through brokers, traders, corporate directors, and other partners. **Individuals:** BURN also sells carbon credits to individuals through one-time purchases and monthly subscriptions, which can be purchased from its website and through brokers and traders.
Value proposition	BURN enables households to significantly reduce their fuel consumption when they switch from using a stone fire or an inefficient wood or charcoal stove to a BURN stove. The comparative reduction in wood consumption between traditional woodstoves and BURN stoves is 70%. Moreover, BURN cookstoves use 60% less charcoal than traditional stoves. As a result, families save about US$119 to US$180 a year by using BURN cookstoves (wood and charcoal).[41] Households using electric stoves can achieve almost zero emission cooking because the grid has renewable electricity rates of 75% in Kenya. Apart from the health and cost benefits, each Jikokoa cookstove, on average, reduces 5 tons of CO2 emissions per annum.[42] The avoided environmental damages in terms of greenhouse gas emissions is equal to US$147 per stove per year.[43] The 4.3 million cookstoves sold to date have already reduced 20 million tons of CO2 and saved 11.6 million tons of wood from indigenous forests.
Competitive advantage	BURN differs from its competitors on several parameters. Many companies offering clean cookstoves, design such appliances in the US or Europe and then either completely outsource manufacture to China or import components from China and assemble them locally. Manufacturing locally affords BURN several advantages, as labor costs are 50% lower than in China.[44] However, the high cost of establishing a manufacturing facility acts as a barrier to entry for potential competitors. Additionally, by manufacturing locally, BURN saves on transportation and customs duties. Thus, it is able to offer its stoves to consumers at an 18% lower price point than its competitors.[45] BURN's cookstoves are also the most fuel-efficient natural draft stoves in the world, according to independent studies.

	BURN has also always focused on customer needs. Thus, it started by introducing more efficient charcoal and woodstoves, keeping in mind the availability of fuel and existing customer habits, instead of trying to drastically alter customer behavior by offering them stoves that used special fuel. This approach has enabled them to steadily acquire consumers and create sustainable change in consumer habits.[46]
Channels & key partnerships	BURN has established partnerships with other clean cooking providers in addition to its own projects in 10 countries (including Nigeria, Senegal, Côte d'Ivoire, Ghana, the Democratic Republic of Congo, Uganda, Kenya, Mozambique, and Somalia). These partnerships involve supplying high-quality stainless-steel stoves to other project developers, who then distribute them in various countries in Africa and Southeast Asia.
Customer relationship	BURN provides delivery and after-sales customer support, including repair and replacement. Typical warranties cover customers for up to 1 year. Moreover, BURN maintains close ties with the local community to ensure the successful adaptation of its cookstoves. Field agents demonstrate the benefits of clean cooking in local markets and act as touchpoints for consumers.
Pricing and payment methods	**Cookstoves:** Although it costs US$24-US$76 to manufacture a BURN stove, the enterprise subsidizes this cost through the sale of carbon credits, making its cookstoves available to customers at the price of US$3-US$5. **Carbon credits:** Individuals can make a 1-time purchase for US$30 for 1 carbon credit which equals 1 ton of avoided CO2 emissions or opt for subscription plans that are billed monthly.
Revenue streams	As of 2021, 61% of BURN's revenue comes from the sale of cookstoves, stove accessories, and stove distribution fees. 39% is from the sale of carbon credits. BURN also receives grants and donor funding.
Cost structure	As of 2021, 48% of BURN's cost is spent on sales and marketing. BURN spends another 30% on general and administrative expenses. The cost of research and development is an estimated 21%. The enterprise spends only 1% on Cost of Goods Sold (COGS) required to purchase raw materials.

3.4 BURN Manufacturing's growth story

3.4.1 Revenue growth:

BURN Manufacturing's revenues have grown at a CAGR of 56.4% from 2019 to 2022. Although the enterprise had anticipated a reduction in revenue due to the COVID-19-related restrictions, revenues increased in 2020. Moreover, revenues increased exponentially in 2022 as a result of capacity expansion as well as the enterprise's participation in carbon markets.



3.5 People and governance

2X Criteria[47]	Climate and Gender Justice[48]
• 20% of senior management are women. • 29% of board members are women. • 34% of full-time employees are women. • Initiatives in place to specifically advance women in the workplace. • Products or services specifically benefit women. • Approximately 90% of customers are female.	• To a large extent, the company provides affordable clean energy and fuel solutions to low-income households (urban or rural), which improves women's health outcomes and economic participation. • To a large extent, the company has improved access to affordable and reliable clean energy, which has reduced women's care responsibilities and freed up time for leisure, education, and economic activities.
Burn Manufacturing is a **gender-intentional** business.[49]	BURN Manufacturing is a **gender-transformative** business.[50]

As of 2021, BURN Manufacturing has 534 full-time employees, 399 contracted employees, and 1,681 casual employees (across 8 countries in Africa). BURN has a 35-member product development team, which is continually working towards improving the efficiency of the cookstoves as well as launching new products. Currently, 34% of full-time employees, 27% of contracted employees, and 46% of casual employees are women. BURN's current management team consists of 23 team members, including 5 women. BURN's board consists of 7 members, 2 of whom are women.

During its initial years of operation, the enterprise faced several challenges in attracting the right talent. It realized that instead of focusing on hiring a lot of people to increase the number of units manufactured, it is more important to invest time and money in setting up a proper human resources department and in training staff to ensure that its products are of high quality. Thus, BURN's management team focused on finding production leads with manufacturing experience and training them to become middle managers. It also paid a lot of attention to quality control checks. BURN also devised a system of incentivizing assembly line teams, based not just on the quantity of products, but also on quality, safety, and tidiness to ensure compliance with its standards.

BURN's CEO is committed to gender representation throughout the enterprise, which has resulted in a gender-friendly work ethos across the company. Moreover, the management is committed to changing stereotypes around the types of jobs women can and cannot do and encourages women to opt for technical positions. As a result, its production factory has an almost equal number of men and women employees. This emphasis on creating equal opportunities for men and women further attracts women and men and demonstrates that women can be effective in technical positions.[51] BURN encourages internal promotions, supporting employees who demonstrate dedication and a strong work ethic to grow within the enterprise. Higher-level employees train and support their subordinates creating a culture of mentorship across all functions.

The enterprise has instituted 90-day maternity leave and 2-week paternity leave. Further, new mothers can opt to work for half days for 1 month upon returning to work. The enterprise also regularly conducts training on sexual harassment, has a secure reporting mechanism, and has a well-established no-tolerance stance towards sexual harassment.

