

The journey to clean cooking: Practical insights from case studies in Kenya and Zambia

African governments are increasingly looking to modernize household energy options for the 700 million people who still rely on traditional biomass fuels such as wood, charcoal and dung for cooking and heating. The use of traditional biomass energy has significant negative effects on public health, air quality and forests, and a shift to modern cooking technologies and fuels could bring multiple benefits.

Advanced cookstoves are on the market in several African countries. However, the level of adoption of those stoves – correct, consistent use over time, for all or most cooking tasks – still falls far short of what is needed to achieve substantial benefits.

We know how to build efficient and clean-burning stoves, but empirical evidence of what drives households to adopt advanced cooking technologies is limited. We know that to start using an advanced stove, people must know about the stove and where to find it, be able to afford it, and be motivated to acquire it. Then they need to know how to use it correctly, and know where to go for support if something goes wrong.

Yet even when those factors are in place, we know that large numbers of households only use their advanced stoves sporadically, or discontinue their use over time. Therefore, we need to learn more about how to motivate people not only to buy an advanced stove, but to *keep using it*, and apply these insights to the design and implementation of cookstove programmes and businesses, so they can be more successful.



A woman in Kiambu County uses twigs and kerosene to light her Philips cookstove. © Fiona Lambie / SEI

This discussion brief builds on an SEI working paper that uses two case studies in Kenya (peri-urban Kiambu County) and Zambia (urban Lusaka) to examine what drives households to adopt clean stoves for most or all of their cooking needs, and to stick with those stoves for the long term. The case studies highlight several opportunities to promote cookstove adoption by providing additional support at key points.

Key messages

- Adopting an advanced stove can require a significant shift in cooking practices, as these stoves function differently, use different fuels, and may impart a different taste and texture to food. The change in cooking practices takes time and requires real effort and persistence.
- A first step in supporting a shift to advanced cookstoves is to understand how users experience the stoves – from initial exposure, to learning to use them, to full adoption – and identify critical points in the process when extra support is needed.
- In case studies in peri-urban Kiambu County, Kenya, and urban Lusaka, Zambia, we built “user journeys” – a tool from service design – to map households’ experience with advanced stoves, including their motivations and the barriers they encountered.
- The main motivating factors for buying a stove were the prospect of saving money and/or fuel, added convenience, and the aesthetic and aspirational appeal of the stove. Once they began to use the stove, however, what mattered most was whether it worked as expected.
- It is crucial that users get the support they need to learn how to use the stove, so they do not abandon it in frustration. Key interventions include hands-on trials before purchase, to ensure that users know what to expect; high-quality user manuals; and building a trusting relationship that continues after the purchase, to provide longer-term support.

Why is it so difficult to establish a new cooking practice?

Advanced cookstoves typically function differently than traditional biomass stoves. They may use different fuels (e.g. gas, ethanol or pellets instead of wood, charcoal or twigs), or require preparing traditional fuels in a new way (e.g. chopping wood into very small pieces). They may regulate temperature differently, generally do not expose food to open flames, as many traditional stoves do, and produce little or no smoke. This means that foods cooked on advanced stoves may taste and feel different than those cooked on traditional stoves.

Adopting an advanced stove can thus require a significant shift in cooking practices, to adapt recipes and develop new habits to make the most of the new stove. And it means choosing the new stove over a more familiar one, over and over again, until it is part of the daily routine. This shift does not happen overnight, and requires a significant effort on behalf of the user.

Creating new cooking habits is a form of *behaviour change*. Therefore, if we want to promote the adoption of advanced

cookstoves, we need to consider determinants of human behaviour, decision-making and choice.¹

Cognitive and social influences on behaviour

Insights from cognitive psychology and behavioural economics tell us that individuals typically make decisions for non-economic reasons, often with incomplete information, influenced by social norms or emotions. There is evidence that in everyday decision-making, people tend to rely on “automatic” thinking – quick, not deliberative, based on assumptions. A common result is that they opt for small, short-term gains over larger future gains.

Humans are also inherently social beings and can be motivated by social factors, such as the actions or opinions of a friend or neighbour, to change their behaviour. They also adopt their group’s shared values, and tend to evaluate new information based on how it fits with those shared values, rejecting what does not conform. Given the importance of food in human interactions, it stands to reason that household perceptions of traditional and advanced stoves alike would be shaped by the social and cultural context.

Another useful concept in thinking about how to promote behaviour change in cooking is “mental models”. These are internal representations of how the world works, how different parts fit together, etc., based on our experiences, what we are taught, and collective beliefs. In the context of cooking, mental models may lead the concept of cooking to be closely associated with particular methods or stoves: for example, that meat is cooked over an open flame, using charcoal or wood as fuel. This means that to adopt a new stove, people may have to grapple with how it conflicts with their mental model, and accept a new model.

The case studies

In order to understand when in the adoption process a change in behaviour is needed, we mapped out the “user journey” for advanced cookstove purchase and adoption. This is an approach from the field of service design that has yet to be widely applied to advanced cooking.

