

A young girl with a nose ring and traditional Ugandan clothing is peeling beans. The image is overlaid with a teal gradient. The title 'Uganda Clean Cooking Behavioral Diagnostic' is centered in white text.

Uganda Clean Cooking Behavioral Diagnostic



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Abbreviations

CO₂	carbon dioxide
COM-B	Capability, Opportunity, Motivation - Behavior
DCF	Distribution Challenge Fund
ICS	improved cookstove
LPG	liquefied petroleum gas
SACCO	savings and credit cooperative organization

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Highlights

Barriers to the uptake of so-called *improved cookstoves* (that is, new, more energy-efficient models that save users considerable time and money) in Uganda, along with potential solutions, are presented throughout this report. Here are ten such barriers and solutions, summarized for easy reading.



Barrier: Improved cookstoves are perceived as luxury items, owned just by high-income households in cities. This erroneous framing is, in part, due to the efforts of credit-granting entities to push high-end stoves that are indeed priced for high-income households.

Solution: Given that **some improved cookstove models cost less than \$10**, they are indeed a viable way for lower-income families to realize significant savings on fuel expenditures. With the proper strategy, baseline stoves (that is, unimproved and inefficient, traditional models) can be reframed as a “luxury” option, since they cost more in the long term than do more-efficient technologies.



“Only rich people have these cookstoves. I don’t think people like us deserve them.”

Focus Group Participant



Barrier: Savings and credit cooperative organizations (SACCOs) are mistrusted by both consumers and cookstove distributors, yet they represent a critical and potentially scalable bridge between the two. Without access to credit, many consumers cannot afford the up-front cost of improved cookstoves, a cost that could easily be recovered by subsequent savings in fuel expenditure.

Solution: One positive step would be to **identify the most trusted SACCOs** in Uganda and integrate them into efforts to promote improved cookstoves. In the medium to long term, the credibility of other SACCOs could be improved by centralized accountability entities promoting transparency.



Barrier: Too few shops carry improved cookstoves, and those that do may not feature them. Consumers lack awareness of these products and their benefits, and have little exposure to different models. This has implications for the financial health of distributors, and causes market spoilage. Most important, potential demand is not being met.

Solution: Create centralized access points where visitors may test several different models and learn about their benefits and possible pathways to ownership (including via various credit mechanisms and delivery options). Marketing campaigns and standardized public demonstrations can help point consumers to these one-stop shops, which can be part of a sustainable franchise model.



Barrier: Word-of-mouth around improved cookstoves is weak despite general satisfaction with the product. Given many people's low level of trust in institutional sources of information, strengthening word-of-mouth is a critical prerequisite for increasing the uptake of improved cookstoves. Efforts to promote this would also need to counter common fears that the new technologies may not be as durable as old ones, or may be difficult to use.

Solution: Set up referral programs and community-spirit campaigns that focus on the benefits of improved cookstoves, and address negative word-of-mouth by promoting repair and replacement services. Importantly, all claims must be fact-based to build trust.



Barrier: Few people are aware of the serious drawbacks of baseline stoves, both in terms of health and money. This leaves many to perceive improved cookstoves as unnecessary luxury items.

Solution: Identify key ways to present the benefits of improved stoves over baseline stoves. For example, manufacturers may use evidence-based approaches to advertise their products, and feature the benefits on product packaging. Importantly, abstract concepts or negative messages that focus on the health impacts of baseline stoves are unlikely to prove effective, based on our research. Instead, a focus on concrete benefits (e.g., what could one buy with the money saved over one year?), first-hand experience, and story-telling holds greater promise to persuade potential consumers.



“Only the smoke when lighting the stove is bad for health. After that, there is no smoke, so no effect.”

Focus Group Participant



Barrier: Public demonstrations are rare, unstandardized, and typically conducted by men, who traditionally have little experience/credibility in the kitchen. This is problematic given that public demonstrations are cited by consumers and front-line distributors as absolutely necessary to develop trust in improved cookstoves.

Solution: Develop and test a model for standardized public demonstrations. Importantly, given the high turnover of demonstrators, the model must be easy to execute with little training (based on, for example, a checklist).



Barrier: Women, the key users of stoves, would most often be the ones to convince a (typically) male head of household to purchase one. The gender-based asymmetry inherent in household financial decisions in Uganda may, in fact, be a significant hamper on possible demand for improved cookstoves.

Solution: Develop sales and marketing tactics that help front-line distributors address the fact that women are their main customers while men are often the key gatekeepers. These may include simple, memorable messages that may be used by women to persuade key decision-makers in their household.



Barrier: Credit options for the purchase of a low- to mid-priced improved cookstove are rare. Most creditors, instead, focus on higher-end luxury models. Also, few to no standard savings mechanism are offered to customers.

Solution: Develop partnerships between improved cookstove distributors and, for example, telecommunications companies, to offer automatic layaways.

For example, every time a customer purchases a certain amount of mobile telephony, one-tenth of it could go toward a “stove fund” attached to that customer’s number. This fund cannot be cashed out or applied to anything other than an improved cookstove. Since most consumers use more than one telecommunications provider, creating such a fund could benefit the company offering it, by, in effect, buying customers’ loyalty.



Barrier: The fact that improved cookstoves are generally less durable than traditional models (often built out of stone or brick) is seen as a critical drawback. Potential buyers cite this as the main reason for avoiding improved cookstoves. Also, and just as important, warranties are generally mistrusted. This mistrust creates both a structural barrier (i.e., people stop using stoves after they break) and a behavioral one (i.e., people mistrust any after-service that is promised by manufacturers and distributors).

Solution: Communicate consumer concerns to manufacturers and encourage them to develop strategies to protect their brands. Our research suggests that considering repairs, service, and spare parts (e.g., by offering a spare top-ring at the time of sale) could be a low-cost way for a manufacturer to build customer trust and stand out from the competition.



Barrier: The bright colors of many improved cookstoves have political connotations and leave possible consumers afraid of theft and also of simply attracting neighbors' attention. Attracting attention can be dangerous in low-income neighborhoods where those who appear to be better off are often asked for help and shunned if they do not provide it.

Solution: Suggest to manufacturers that, based on preliminary research, consumers may be willing to pay up to U Sh 10,000 more for a black stove than another color. Consider piloting a program that allows consumers to select a stove's color at the time of purchase and then use data from that program to offer colors that are based on demand rather than branding.



(Presses finger down on top ring) "I can already tell this will break as soon as I put my matoke pot on this. It does not feel durable at all."

Focus Group Participant

1. Context

Background

Data from the Organisation for Economic Co-operation and Development show that ambient particulate matter pollution results in over 700,000 premature deaths in Africa per year, making air pollution a deadlier problem than malnutrition, unsafe water, or unsafe sanitation (as of 2014). Despite the existence of low-cost (less than \$10) clean cookstoves that could cut households' fuel spending by 50 percent and indoor pollution by up to 90 percent, uptake has been slow. Household spending on solid fuels for primary cooking needs is projected to increase from \$700 million to \$900 million between 2010 - 2020. In recognition of these worrying trends, the World Bank has launched initiatives aimed at increasing the market penetration of improved cookstoves (ICSs) in Sub-Saharan Africa.

One of the countries targeted by these initiatives is Uganda, where ICS uptake has been particularly slow relative to neighboring countries such as Kenya, due to a variety of issues along the value chain. Past work by the Bank has found that weak supply chains and poorly capitalized distributors limit customer exposure to new stove technologies, which in turn reduces demand, in a vicious cycle that creates market spoilage. A shift in this equilibrium requires simultaneous work on the supply and demand sides: that is, a shift toward private sector supply, better distribution channels, and effective marketing strategies that allow manufacturer-distributor consortia to boost local demand and strengthen supply chain efforts.

Past research carried out by the Bank and other organizations has reliably shown that effective interventions at the consumer level must be designed with a strong consideration of human behavior (i.e., biases, heuristics, social and cultural norms, etc.). While the Bank has identified broad behavioral barriers to ICS adoption such as low consumer exposure to technologies and low awareness of benefits, this understanding needs to be taken a step further, and addressed through sustainable long-term interventions that can be implemented at the local distributor level.

Overcoming behavioral barriers requires a different level of analysis from what classical economic models can offer. For example, despite a strong economic case for using improved cookstoves—including a payback period of fewer than six months, and considerable savings of the household income that would be otherwise spent on solid fuels—**penetration in Uganda remains below 5 percent.**



No one can risk to buy a product they don't know at U Sh 180,000 when they have a hard time even buying food.

Focus Group Participant

In other words, although significant work has been done to clarify the benefits of using a clean cookstove, more work needs to be done to present a value proposition to consumers (through marketing and beyond) that is as closely aligned with how decisions are made in the real world as possible. Past efforts by the Bank confirm this: while marketing efforts have focused on abstract benefits related to health and the environment, the factors that actually inspire sustainable shifts in household behaviors are related to cost savings and ease of use. These findings are supported by past work in public health; campaigns that focus on health benefits are now recognized as having very limited effectiveness.

Leveraging behavioral science to understand consumer decision levers, our work uses established frameworks of behavior change to identify key barriers to desired consumer behaviors and drivers of undesired consumer behaviors. A particular area of focus is applying behavioral insights to understand end users and create feasible, low-cost strategies for manufacturer-distributor consortias to strengthen supply chains.

Quick Facts about Fuel Use in Uganda (adapted from Price 2017)

- 87 percent of Ugandans live in rural areas.
- One-third of Ugandan households are headed by women.
- Unprocessed biomass makes up over 85 percent of fuel use, charcoal makes up 13 percent, and liquefied petroleum gas (LPG) and kerosene are each 0.5 percent.
- Most biomass fuels used in Uganda are produced in Uganda.
- Less than 10 percent of the population employs clean cooking practices.
- Only 12 percent of the population has access to electricity.
- The majority of rural households use firewood for cooking; urban households use both firewood and charcoal.
- Rural households mostly cook on three-stone fires, often in enclosed spaces (see figures 1 and 2). Three-stone fireplaces have very low fuel efficiency rates (between 10 percent and 17 percent).
- Many households in rural areas can collect firewood for free although it is becoming increasingly unavailable.
- Uganda's forested land is shrinking by 2 percent a year; only 15 to 26 percent of the total land area is still covered by forest.
- Nearly 22 percent of the population lives in areas without trees.
- The price of fuel is higher in urban centers and is subject to seasonal fluctuations.



Factors beyond the standard variables of prices, incomes, and regulations also affect saving behavior, including automatic thinking that reacts to the framing and perception of choices.

World Bank 2015b



Figure 1. A baseline fire pit located in a peri-urban household. Powered by firewood, this kind of stove is used to cook large meals over a long period of time (e.g., 6–8 hours).



Figure 2. A peri-urban kitchen. In many cases, the firewood pit in a peri-urban or rural household is located inside an enclosed space, with women and children sitting around the fire for hours every day.

- The type of fuel used can vary depending on the time of day and meal being cooked.
- LPG usage is low and restricted mainly to urban families. It is perceived as a dangerous fuel (risk of explosion) and is rare outside urban centers.
- Government subsidies are available for kerosene, but not for LPG.
- In 2012, the government removed subsidies on electricity; very few households can now afford to cook with electric-powered stoves.
- Recycled biomass briquettes have been introduced but awareness and uptake is low.
- Production of charcoal in the country is not regulated.

Research Approach

Our goal in this research was to uncover the key behavioral barriers that prevent ICS uptake. Because the path to purchasing an improved cookstove is extremely complex and has already been studied from a variety of angles, our research approach was tiered. We first formulated broad hypotheses based on past work by the Bank and others, expanded on these hypotheses based on input from key stakeholders in the Ugandan ICS space, and then validated the hypotheses through structured fieldwork. The components of our research approach are described below.

Desk Research

As a first step, we used desk research to acquire contextual knowledge of improved cookstoves in Uganda specifically and Sub-Saharan Africa in general. We surveyed past reports on the subject, including those specific to the World Bank's work under the Distribution Challenge Fund (DCF). A comprehensive list of reports used for desk research can be found in the References section of this report. This research allowed us to generate initial hypotheses regarding the possible behavioral factors limiting ICS uptake in Uganda.

Stakeholder Interviews

In order to expand our list of hypotheses and pressure test some of the ideas that were acquired during our desk research, we organized a series of structured interviews with stakeholders involved in the World Bank's DCF program. In order to cover a wide range of points of view, we focused on stakeholders across the value chain—manufacturers (Envirofit, Burn, Ecozoom & Ugastove), distributors (Save Energy Uganda, Fenix, Build Uganda, FINCA Brightlife, AVSI Foundation) and others that have an effect on ICS uptake in Uganda by regulating, measuring, and administering ICS-related interventions (CIRCODU, PSFU).

Household Focus Groups

We organized six focus groups (three women-only, three mixed) in the Kampala region (see figure 3 for an example) in collaboration with enumerators from CIRCODU, a Uganda-based organization that is involved in administering the DCF and has over a decade of experience in surveying ICS-related matters in Uganda. These groups followed a structured format, focusing on key areas identified in the desk research and stakeholder interview portions of our research. In particular, we investigated social norms around seven core themes: (i) people's **awareness** of improved cookstoves; (ii) **consumer finance**; (iii) people's **trust** in various sources of information and products; (iv) potential consumers' **access** to stoves and (v) their **understanding** of them; (vi) **product features** and offerings; and (vii) the **gender** dynamics of household decision-making processes.