3.6 Support received to date

Financial

BURN has received the following investments and grants:

Overseas Private Investment Corporation (OPIC)	BURN has received a US$3 million loan from the United States Overseas Private Investment Corporation (OPIC) and US$1 million financing from General Electric (GE).[52] This enabled BURN to set up Phase I (assembly facility) of the full manufacturing unit in Kenya in 2014.
Unilever and Acumen	In 2015, BURN received US$800,000 from Unilever and Acumen.[53] This enabled BURN to bring their wood-burning cook stove, the Kuniokoa, to smallholder and plantation workers in tea estates in Kenya and Tanzania. Acumen subsequently made follow-on investments in the enterprise in

	2019 and 2022.[54] The Acumen funding helped the enterprise reach its short-term target of 10,000 stoves per month in 2016 and its long-term goal of providing 3.7 million cookstoves to families by 2023.
Yunus Social Business	In 2019, BURN received an undisclosed amount of funding from Yunus Social Business. The funding enabled raw material purchases and enabled BURN to double its sales and production in 3 months.
Bettervest GmbH	In 2021, BURN raised US$100,000 in debt financing from Bettervest GmbH through a crowdfunding campaign. The funds are intended to contribute 7.3% to achieving the enterprise's goal of selling 20 million energy-efficient cookstoves by 2027.
Development Innovation Ventures	In 2022, BURN received a grant of US$2.1 million from Development Innovation Ventures to expand its operations in Ghana and Nigeria and reach 6 million people.[55]
Spark+ Africa Fund	In 2022, BURN received US$4 million in the form of long-term quasi-equity instruments from Spark+ Africa Fund.[56] The purpose of the investment was to increase the capacity of BURN's manufacturing facility in Nairobi and finance the expansion of its business in new markets, including Somalia, Ghana, Nigeria, Mozambique, and the Democratic Republic of Congo.
Carbon Neutral Royalty Ltd. (CNR)	In 2022, BURN entered into a strategic partnership with Carbon Neutral Royalty Ltd. (CNR), a financing provider for high-integrity carbon projects. Under the agreement, CNR is financing BURN's global cookstove manufacturing and distribution operations in exchange for a share of carbon credits from produced cookstoves. This joint venture financed BURN's expansion plans and allowed it to enter Tanzania, Uganda, Zambia, the Democratic Republic of Congo, Nigeria, and Ghana in 2022.
USAID's Development Innovation Ventures and Innovate UK's Energy Catalyst	In 2023, BURN received US$7 million from USAID's Development Innovation Ventures and Innovate UK's Energy Catalyst (funded through the Foreign Commonwealth and Development Offices Transforming Energy Access Programme). This funding helped the enterprise introduce 2 new e-cooking devices.

Modern Cooking Facility for Africa (MCFA)	In 2023, BURN entered into a strategic partnership with Modern Cooking Facility for Africa (MCFA) to provide access to affordable, high-quality electric cooking devices in 5 Sub-Saharan African countries. MCFA will provide up to EUR10 million of results-based financing until 2027 to expand access to electric cooking products in the Democratic Republic of the Congo, Kenya, Mozambique, Tanzania, and Zambia. MCFA financing will mobilize a further EUR10 million in additional co-financing. This funding will help BURN grow its operational presence across the 5 targeted markets. By 2027, the partnership will reach 2.28 million beneficiaries and create up to 2,200 jobs. BURN and MCFA will also explore the potential for electric carbon credits to support sustainable development.

Non-financial

The enterprise has received support from the following institutions:

Global Alliance for Clean Cookstoves and The Energy and Environment Partnership Programme (EEP)	BURN has received support from the Global Alliance for Clean Cookstoves and The Energy and Environment Partnership Programme (EEP) to create a state-of-the-art manufacturing facility for its Jikokoa cookstoves.
The Clean Cooking Alliance Venture Catalyst	BURN is a portfolio member of The Clean Cooking Alliance Venture Catalyst. The enterprise has received extensive support in various areas, such as industrial development, promoting gender diversity through women empowerment, building research, evidence and learning capabilities, developing systems strategy advocacy, and improving communication.
The Ashden Clean Energy for Women and Girls Award	In 2015, BURN was recognized with the Ashden Clean Energy for Women and Girls Award. The enterprise won the award for its accomplishments in improving the health and economic livelihoods of girls and women by promoting the widespread adoption of more efficient cookstoves in Kenya.
Bloomberg New Energy Finance Award	In 2018, the enterprise received recognition from the Bloomberg New Energy Finance Award for being the world's leader in clean energy solutions.

SwissECS Award	In 2018, BURN's pitch won the Swiss Energy and Climate Summit award (SwissECS Award) at Switzerland's leading conference for energy and climate issues.
Affordability Prize Award	In 2020, the enterprise won the Affordability Prize Award in the Global LEAP Awards Electric Pressure Cooker Competition for the ECOA cookstove.
Yunus Social Business	The enterprise has received support from Yunus Social Business which conducted an impact performance study of BURN's Kuniokoa wood stove.

3.7 Key business drivers and challenges to growth

Key business drivers	
Ecosystem	• **Customer uptake of products:** The enterprise has observed that rural households have a strong desire to improve their living conditions. If there are products and services that can improve lives, rural households are willing to adopt them, provided such products and services are aligned to their circumstances and requirements. BURN's cookstoves are seen as an aspirational product by customers. Customers view them as an enabler of social mobility that they are proud of using. Further, as both BURN's staff and customers comprise people who are most vulnerable to climate change (as they experience firsthand the effects of climate change such as shifts in weather patterns and crop failures), it is relatively easy to convince them to switch to fuel-efficient stoves or alternative fuels, which reduce deforestation and carbon emissions. • **Growth of carbon finance:** Over the last few years, carbon finance has begun to play a significant role for clean cooking companies to meet their funding needs. As an increasing number of corporations commit to carbon neutrality goals, the size of the voluntary carbon market has expanded (estimated at US$2.4 billion in 2023).[57] This has also led to an increase in the price of carbon credits, which has attracted a number of financiers to the sector.[58] Together, these factors have made carbon finance a viable source of funding for clean cooking companies, especially as carbon credits become a guaranteed source of revenue after a stove is delivered and its climate impact is verified. For instance, BURN raised US$37 million in carbon finance in 2022, which allowed it to scale significantly by increasing capacity and by subsidizing the cost of its stoves, making them available at an affordable rate to consumers.

Operational	• **Cohesive team within Africa:** Unlike some other cookstove companies catering to Africa, which have their operations spread across the globe (for instance, their design team can be in one country, finance team in another, with manufacturing in a third location), all of BURN's teams, from their C-suite to the staff on the factory floor and the last-mile field agents distributing the stoves, are located either in Nairobi or in 1 of the 10 African countries where BURN operates. This has allowed the enterprise to maintain and communicate a cohesive vision throughout the company across its years of operation. Moreover, it has enabled the enterprise to introduce its products in most African markets at a lower cost than if the products had been manufactured offshore. • **Local Manufacturing:** BURN has established 2 manufacturing units in Kenya. Manufacturing locally has allowed the enterprise to limit costs related to labor, shipping, and customs duties, etc. Thus, enabling it to bring down the cost of manufacturing and delivery as well as the time taken to market. Further, the enterprise is in the process of setting up manufacturing facilities in Nigeria and Ghana, which will allow it to access these markets with ease and further reduce transportation costs. • **Distribution model's scalability:** BURN's distribution is laid out in a 'tree structure', with country managers at the top, going down to last-mile field agents. Hence, once the basic pipeline is built, the tree structure is easily replicable in new regions. The enterprise also sets up a call center, an after-sales support unit, and a measurement, verification, and reporting team in new markets, which are easy to scale after the initial setup.

