

Commercial Cooking Briefing Paper

Examining the impacts of introducing induction cookstoves to businesses in Kenya and Tanzania



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Briefing Paper

Background

Commercial cooking¹ is a critical yet underexamined segment of the productive use of energy (PUE) landscape, particularly for women-led micro and small enterprises operating in urban and peri-urban settings. Across East Africa, thousands of women run micro, small and medium enterprises (MSMEs) such as street kiosks, small eateries (commonly referred to as kibandas or hotels in Kenya and Tanzania), and cafés, relying on cooking as their core productive activity. These enterprises often operate informally, with limited access to capital, technology and business support, and have received limited attention despite their importance to household and women's livelihoods, urban food systems, and local and national economies.

This briefing paper presents PUE implications and findings from a commercial electric cooking (eCooking) study undertaken by the Modern Energy Cooking Services (MECS) Programme. It examines the adoption and impact of disseminating PayGo-financed Internet-of-Things (IoT) enabled BURN induction cookstoves, packaged with compatible cookware, among women-led food businesses in Kenya and Tanzania. The study forms part of a Shell Foundation, Odyssey Energy Solutions, and CrossBoundary Advisory Results-Based Financing (RBF) programme for Productive Use Appliances to Promote Gender Outcomes funded by the UK Foreign, Commonwealth & Development Office (FCDO).

Methodology

The study draws on nearly 400 in-person surveys² with women-led business owners or representatives spread nearly equally between in Kenya and Tanzania, which were conducted by trained enumerators between March and September 2025. In addition, analysis was carried out on their corresponding detailed IoT usage data gathered between January and June 2025, from the total of 2,457 BURN ECOA induction cookstoves deployed through the programme.

¹ Defined as a cooked food business or profit-led venture or enterprises; for instance street food vendors or restaurants

² The surveys took approximately one hour and consisted of over 100 questions

Findings

1. Productivity and time savings drive adoption

The aggregated findings show that women-led businesses are incentivised to adopt induction cookstoves primarily as productivity enhancing tools. Time saving was the single most important reason for purchasing the induction cookstoves, cited by over 80% of businesses in Kenya and Tanzania. These savings are reported to arise from factors such as faster cooking, improved cooking automation, and eliminating charcoal lighting and monitoring. Importantly, this study finds that these time savings are best understood in the business context meaning, where time savings translate to greater productivity, and a decrease in time spent on low-value activities or inactivity (as opposed to the household context meaning where time savings are often cited as providing the benefit of freeing time for other activities or rest). Cleanliness, reduced smoke exposure, and modern aesthetics are valued by some businesses, but consistently secondary to the operational benefit.

“In the past, I used to lose a lot of orders due to being late, but now I can cook a lot in a short amount of time.”
Source : Customer of a women-led business using a BURN induction stove, surveyed in Kenya

2. Sales uplift is achieved through efficiency gains

The business case for induction stoves is compelling as reported time savings translate into higher throughput and increased sales. A consistent reported observation throughout the data was that the time saved when using induction stoves, instead of or alongside traditional fuels, generated more sales, either through shorter waiting times for potential customers or simply by the ability to produce more product. This conversion is observed more consistently in Kenya, where over 73% of businesses report increased sales after adoption. Within both Kenya and Tanzania, over 75% of the businesses which reported an increase in the number of sales cited the driving factor to be faster cooking (Figure 1). These businesses explicitly linked faster cooking to reduced waiting times and the ability to serve more customers.