Manufacturer Surveys

Although this behavioral diagnostic is focused on unlocking consumer demand, a large part of demand-side barriers may require collaboration from manufacturers to be unlocked. In order to identify potential implementation roadblocks and survey broader concerns, we surveyed manufacturers on the ground and asked which issues they thought were most pressing.

Shopkeeper Surveys

Given that ICS awareness and access are key concerns in Uganda, it is important to consider those shopkeepers who might act as the bridge between supply and demand mechanisms. We surveyed over twenty shopkeepers in the Kampala region (figure 4) and asked about their customers as well as their own perceptions of improved cookstoves.

ICS Owner Surveys

Although ICS penetration in Uganda is less than 5 percent, a significant number of people own such stoves. In collaboration with CIRCODU, we were able to find 50 households who had owned an Envirofit stove for at least six months. These households were given a survey focused on the same seven themes as those considered by the household focus groups.

Randomized Household Survey

We surveyed 100 households (72 percent of interviewees were women, 42 percent ICS users, average age 36.2 years old) and used a combination of qualitative and quantitative approaches to elicit attitudes and beliefs around ICS awareness, understanding, trust, gender, consumer finance, product features, and access to stoves.



Figure 3. A focus group interviewed in urban Kampala. Our focus groups ranged in location (urban, peri-urban, rural), gender (female-only, mixed gender) and income levels (low, medium, high).



Figure 4. A shopkeeper surveyed in the center of Kampala. To maximize our chances of finding stores that sell improved cookstoves, we focused on populated areas and central markets around Kampala.

Stated Preferences: Hypothetical Choice Approach

As a way to supplement our research with a more quantitative and rigorous economic approach, we collaborated with Dr. Tomasz Gajderowicz, assistant professor at the University of Warsaw, to adapt a Discrete Choice Experiment to study willingness-to-pay for cookstoves. In particular, we were interested in studying how much certain ICS features and benefits were worth to consumers. We asked 100 subjects to choose between a series of hypothetical “either-or” stove options, in an effort to find out how much they were willing to pay for increased durability of one year, a particular color, or increased fuel efficiency, among other features.

Limitations and Caveats

Sample Size

Although we leveraged resources as efficiently as possible and were able to cover a wide range of stakeholders and consumers, our sample size is limited by the resources available. Future work should focus on expanding the number of surveys, diversifying the demographic groups targeted, and increasing focus on peri-urban and rural areas, where a large portion of potential consumers reside.

Focus on Demand

The present report is focused on a behavioral diagnostic of demand-side dynamics. This means that, by necessity, important supply-side structural issues fall outside of the scope of our work. This focus does not imply that these issues are less important: we believe that addressing key supply-side concerns, which have been listed in other reports, is critical to achieving sustainable ICS uptake and market growth.

Limited Solution Validation

Importantly, this behavioral diagnostic was designed in order to identify important behavioral barriers that may be limiting consumer uptake of improved cookstoves in Uganda. Given this focus, we took an exploratory approach that is more focused on identifying barriers than solutions. Thus, any design ideas or interventions we propose are, necessarily, hypotheses that remains to be validated through further testing during the implementation phase. As such, our behavior change approach is inherently iterative: the goal is not to design the perfect intervention right away, but rather to align interventions with real-world changes, more and more closely with each iteration.

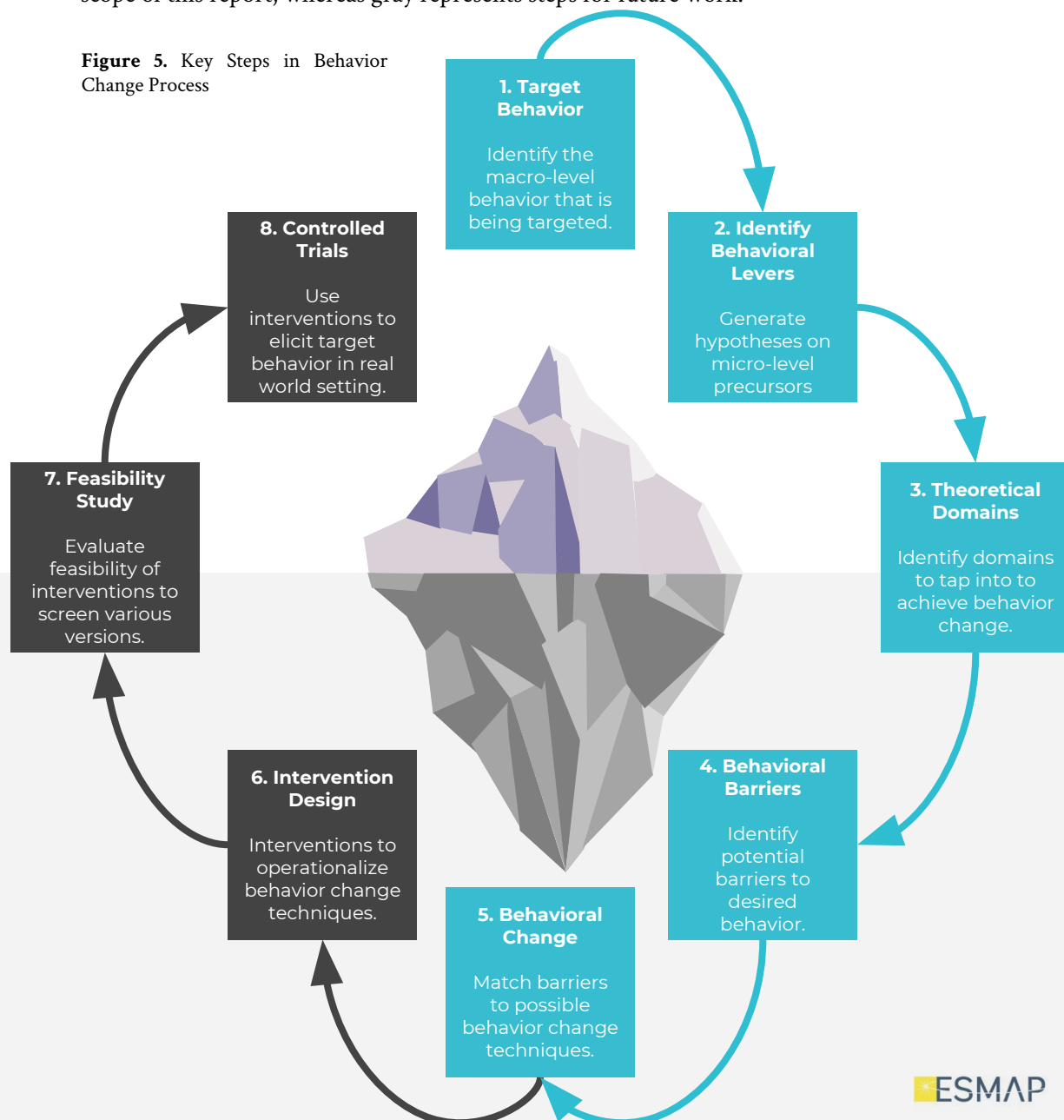
Structure of Findings

This report is organized around seven themes: **awareness, consumer finance, trust, access, understanding, product features, and gender**. In each, themed, section of the report, the reader will find a list of (i) **barriers** and (ii) **behavior change techniques** that can serve as starting points for addressing the identified barriers. Finally, we will present a series of **interventions** that, we believe, have the potential to address multiple barriers at once.

2. Behavior Change Approach

The approach to behavior change we present in this report is based on a thorough analysis of existing reports on human decision making in the context of development policy. In particular, findings detailed in the *World Development Report 2015: Mind, Society, and Behavior* (World Bank 2015b) were used to guide the validity of our methodological choices. Our general approach is aligned with previous World Bank work integrating behavioral insights. This includes beginning **above the surface** by defining the macro-level behavior to be addressed, translating it into micro terms, finding the best theoretical insights to leverage, then diving **beneath the surface** into the hidden behavioral barriers, matching them to behavior change techniques that are then used to design interventions. Figure 5 illustrates key steps in this process; the color teal indicates topics that are in the scope of this report, whereas gray represents steps for future work.

Figure 5. Key Steps in Behavior Change Process



Theoretical Framework

Given the wide scope of demand-side issues yielded by our desk research and stakeholder interviews, any framework with too narrow a focus would be insufficient at capturing the full breadth of insights available. With this in mind, when choosing a behavior change lens (e.g., COM-B, CRI²SP, M.I.N.D.S.P.A.C.E., SaniFOAM, EAST, etc.) for analysing results and generating focus areas, we sought one that fulfills the following criteria:

- Provides space for mutually exclusive drivers of behavior change
- Applicable across a wide variety of contexts
- Allows a maximum amount of breadth without limiting depth
- Sufficiently agnostic to further levels of analysis

After a thorough survey of competing frameworks, we found that COM-B best fit these criteria. The COM-B (Capability, Opportunity, Motivation - Behavior) framework, developed by Susan Michie, Lou Atkins, and Robert West at the University College London, has been widely used to unlock behavior change opportunities in a variety of contexts. COM-B draws on a systematic literature review and meta-analysis of 19 behavior change frameworks in areas such as public health, environment, and policy design, to create a single, cohesive process.

COM-B separates behavioral drivers into three broad categories, then separates each into two primary components. Figure 6 illustrates this structure. Importantly, the large area with the question mark represents a key goal of this behavioral audit—i.e., to use each category and component as a searching light to identify the relevant behavioral barriers that limit ICS uptake. In the next subsection, we will outline how we used COM-B to identify core themes relevant to ICS uptake in Uganda.

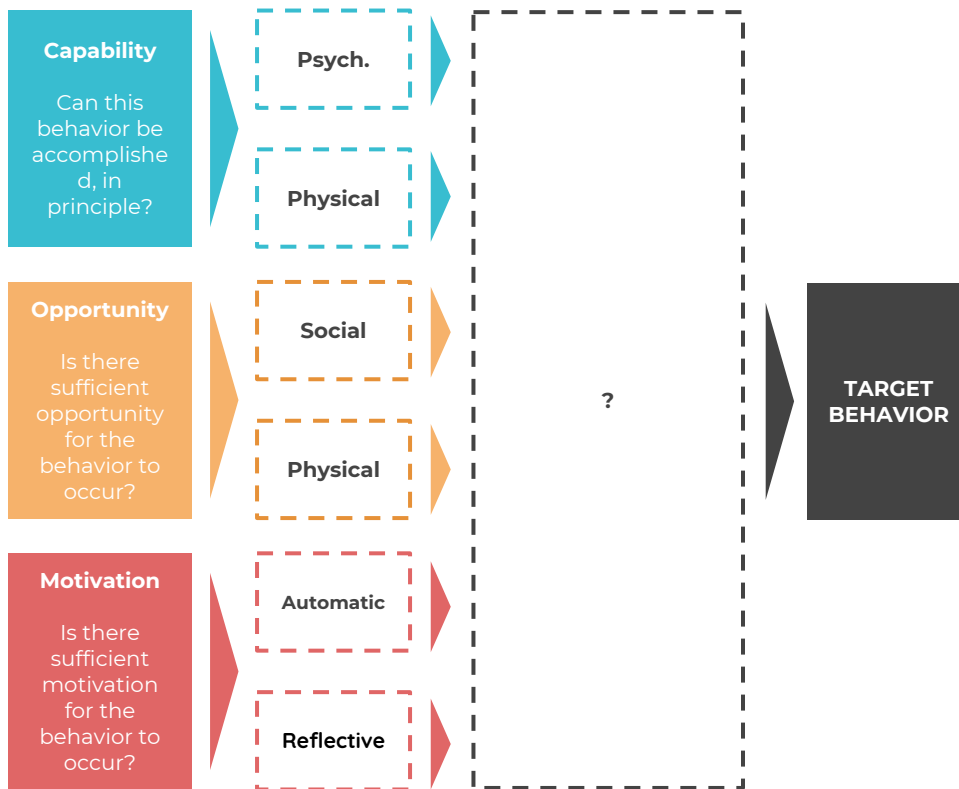


Figure 6. A diagram representing the basic elements of the COM-B framework. Each precursor of behavior (capability, opportunity, motivation) is split into two. The total sum of the 6 components predicts whether the target behavior will occur or not.

Core Themes Mapped onto COM-B

In order to make sure that our framework for this behavioral diagnostic is aligned with both the COM-B framework of behavior change and the seven core themes identified in our desk research and stakeholder interviews, we mapped each COM-B component to a core themes. The one exception is gender, which we found to be cross-cutting. Given that the main users of cookstoves in Uganda are women, and that women have relatively little purchasing power, we anticipate that gender requires a deeper level of analysis, as reflected in the final framework presented in figure 7.



Behavior Change Techniques

Readers familiar with the COM-B framework of behavior change will notice that we use the term here to denote a design concept, not just a framework for categorization.