Challenges to growth

Financial	• **Limited availability of funding:** BURN's scalability is limited by the financing available to it. Even though the enterprise is currently manufacturing and distributing around 400,000 stoves every month, this is not enough to have a large-scale impact on deforestation caused by the requirement for cooking fuels. BURN is seeking a total of US$150 million (through equity, debt, and carbon finance) to scale. However, estimates indicate that current investments in the clean cooking sector are US$150 million per year compared to the US$150 billion required to make clean cooking accessible universally by 2030. Thus, not only does BURN face significant competition in obtaining funding, the overall funding gap significantly affects BURN's ability to grow.[59]
Operational	• **Operational challenges (infrastructure):** When BURN began operating, it faced a lack of awareness as well as a lack of infrastructure, from manufacturing capacity to distribution channels. In order to ensure it developed an efficient solution and reached people who were the worst affected by the ill effects of using wood and charcoal for cooking, the enterprise had to build each component of the value chain, from R&D to production to distribution and after-sales service.

- **Operational challenges (customers):** In 2022, BURN started selling directly to customers, as this enables the enterprise to have more control over data collection and carbon registration from the end user. However, as this is a new segment for the enterprise, it has encountered a series of challenges such as difficulties in tracking the serial numbers of the cookstoves that have been sold in order to accurately measure use and calculate carbon offsets.

Ecosystem

- **Affordability:** One of the core tenets of the enterprise has been to always offer its customers the best-available technologies. It has thus built the most fuel-efficient and easy-to-use stoves possible. However, such stoves typically cost upwards of US$40. This price is unaffordable for many of BURN's targeted beneficiaries. A randomized control trial conducted in Kenya shows that urban families are willing to pay only about US$12 for clean cookstoves, despite its advantages. In rural areas, families can afford to pay a maximum of US$3–US$5. This highlights the need for subsidies. Although there is some grant financing available, it has not been able to effectively drive the adoption of clean cooking at scale. BURN is dealing with this challenge by leveraging carbon finance to mobilize clean cooking initiatives and help achieve universal access to clean cooking by 2030.

- **Social norms:** The enterprise has observed that there are cultural beliefs concerning how food must be prepared in Kenya. Despite significant customer uptake, some consumers still prefer using charcoal for cooking as it gives the food a certain taste. This impedes the rate at which clean cookstoves are adopted to an extent.

- **Competition:** BURN faces logistical challenges in getting products to different countries. It is working to overcome the logistics of shipping, customs clearances, and getting the products to the market. However, these challenges affect the ease and speed with which BURN cookstoves are available locally. Thus, in some areas, local players have taken advantage of the demand for BURN's fuel-efficient cookstoves and have begun selling counterfeit products with BURN's branding. Losing out on potential customers due to the proliferation of counterfeit products has impacted BURN's revenue. However, BURN has expanded its presence to 10 countries and is setting up manufacturing facilities in several locations such as Nigeria and Ghana in order to reduce the time taken for its products to reach target markets and increase local availability.

- **Uncertain policy environment:** Over the last few years, carbon offsets have acted as the major accelerant for BURN and allowed it to scale. However, working with carbon requires the enterprise to concern itself with a different set of legislations and policies (as opposed to policies for producing and distributing cookstoves, which are quite straightforward). As carbon markets are not robustly regulated in several countries across Africa, there exist legal uncertainties around carbon financing. Policymakers are still developing their understanding of how carbon markets should be governed. Additionally, current policymaking is focused on regulating carbon financing for forestry-related projects, and there is a limited understanding of carbon financing for clean cooking solutions. While there

is a need for firmer policy directives, it is possible that future policies may not allow unrestricted access to global carbon markets or may introduce requirements that are not supportive of BURN's endeavors. BURN has engaged with different stakeholders and decision-makers, to help them develop a better understanding of its work and demonstrate the ability of its products to save lives and forests to ensure that future policies allow the effective utilization of carbon credits for the clean cooking sector.

4 - IMPACT DEEP DIVE

4.1 The impact theory of change of the enterprise

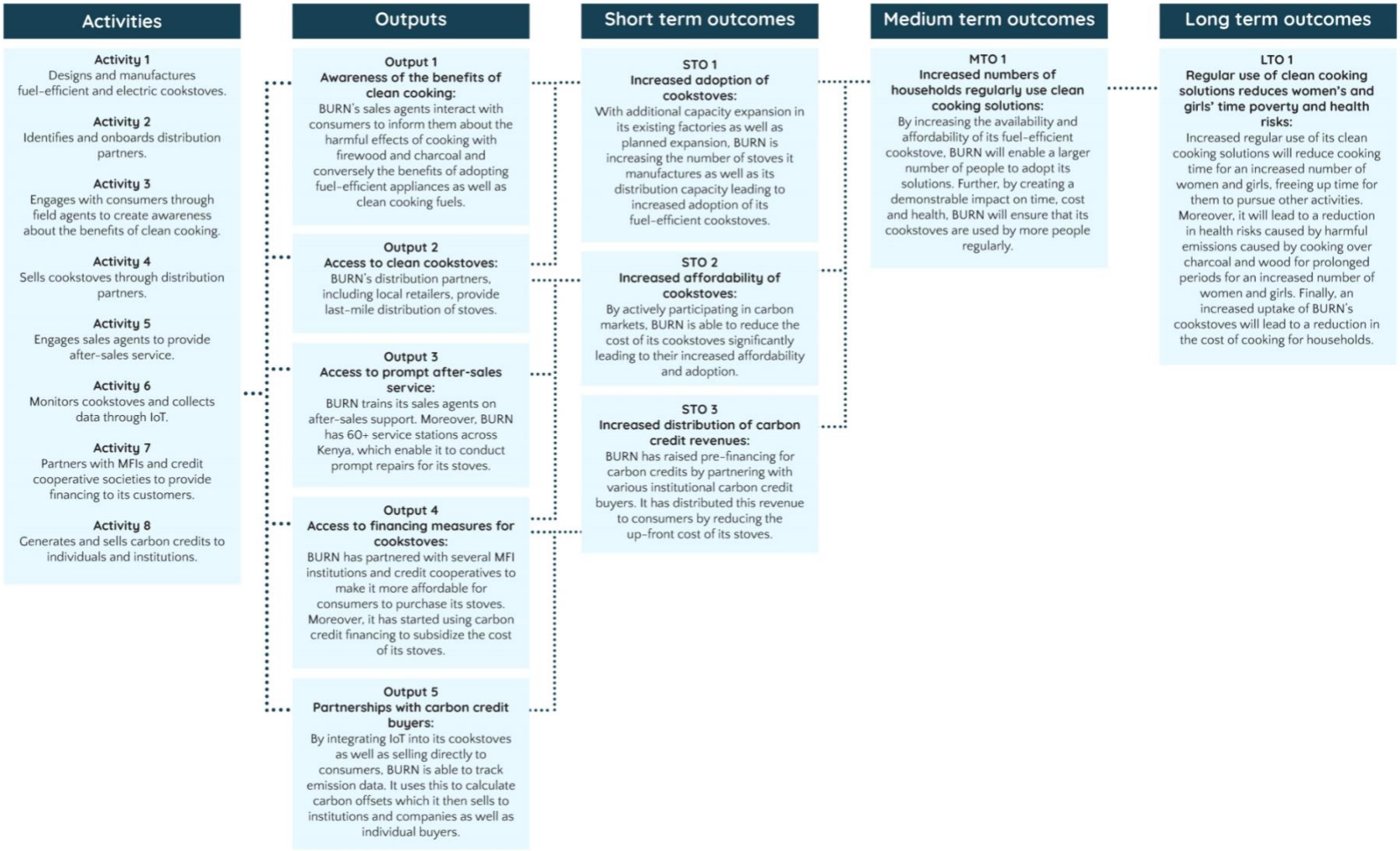
Mission statement

BURN Manufacturing's mission is to increase access to clean cooking solutions in underserved communities across Sub-Saharan Africa. This will reduce time spent on collecting fuel and cooking as well as reduce health risks for women and girls.