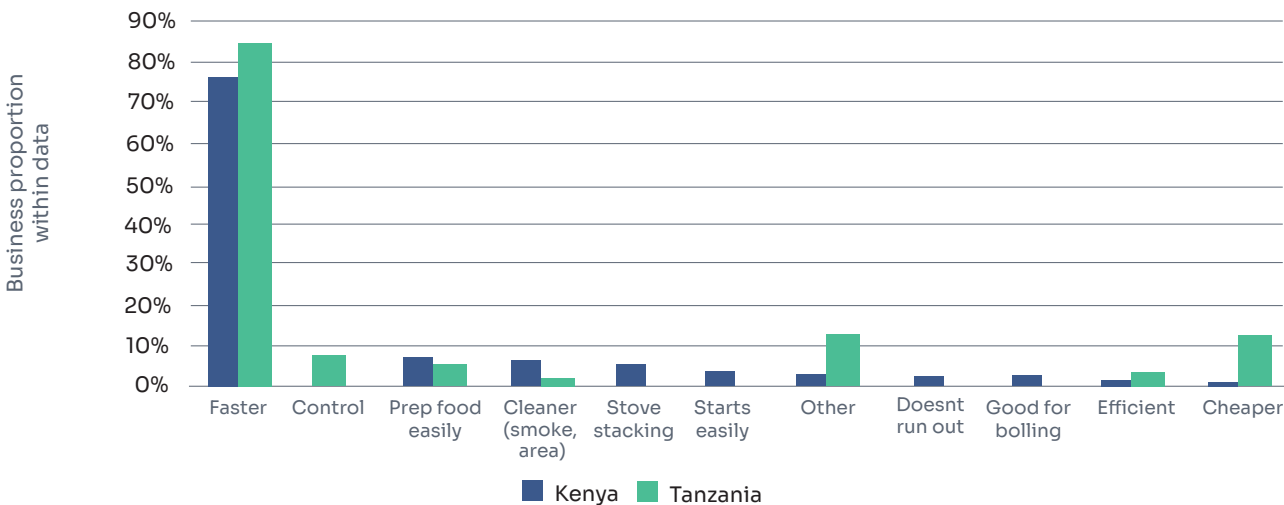


Figure 1: Reason given for increased number of sales since induction stoves purchased

3. Income gains are accompanied by fuel savings

Reported fuel cost savings from induction cooking are real, averaging around \$20 per month per business in Kenya and \$29 in Tanzania after accounting for the increased electricity usage of the stove. At non-subsidised prices, estimated payback periods for the induction stoves from fuel savings alone are relatively short, ranging from five to nine months (estimated for Tanzania and Kenya respectively). However, these savings were modest relative to the overall business turnover for some of the businesses (for example those whose average earnings ranged between \$80–750 per week), suggesting that savings alone may not be sufficient to justify adoption for all businesses.