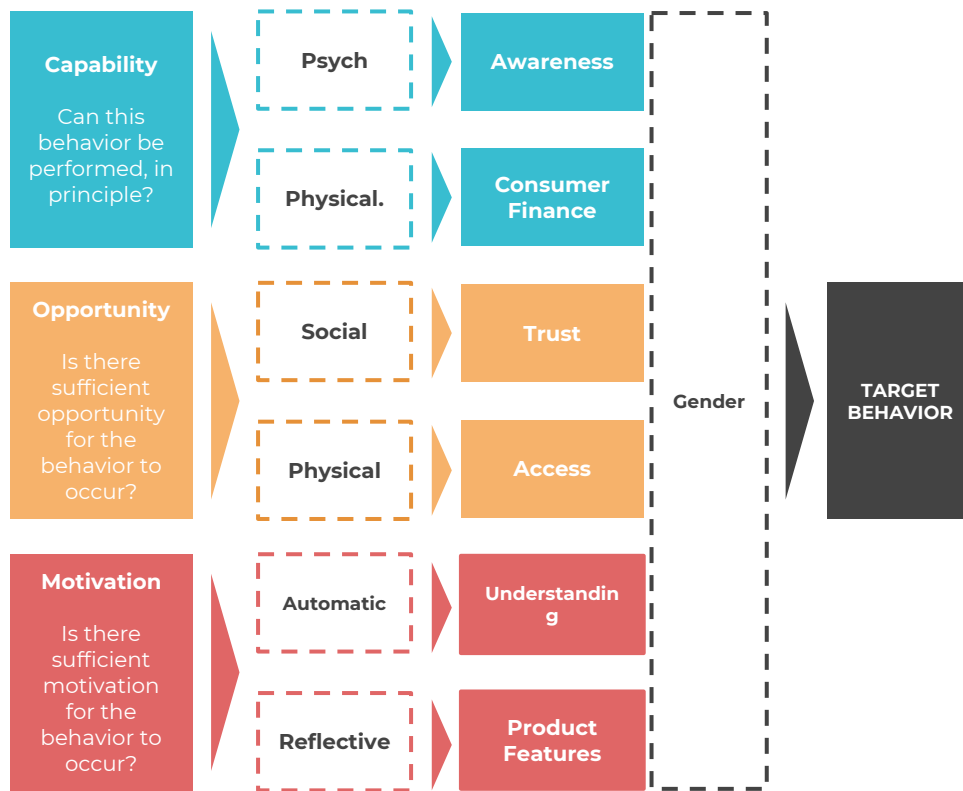
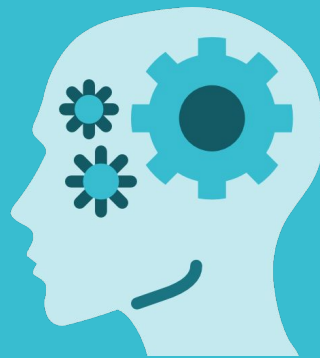


Figure 7. The core themes identified in our desk research and stakeholder interviews, mapped against the COM-B predictors of behavior change. Note that gender is mapped across all.



Awareness

3. Awareness

Few people know what improved cookstoves are in Uganda. There is no clearly established idea of what types of cookstoves are really “clean,” what a clean one typically costs, and no incentive to spread the word about them. We want consumers to have a homogenous and factual understanding of ICS benefits and share this understanding with others.

Demand-side ICS awareness is overestimated by shopkeepers, prompting ineffective sales tactics

Barrier

Previous reports (see ACCES 2014, 2015) raise concerns regarding the low levels of ICS distribution and awareness across Uganda and Sub-Saharan Africa, especially in rural areas. Data on the effectiveness of existing distribution channels is limited, especially when it comes to sellers’ understanding of consumers and consequent sales tactics. To fill this gap, we asked shopkeepers questions about their customers and compared their results to results from our random household surveys (figure 8). What we found is that in nearly every category, shopkeepers presented an overwhelming **optimism bias** regarding consumers’ awareness of improved cookstoves and their benefits. Furthermore, qualitative evidence suggests that this bias drives shopkeepers to be less aggressive in their sales and marketing efforts than they would otherwise.

On the whole, shopkeepers overestimate consumers’ awareness of improved cookstoves by about 50 percent. And the disconnect is even greater for ICS benefits such as fuel efficiency, cleanliness, and health. Shopkeepers overestimate perceptions of cooking speed by 84 percent, safety by 75 percent, health by 72 percent, and fuel efficiency by 33 percent. These findings are especially critical given that 61 percent of shopkeepers do not engage in any sort of marketing efforts to improve sales of improved cookstoves. Perhaps they feel little need to explain ICS benefits to their customers, since they believe these benefits are already widely known.

Behavior change technique: Sales and marketing training that raises shopkeepers’ awareness of consumer knowledge gaps

Shopkeepers need to be equipped with a good understanding of their customers in order to sell as many stoves as possible. Thus, we suggest an educational campaign promoting greater understanding of consumer attitudes toward improved cookstoves in Uganda across distribution channels, targeting those on the front line of sales. More detailed recommendations are offered in a later section of this report.

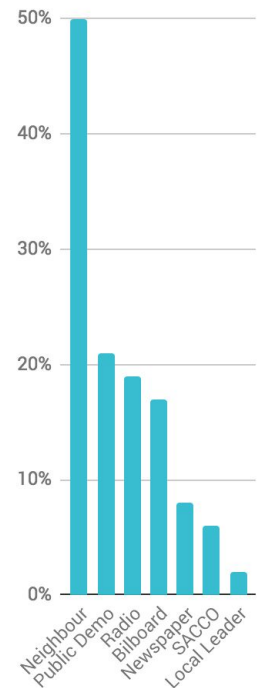


Figure 8. The proportion of survey respondents who indicated being exposed to ICS-related messaging, by source



Optimism Bias

A cognitive bias that causes persons to believe that they are at less risk of experiencing a negative event than are others.

Behavior change technique: In-depth study of shopkeeper motivators

Importantly, for any front-line sales training to be effective, it is crucial to develop a detailed understanding of the various factors that affect shopkeepers' motivation to sell improved cookstoves over other products. Future work should focus on identifying the competing products that shopkeepers sell, the relative margins and sales volumes of these products, the sales and marketing strategies that they find most effective in achieving those sales, and the potential business impact of selling more improved cookstoves. The findings of such a study could be used to better understand how shopkeepers might be nudged to sell more improved cookstoves (see figures 9 and 10 for photos of a charcoal salespoint that also sells stoves).



"Manufacturers think that distributors should be responsible for awareness campaigns, and distributors think manufacturers should be."

Stakeholder Interviews

Word-of-mouth ICS recommendations are not common, despite overall product satisfaction

Barrier

Past reports (see SNV 2014) have emphasized the critical role of word-of-mouth recommendations in ICS uptake. Consumers are generally distrustful of any product-related messaging that is not directly observable (e.g., through a public demonstration) or that does not originate from someone that they trust. Our surveys confirm these results: 43 percent of household respondents stated that a friend or neighbor would be their most trusted recommender of purchasing an improved cookstove (compared to just 5 percent for a community leader, 2 percent for a government official, and 2 percent for a savings and credit cooperative organization, SACCO). It is therefore crucial to create an incentive structure that nudges ICS owners to expose their benefits to their friends/neighbors (Usmani, Steele, and Jeuland 2017).



"[ICS] retailers often perform limited marketing activities and rely on customers to hear about them through word of mouth or take advantage of passing trade."

GVEP 2012

Qualitative data gathered from focus groups suggests ICS owners have little incentive to openly share the cookstoves' benefits with friends and neighbors. One participant owned two improved cookstoves, yet only two out of nine participants had been exposed to them or heard about their benefits. Where, as is often the case, only a community leader owns such stoves, this contributes to the perception that they are luxury goods, "unachievable" for a regular household.



Social Desirability Bias

The tendency of survey respondents to answer questions in a manner that will be viewed favorably by others.

The reasoning behind this barrier likely has to do with a reverse **social desirability bias**. Typically, people tend to overreport characteristics that make them socially desirable. In poor communities, people perceived as wealthy are expected to assist other families in the event of an unexpected hardship, such as medical expenses. Poor families understandably do not want this perception attached to them.



Figure 9. A charcoal salespoint at the center of Kampala. Households' reliance on charcoal is revealed by their distinct purchasing habits. For example, many households have bought a set amount per day for decades.



Figure 10. Cookstoves for sale at the same charcoal salespoint. Such salespoints are obvious places to promote improved cookstoves. This particular seller had a wide range of baseline and improved cookstoves on hand, but sold far more baseline than improved models. Interestingly, she also sold hybrid stoves (center of photo, left shelf) which have features (wrapped in metal, with handles) and a price point (U Sh 6,000) that are positioned in the middle between baseline and improved cookstoves. These stoves could perhaps be signs of an organic demand-driven move toward improved cookstoves.



Behavior change technique: Design and test an ICS referral program

While further research is needed to confirm the trends described above, it is clear that any behavioral interventions that aim to improve ICS uptake would benefit from a component that promotes word-of-mouth recommendations. In line with these findings, our conversations with local distributors identified incentivized referral programs as providing the single highest return on investment of all marketing activities. A behaviorally guided version of this program, particularly one that taps into **existing social norms** around helping others (e.g., “help your neighbors save” or “let’s save up together”), and combines this with possible financial incentives, should be designed and tested as a low-cost and potentially high-impact way of unlocking further ICS uptake.

One approach that has previously been successful in mobilizing communities around a common goal is the Rapid Results methodology widely leveraged across sectors and countries by the World Bank Group. Such an approach could be used to bring a referral campaign to scale.

According to a report from the Government of Kenya (see Obong’o 2017):

The Rapid Results Approach (RRA) is a results-focused learning process aimed at jumpstarting major change efforts and enhancing implementation capacity. It tackles large-scale, medium- and long-term change efforts through a series of small-scale, results-producing and momentum-building initiatives. The premise of the Rapid Results Approach is to create a context for learning and for enhancing implementation capacity, by helping stakeholders work on sharply defined initiatives that will ensure delivery of the desired targets.

Rapid Results taps into the human desire to succeed by creating real empowerment, motivation, and innovation in working towards results. It:

- *Starts by focusing on a few results*
- *Challenges teams to achieve 100-day results goals*
- *Creates a temporary governance and support structure*
- *Reinforces basic management skills*
- *Manages the scale-up beyond the first 100 days*

Consumers underestimate ICS prices, leading to sticker shock

Barrier

Previous reports such as ACCES (2014) and Price (2017) cite price as a principal barrier to ICS uptake. Correspondingly, potential consumers' willingness to pay is far lower than the actual price point of most commercially available stoves—a finding covered in detail by the Rebel Group Consortium (2015). Although there are many factors involved in a consumer judging a price to be “too high,” one potentially disruptive behavioral barrier to uptake is low price awareness. Optimally, a consumer should be aware of the accurate price of a product. If the perceived price is much higher than the actual price, the consumer might not even consider the product as an option. Conversely, if the perceived price is lower than the actual one, there is a risk of **sticker shock**—thus, for people who have never been exposed to an improved cookstove in-store, their first experience may be an unnecessarily negative one.

Our research has found that potential consumers indeed have little awareness of the prices of improved cookstoves. Household surveys suggest that those without an improved cookstove consistently underestimate retail prices—by 30 percent compared to respondents who own one (U Sh 27,300 vs. U Sh 38,500). Based on past research on “sticker shock” (see Jun and Kim 2012), it is quite likely that concerns surrounding ICS costs, amid low disposable income and little understanding of the economic benefits, are amplified if consumers are exposed to a price that is higher than what they had imagined.

Behavior change technique: Reframe pricing to emphasize future savings

Although increased price transparency can in theory address the problem of sticker shock, it can be challenging to implement on a wide scale. This is especially true given the wide variety of stoves and price points on the market and the relatively low exposure a consumer typically has to various models. Thus, while each model might expose its price transparently, a consumer would still have a skewed idea of overall pricing if the consumer sees only one particular model. One possible solution is to think about **counterfactuals**—that is, to reframe product prices in terms of future fuel savings. Given that consumers are generally loss-averse (and are far more sensitive to potential losses than potential gains), developing and testing a strategy focused on **reframing** the price has the potential to counteract sticker shock and raise consumers' willingness to pay. For example, a promotional marketing campaign could draw visual parallels between two households: one that has a baseline stove and spends a certain amount of its monthly income on charcoal (“they lose X/month on charcoal”) and another that has an improved cookstove.



Sticker Shock

The shock or dismay experienced by the potential buyers of a particular product on discovering that its price is somehow higher than expected.

This can be represented visually in posters (and other marketing materials) by projecting and comparing how much money (and, perhaps more concretely, necessities that could be bought with that money) each family will be losing over the next 1–2 years, taking into account not only a cookstove’s installment payment, but also forecasted increases in charcoal prices.

Lack of a common definition reduces the effectiveness of ICS-related communications

Barrier

Qualitative data from our focus groups and surveys indicates that there is significant confusion regarding what exactly an improved cookstove is. Some respondents believed that only expensive brands (e.g., Envirofit, Ecozoom, Biolite) fall into this category, while others believed that any non-ceramic cookstoves could be classified as improved.

Previous research (see Levine and Cotterman 2012, Johnson et al. 2015, Price 2017) has shown that it is difficult to address low consumer awareness unless it is broken down into specific precursors. One crucial precursor is the lack of a vernacular term for “improved cookstove.” Those administering the surveys had to explain various features of the stove since terms can be consistently employed to transmit the **mental model** of an improved cookstove. To add to this complexity, there is no formal definition of an improved cookstove even by industry standards—instead, there is a tiered approach to qualifying the cleanliness of stoves, adding to consumers’ difficulty deciphering an already complex set of product offerings. Together, these barriers likely create an **ambiguity effect** that translates into aversion toward improved cookstoves and a preference for the known characteristics of baseline stoves.⁴

Behavior change technique: Create a vernacular term that stresses one or more key benefits

To counteract the lack of clarity associated with the current mental image that consumers have of an improved cookstove, we recommend the creation of a single universal term for an improved cookstove. As an initial investigation into this behavior change technique, we asked household participants to choose from several terms we invented: *chumba*, *kamu*, *fabo*, *bole*. Forty-seven percent of participants chose *chumba* and, interestingly, participants also suggested terms to us. Of the terms suggested, almost all reflected the stove’s ability to save money— e.g., “money saver” or “Fuel Saver.” Given that marketing communication around improved cookstoves currently focuses on their cleanliness (a benefit believed by only 55 percent of our respondents), creating a single vernacular term that taps into existing **mental constructs** and relates to the most believed benefit (efficiency, at 66 percent) is an idea that should be tested further.