A user journey is a tool for sequencing users’ experience with a product or service, from the first point of interaction, to when they begin to use it, to when they become accustomed to it, through to the post-service period. The consecutive ordering of events highlights that the uptake process is dynamic and takes place over time.

A key benefit of the user journey approach is that it allows us to examine how users experience advanced stoves at each step

in the journey, what motivates them to adopt the stoves, what challenges might arise, and how those challenges might be overcome. Our analysis is informed by the literature on human behaviour, as summarized above.

Throughout the user journey, we considered what behaviour change techniques are being used that support advanced cookstove adoption, and what additional techniques could be used to bolster existing efforts. We worked closely with cookstove sellers in each location: a microfinance institution that helps women acquire “life enhancing products” in Kiambu County, and two social enterprises that sell advanced stoves and pellets in Lusaka. As part of the project, we shared the results of our research with them, and obtained their feedback.

In total, we visited 36 households in the two locations, all of whom had purchased and, in most cases, started to use an advanced cookstove. We brought visual materials to support the interactions, as well as pens and paper for sketching, to elicit responses that can be difficult to articulate in response to a direct question. The interviewees (mostly women) had been using their stoves for two weeks up to nine months.



Marie Jürisoo (centre), the author of this brief, conducts an interview with two women in Lusaka.

All interviewees in Kiambu County and half in Lusaka cooked on the Philips advanced biomass cookstove, using pellet fuel. The other half of the customers in Zambia cooked on one of two types of natural draft gasifier cookstoves that burn different types of granular fuels: the Vitalite stove and the Peko Pe stove.

To learn more about the local context, we also interviewed staff members at the three cookstove companies whose customers were part of the study, as well as cookstove sector experts at UN Women and in the Swedish foreign service.

The user journey towards adopting a clean cookstove

Adopting an advanced cookstove requires, as a first step, having the opportunity, ability and motivation to purchase and use the stove. In practice, this means the stoves need to be avail-

¹ We start from the premise that adopting advanced cookstoves is a good thing, with benefits for both the household and society as a whole. That may not always be the case: a stove could be prohibitively expensive, or be poorly built and dangerous, or simply not reduce smoke enough to make a difference. People also may not use them to the extent that is required to reap significant (health) benefits. While our analysis touches upon some of these issues, they are mostly beyond the scope of this study.

able, and users need to know they exist and be able to afford them on the terms offered. In both locations, the wholesalers acted as financial enablers, actively intervening to make the stoves affordable and allowing buyers to pay in instalments.

Prospective customers also need to be presented with information about how the stove works, to get an initial sense of the amount of learning required to use the stove correctly. Crucially, they also need information about the benefits of adopting advanced stoves. Our findings indicate that information about technical aspects of the stove, including how much money and time can be saved, and why this model is better than others on the market, can help assure customers that they are making the right choice.

The three main motivating factors for purchase were similar in both study locations. A majority bought the stove to save money and/or fuel. The second most-cited factor was convenience, such as time savings and not having to handle charcoal, which dirties the hands. The third related to the aesthetic appeal of the stove, and was associated with personal goals and aspirations that could be realized by owning a modern technology.

As different drivers motivate different people, nuances in design and implementation are important. For instance, in Kiambu, convenience primarily meant flexibility in terms of which type of fuel to use. The stove is useful for women who normally only cook with collected fuelwood, but use charcoal as a backup if the wood is damp, which often happens during the rainy season.

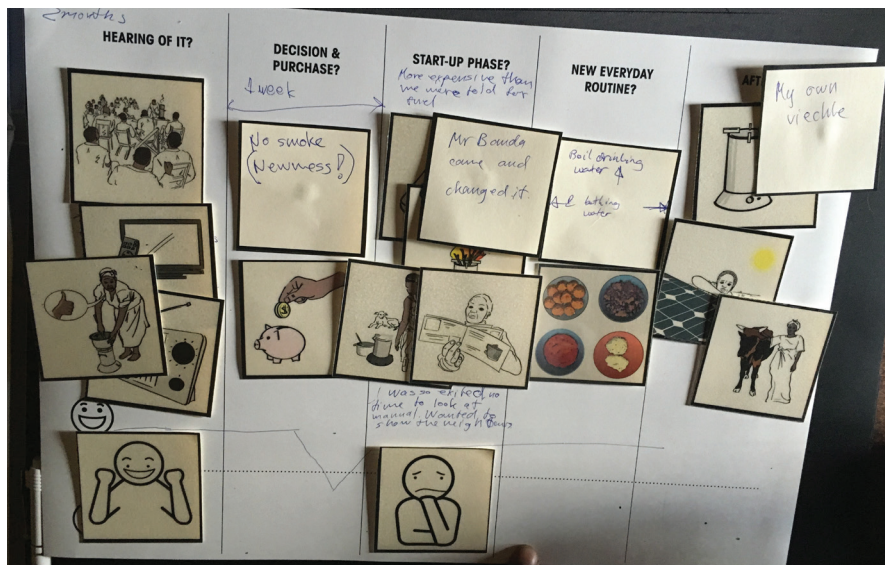
In Lusaka, convenience was sought to free up time for leisure and rest, or to pursue income-earning activities. Many respondents specifically referred to the convenience of being able to cook “independently of charcoal” at any point in the day, even when the electricity was out. As one said: “Finally I will not be in the hands of charcoal vendors.” This suggests that some users in both locations, at least at the point of purchase, were motivated by the prospect of departing from their “known” way of cooking and establishing a new habit.