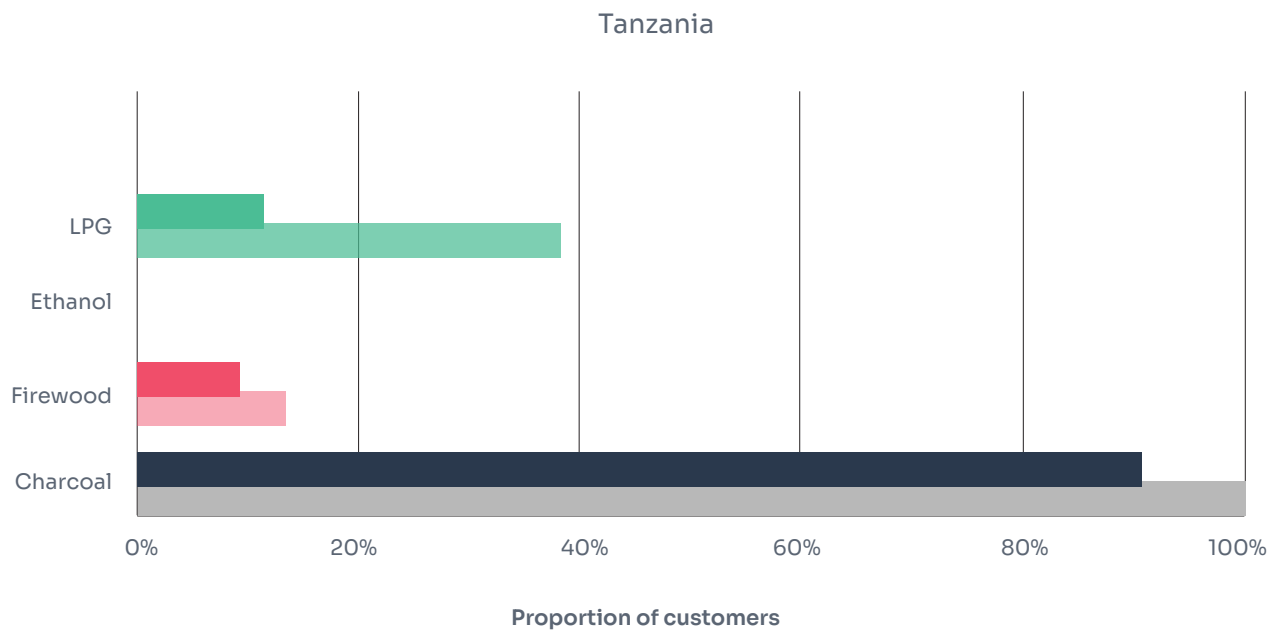


Figure 2: Fuel use change in Tanzania, before induction stoves (shaded) and after (bold)

4. Stove adoption and fuel use changes reflect rational business behaviour

Induction stoves are a viable and valued electric cooking technology to the fuel stack for a range of micro and small enterprises in Kenya and Tanzania. The findings show that businesses integrated induction cookstoves into hybrid cooking systems where they have a competitive advantage (e.g. speed), resulting in an overall reduction (although not a full replacement) of baseline fuels. Charcoal use decreased but remained widely used after adoption – from 89% to 74% of Kenyan businesses and from 100% to 90% of Tanzanian businesses using the fuel. Firewood use changes little in sharp contrast to LPG use, which drops sharply after eCooking adoption, particularly in Tanzania. Fuel stacking reflects rational business behaviour, where different devices and fuels are used to optimise different cooking processes.

5. Delivery models and enabling conditions are key

How the technology is delivered is a critical factor, and the finance and delivery mechanism for this RBF programme resulted in successful sustained use. Most businesses were introduced to induction cooking through sales agents, and over 90% received in-person training. The importance of in-person training or live cooking demonstrations for novel technologies has been evidenced in several clean cooking consumer behaviour studies. All stoves were acquired through Pay-As-You-Go financing, intended to reduce upfront affordability constraints for micro and small enterprises. Many businesses – especially in Tanzania – were able to adopt induction without major changes to kitchen layout or wiring, further indicating low barriers to adoption.