To make most decisions and judgments, we think automatically. We use narrow framing and draw on default assumptions and associations, which can give us a misleading picture of a situation.

World Bank 2015b



Mental Model

A mental model is an internal representation that a person forms of the external world.



Ambiguity Effect

A cognitive bias where decision making is affected by a lack of information.



Consumer Finance



4. Consumer Finance

Price sensitivity, combined with low access to finance mechanisms and low institutional trust, contributes to low ICS uptake. Adequate consumer finance mechanisms are required to enable consumers to make a purchase.

Shopkeepers do not widely offer credit or installment payment plans, choking demand in that portion of the market unable to pay an initial lump sum

Barrier

Previous reports (see Rebel Group Consortium 2015; Beltramo et al. 2015) have found that consumers' willingness to pay for improved cookstoves in installments is at least 35 percent to 40 percent higher than without installments. According to the World Bank (2015), consumers were willing to pay U Sh 20,000 for a Ugastove, rising to U Sh 33,000 if the payment was in installments. Consistent with these results, our shopkeeper survey found that 30 percent of customers need some form of credit to purchase an improved cookstove. However, 61 percent of these same shopkeepers do not offer any financing mechanisms, with the remainder offering financing only to friends. This leaves off the large number of consumers who are potentially interested in purchasing an improved cookstove but lack the liquidity to do so.

Behavior change technique: Implement a centralized system informing consumers of credit options available to them based on their specific situation

Given the high degree of complexity that would be involved in equipping shopkeepers with the tools required to offer credit to their customers, any approach that aims to scale at a rapid pace would need to circumvent the shopkeeper as the financing provider. We propose the implementation of a centralized system using USSD, SMS, or toll-free numbers that would allow potential customers who walk into a shop to either apply for credit directly via their mobile phone, or gain information regarding organizations that would be able to extend credit. Credit information can be delivered via a "survey" to personalize the offers to customer needs. This type of system would be able to direct the user to credit-providing organizations that are not only easily accessible and local, but that are also highly relevant to their particular employment and financial situation (self-employed or not, possibility of using land as collateral or not, monthly income level, etc.).



USSD

Unstructured supplementary service data: a service that can be used on non-smartphones to interact with a programmatically generated menu.

SACCOs represent a potential bridge between consumers and distributors, but are mistrusted by both

Barrier

Research to date (see Rehfuess et al. 2014) has recommended increasing access to microfinance as a way to enable ICS adoption on a larger scale. However, a key consideration in evaluating this option is the extent to which microfinance institutions, such as SACCOs, are trusted. Previous reports on microfinance (see World Bank 2015a; Deshpande, Pickens, and Messan 2006) have demonstrated that, within SACCOs, the security of savings is contingent upon managers' honesty and, in the absence of information on this point, consumers equate strong-looking physical premises with institutional stability. In some cases, SACCOs lack physical premises, and this can work against their public image.

Our household surveys found that trust in SACCOs is poor, even among SACCO members themselves. When asked to rank the institutions they would trust to buy an improved cookstove from, only 4 percent of our sample of 100 people rank SACCOs in their top three, while 7 percent of SACCO members did so. Given that 62 percent of Ugandans do not have access to mainstream financial services, the viability and trustworthiness of SACCOs is critical in ensuring credit for ICS purchases (Iwumbwe 2015). If SACCOs are to be part of a long-term solution promoting ICS uptake, measures need to be taken to select successful and trusted SACCOs for ICS-related programs, and find ways to increase consumers' trust in SACCOs.

Similarly, supply-side concerns regarding SACCOs' trustworthiness were raised in key stakeholder interviews. On numerous occasions, we were told that distributors who allowed mobile salespeople to leave improved cookstoves with SACCOs in remote regions after a public demonstration (for the purpose of having customers purchase them in installments or at a later date) were no longer doing so. In all cases, this was because the SACCOs had defaulted on the payments for the cookstoves.

It is important to note that, based on very limited qualitative data, it appears that consumers' mistrust of SACCOs focuses on large and established institutions (typically in urban areas), whereas that of distributors focuses on SACCOs that are small and not well established (typically in rural areas). These findings remain to be confirmed using a larger and more geographically distributed sample, but they open up potentially interesting questions about the role that small and large SACCOs can play in ICS distribution.



Deceptive Tactics?

A study in Mexico City invited low-income participants to try and choose the cheapest one-year loan product [...]

When using the banks' descriptions of their products, only 39% of the people could identify the cheapest credit product.

When using the more straightforward summary sheet, 68% could identify the cheapest credit.

Giné, Martínez Cuellar, and Mazer 2014



Behavior change technique: Leverage well-regarded SACCOs to deploy ICS programs

Given people's relatively low levels of trust in SACCOs, it is crucial that any program that relies on them for education, consumer finance, or distribution be built alongside SACCOs or particular SACCO branches that are well known and trustworthy.

Behavior change technique: Implement measures that improve SACCOs' reputation and credibility

Although beyond the scope of the work presented in this report, we believe that an important measure that would help increase trust is the development of a centralized credit rating system (e.g., delivered through SMS) that would provide both the supply and demand side with objective and transparent information about the SACCOs of interest. The goal of this system would be not only to inform distributors and consumers about the quality of the SACCOs they are thinking of engaging with and thus build institutional trust, but also to incentivize SACCOs to improve their services and minimize corruption.

A lack of incentive to provide credit for relatively low-cost ICS models creates income-disproportional demand for higher-cost units

Barrier

Qualitative interviews with distributors reveal a lack of incentive to offer credit for relatively low-cost ICS models (under U Sh 100,000) since the costs of acquiring a customer are high (credit checks, infrastructure, repayment schedule, etc). Key stakeholder interviews confirm this; many of the organizations that consumers turn to for the purpose of financing an improved cookstove do not offer loans for products under U Sh 50,000, unless they are coupled with a larger loan.

Behavior change technique: Incentivize creation of savings tools among large credit-offering organizations

Although it would be possible to artificially incentivize loans for cheaper products (e.g., by providing a results-based grant), this may not be the most sustainable method of increasing long-term access for consumers. It also does not address the issue of high interest rates and the fact that there is a huge hassle factor for consumers associated with passing credit checks and obtaining a loan. One possible solution to this issue is incentivizing credit entities to create savings programs. Although the exact mechanisms need to be designed and tested, we believe that the general approach represents a good alignment between supply-side and demand-side constraints.



Sales representatives at SACCOs are always trying to sell us products but how can we be sure that they are good products?

Focus Group Participant



Certain credit-offering entities have already begun to specialize in micro-savings products (figure 11). This trend can be leveraged to create product-specific layaway accounts. More work, as well as conversations with key stakeholders at lending institutions, is needed to determine the best structure for this type of program.

The cost of credit is high, limiting uptake of high-cost cookstoves

Barrier

Qualitative data collected from interviews with distributors reflect the reality that even though credit is not given out to the extent required, when it is being offered to prospective buyers of improved cookstoves, loans are extended at interest rates often above 30 percent per year. Although lower-cost ICS models (e.g., U Sh 30,000) are less affected by this, as they are typically paid off in under three months, higher-cost ICS models become even more expensive for consumers when interest rates are accounted for.

A qualitative report from the World Bank-sponsored CGAP showed that microfinance institutions in Sub-Saharan Africa regularly charge interest rates in excess of 100 percent per year (see Mbengue 2013). There is an extensive literature on the effect of interest rates on spending—in particular, a report from the Center for American Progress (Weller and Chaurushiya 2004) cites evidence that even a 1 percent increase in interest rates can have tangible impacts on spending (see, for example, Jordaan 2013; Mutinda 2012). We believe that such high interest rates contribute to consumers' low trust in SACCOs and to the low frequency of credit purchases.

Behavior change technique: Leverage a default bias by allowing consumers to automatically have ICS installment payments taken out of their monthly salary

This is a relatively simple behavior change technique that applies to only salaried employees. Past experience shows that, if executed correctly, it can be an effective way of providing credit.



Everyone has volume targets so they'd much rather sell high-value goods, especially because it takes almost as much effort to sell a cheap and an expensive improved cookstove.

Distributor Interviews

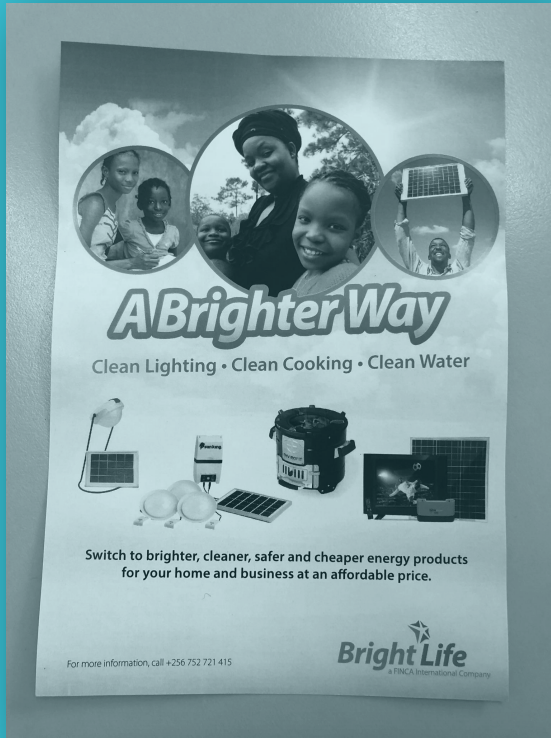
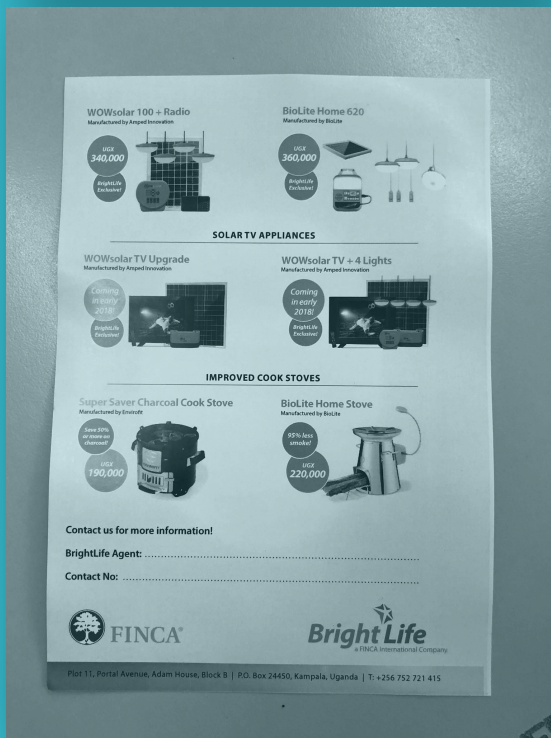


Figure 11. Brochure from BrightLife, which offers a variety of products, including improved cookstoves. Higher-cost stoves (e.g., EcoZoom, Envirofit, BioLite), which are around 5–10 times more expensive than lower-tier stoves (such as the SmartHome), are typically sold through entities that already have a way to provide credit to customers (e.g., in the sale of solar panels, whose high cost makes an add-on sale easier).





Behavior change technique: Where possible, promote savings over loans

Given the current high interest rates associated with financing mechanisms in Uganda, a more sustainable approach to facilitating consumer financing is to incentivize layaway mechanisms and create alternative savings mechanisms. These mechanisms can be created either at an individual level (through education initiatives), at a local level (through community groups), or at an institutional level (savings institutions). Although improving loan-granting opportunities and financing facilities in Uganda should not be dismissed, serious consideration should be given to the potential private sector opportunities that can be unlocked by developing mechanisms that incentivize savings.

Consumer savings is difficult; lack of standardized support leads to lack of access to capital

Barrier

Qualitative data from our focus groups reveal that saving can be quite difficult. Over one-quarter of respondents indicated that it would be difficult to save. A consistent response was that it takes between three and six months to save U Sh 30,000. Savings are often used to purchase necessities and in some cases, entertainment. Maintaining commitment over a long period is difficult for the majority of the people we interviewed. Since there are no mobile salespeople or layaway payment methods, savings can seem aimless as consumers may not know when they will have the chance to purchase an improved cookstove.

In addition, mobile salespeople rarely come back to the same location—and therefore are unable to give people a chance to save. Therefore, even when supply and demand conditions are met, without a goal-directed consumer finance plan, decision makers will focus on good experiences (consumption as usual) now, and push off bad experiences (making difficult decisions about how to save) toward the future, leading to procrastination and, possibly, overconsumption—ultimately contributing to low access to capital to purchase improved cookstoves.