Theory of change

BURN has identified the following pathway to reduce the burden of unpaid care work for women and girls.

BURN's pathway to reducing the burden of unpaid care work for women and girls



4.2 Current impact and measurement practices

BURN collects data to better understand the requirements of its customers, as well as to demonstrate the impact of its products. This data collection is financed entirely by the enterprise's internal resources.

Commercial data

BURN collects demographic data on its customers to better understand its customer profile.

Surveys measuring impact

BURN has a robust monitoring system in place. The enterprise measures fuel use amongst a sample of households for 4 days every year, to record the reduction in fuel consumption for each stove. As BURN's new electric stoves are IoT-enabled and metered, both BURN and its users know exactly how much they are being used and how much electricity is being consumed. Measuring cookstove usage enables BURN to estimate carbon credits generated. BURN uses the Gold Standard and VERRA to guide its monitoring activities (related to carbon standards for carbon credits). BURN also tracks indicators related to livelihoods, cost-savings, and the environmental impact of its products. The following indicators are currently tracked: savings (per household) resulting from the use of BURN stoves; and reduction in carbon emissions.

In addition to its own monitoring systems, several research studies have demonstrated the impact of BURN's cooking solutions:

- A study by academics from the University of Pennsylvania and the University of Chicago estimated that BURN's stoves provide an ROI of 295% and have delivered around US$1,000 in social benefits over 3 years for each household. This impact includes time savings, improved health, particularly for women, and poverty reduction, as families have more money to spend due to lower charcoal costs. The study also observed a 0.56 standard deviation improvement in self-reported health outcomes as a result of using BURN's stoves. The study further noted that BURN's charcoal cookstove reduced fuel consumption by 39% and generated US$700 of benefits over 2 years for customers in Kenya. These benefits (US$700) were comprised of:
    - Financial savings on reduced charcoal: US$214
    - Time savings from less time spent cooking and gathering fuel: US$221
    - Environmental benefits from reduced emissions: US$265

- An independent Impact Survey by Yunus Social Business found that
    - 99% of the customers experienced a strong decrease or a decrease in the smoke generated while cooking or using BURN's stove.[60]
    - The use of BURN's stoves has increased opportunities for income generation. Ninety-seven percent of respondents who use the Kuniokoa stove reported that they have increased opportunities for income generation because of a decrease in the time spent cooking.
    - The use of BURN cookstoves has improved safety. Ninety-nine percent of the Kuniokoa users surveyed said that the stove improved safety such as reduced risks for burns as compared to their previous stoves.

BURN Manufacturing's business impacts (*as per internal measurement system*)

- Number of charcoal, wood, briquettes, LPG, and electric cookstoves sold: 4.3 million.
- Number of jobs created since 2013: 2,500 jobs.
- Reduction in CO2: approximately 20,756,359 tons of carbon emissions.
- Amount of wood saved using efficient cooking stoves: 11,667,431 tons.
- Household savings: US$819,151,239.
- 100% of BURN electric stove users in Kenya have either reduced or eliminated charcoal usage, 93% report enhanced quality of life, and 70% now cook with electricity for the majority of their meals.

Measurement challenges

Accessibility to consumers: BURN observes that by the fifth year of its surveys, it is unable to reach around 25% of initially surveyed households. This affects the quality of long-term data and therefore BURN's assessment of its long-term impact.

In the future, BURN would like to track how women using its electric stoves reinvest their savings, such as in education or starting/growing businesses, and how this leads to positive gender co-benefits.

4.3 Customer's own experiences of the solution

Understanding the social context, emotional needs, preferences, and barriers faced by BURN's customers is key for potential investors to understand where BURN excels and where it has room to grow. It also creates an opportunity for BURN to identify ways it can adapt to better meet customer needs. The following sections provide insights into the foundation of the business's market success and its impact on the lives of BURN's customers, with the aim of helping investors make informed investment decisions.

To inform this analysis, the research team conducted 12 in-depth interviews with BURN's customers to gather insights on the lived experiences and realities of users of the clean cooking stove.[61] This section presents the results of the qualitative impact deep dive, starting with a snapshot of the customers, followed by an examination of different customer "personas" and their journey to using the cookstove. This section concludes with a qualitative overview of BURN's impact on customers' daily lives.

4.3.1 Customer snapshot

BURN's customers are champions of the technological solutions provided by the business, and their experiences serve as testimonials of the benefits of improved access to their product.

BURN offers a selection of 4 different types of cookstoves, each tailored to accommodate varying household sizes and specific needs. The customers interviewed predominantly use the "Jikokoa" or "ECOA woodstoves". These models are particularly appealing due to their affordability, making them ideal choices for low-income households seeking cost-effective cooking solutions.

The interviewed BURN customers were all female, ranging in age from 24 to 68 years, with an average age of 42. These customers are all married and typically live in households of about 5 members, including their spouses and 2-3 children. A small minority also share their homes with their grandchildren.

All customers were literate. Approximately half of them have completed secondary education and less than half have only achieved primary education. A small minority pursued post-secondary education. This diversity underscores the wide appeal of BURN's products among customers from different educational levels.

The occupations of the customers reveal a diverse range of professions. Around half are farmers, indicating a strong agrarian presence in the customer base. The sample also includes a variety of skilled workers such as casual laborers, hairdressers, and tailors. Additionally, a few customers are entrepreneurs involved in small-scale businesses, such as selling vegetables. Financially, the household income of BURN customers spans from 800 KES to 50,000 KES (US$5.5-US$345.5)[62] monthly. More than half of the respondents have a household income that falls below both the average national household income in Kenya, which is 20,123 KES (US$139),[63] and the international poverty line.

The majority of BURN customers learned about the cookstoves through direct engagement with BURN representatives. These representatives actively approached community members, highlighting the products' benefits and their positive impact on daily life. Some customers were introduced to the cookstoves via their church groups, influenced by friends who had already purchased and experienced the advantages of the product.

Customers chose to purchase BURN cookstoves for a variety of reasons. Many found these cookstoves to be more efficient than traditional charcoal stoves. A significant factor in their decision was the positive feedback from friends and neighbors, who praised the cookstove for its faster cooking speed, reduced smoke emissions, shorter cooking times, and decreased firewood consumption.