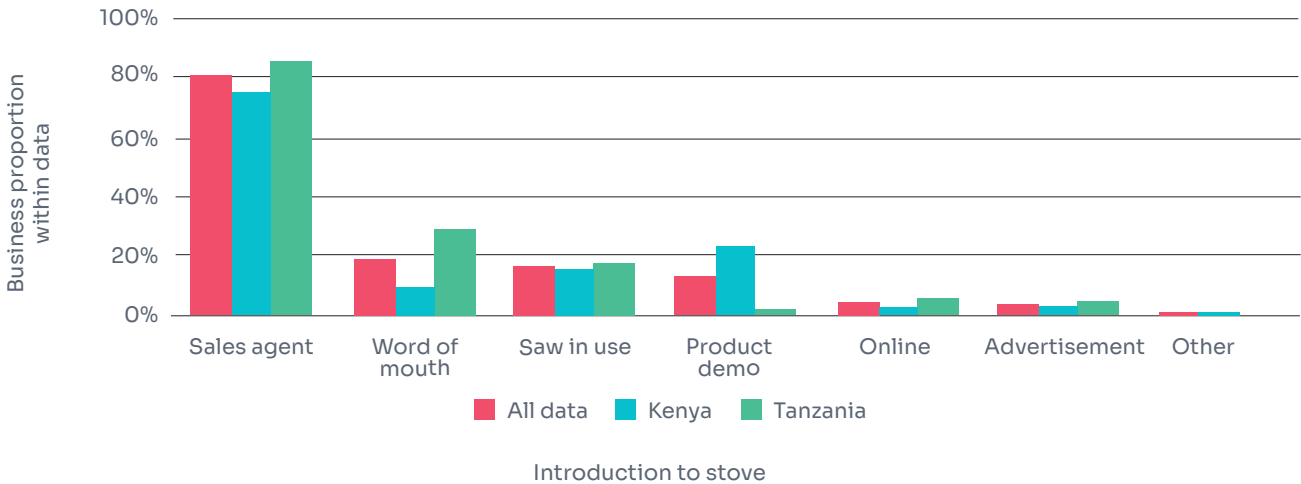


Figure 3: How businesses learnt about the stove

6. Gender, climate and health co-benefits

The intervention targeted and primarily reached women-led micro and small enterprises, many informal and run and staffed entirely by women. Reported benefits include improved working conditions, and significant time savings. Emissions reductions are meaningful, estimated at 1.1–1.7tCO₂e per device per year, conveying both climate and health benefits. Self-reported working condition and health impacts were also mentioned, including 91% of respondents in Kenya and 84% in Tanzania reporting that the induction stove has a significant positive effect on smoke, heat and cleanliness.



7. Design constraints impact uptake

The most cited challenge was limited cookware capacity resulting in an inability to cook large batches, resulting in throughput constraints. Businesses signalled that they need technologies and cookware that match commercial sizes and can deliver both speed and scale. This reinforces that adoption decisions are grounded in business performance and may explain why businesses continue to use biomass fuels for specific purposes. Trials with larger or more diverse cookware could inform whether businesses can make greater use of eCooking technologies and achieve further gains.



Image : Mama Lishe in Tanzania integrating ICS into their business

Implications and Recommendations

Key implications

Overall, **the study sheds light on the critically overlooked opportunity for cooking as a PUE, which would benefit from a more pro-active and systematic focus from funders.** The evidence shows that induction cookstoves can deliver strong impact and value as a **productive use of energy when embedded within existing business practices.** Programme design should integrate appropriate financing, sales and training models to maximise uptake and sustained use. Programmes or investments that assume full fuel displacement are misaligned with the observed behaviour, which indicates adoption will involve more gradual transitions to progressively cleaner, more modern fuel and appliance stacks. The introduction of induction stoves to the cooking stack resulted in increased productivity, and an area of important future enquiry would be to explore whether further gains could be made by businesses making greater use of modern cooking.

Recommendations for institutions and investors

1. Treat modern eCooking appliances as productivity infrastructure for micro and small businesses

- The strongest productivity impacts and adoption drivers come from time savings, throughput, and income. Investment should therefore far more dynamically promote the PUE, MSME growth, and women's economic empowerment opportunities of modern cooking transitions.

2. Prioritise delivery models as well as hardware

The success of this intervention is tightly linked to:

- PayGo financing Agent-led sales and training
- After-sales support
- Maturing and reliable product

Funding OEMs without supporting distribution, finance, and user onboarding will likely limit impact.

3. Expect fuel stacking — and design for it

- Induction or clean cooking technology is unlikely to initially fully displace charcoal or firewood.
- For many MSMEs, investors should avoid binary “fuel switching” assumptions and consider new technologies may instead be integrated within hybrid cooking ecosystems.

4. Segment by business type and use case

Returns are strongest where:

- Menus and cooking processes align with modern eCooking appliances.
- Time constraints are prominent (e.g. for small urban eateries).
- Businesses have high daily turnover and underutilised opportunity to increase sales.

5. Centre productivity gains as the core drivers for adoption

- Business concerns (e.g. time saving and productivity) are the core adoption drivers.
- Emissions reductions are meaningful ((1.1–1.7tCO₂e/device/year)) and future carbon finance applications could further support this business-driven investment logic.

6. Additional research and investment can further strengthen the case for modern cooking technologies as a PUE asset

- The introduction of induction stoves to the cooking stack was shown to increase productivity, and further gains may be achieved with greater integration of modern cooking technologies that can deliver a competitive advantage and performance over existing devices (with financing mechanisms helping to improve affordability).
- Future enquiry should therefore explore the potential gains that could be made by businesses making greater use of modern cooking.