Another aspect of savings is seasonality. Most of the focus group participants were farmers and mentioned that saving was substantially easier right after a harvest period. More general research presented in the *World Development Report 2015: Mind, Society, and Behavior* (World Bank 2015b) notes that the stress of the harvest period is a massive drain on cognitive resources. Farmers in the Sub-Saharan region performed on average one standard deviation (10 pts) higher on standardized IQ tests after the harvest season than before. Trying to implement mechanisms to encourage savings and ICS adoption at the wrong time of year can turn out to be a substantial waste of resources.



Regression analysis of factors leading to ICS adoption showed that salaried employees were significantly less likely to own an improved cookstove. Nonsalaried employees (e.g., farmers, salespeople, etc.) sometimes receive money in windfall amounts and are able to buy big-ticket items like improved cookstoves that salaried employees cannot afford. Salaried consumers need effective mechanisms to save money for an ICS purchase.

Behavior change technique: Leverage loss aversion in existing spending to create frictionless savings toward improved cookstoves

Given the mental friction associated with setting money aside deliberately, automated savings mechanisms (e.g. round-up mechanisms used by Acorns in the United States) should be explored as a frictionless alternative. Platforms such as Acorns leverage the fact that, while people are very sensitive to losses, they are not particularly sensitive to the exact amount that they are losing. Thus, by dedicating a small portion of a payment to savings, one can, in a sense, “piggy-back” on the existing friction created during a purchase to create savings that are almost pain-free. A real-world example of how this could work is shops that sell mobile airtime upselling improved cookstoves by diverting part of each airtime purchase toward that goal. For example, when a customer purchases U Sh 900 in airtime, then U Sh 100 can be added to his or her account and saved for a later ICS purchase.

Behavior change technique: Create dual incentive structure for layaways using a lottery system

One possible layaway mechanism that could facilitate and even incentivize saving is a **scratchcard** to sell an improved cookstove in installments. For example, an improved cookstove costing U Sh 60,000 could be split into four separate scratchcards, each costing U Sh 15,000. Upon purchasing each scratchcard, the consumer has a chance to win a prize (i.e., the incentive component). Finally, after acquiring all four, the consumer can exchange them for the improved cookstove.

Although this idea has been well received in focus groups, household surveys, and shopkeeper surveys, its implementation design would need to be carefully tested, taking into account ethical considerations (i.e., promoting gambling behavior), corruption (i.e., possibility of mechanisms around prizes and ICS delivery being compromised), and lack of institutional trust (i.e., consumers not believing that they will ever get a stove). In addition, since our household survey indicates that consumers have a strong preference for paying any loan installments in person to the shopkeeper, the scratchcard system might also involve direct, in-person transactions.



“A lot of the people I visit tell me, ‘Can you please show me how to save for this stove?’ and I am really not sure what to tell them.”

**Mobile Seller
Interview**



Trust

5. Trust

The current touchpoints associated with the awareness, purchase, and payoff of improved cookstoves are not widely trusted. We want consumers to hear about cookstoves, purchase cookstoves, and get financing for cookstoves from individuals, distributors, and organizations that they trust.

Low trust in institutional recommendations puts onus on word-of-mouth

Barrier

According to the Afrobarometer and many other sources, institutional trust is extremely low across Sub-Saharan Africa. This is particularly true in Uganda, where upwards of 80 percent of people perceive public officials as corrupt (see Armat-Attoh, Gyimah-Boadi, and Chikwanha 2007). How this lack of institutional trust affects ICS uptake is a question that has not yet been studied or addressed.

We asked household survey respondents about their trust in the various institutions that are currently involved in ICS promotion. Forty-nine percent of respondents ranked mobile salespeople in their top three trusted sources, 33 percent ranked shopkeepers in the top three, and only 13 percent ranked government officials as such (figure 12). The lowest-ranked organizations in terms of trust were SACCOs—even though 26 percent of survey respondents were also SACCO members.

However, 78 percent of respondents said they would trust a neighbor's recommendation, and 73 percent said they would trust a friend. In addition, survey data suggest that respondents care about the country-wide implications of improved cookstoves' benefits. Survey participants were willing to pay, on average, U Sh 33,900 for less forest destruction in Uganda, U Sh 36,800 for cleaner air, and U Sh 49,600 to prevent sickness.

Behavior change technique: Leverage trust in neighbors/friends by encouraging emphasis on communal benefits

A behaviorally guided program that taps into **existing social norms** of sharing and helping others can be used to spread ICS recommendations through word-of-mouth.

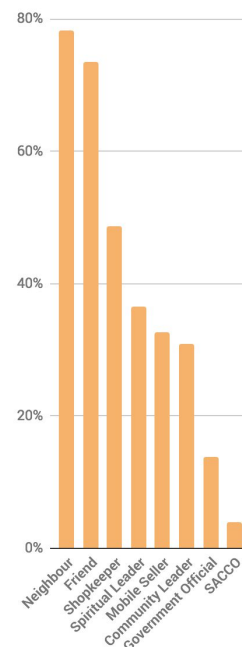


Figure 12. Proportion of respondents who placed each entity in their top 3 most trusted sources of a possible cookstove recommendation



Salesmen oversell aspects of the stove—for example, they'll say it loses so little heat, you could cook on your bed.

Distributor Interviews

The social norm of helping neighbors can be used to frame messaging about cookstoves that highlights the communal benefit as opposed to only the individual benefit (i.e., “help improve your community by recommending an improved cookstove and [insert benefit]”). This approach is also self-reinforcing—if a majority of people within a **social network** recommend improved cookstoves, then the perceptions around such stoves will start to shift.

Behavior change technique: Implement a system that legitimizes shopkeepers and mobile salespeople

Promoting trust and confidence in the institutions responsible for nudging ICS adoption is a foundational mechanism that legitimizes the recommendations made by these institutions. One approach could be to implement a centralized system that would allow customers to verify ICS sellers (mobile salespeople and shopkeepers), compare the prices of different ICS models, get information on the fuel savings associated with adopting improved cookstoves, and other relevant information. Since the vast majority of Ugandans have mobile phones, this system could be a toll-free SMS, USSD, or robo-calling number that customers can text to verify or obtain information about improved cookstoves and their sellers.

The system would enable customers to verify that ICS sellers are certified, which would legitimize their sales efforts (see figures 13 and 14 for examples of such efforts) and reduce the **ambiguity** or **risk aversion** that may be contributing to a **lack of trust** in their recommendations.

Behavior change technique: Consider children as a vector for behavior change

Qualitative data from focus groups and stakeholder interviews indicates that family members are trusted sources of advice. Thus, family members represent a meaningful vector for ICS recommendations. School campaigns focused on key ICS benefits (such as fuel savings) could be tested as a way to promote meaningful conversations about the benefits of improved cooking methods at home.



Women in our focus groups report having a lack of trust in mobile salesmen, since men rarely have personal experience cooking at home.



Risk Aversion

The behavior of humans (especially consumers and investors), when exposed to uncertainty, in attempting to lower that uncertainty.

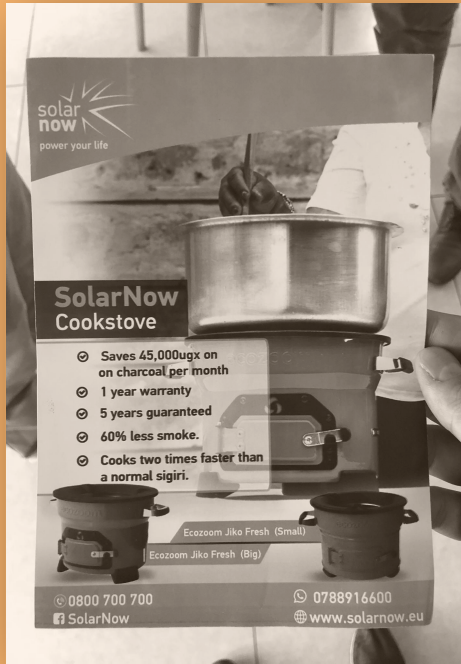


Figure 13. A SolarNow pamphlet showcasing several benefits of an EcoZoom stove (branded here as a SolarNow).

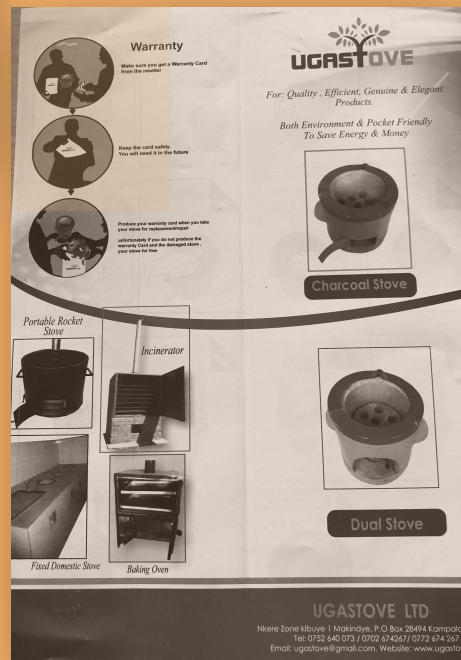


Figure 14. Marketing collateral from Ugastove discussing the various types of stoves available as well as the warranty mechanisms. The “dual stove” is a new type launched by Ugastove that can be used with both charcoal and wood.

Lack of standardized ICS demonstrations limits trust in claimed benefits

Barrier

The effectiveness of public demonstrations is an important finding of numerous reports on ICS uptake both in Uganda and the wider Sub-Saharan region (see ACCES 2014; World Bank 2015a; Price 2017). These reports also point to the lack of demonstrations as a key barrier to ICS adoption.

Our own instruments affirm this finding: 90 percent of respondents cited public demonstrations as being important to their understanding of improved cookstoves, and 89 percent agreed with the statement that it was important to see a demonstration before buying an improved stove. Furthermore, 95 percent said they would trust a public ICS demonstration if they saw one.

However, our survey found that only 27 percent of respondents had ever seen a demonstration. Given that previous studies have shown that public demonstrations increase ICS uptake by a factor of 5 to 6 (see GACC 2015), our findings confirm that their absence is a major hindrance to ICS adoption.

Behavior change technique: Enhance public demonstrations by considering local barriers to adoption

Data from our surveys indicate that demonstrations are highly valued by customers and potential customers. Meanwhile, conversations with key stakeholders suggest that public demonstrations are seldom standardized. We believe that public demonstrations can be enhanced by taking into account the local context (audience, location, etc.) and by leveraging a set of standardized methods of identifying and dealing with the most significant barriers to ICS adoption, on an individual and group basis. For example, in a community that seems particularly untrusting or has very low ICS awareness, a trusted local figurehead can be asked to spearhead the demonstration, by handing out materials or by providing one-on-one advice to members of the audience.



...willingness-to-pay challenges [need to be solved] through proven approaches, including consumer education and field demonstrations.

ACCES 2014



Male focus group participants specifically expressed skepticism that they could trust any improved cookstove without seeing it in action, compared to a baseline stove.



Behavior change technique: Leverage networks of SACCOs to create country-wide public demo campaign

Given that SACCOs are widespread in Uganda (there are over 1 million SACCOs overall, with over 700,000 of them under a single provider called CARE), a country-wide public demonstration campaign through SACCO networks may be a cost-efficient way to reach a wider audience.

Further, such a campaign would increase the general discussion around improved cookstoves, especially as it permeates social networks. Seeing a demonstration, discussing it with a friend, and coming across it in another context will reinforce the mental model of an improved cookstove and also create a sense of familiarity, which is known to increase trust.

Behavior change technique: Use popular television shows to televise public demonstration

One idea worth exploring further is the use of publicly televised shows (e.g., soap operas) that are watched by both urban and rural populations as a vector for diffusing ICS information. Given the importance of seeing the benefits of an improved cookstove first-hand, one possibility would be to use the advertisement breaks to show a baseline stove and an improved stove making a meal side by side. Each advertisement break could be a short (and thus relatively cheap) update on how much charcoal each stove has consumed and what the state of the food is.



Access



6. Access

Improved cookstoves are not widely distributed across the country, causing a choke on demand, which in turn results in market spoilage. Beyond the structural effect (i.e., improved stoves simply can't be purchased), a lack of access translates into low levels of awareness, particularly of the existence of competing ICS models. Thus, consumers feel less confident in purchase decisions and remain uninformed.

A lack of shops carrying improved cookstoves leaves a gap between potential and current demand

Barrier

Evidence from our distributor surveys cited the weak distribution of improved cookstoves as a key barrier to uptake. Previous reports (see Price 2017; SNV 2014) have also found this to be the case, both in Uganda and across the Sub-Saharan region.

Data from the randomized household survey confirm past findings; only 56 percent reported having access to some type of improved cookstove. Many shops do not carry improved cookstoves or have very limited stock (figures 15 and 16). For example, a shopkeeper with upwards of 50 baseline stoves in stock may have fewer than five improved stoves. Focus group participants indicated that they would be more likely to purchase an improved cookstove if it were more widely available among local retailers.

It is worth noting that the data presented are from urban and peri-urban areas. Based on past reports, we anticipate that access to improved cookstoves in rural areas, where upwards of 80 percent of the Ugandan population is based, is even more limited.

Behavior change technique: Create ICS-focused pilot stores

Although there are possible temporary solutions that can mitigate some of the negative externalities of low ICS access, we believe that the only sustainable solution is structural in nature: that is, to increase the number of stores carrying improved cookstoves.