4.3.2 Customer personas

The qualitative research revealed 2 distinct customer personas:

- **The Impulsive Buyer:** This persona represents customers who make a spontaneous decision to purchase BURN's stoves. Often, they decide right after their first encounter with the product, typically following a visit from a BURN door-to-door representative.
- **The Follower:** This customer type is significantly influenced by observing others using BURN's stoves. Witnessing the practical benefits and efficiency of the stoves in their community or social circle motivates them to make the purchase.

These distinct personas were identified through a qualitative analysis of customers' characteristics, beliefs, attitudes, and behaviors. Each persona is descriptive, actionable, and unique, reflecting the customer's primary motivations, challenges, and awareness of the benefits they receive from BURN's cookstoves, and providing insights relevant to their decision to use the product. This understanding enables the BURN team to empathize with the customers, thereby fine-tuning their offerings to increase their reach and more effectively address customer needs.

Below is an in-depth examination of these 2 distinct personas.

Mercy's Bio

Mercy, a 39-year-old married woman, lives with her husband and 3 children in their family home. She works as a farmer, selling her produce, which generates a monthly income of 13,967 KES (US$97).

She learned about the ECOA Wood stove through a door-to-door representative from BURN. The representative thoroughly explained the stove's functionality, its advantages, and maintenance requirements. As the primary person responsible for household chores, Mercy recognized the potential benefits the stove could offer for her daily tasks and decided to register for it with the representative's assistance.

Mercy Nafula

The Impulsive Buyer

Demographic Information *(of the persona she represents)*
Age: 24-70 years old
Marital status: Married
Children: 3 children
Education: Likely to have completed primary school
Monthly Household Income: 13,967 KES per *(Slightly below Kenya's minimum wage)*
Occupation: Likely to be a farmer who sells her produce
Average hours spent on care and domestic work: 6 hours per day

Motivation

Mercy first encountered BURN's cook stove through a visit from a door-to-door representative. She listened attentively as the representative highlighted the stove's benefits, realizing its necessity in her home. They even demonstrated the stove's use in Mercy's home. Known for making swift purchase decisions, Mercy, convinced of the stove's value, promptly registered for the ECOA Wood stove.

Mercy's key motivation for purchasing and using the ECOA Wood stove from BURN lies in its ability to cook meals quickly and its efficient use of firewood. Previously, it would take up to 3 hours for her to finish cooking, but with the introduction of the new cookstove, this time has been dramatically reduced to just 1.5 hours. An added benefit is the reduction in time she spends cleaning pots, as they accumulate much less soot compared to traditional cooking methods. Additionally, the time she used to invest in collecting firewood, which was about 3 hours per day, has now been halved. The ECOA Wood stove's efficiency is further demonstrated in its fuel consumption - firewood that once lasted only a day now stretches up to 3 days.

With the extra hours saved each day, Mercy now has more time for rest or to attend to other tasks. She regularly uses the stove for preparing 3 family meals per day and reserves the traditional 3-stone fireplace for occasions when she needs to cook for larger groups.

She exhibits the behavior of an "impulsive buyer" as she decided to buy the stove after engaging with effective marketing done by BURN's door-to-door representative.

It was brought to me by people who were walking around with it. I was given the advantages and disadvantages of using it. They showed me how to use it and that is how I bought it and stopped using the other methods.

Impulsive Buyer, 25 years old

Some Behavioral Traits

- Mercy makes quick purchase decisions, especially when a product's benefits are clearly demonstrated and align with her immediate needs, as seen in her prompt decision to register for the stove after the door-to-door presentation.
- Mercy likely has some level of disposable income, enabling her to make impulsive financial decisions like purchasing the stove without needing to consult her spouse or friends.
- She feels a sense of satisfaction and pride in her purchase, reinforced by the realization that the benefits touted by BURN's representative hold true. This has boosted her confidence in sharing her positive experience with her social circle, many of whom are unfamiliar with the product. As a result, Mercy has become a passionate advocate for the stove, often demonstrating its features to visitors in her home.
- As someone who shoulders most of the domestic responsibilities, she places a high value on solutions that streamline her tasks, specifically those that save time, reduce physical effort, and are cost-effective. This inclination positions her as a likely early adopter of innovative products within her community, often embracing new solutions ahead of others.
- The stove has significantly reduced Mercy's stress levels. Its faster cooking time allows her to prepare meals quickly, even on days when she returns late from work.

Catherine's Bio

Catherine, a 46-year-old married woman, lives with her husband, 2 children, and a grandchild. She operates a small business, generating a monthly income of 4,250 KES (US$29).

Catherine discovered BURN's cookstoves through discussions in her micro-savings (chama) group. Seeking an alternative to costly gas refills and the health hazards posed by smoke from both the traditional 3-stone fireplace and charcoal jiko, she explored other options. A fellow member of her chama invited her to see the ECOA Wood stove in use. Impressed by its efficiency, Catherine discussed purchasing one with her husband, who supported the idea.

Rina Amin

The Working Mother

Demographic Information *(of the persona she represents)*
Age: 30-65 years old
Marital status: Likely to be married
Children: 1-2 children, 1 grandchild
Education: Likely to have completed secondary education (Form 4)
Monthly Household Income: 4,250 KES *(Significantly below Kenya's minimum wage)*
Occupation: Likely to be engaged in some form of paid work
Average hours spent on care and domestic work: 6 hours per day

Motivation

Catherine was motivated to purchase the ECOA Wood stove after witnessing its benefits among her peers in her chama group. They praised the stove for its cost-effectiveness and versatility, highlighting its ease of use and the comfort it provides. Inspired by a demonstration, Catherine, along with 3 others from her social circle, registered to receive the stove through a BURN representative.

Earning an income well below the minimum wage, Catherine is typically cautious about new technologies. Initially skeptical about the stove's durability, she was reassured by her peers that it would be more economical than refilling gas cylinders, even if it lasted only a month. This proved to be accurate; she previously spent up to 1,500 KES (US$10.37) monthly on gas refills (often causing disagreements with her husband) and now 500 KES (US$3.46) worth of firewood suffices for a month.

The ECOA Wood stove's low smoke emissions allows Catherine to comfortably use it indoors, particularly useful during rainy days. While she has other cooking options like the 3-stone fireplace and gas, she now primarily uses the ECOA Wood stove twice daily, and the charcoal jiko at night. Her children also benefit as she can now easily boil water for baths with minimal firewood.

Catherine exhibits the behavior of a "follower", trusting and acting upon others' recommendations.

I was thinking about it and doing my research and that is when I found the women talking about it. One of them took me to their house to see. I then decided to buy it.

Follower, 41 years old

Some Behavioral Traits

- Initially skeptical about the ECOA Wood stove. Catherine sought reassurance from other women in her group. Their positive feedback helped her overcome her doubts.
- Catherine values her community and peer network highly. As an active member of her chama and church's women's group, she relies heavily on the opinions and recommendations of her peers.
- With limited income, Catherine is deliberate and cautious with her financial choices. Her risk-averse nature, especially considering her income, means she prefers safe investments. She gains confidence in her purchases after receiving positive reviews from trusted sources in her community.
- Unlike impulsive buyers, Catherine exercises caution in her recommendations, suggesting a need for stronger confidence in a product before endorsing it to others.
- Responsible for domestic care, Catherine finds the ECOA Wood stove a valuable asset. Its safety and cost-effectiveness have enabled her children to assist with cooking and boiling water for baths, tasks that were more challenging with gas and the traditional 3-stone fireplace.