Our research suggests that when it comes to motivating the *purchase* of advanced stoves, the three sellers we worked with are doing many things right – particularly by making the stoves affordable. However, another key insight is that the factors that motivate the *purchase* of a stove may not motivate its ultimate *adoption*.

Once households begin to use the stoves, the decisive factor is whether they work well and as expected. Most cooks will need to use the stove several times before learning how to operate it optimally and realize its full value. It is thus crucial that users have the information and support they need to learn to use the stove without great difficulty, so they do not abandon it in frustration.



Above: The three advanced stoves used by households in the studies, from left: Philips, Peko Pe and Vitalite. Below: An interviewee in Lusaka traces her emotions through the user journey, including worries in the start-up phase.



Our findings show that quick sales pitches, such as those used by the vendors in both Kiambu and Lusaka, are unlikely to meet users’ needs. Although the vendors offer demonstrations, they do not invite prospective buyers to actually handle and try cooking on the stoves, to get the full experience. Several households reported being surprised when they started using their stoves and discovered that they had limitations or were harder to use than expected.

These issues could be addressed by providing hands-on testing opportunities and making more information available to people before they purchase a stove. In addition, particularly when there is a waiting period between the purchase and delivery of the stove, it is important that sales agents provide active support and information to help users get started.

Several interviewees highlighted the importance of an easy-to-read, comprehensive user manual, with clear instructions and supporting pictures. Stove sellers might also want to consider hiring chefs to develop recipes and technical tips for preparing popular dishes on the new stoves, so they are as tasty and appealing as those from traditional stoves.

The stove also needs to be designed to be easy to use, convenient and practical in daily operation. And given that the look and feel of the stove is an important factor for many buyers, the stove needs to be easy to maintain – not only to keep working well, but to keep looking good. If a small mishap with pellets or fuelwood can melt the plastic base, for instance, the stove’s aesthetic value is greatly reduced.



Photo © Sophie Anderson; Graphics, Per Brölund

A schoolteacher in Lusaka explains how she weighed the pros and cons of the Philips stove before deciding to purchase it. She liked the prospect of saving money and not having to use charcoal, but worried that the stove would be difficult to use, and that it might break.

When problems arise – and they often do – it is vital that a system is in place to re-motivate users to keep choosing the stove. Our findings tell us that this is best delivered in the form of personal follow-up support, from a trusted source. It can take the form of periodic visits, phone calls, and invitations to social cooking gatherings.

Importantly, vendors also need to ensure that purchased fuel, such as pellets, is of consistent quality, affordable and easily accessible. Ideally, fuel should be made available in sizes equivalent to those for charcoal or other widely used fuels, so consumers can easily compare the cost and replicate existing purchasing patterns, but with the new fuel.

How governments and donors can help

Many African governments are committed to promoting a shift from traditional biomass cooking to advanced stoves. A key step they can take to strengthen the enabling environment for advanced cookstove uptake is to provide incentives that make advanced biomass stoves and fuels, such as biomass pellets, easily available to clients. Such incentives can lower the barrier for initial purchase, and also keep fuels affordable in the longer term, so households are likelier to keep buying them.

Of equal importance is a regulatory environment with a vision to favour clean technologies and fuels over less-efficient options. While such a transition requires a careful approach, to

ensure no one is left behind, a long-term vision and associated implementation plan are crucial to achieving a household energy transformation.

For international donors interested in this sector, it is important to recognize that new cooking habits take a long time to develop. In order to understand the long-term benefits, ample funds must be put aside for regular, long-term monitoring and evaluation. Earmarked funds for interventions that have a clear strategy for how to support the formation of a new habit, such as follow-up visits by local implementers over several years, also hold promise.

Areas for further research

There is little evidence still of how interventions can aid the formation of new cooking habits in low-income countries. This study has begun to fill that gap, but we strongly encourage further user-centred, ethnographic studies focused on these questions, particularly on how to help people develop new cooking habits once they have bought an advanced stove.

Future research should also aim to study the same households over several years, as there is now a lack of longitudinal studies. This would also help us get an understanding of what the “after” phase of the user journey could look like. What happens once an advanced cookstove reaches the end of its useful life? What technology does the household choose to replace it, and why? If the goal is to achieve lasting change, it is important to ensure that households stick with advanced technologies, replacing clean stoves only with other, perhaps even cleaner and more efficient stoves.

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