Findings indicate that there is a good network of retail outlets in Kampala but few distributors or vendors in areas beyond Kampala, which makes ICS accessibility hard.

SNV 2014



Figure 15. A metalworking shop that produces and sells various types of metalwares, including baseline cookstoves. A single SmartHome (Ugastove-type) cookstove can be seen at the bottom right.



Figure 16. A Ugastove-type cookstove, shown here in operation. This type of stove is the most common we observed during our fieldwork.



That said, we believe that there are possible low-cost solutions to this problem that can also double as solutions to other barriers presented in this report. In particular, the idea of a pilot ICS store in a populous part of Kampala, which can also deliver public demonstrations and serve as a training center for ICS shopkeepers and mobile salespeople, could be explored further (as discussed in section 10, on interventions).

Poor supply-side variety leads to lack of consumer confidence

Barrier

In our randomized household survey, 56 percent of respondents indicated that improved cookstoves were available in local shops. When asked which models they had access to, 51 percent said Ugastoves and the remainder said fake Ugastoves. Our fieldwork, too, indicates that cookstoves are not readily accessible. It took our team 60 minutes in a very busy market area of Kampala to find even one store selling improved cookstoves. It appears that there is an acute lack of variety in ICS distribution (see Rehfuss et al. 2014).

Furthermore, based on evidence from focus groups and shopkeeper surveys, it seems unlikely that this is driven by demand-side dynamics. Forty-six percent of surveyed shopkeepers reported having been asked by customers about ICS brands that they do not carry.

The consequences of a lack of variety for supply-side entities are obvious. The demand-side consequences are perhaps more subtle yet possibly just as impactful on overall ICS uptake. First, a lack of models to compare leaves potential consumers less informed about risks and therefore less confident in making a purchase decision—something called the **ambiguity effect**. Second, when a particular ICS model is the only one seen in a given area, it is possible that any product faults are associated not with the brand but with the entire product category—this is referred to as the **surrogation effect**.



“I really wish we had seen all these different stoves before—we didn’t even know some of them exist.”

Focus Group Participant



Surrogation Effect

A psychological phenomenon in which the measure(s) of a construct of interest evolve to replace the construct itself.

Behavior change technique: Use USSD, SMS, and toll-free numbers to democratize ICS comparisons

Beyond any supply-level solutions (i.e., increasing the availability of various ICS models), we believe that a potential front-line solution to the poor supply-side variety could be increasing access to information about ICS models. One way to do this would be to create a nationwide toll-free line that can be accessed through telephone, SMS, and USSD. This line could provide consumers with important information about the pros and cons of various ICS models. Importantly, the line must remain unlinked to government entities because of the potential negative effects of low institutional trust.

Mobile sellers face logistical challenges to bridging interest and payment touchpoints

Barrier

Qualitative evidence from distributor interviews and mobile seller surveys suggests that strong distribution networks exist only around Kampala, with little to no distribution elsewhere (see Price 2017; ACCES 2014). This poses structural barriers to mobile sales. For example, although a significant portion of households are interested in purchasing an improved cookstove (60 percent, as estimated by one mobile seller we interviewed in Kampala), about 30 percent require credit to be able to complete the purchase. Although mobile sellers offer installment plans to friends, there is no formal credit system. Thus, a large portion of interested leads are not able to acquire a stove because they simply do not have the cash on hand.

Interestingly, both distributors and mobile sellers report being asked to “come back in a week.” Given the nature of mobile sellers, there is significant difficulty in organizing a second trip to interested households. This is true in an urban center such as Kampala but particularly so in faraway rural areas; mobile sellers may be able to come back only every six months or more. Our initial hypothesis that mobile money could present a viable solution to this problem was invalidated by the quantitative study: 78 percent of respondents prefer to make their installment payments in person, even when presented with a mobile money option.

Beyond these structural barriers, there is a significant negative spillover created when households are interested in an improved cookstove but feel that they cannot afford it due to limited liquidity.



Focus group data showed that women in particular are concerned about being scammed by mobile sellers selling fake stoves.



Behavior change technique: Promote informal lending

We suggest designing programs that facilitate mobile sales of improved cookstoves, particularly low-cost models such as Ugastove, Smart Home, Sessa, etc. One way to tackle the financing of these models is to create an informal credit system.

For example, local entities may act as de facto creditors for ICS customers. For example, when confronted with a customer interested in purchasing an improved cookstove who lacks liquidity, rather than dismissing the potential sale, a mobile seller could instead leave a stove with a SACCO or a local store. This institution would pay the seller at the time of the deposit and collect a down payment (e.g., U Sh 1,000 for a U Sh 40,000 cookstove) from the interested customer. The customer would then be able to return with the remaining payment (e.g., U Sh 30,000) and receive the stove. Concrete iterations of such programs must be carefully designed and tested to reflect on-the-ground realities, but we are optimistic that the right variation could increase ICS uptake in remote rural areas.

Rural distribution prohibitively expensive at current volumes

Barrier

Previous reports identify high distribution costs in remote rural areas as a major structural barrier for manufacturers who are trying to sell cookstoves to populations at the base of the income pyramid. Conversations with distributors largely confirm this idea, with urban-focused efforts seen as having higher returns on investment in the short term. This focus is particularly problematic considering that 77 percent of Uganda's population lives in rural areas (World Bank Data, Rural Population Index available online, 2017). This fact, coupled with the generally low level of operational budgets that distributors have access to, and their overall risk aversion, mean that a high return-on-investment strategy focused on addressing localized consumer needs is required if rural distribution is to work.



Behavior change technique: Social franchise manufacturing and distribution

One possible solution to the rural distribution problem is the social franchising of cookstove manufacturing in remote regions. Qualitative data from our interviews with manufacturers confirm that this idea is aligned with on-the-ground realities. For example, some manufacturers (e.g., Ugastove) intend to train microentrepreneurs to assemble and sell cookstoves in their respective regions.

In addition to being a good structural solution to the problem, this approach has potentially powerful behavioral spillover effects. The act of assembling (or manufacturing) stoves locally has the potential to leverage the **Ikea effect**—i.e., a cognitive bias that leads people to think of items they have assembled as more important. Thus, it is possible that, in combination with the right sales training, distributors who have taken part in assembling a cookstove are more motivated to adopt the proactive sales tactics necessary to sell the stoves. Further design and testing is needed to fully formulate how this behavior change technique could be translated into practice.

Behavior change technique: Create a mechanism for mobile sellers to appoint a local liaison

A mobile seller visiting a specific area might be able to develop a relationship with a local entity who could then communicate possible demand, help plan future trips, organize demonstrations, etc. In particular, mobile sellers might incentivize local stakeholders (e.g., members of a community group, a SACCO, or a women's group) to forge a relationship with them (e.g., through financial incentives, discounts on stoves, public recognition, etc.).



98% of improved cookstove producers in Uganda [were] concentrated around the country's major cities.

Energy 4 Impact 2014



Women in rural areas are often unable to reach a large marketplace where they might be exposed to an improved cookstove.



Ikea Effect

A cognitive bias in which consumers place a disproportionately high value on products they took part in creating or customizing.



Understanding

7. Understanding

The benefits of improved cookstoves are currently undervalued by consumers, potentially affecting their willingness to pay. We want consumers to fully understand why an improved model is better than a baseline one, particularly along the dimensions of health, fuel savings, money savings, time savings, and safety.

Health risks from smoke are poorly understood, limiting motivation to switch to improved models

Barrier

Previous surveys (see Erone et al. 2017) have focused on measuring consumer understanding of ICS benefits; an aspect that is less well understood is the perception of risks related to baseline cookstoves. While 90 percent of surveyed households agreed that the thick black smoke produced when a fire is first lit is dangerous for health, only 65 percent agreed that the smoke thereafter is dangerous. A similar proportion, 68 percent, agreed that overall smoke is dangerous enough to kill. These figures reveal that nearly a third of respondents underestimate the gravity of the health problems caused by smoke. Furthermore, qualitative data gathered from focus groups indicate that, while the general idea that “smoke is bad for health” exists, there are strong social norms around smoke being “annoying” rather than “dangerous”—a possible explanation of why current cooking habits expose children to smoke for prolonged periods of time. In addition to this, only 47 percent of respondents agreed with the blanket statement that improved cookstoves are healthier than baseline cookstoves. When asked why they thought improved cookstoves might be healthier, focus group respondents were more likely to cite safety concerns (e.g., “avoiding burns and fires”) than other health risks.

Thus, although *statistically* smoke kills, the effects are far removed in time from the cause, and people may hesitate to link the two.

Behavior change technique: Make the health risks of smoke more salient

To counteract this effect, we suggest adopting a technique that renders the health risks more **salient** and direct. This can be achieved through campaigns that build on current beliefs that smoke is dangerous and explicitly link it to use of baseline cookstoves. Furthermore, these campaigns need to emphasize that using an improved cookstove will eliminate health risks associated with baseline cookstoves.



They hate the smoke but not for health reasons—they hate it because it hurts their eyes.

Stakeholder Interviews



Women in focus groups were generally unaware of the health consequences of smoke; they saw it more as an annoyance.



In a review of 94 studies comparing gain-framed to loss-framed messages, gain-framed messages consistently improved adoption of preventive behaviors [...] when compared to loss-framed messages with the same objective information.

Gallagher and Updegraff 2013

Behavior change technique: Use smoking cigarettes as an analogue

Quantitative evidence indicates that Ugandans are well aware of the dangers associated with tobacco smoke; according to the Ugandan Ministry of Health, 94.6 percent of adult Ugandans believe that smoking causes serious illness (GATS 2013). Comparing smoke from cookstoves to smoke from cigarettes could serve to further consumers' understanding of the health risks associated with baseline stoves. Any such intervention needs to be supported by further research before being designed, and any final implementation needs to be first tested in randomized controlled trials before being deployed.

Behavior change technique: Use cleanliness norms as promoter of health

Qualitative evidence from household surveys suggests that reduced ash from improved cookstoves versus the baseline alternative is one of the features most appreciated by consumers. Consumers said they were willing to pay up to U Sh 22,700 more for a stove that limits ash spillage.

Designing interventions that leverage this insight to focus on cleanliness rather than health as a key benefit and perhaps go even further so as to draw analogies between a cleaner household and a healthier body could act as a **framing technique** to raise awareness of the health benefits of improved cookstoves.

ICS fuel savings are not widely understood, likely resulting in strong negative pull on demand

Barrier

Lab tests of several ICS models (see Erone et al. 2017) have shown them to be fuel-efficient. However, our research indicates that the implications of this efficiency are poorly understood by would-be consumers.

Of respondents to our household survey, 66 percent agreed that improved cookstoves are more efficient than the baseline alternative. We believe that understanding the benefits of this is critical to ICS adoption, since fuel savings is consistently cited as the number-one reason to purchase a new stove. Furthermore, our stated preference experiment confirms these results: respondents ranked fuel savings and durability as the features that they would pay the most for.



Ugandan women are particularly averse to having their partner smoke—something that could potentially be leveraged to build negative attitudes toward baseline stove smoke as well.



People think that how much heat a stove emits is equivalent to how bad it is for the kids. They focus on safety issues, ignoring health ones.

Distributor Interviews



Framing Effect

A cognitive bias, in which people react to a particular choice in different ways depending on how it is presented.

Future studies might distinguish whether (i) consumers are aware of improved cookstoves' claims to be fuel-efficient, but don't believe these claims to be real, or (ii) are not aware of this fuel-efficiency, or its benefits. We think that both understanding and belief could have a positive effect on ICS demand.

Behavior change technique: Use live demonstrations to increase understanding of the benefits of fuel efficiency and savings

Live demonstrations of improved cookstoves can be used to overcome any **ambiguity, psychological "distance,"** or misunderstanding about what an improved cookstove is, how it is used, and the derived benefits. Given that there is significant confusion among consumers regarding what ICS products represent, we believe that demonstrations would provide a unique opportunity to tackle multiple barriers. In fact, 80 percent of our random household survey respondents indicated that a public demonstration would be important for them to trust an improved cookstove.

Since live demonstrations may be lengthy, demonstrators can also hand out information cards highlighting the main takeaways. These should be primarily image-focused, and showcase fuel savings and durability, along with a call to action that indicates how—and, importantly, where—to purchase an improved cookstove. This links back to self-efficacy theory—i.e., imagining performing a task can be a powerful way to build confidence in performing that task.

Demonstrators could collect phone numbers from attendees for a prize draw, then use these phone numbers to build a potential customer database.

This information card, coupled with the fact that consumers are able to observe the improved cookstove in person (even for a short period of time) reduces the psychological distance and any ambiguity they may have regarding the product—even if they do not attend the full length of the demonstration.

Behavior change technique: Use visual representation of benefits to concretize difference between improved and baseline stoves

To render the benefits of improved cookstoves easier to internalize, a communication strategy could draw on **local mental models** to make fuel savings more salient. Visual representations, such as diagrams, graphs, or calls to action can help concretize the difference between the amount of fuel used by an improved versus a baseline stove (see figures 17 and 18 for images of the two types). For example, pictures or drawings may portray the number of bags of charcoal spent/saved per week in a household that uses an improved and one that uses a baseline stove, alongside items that a family would be able to buy with the realized savings (see Garland et al. 2015).



Compared to the baseline fuel consumption for similar households, the fuel savings accrued from the use of the Envirofit stoves was . . . equivalent to 22%.

Erone et al. 2017



The biggest barrier to cookstove uptake will be to get users to try the stoves.