4.3.3 Journey maps

These personas are illustrative of how different customer groups discover and decide to use BURN products. In the following section, journey maps are used to provide additional detail to describe the step-by-step emotional experience that customers undergo from their initial introduction to BURN to their eventual usage of its products.

Journey maps are a visual representation of the highs and lows experienced by current customers as they engage with BURN and its products. These maps can guide BURN to identify opportunities for improvement and ensure that the diverse needs, wants, and constraints of customers are considered in the expansion and refinement of their products or reach.

The journey to using the BURN stove starts with awareness, wherein potential customers first discover the product. This is followed by the consideration stage, where they weigh their options and gather more information. The decision-making process constitutes the third stage, during which customers discuss the product within their family and decide whether to register for or purchase it. This leads to the purchase and payment. The subsequent stage, Product Usage, marks their initial experience using the product and experiencing its impact on their daily life. Following this, the customer clears any outstanding dues. The journey culminates in loyalty and advocacy, where customers, now active users of the clean cookstove, recommend it to others.

Table 1: The journey a customer goes through while purchasing a stove from BURN

	Pre-product purchase		Product purchase	Post-product purchase		
Stage	Awareness	Consideration and decision	Purchase and payment	Product usage		Loyalty and advocacy
Activities	Customer seeks information or is made aware of the product	Customer evaluates the need for the product and discusses their purchase decision	Customer makes the payment for the product, registers their details and brings the product home	Customer begins using the product and the family experiences its impact	Customers experience a positive change after using the product compared to before	Customer reviews the product after its sustained use and promotes it
Customer goals	A typical potential customer learns about BURN through 2 main channels: • By overhearing conversations about it within their social network or Church gatherings. • Through BURN representatives who actively promote the cookstoves. Potential customers attend product demonstrations to gain further information.	Women assess the product's effectiveness by considering the experiences of existing users in their community. Purchase decisions are influenced by a thorough evaluation of benefits vs. costs and family discussions. Customers explore payment options for the product.	The customer initiates the purchase by contacting BURN's representatives during community visits. They complete the transaction by making payments and providing identification details. Representatives then deliver the stove to the customer along with a reference number.	The customer enjoys improved comfort and integrates the stove into their daily cooking routine, experiencing benefits like efficient cooking, reduced money and time spent on fuel collection.		Customers assess their satisfaction with the product and their likelihood of continued use, often recommending the BURN stove to friends and family who could benefit from it.

Emotions	Curious	A mix of excitement and caution, requires effort	Excited	Happy and excited but slightly stressed about repayment	Excited	Relaxed and satisfied
Levers	*Community outreach* BURN enjoys a high level of trust among its current customers, who frequently share their positive experiences with the product within their networks. This word-of-mouth endorsement effectively spreads awareness and credibility. *On-ground marketing* BURN's marketing strategy includes representatives conducting door-to-door outreach and live demonstrations. This approach enables potential customers to learn about the product firsthand and easily understand its benefits.	*Flexible payment options* BURN offers flexible payment solutions, including installment plans that cater to a wide range of income levels and even accommodate group payment arrangements, ensuring accessibility for various financial situations. *Social influence* The firsthand experiences and validations from friends who have used the product play a significant role in influencing new customers and affirming the product's benefits. *Positive reputation* BURN enjoys a strong reputation within the community and among current users, underscoring the trust and satisfaction associated with their products.	*Accessibility* BURN representatives are easily accessible within the community. *Efficient purchase process* Customers need to provide a copy of their identification. While some choose to pay in full, others opt for installment plans, making a down payment to receive the product. The wait time between registration and delivery is typically brief. *Demonstrations and training* BURN representatives conduct demonstrations both in the community and upon delivery. These include instructions on how to use, clean, and maintain the stove. Customers also receive training on operational aspects like igniting the stove, fuel loading, and cleaning, along with a guidebook for future reference.	*Ease of use* Customers easily adapt the stove into their cooking routine and quickly notice its benefits. *Increased free time* The stove's efficiency significantly cuts cooking time, freeing up hours for home care, quality time with children, or additional work hours for extra income. *Fuel savings* Fuel consumption has decreased significantly. What used to cost 1,000 KES (US$6.91) for a month's fuel now lasts 3 months, reducing both expenses and time spent gathering wood. *Health benefits* The stove's minimal smoke emissions have led to noticeable health improvements, including fewer instances of coughing and headaches.		*High satisfaction & advocacy* A majority of customers express high satisfaction with the BURN stove and actively recommend it to others. They are also willing to demonstrate its uses to community members to further promote the stove. *Support & warranty* Customers are given a contact number for any inquiries or issues with the stove, which comes with a 1-year warranty. *Strong demand* The stove enjoys considerable demand in the community, owing to its growing popularity.

Barriers	*Mistrust in salespersons* A few customers exhibit skepticism towards marketing representatives, often showing reluctance to their outreach efforts. *Choice overload* Some customers have expressed confusion over choosing the BURN stove, given the plethora of similar products offered by various businesses.	*Indecisiveness* Some women exhibit hesitation in committing to a purchase, preferring to consult with their families before registering for the product.	*Cost concerns* Some customers find the average monthly installment challenging, considering it expensive relative to their limited income and other financial commitments. *Product unavailability* Due to high demand, certain customers face challenges in purchasing the BURN stoves, occasionally encountering issues with product availability.	*Product monitoring* Adapting to the new stove can take time for some customers, as its faster cooking time requires attention to avoid burning food. *Maintenance efforts* Keeping the stove's top clean poses a challenge, as it gets dirty with each use and is difficult to clean thoroughly. *Size limitation* The stove's inability to accommodate large pots presents difficulties for customers when cooking for many people.	*Accessibility challenges* Some potential customers face challenges due to being outside the reach of retail outlets or stove repair centers.

4.3.4 BURN Manufacturing's impact

This section presents the impact of BURN's products on customer's daily lives, based on qualitative data. The quotes below are the customer's own words.

All customers reported experiencing positive changes in their lives since using the BURN stoves, including reduced time spent preparing meals, improved health conditions, and increased free time. The impact has been consistent across both customer personas, Impulsive Buyers, and Followers.

Qualitative evidence of theory of change	
Long-term outcome	**LTO1:** Regular use of clean cooking solutions reduces women's and girls' time poverty and health risks.

- The BURN cookstove has effectively streamlined the time women and girls spend on cooking-related tasks in 2 significant ways. First, its ability to cook faster compared to traditional stoves, combined with its fuel efficiency, has not only shortened cooking times but also reduced the time required to collect firewood. Women and girls no longer spend around 3 hours gathering firewood, and the firewood they collect lasts longer with this cookstove. Second, the cookstove's user-friendly nature has led to a more shared distribution of cooking duties within households. While women remain the primary cooks, the more straightforward cooking process has led to greater involvement from male family members.

"I tell them that it is a jiko that saves money, that you can even buy wood worth 50 KES, and it will take you 2-3 days depending on the food that you are cooking."
Follower, 40 years old

"All of us use the stove, even my husband because he uses it sometimes."
Follower, 49 years old

"The children have benefited because the gas is a dangerous thing that can harm them but with this jiko koa, they can just cook by themselves if need be. It is not dangerous."
Follower, 30 years old

- **Improved health:** The adoption of BURN cookstoves has led to a notable decrease in health issues commonly associated with traditional cooking methods. Women report fewer incidents of headaches, coughs, suffocation, and smoke-related problems such as eye irritation, chest pain, and bronchitis. This is attributed to the BURN cookstoves emitting less smoke compared to traditional stoves. Additionally, the shift away from burning coal has resulted in a reduction of toxic fume exposure, leading to a significant decrease in customers' health-related expenses and ailments like headaches and eye irritation.

"Right now I don't have that problem and my eyes are okay."
Impulsive Buyer, 50 years old

"It had a lot of smoke that affected my eyes. This one does not. The charcoal jiko would give me headaches. I no longer buy drugs and I spend 20 KES on fuel per day instead of 100 KES that I would spend before. I don't know what made me have headaches."
Impulsive Buyer, 35 years old

- **Improved well-being:** Customers have also experienced a marked improvement in their overall well-being and life satisfaction since using the BURN cookstove. With its faster cooking capabilities compared to the traditional stove, customers find they no longer need to worry about time-consuming meal preparations. This frees them to focus on other important aspects of their lives, improving their mental well-being.

"Me and my family are very okay since we started using the jiko. I haven't had any health problems since I started using the jiko. The only stress that I have is caused by school matters, not the jiko."
Follower, 32 years old

Medium-term outcomes	**MTO1:** Increased number of households regularly use clean cooking solutions.

- **Increased product adoption:** The high levels of trust and satisfaction expressed by customers have led to a strong willingness amongst almost all interviewed to recommend BURN cookstoves within their communities. This endorsement is fostering a trend towards widespread adoption of cookstoves like ECOA Wood stoves or Jikokoa.

"All the people I have come across are already using it. But I would recommend it to others because it uses less fuel and has no smoke so you can use it anywhere inside or outside the house. It does not dirty the sufurias."
Impulsive Buyer, 25 years old

- The widespread adoption of the BURN cookstove in many households has streamlined daily routines, with women regularly using it to prepare 3 meals a day, including breakfast for children before school, as well as lunch and dinner. The use of the new cookstove has resulted in women saving 1-3 hours previously spent on collecting fuel and cooking. Consequently, many women have extra time, which they use either to rest or to complete other household tasks such as dishwashing, cleaning, gardening, animal care, or even engaging in income-generating activities like hairdressing.

"I used to spend about 1 hour collecting firewood and it would end very fast but with this cookstove, I spend 30 minutes and the firewood lasts me longer."
Impulsive Buyer, 24 years old

"I can now do other things. I can use the extra 2 hours to wash dishes if I have work the next day."
Impulsive Buyer, 35 years old

"I use it most of the time. When I wake up at 5:30 am, I cook breakfast so that breakfast is ready when the children come out of the bathroom. I use it thrice a day."
Follower, 38 years old

Short-term outcomes	**STO1:** Increased adoption of cookstoves. **STO2:** Increased affordability of cookstoves. **STO3:** Increased distribution of carbon credit revenues through subsidized cost to consumers.

- **Trust and customer satisfaction:** BURN's customers have given the cookstove an impressive average rating of 4.1 out of 5. The majority appreciated the time and cost savings associated with its use. Another significant benefit noted by the customers is the stove's minimal production of soot, which helps keep their cooking pots clean.

"It is very fast like using the gas cooker. And you use less fuel. If you have one piece of firewood you can cook unlike the 3 stones. It does not produce soot like the other one so the cooking pots are easy to wash."
Impulsive Buyer, 35 years old

- **Affordability:** Affordability emerged as a key factor in customers' decision to purchase the product. A majority of customers reported buying the stove in a single transaction. In some cases, customers opted for installment payments, spreading the cost over a 6-month period, which they found to be manageable. Customers noted that the stove's minimal firewood usage significantly reduced their spending on fuel, marking a notable decrease compared to their previous expenditure.

"It doesn't have smoke, it saves on firewood and the money I used to spend on refilling the gas every month I can now save. You can decide to buy firewood with that money and that firewood lasts for a very long time because the cookstove saves on firewood a lot."
Impulsive Buyer, 24 years old

- **Financial benefits of the cookstove:** The BURN cookstove not only reduces the amount of fuel (firewood) required but, in some cases, completely eliminates the need for fuel purchases, leading to some financial savings. Customers have reported a significant reduction in their daily firewood expenses after purchasing the BURN cookstove. Previously, they would spend approximately 100 KES (US$0.69) per day on firewood. Post-purchase, their daily firewood expenditure has decreased to between 20 KES and 35 KES (US$0.13-US$0.24).

"If I could not fetch firewood I would buy some at 600 KES every month. But now if I have to buy it I will buy firewood worth 300 KES. I saved a lot."
Follower, 41 years old

"In this one when I buy firewood for 100 KES it serves me for 3 days while in the past a firewood of 100 KES would last for 1 day."
Impulsive Buyer, 68 years old

"I spend 20 KES on fuel per day instead of 100 KES that I would have spent before."
Impulsive Buyer, 35 years old

"I stopped buying firewood. These days I just look for some little firewood here in the village."
Impulsive Buyer, 50 years old

Outputs	**O1:** Awareness of the benefits of clean cooking. **O2:** Access to clean cookstoves through BURN's distribution partners. **O3:** Access to prompt after-sales service to consumers. **O4:** Access to financing measures for purchasing cookstoves. **O5:** Partnerships with carbon credit buyers.

- **Maintenance and after-sales service:** Customers reported minimal to no expenditure on maintaining the cookstove. The majority have not experienced any issues with the cookstove. Moreover, a substantial number of customers noted that they were given a contact for assistance should any challenges arise in using the stove. In one particular instance, a customer highlighted that BURN proactively reached out to her and replaced her cookstove with a new one, demonstrating the company's commitment to customer satisfaction and product reliability.