Stakeholder Interviews



Concrete images and comparisons to familiar experiences help make concepts such as relative frequencies and conditional probabilities easier to absorb.

Suarez and Patt 2004



Figure 17. An industrial-sized three-stone fire. This is the baseline set-up for large-scale cooking operations such as those in schools and prisons.



Figure 18. An industrial-sized improved cookstove, which is faster than the baseline three-stone fire, far more efficient, and has the potential to lead to significant savings in the long term.

Long-term economic benefits of improved cookstoves are poorly understood, constraining demand

There is a lack of understanding around the economic benefits of improved cookstoves. Since these benefits are very different for households that collect their own fuel and those that purchase charcoal, the two cases need to be examined separately.

Barrier

In households that pay for fuel, the long-term (and even medium-term) savings derived from owning an improved cookstove are significant yet poorly understood by consumers. This is likely a case of **future discounting**—the tendency of people to undervalue any future gain. It is important that sales and marketing campaigns understand this effect well, as it tends to be particularly strong in highly risk-averse populations, such as those in lower-income areas. In addition, it is possible that these households exhibit a **narrow framing tendency**, whereby people compartmentalize funds and only make financial decisions based on relative increases/decreases to these compartments. Since baseline cookstove users are accustomed to spending a certain amount of money on ceramic cookstoves, the initial high cost of an improved model may go beyond their mental allocation of funds for cooking materials.

Reports show that the majority of households across Sub-Saharan Africa collect firewood for fuel, and so these households are the most important category (ACCES 2014) to target. In urban areas of Uganda like the one surveyed for this report, 34 percent of households collect fuel (Price 2017). These fuel-collecting households have a harder time understanding the monetary benefits of improved cookstove technology, given that they never spend any money on fuel. Indeed, of the (largely urban) households we surveyed, 37 percent disagreed that improved cookstoves were “more money saving” than the baseline alternative. In an ordinary least squares regression model constructed from the household survey, whether or not a respondent agreed that an improved cookstove saved money was the number-one positive predictor of ICS ownership (see Appendix II).

This shows that emphasizing the benefits of fuel savings is not an ideal strategy to convince these particular households of the monetary benefits of improved cookstoves. Also, they place a surprisingly low value on the time lost due to fuel collection (ACCES 2014).

The cost benefits of durability also need to be communicated. Our surveys show that ICS owners had been using their stoves for on average 3 years and 8 months, whereas lower-cost ceramic stoves last only a matter of weeks. Such improved durability is a key money-saving factor that has not been sufficiently emphasized in marketing efforts.



“I have heard that these cookstoves can save me money but my neighbor’s stove broke after a month—so how can I be sure this is true?”

Focus Group Participant

Behavior change technique: Use consumer finance as a vehicle to frame ongoing costs compared with ongoing savings

When the economic benefits of owning an improved cookstove extend beyond saving on replacement costs (as is the case with households that purchase charcoal), savings can be emphasized even more easily. That said, it is likely that the fixed price of an improved cookstove is simply too high to outweigh even near-term economic benefits. In such case, consumer finance is likely the only way forward, as it reframes the price as an ongoing cost, which can more easily be compared to ongoing savings. For example, in cases where consumer finance is an option, the price of the stove can be given per month, highlighting the savings on charcoal. Thus, the total cost of an improved cookstove minus charcoal savings may be compared against the costs of charcoal for a baseline stove.

Behavior change technique: Create a frame that highlights long-term monetary savings

Advertisements and other communications promoting improved cookstoves should create a frame that highlights monetary savings by linking them to the durability of improved over ceramic cookstoves (which need to be replaced every few weeks).

For example, a visual diagram could show the number of ceramic cookstoves a household would use per year and the cost incurred and compare it with the cost of buying one good improved cookstove, which could last years.

Behavior change technique: Create a frame in which losses become less salient than long-term benefits

To counteract the **cognitive dissonance** between the desire to save and the continued use of baseline cookstoves, we propose an approach that downplays the short-term cost, makes the long-term benefits of adopting an improved cookstove more salient, and helps people overcome **future discounting**. For example, a campaign can be created that emphasizes all of the concrete things a family can purchase over the course of a year with the average money they could save by switching to an improved cookstove. A way to take this idea even further is to tie these concrete things to an emotional outcome—e.g., something that would make a child happy, and that the family cannot normally afford.



Cognitive Dissonance

The state of having inconsistent thoughts, beliefs, or attitudes, especially as relating to behavioral decisions and attitudinal changes.

Improved cookstoves are perceived as luxury goods, creating income-disproportional demand

Barrier

As was noted earlier in this report, qualitative data gathered from interviews and focus groups indicates that consumers perceive improved cookstoves as luxury items fit for only “rich people.” For example, when asked, “Who owns an improved cookstove?”, many respondents in our focus groups stated that only rich people in urban areas do. This belief is further reinforced by the fact that, in many of the focus groups we interacted with, it was the community leader who owned an improved cookstove (and very few others). However, as our discussions progressed, we observed how perceptions began shifting as some of the participants began realizing that improved cookstoves are indeed money-saving.

Only 47 percent of survey respondents agreed with the statement that improved cookstoves save more money than the baseline alternative. The false perception that improved cookstoves are luxury items, combined with a poor understanding of their economic benefits, present serious barriers to uptake.

Behavior change technique: Shift perceptions of improved cookstoves from luxury items to the most cost-effective option

We propose an approach that tackles ICS adoption by shifting the general **mental model** of an improved cookstove as a luxury item to that of a cost-effective option. Given that a significant portion of the value-added of an improved cookstove is the potential for fuel and money savings, we believe baseline stoves can instead be presented as the luxury items, since they end up costing more in the medium to long term than do improved alternatives.

Further, research suggests that **emotions** such as joy, usefulness, and practicality are associated with the conversion from luxury desires to necessities (Cruz-Milán 2015). To this effect, any such messaging could benefit from being accompanied by visual cues that evoke such emotions and associate them with improved cookstoves.

To re-define improved cookstoves as non-luxury items, images might induce an association between baseline cookstoves and wealth. For example, an image of a popular wealthy person using a baseline stove can be juxtaposed with an average Ugandan family using an improved stove with very little charcoal.



In Uganda, it's all about cost savings.

Focus Group Participant

Messaging on the baseline stove user could display “I can afford to waste charcoal, can you?” whereas the ICS household imagery would present a statement: “We decided to switch to an improved cookstove to cut back on costs and save money for our children’s education.”

Time savings are poorly understood, affecting would-be consumers’ willingness to pay

Barrier

Improved cookstoves not only are more fuel efficient but save users’ time as well (see Erone et al. 2017). This feature is especially important in a country like Uganda where the main dish, *matooke*, can take nearly all day to prepare. Yet, only 43 percent of household survey respondents agreed with the statement that improved stoves allow faster cooking times (figure 19). Stated preference experiments showed that participants were willing to pay up to U Sh 7,763 for time savings of one hour per day. This implies that consumers’ willingness to pay would increase alongside their awareness of ICS efficiency.

Behavior change technique: Communicate actual time savings realized by faster cooking times, and leverage gains to promote positive changes in lifestyle

Since most baseline cookstove users have not been exposed to improved stoves, they are susceptible to **confirmation bias** because most people in their network share similar experiences and opinions about cookstoves. Therefore, even when confronted with information, such as the time saved by using improved stoves, people may fall back on their prior intuitions and norms.

To counteract this, campaigns and communication mediums must communicate information about the time saved by using improved stoves. Additional research on the activities that Ugandans would most value doing with their saved time needs to be conducted. This would help determine the real opportunity cost that should be emphasized in any intervention that encourages people to switch from a baseline to an improved cookstove (e.g., lifestyle changes such as spending more time with family, watching TV, etc.). Further, to reduce confirmation bias, ICS sellers should be prepared to not only educate potential customers on the time-savings of improved models, but they should also question customers’ existing perceptions of these models. By engaging customers in this way, they are creating an environment in which individuals are asked to reflect on their own views and the evidence with which they support them. The goal of this is to eventually shift their perceptions, in light of evidence of the actual efficiencies of improved over baseline cookstoves.

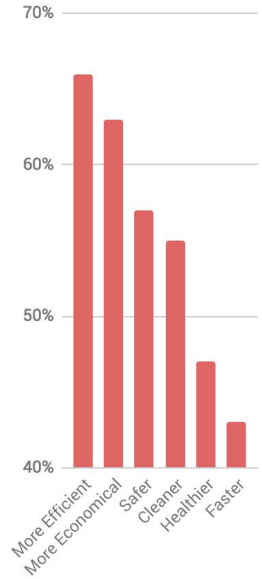




Figure 19. Key ICS benefits, by the proportion of respondents who cited them. Even the highest-rated benefit is not agreed on by a third of respondents.

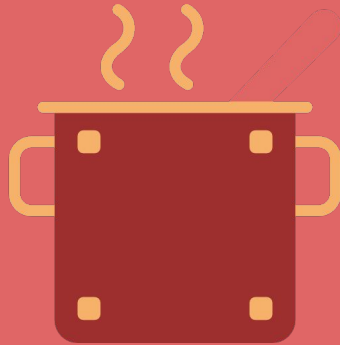


Men in rural areas do not appreciate time savings associated with fuel efficiency, as they are mostly not the ones who have to gather fuel.



Confirmation Bias

The tendency to search for information in a way that confirms one’s pre-existing beliefs or hypotheses.



Product Features



8. Product Features

Despite overall satisfaction with ICS features, certain ICS design choices present barriers to uptake. Ideally, we would like manufacturers to at least be aware of the effects that their choices may have on demand, so they can make informed choices.

Improved cookstoves are inadequate for certain cooking tasks; the hassle factor affects public opinion

Barrier

The trend of “stove stacking”—when households use their baseline stove alongside their improved one—has been well documented (Shankar et al. 2014; Erone et al. 2017). Our survey of Envirofit users confirms this result: only 5 percent of owners had entirely stopped using their baseline stoves (see figure 20 for examples of such stoves).

When asked why they held on to their baseline stove, 51 percent mentioned certain types of dishes (e.g., matoke), or an inability to cook large meals on the improved stove. Previous studies (see Price 2017) have also provided evidence that improved stoves are not adequately suited to local needs. When asked to elaborate, participants explained that it was difficult or unfeasible to steam food using an improved model.

Behavior change technique: Preempt cooking-related objections through information campaigns

ICS limitations must be addressed by manufacturers to increase uptake. That said, we propose several strategies to minimize the effects of these limitations:

1. **Preempt** existing concerns by creating promotional materials that clearly state what an improved cookstove can and can't do, demonstrating that the key benefits remain valid despite limitations.
2. **Counteract** negative views of improved cookstoves by pointing out that baseline stoves have limitations as well and cost a lot more money over a year—“if your overall goal is to be healthier and eat better, than buying an improved cookstove is a no-brainer.”
3. **Reframe** ICS limitations as inherent to a “modern” mode of cooking that is faster, involves smaller amounts, and allows users, in the long term, to afford the kind of food that better lends itself to the limitations of an improved cookstove.



Women face pressures to cook for large numbers of people (which requires a stove beyond the size of most improved cookstoves) and to make certain dishes which are not possible with improved stoves.



Figure 20. Examples of baseline stoves. Baseline stoves come in a variety of shapes and sizes—purely ceramic, purely metallic, and hybrid ceramic-metal. Typically, they are cheap (under U Sh 3,000), break fairly often (e.g. once every few weeks) and use about twice as much charcoal of an equivalent improved cookstove.

The durability of improved cookstoves is often questioned, with implications for uptake

Barrier

Previous studies (Price 2017) have cited the variable quality of ICS products as a major barrier to widespread adoption. The household surveys we conducted produced similar results. Of households who had an improved stove but were still using a baseline stove, several respondents mentioned that their newly purchased improved stove had broken.

Since over half of household survey respondents indicated that they had heard of improved cookstoves from a friend or neighbor, for every poorly made stove sold, a whole circle of friends and neighbors develops a negative perception of ICS technology.

The stated preference experiments indicate that durability, along with fuel savings, is the element that participants are willing to pay the most for. As mentioned earlier, institutional trust is low in Uganda; consumers are unlikely to be forgiving after hearing about or having a bad experience with an improved stove. According to the **grain of truth hypothesis**, having or hearing about one bad experience with an improved cookstove may be enough to assume that all improved cookstoves are bad. Further, people who assume this become subject to confirmation bias, by which other bad experiences only serve to reinforce their assumptions.

Behavior change technique: Transfer the onus for care on to the consumer

To counteract these negative assumptions and prevent confirmation bias, we propose reframing the stove as a product that is built to be durable but requires proper care and maintenance. Focus group evidence suggests that stove mishandling is the main reason they eventually break. For example, leaving an improved cookstove out in the rain overnight (something that would be fine for a baseline stove) can result in the liner cracking, essentially making the stove useless. Thus, clear messaging should be developed to suggest that improved cookstoves are advanced products that require more careful maintenance than their baseline counterparts. Consumers already know this about products such as mobile phones or televisions. Thus, an analogous frame can be created around improved cookstoves as well.



Women, often the key users of improved cookstoves, have little to no education around their proper usage and upkeep.



"This SmartHome (Ugastove-type ICS) has a really flimsy top, I know it will break soon. And this Envirofit, you can tell that if I cook for 8 hours a day, it will get holes on the side."