"There is a number we were given. We can use it to get in touch. But I have never had an issue."
Impulsive Buyer, 29 years old

"When I had a problem with my cookstove, they (BURN) gave me a new one. There was a lady that called. And asked me for a few questions and they sent me 200 KES. They later sent me the new one."
Follower, 49 years old

5 - LOOK FORWARD

5.1 Growth and sustainability plans

 Market expansion	BURN is currently working in 10 countries in Africa. Even so, there exists significant untapped potential across these 10 countries. The enterprise intends to further penetrate these markets to increase the sale of cookstoves and in turn to ensure that it is making a significant impact on deforestation. Currently, BURN has 2 factories in Kenya (with a production capacity of up to 400,000 stoves per month) and it is in the process of setting up a factory in Nigeria and another factory in Ghana, as well as increasing production capacity in Kenya to 1 million per month. This expansion of production capacity will allow the enterprise to deliver products at an even lower cost to end customers and to serve more consumers across existing markets. The enterprise also plans to launch 5 new products and scale its e-cooking suite by 2027.
 Geographic expansion	BURN plans to expand its reach beyond the 10 African countries as there is a huge unmet need across the rest of Africa and in large parts of Southeast Asia. Through its partnership with MCFA, BURN plans to impact an additional 2.8 million people through 456,000 clean cooking services across the Democratic Republic of Congo, Kenya, Mozambique, Tanzania, and Zambia by 2027. The enterprise plans to enter Mali, Guinea, Liberia, Burkina Faso, Benin, South Sudan, Ethiopia, Zimbabwe, South Africa, and Madagascar in the future.[64] It also plans to target areas with easy and affordable access to electricity so that it can scale its e-cooking product line. To serve these new markets, BURN has introduced a new assembly line for electric products within its existing factories.
 Enhance operations	BURN is piloting an app to manage direct sales and inventory in Kenya. Business-to-business (B2B) distribution relies on the capacity of the distribution partner to collect carbon registration data from the end-user. In 2022, BURN decided to also sell directly to consumers to control data collection and carbon registration. Business-to-customer (B2C) teams are typically recruited from the local region or town by country managers. Agents are provided training and resources according to BURN's universal SOPs to deliver an appropriate and uniform sales experience for customers across Africa. BURN plans to use the app to track the inventory from the time of sale till the product reaches the consumer. The enterprise also plans to use this app to track payments.

5.2 Ask of investors and stakeholders

Financial

- BURN is seeking debt of US$25 million, equity of US$25 million, and carbon project finance of US$100 million to scale operations and distribution across Africa. Debt and equity capital will be invested into scaling the company's manufacturing capabilities and distribution networks.
- BURN has received financing across several different carbon projects. The enterprise requires pre-financing so that it can reduce upfront costs of the stoves for the end consumer, distribute more stoves, and ensure that it is targeting low-income households with an immediate need. Once the stoves generate carbon emissions reductions, related carbon credits can be used to pay the investor. BURN raised approximately US$37 million as carbon financing in 2022 and is in talks with investors this year to raise additional financing against the next batch of cookstoves.

Non-financial

The enterprise does not require any non-financial support.

5.3 Lessons learned

The enterprise's experiences show that manufacturing locally allows for quick iteration of product design in response to consumer feedback. BURN originally designed the Jikokoa stove with women in Kenya and tested the product with its target consumers before introducing it to the market. As it continued to scale operations in the country, it was able to get rapid feedback from customers. This allowed the enterprise to make adjustments to the product color, packaging and design. BURN is now able to quickly re-design, test iterations with customers, and introduce new generations of the Jikokoa stove. Over the past 2 years, the enterprise has released 2 iterations of the stove and its packaging, enabling it to reduce costs and increase consumer uptake.

One of the most important lessons that the enterprise has learned is that consumers across the African continent are ready to adopt clean cooking technologies. It is generally believed that significant behavior change is required to convince people to switch to clean cooking. While education is important, BURN has observed that the most important barrier to the adoption of clean cooking is affordable access. When BURN offers stoves at a subsidized price, it faces very few barriers for people to adopt new technologies. The enterprise has also observed that the availability of credit significantly increases their willingness to adopt beneficial products. As people experience the harmful effects of cooking on open fires firsthand and are familiar with the health, economic and emissions impacts of the same, they

are ready to transition to using clean cooking solutions that are efficient, usable and durable. As a result, BURN has focused on the affordability of its product in its marketing communications (along with economic and health benefits).

During its initial years of operations, BURN had to deal with various challenges that were unique to Kenya. For instance, the enterprise found that infrastructure was underdeveloped, and there were few people with experience and expertise in manufacturing and limited government support to encourage setting up a production facility. This made building a factory much harder and increased the upfront capital required. As a result, BURN did not have enough capital to purchase all the equipment required to set up a manufacturing plant, and it purchased equipment periodically, which in turn slowed down production and affected the availability of its products. Further, BURN had to deal with unexpected expenditures. Even though BURN chose a location with amenable terms from the landowner and in an area set aside by the Kenyan government to be a manufacturing hub, BURN's factory did not have electricity or power connected to the main grid. As a result, BURN had to spend over US$15,000 on copper cabling to be electrified. The enterprise also incurred other unexpected expenses, such as unreliable or inexperienced contractors who were responsible for building the factory. Thus, the enterprise realized that setting aside contingency funding is critical when setting up a facility in an emerging or frontier market in order to deal with unexpected challenges.

5.4 Recommendations for policymakers and investors

 **Policymakers**	Africa's current carbon legislation and policy is largely focused on forestry. There exists a lack of awareness on the differences between forestry projects and cookstove projects, especially regarding carbon rights and how the value of carbon can be returned to stakeholder communities. Thus, policymakers need to understand that forestry projects and cookstove projects are very different and develop a nuanced understanding of carbon trading in general to enact enabling policies.
 **Investors**	Data from enterprises such as BURN demonstrate the impact of clean cooking solutions at scale. This is further corroborated by independent studies that show the ground level impact of clean cooking projects. Investors should use this data-driven demonstration of impact as a catalyst to drive more funding into the space. Furthermore, there are limited alternative solutions for the people who are most affected by climate change. Therefore, there is a need to develop alternative funding mechanisms to boost clean cooking solutions and enable them to make a direct impact on the people most vulnerable to climate change. According to a 2023

report by the Clean Cooking Alliance, revenues across 29 clean cooking companies exceeded US$100 million in 2022, double the level of pre-pandemic revenues. Further, 22% of revenues came from the sale of carbon credits, a significant increase from 0.5% in 2027, indicating the changing nature of the sector's business model and demonstrating the sector's potential to become commercially successful.[65]

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[48] We assessed businesses that worked in the sectors of energy and emissions or water and sanitation against 4 climate and gender justice criteria related to: environment and land use; health, safety and security; education and training; and time use.

[49] Businesses were assessed on a 21-point scale, with scores of 0-7 being gender unintentional, scores of 8-14 being gender intentional and 15-21 being gender transformative.

[50] Businesses were assessed on a 12-point scale, where 0-4 was gender unintentional, 5-8 was gender intentional and 9-12 was gender transformative.

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[61] The research team conducted 12 in-depth interviews with customers of BURN. BURN shared a list of customers who fulfilled the following criteria; female customers who have been customers of BURN's cookstoves for at least 3- 6 months and belong to the low income status. The customers for the interview were selected through purposive sampling to ensure diversity in age, occupation, and socio-economic status. An interview guide was used to ensure consistency in the questions asked, although some follow-up questions were added as necessary to explore topics in more detail. The interviews were conducted in Swahili, audio-recorded, and transcribed verbatim for analysis. The data collected from these interviews was analyzed thematically in NVivo to identify key themes and patterns in participants' responses. Given the small sample size and purposive sampling, one of the limitations of our analysis is that it might not be representative of the different socio-demographics of all BURN customers.

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