Focus Group Participant



Grain of Truth Hypothesis

The tendency for a single isolated experience to be generalized to an entire group or category of contexts.

Lower-cost improved cookstoves are too heavy for women to carry, causing access issues

Barrier

A Rebel Group Consortium report (2015) reveals that the ICS feature most disliked is its weight. For example, over 50 percent of respondents reported that Ugastoves are difficult to carry—unlike more expensive brands such as Envirofit, which use carbon fiber to reduce weight. That said, given that Ugastove-type stoves are the most accessible (due to price and availability), weight is a key barrier that needs to be addressed by manufacturers, especially given that their target users are women. Our findings indicate that distributors tend to send their inventory to store branches; and none of the shops we surveyed had invested in delivery services. In addition, 61 percent of the shopkeepers we surveyed were sole proprietors—they cannot leave their store unattended to help a woman carry a stove home.

This barrier is particularly pernicious because it asymmetrically affects women. Although a woman may have the decision-making power, economic capability, and motivation to purchase an improved cookstove, the weight of the model she can afford may be too heavy for her to bear, especially given the fact that the store she will need to purchase it from is unlikely to be near her household.

Behavior change technique: Create ICS packaging with handles

One simple intervention that can counteract this barrier, and an initiative that manufacturers such as Ugastove are already in the process of deploying, is to add low-cost cardboard packaging that includes handles. Until now, cheaper models of improved cookstoves have not been sold in boxes (figures 21 and 22). Adding a box with handles can be relatively low cost while having the potential to increase access. This is key given that the cheaper improved models tend to be heavier—i.e., the ones that women are most likely to be able to purchase without having to consult their partners are the ones most difficult to carry home. This should be communicated more widely to other manufacturers of Ugastove-like improved cookstoves.

Behavior change technique: Organize an ICS delivery service

One possible option, especially in highly populated centers such as Kampala, is to implement an ICS delivery service. This service could be subsidized by a fund that would remove the financial burden from distributors and facilitate their sales process. An additional benefit of a delivery service is that purchasers' neighbors may notice cookstoves being delivered, which helps in normalizing ICS purchase and usage.



Studies show that delivery services and demonstrations can sometimes fail to capture new users, and must be designed very carefully to do so.

Duflo, Kremer, and Robinson 2011



Figure 21. An EcoZoom improved cookstove, distributed by SolarNow for about U Sh 200,000. This type of stove is quite attractive and well built but is priced too high to be purchased in a lump-sum payment. Thus, most sales are made by entities who specialize in credit (e.g. microfinance, SACCOs, etc.) or those who can upsell it when selling more expensive products (e.g. solar panels).



Figure 22. An unbranded improved cookstove carried by a mobile seller in downtown Kampala. After searching for 2 hours in a 1 km perimeter around the Ugastove factory, our team could not find any improved cookstove being sold in shops. However, we encountered a mobile seller who was selling these door-to-door and claimed to sell as many as 20 per day (compared to an average of about 1 per week for a typical store that carries them).



The colors of several models are politically charged, reducing would-be buyers' willingness to pay

Barrier

Qualitative evidence from our focus groups suggests that several ICS models are being commercialized in politically charged colors that can elicit strong negative sentiment from certain portions of the population. Stated preference tests support this finding: some participants are willing to pay up to U Sh 10,000 to ensure that a stove is not painted in a particular color (e.g., yellow). Conversely, participants indicated that they are willing to pay a premium to ensure that a stove can be purchased in black (a relatively neutral color from a political perspective).

We believe that the reason behind why stove color may be a barrier to uptake goes beyond party affiliation. Households that purchase an improved cookstove that is of an unpopular color are not only less happy with the product because of their own preferences, but they risk alienating their neighbors, thus diminishing social capital. In a low-income group, this effect can translate into problematic situations since families rely on their close networks to provide assistance when hardship strikes.

Behavior change technique: Test a black ICS design for its effect on customers' willingness to pay

It is imperative to ensure that all manufacturers are aware of the implications of making their stoves a certain color (e.g., through targeted information campaigns, manufacturer briefings, etc.). Given that stated preference experiments showed that black is the most popular colour, it is worth testing whether manufacturers can increase consumers' willingness to pay for the very same model by commercializing stoves in this color.

Warranties are lacking or mistrusted, creating strong risk aversion and limiting uptake

Barrier

Sixty-five percent of shops surveyed offered no additional services (i.e., repairs or replacement parts) to ICS customers. Of the portion that did, 66 percent would simply send the stove back to the manufacturer—implying that only about 10 percent of shops selling improved stoves are able to make repairs themselves or offer replacement parts.



Given that only 28 percent of our Envirofit survey respondents indicated that they trust shopkeepers, it is unlikely that a large number would be willing to have their improved stoves sent back for repairs. Furthermore, focus group discussions revealed that there is very low trust in any kind of warranty in Uganda—general consumer experience with warranties has been overwhelmingly negative, with qualitative evidence suggesting that scams occur frequently.

Behavior change technique: Preemptive warranty programs

Interviews with distributors and focus groups revealed that in certain situations, sellers offer replacement parts as part of the price of the stove. This approach resonated very well with consumers in our focus groups, who cite durability as a key concern when spending a large amount of their income on an improved stove. Based on this evidence, we suggest promoting repair options—e.g., establishing standards that push manufacturers to release spare parts for any ICS component that is likely to break within a certain amount of time. This “preemptive warranty” would not add much to the cost of components (typically the failing component of a Ugastove-type stove is the top ring, which is not particularly high in cost) and may be the only way to address durability concerns given most consumers’ limited exposure to improved stoves. This could leverage the **Peltzman effect**—a bias that pushes people to take more risks when their perceived safety increases.

Although the cost is relatively low, the psychological security that comes with receiving a spare part is very high, a point that is especially important in lower-income consumer groups. A secondary spillover effect of adding spare components to the sales offering is that these components can shift perceptions. Focus group participants noted that models with spare parts are more durable not just because of the user’s ability to change a component, but because of a more general notion that they are “made to last.”



There are a few models that have begun to incorporate after-sales support to cookstove users. These include services covered by formal warranty agreements and the services provided by artisans that produce stoves for local consumers.

GACC 2015



“Warranties in Uganda are a joke; they simply don’t work, everybody knows that.”

Focus Group Participant



Peltzman Effect

The reduction of a predicted risk by regulations that intend to increase safety.



Gender

9. Gender

Gender dynamics create problems across all stages of the consumer lifecycle and prevent increases in cookstove uptake.

Context

Our household survey detected significant differences in male versus female attitudes toward improved stoves. Seventy-two percent of our sample was composed of females. Awareness was overall high, and more or less equal across genders (82 percent of women and 79 percent of men knew what an improved cookstove is). In terms of awareness of overall ICS usage, men thought that only 15 percent of their neighbors own an improved cookstove, whereas women estimated this figure at 19 percent.

As expected, given past research on the gender asymmetry found within Ugandan households (with males being the key decision makers in a majority of households), more than three times as many women (35 percent vs. 10 percent) thought it would be a problem to save money for an improved cookstove. Seventy-five percent of men said it would be generally easy for them to purchase an improved cookstove; only 48 percent of women said the same.

Surprisingly, a higher proportion of men thought that households should only use an improved cookstove (82 percent vs. 76 percent of women). Similarly, we were surprised to see that men were more aware of the health impacts of baseline stoves—75 percent of them agreed that the smoke during cooking is dangerous for health, compared with 62 percent of women. With this context in mind, we continue on to gender barriers that we consider relevant for increasing ICS uptake in Uganda.

Finally, men and women identified very different entities that they might trust for an ICS recommendation (figure 23) (but, notably, the sample of men who answered was rather small, at 28, and should therefore be treated with caution). Men expressed no trust in shopkeepers, mobile sellers, or government officials—something to consider if any of these are used as vectors to sell to women who do trust them but must consult their partner before making a purchase. On the other hand, word-of-mouth recommendations from friends and neighbors are trusted by men even more than by women—perhaps because of the lack of trust in other entities.

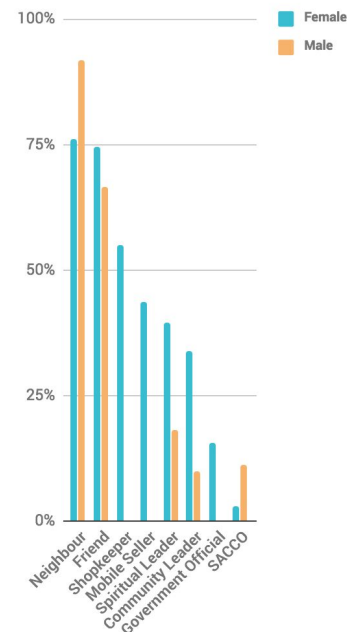


Figure 23. The proportion of respondents, by gender, who placed each entity in their top three most trusted sources of an ICS recommendation



Women drive demand and are ultimately the ones in control of whether or not [ICS] products are fully adopted.

GACC 2016a

Consumers underestimate the need to convince their partners before a purchase, creating a disparity between potential and realized demand

Barrier

Our household surveys show that a relatively low percentage of people see the need to convince their partners before purchasing an improved cookstove—only 30 percent. However, in reality, our survey of existing ICS owners reveals that 80 percent of people who own an improved model found it necessary to convince their partner prior to its purchase. This underestimation of the difficulty consumers are likely to face when purchasing an improved stove is likely an indication of demand suppression—in this case largely driven by the fact that most users of cookstoves are women, whereas the main financial decision makers in a household are men.

Behavior change technique: Information cards handed out during public demonstrations

Given that the difficulty of convincing a single individual to purchase an improved stove is already high, the complexity of persuading a household requires the design and deployment of a system that encourages dialogue and information exchange among household members (see figure 24).

In a hypothetical situation involving a woman who has first observed a public demonstration and then approaches her husband with the proposition of buying one, her failure to provide a compelling argument (one that is backed up by information that would justify the purchase to him) might result in the husband vetoing the purchase. This result in itself may make her feel discouraged and may even shift her perceptions about improved cookstoves (i.e. she may think that her husband is right and that the reasons provided by him to justify the veto are more valid than the benefits that she perceives).

Previous sections have discussed handing out information cards during live demonstrations, for people to share with their friends and neighbors or to use as a reminder of any information they might have missed during the demonstration. Furthermore, the cards could indicate a schedule of all future demonstrations, to give them the option of taking their partner to see these in person. This may be a good mechanism to convince skeptical partners because it does not require any monetary commitment and would allow them to see the improved stove in action for themselves.

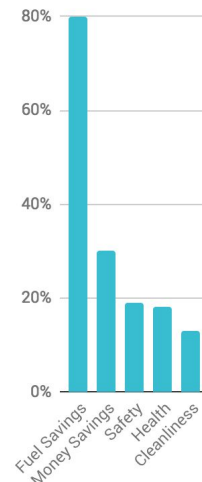


Figure 24. Graph representing the proportion of respondents who placed each benefit in their top three ways of convincing a partner to purchase an improved cookstove. Only 9/28 men answered this question, since most do not need to consult a partner.



"I already asked my husband for money for an improved cookstove but he says I'll just use it for something else... and maybe I would."

Focus Group Participant



Focus group surveys and household data consistently show that the task of convincing one's partner to buy an improved cookstove is much more difficult for women.

Behavior change technique: On-demand demonstration—a toll-free line that allows women to order public demos

Another intervention vector would be a toll-free number that could be called to “order” a public demonstration of an improved stove in a household or community. In this manner, one or more women may be able to organize a time and a place where they can showcase to their husbands the benefits of the improved stove without having to rely on their own powers of persuasion. In order to reduce costs and improve the scalability of this solution, one could consider training local community members who already own an improved stove in how to perform a public demonstration. An incentive structure that rewards those that facilitate the demonstration could also be considered—e.g., they would get a portion of the resulting ICS sales profits.

Behavior change technique: Social franchising allowing women-led groups to assemble and distribute improved stoves locally

Currently, based on the evidence gathered from distributor interviews, most rural sales of improved stoves are from a mobile salesman to a local woman. This dynamic dampens demand since the man who sells the stove is unlikely to spend much time in the kitchen himself, and women often face barriers to large purchases. Social franchising has had significant success in improving supply- and demand-side dynamics in a variety of similar contexts. Given the right model, a social franchising program that allows women-led groups to assemble and distribute improved cookstoves in their local areas could be effective as both a distribution method and as a gender-equalizing mechanism.

Limited mechanisms are in place to convince partners of ICS benefits, creating information asymmetry between household decision-makers

Barrier

The difficulties women face when trying to convince their partners of the benefits of purchasing an improved cookstove have been widely documented (GACC 2016b). What is not clear from previous analysis is *the methods* that women employ to convince their partners to provide them with the funds necessary purchase an improved stove.

Respondents were asked how they would ideally convince their partner to buy an improved cookstove: 37 percent would ask a friend to explain the benefits, while 27 percent would ask a partner to attend a public demonstration. When asked specifically about public demonstrations, 92 percent said they would be helpful. Others cited having more information on the benefits of improved stoves themselves so that they could better convince their partners.

Behavior change technique: Use the EAST framework to generate mechanisms that are effective in convincing partners of ICS benefits

Social interdependence and **shared mental models** can inhibit choices that would otherwise enhance agency and promote well-being: this applies to the problem of convincing partners to buy improved stoves. The difficulty that women face in convincing a partner to purchase an improved stove poses a major barrier as it can prevent them from even considering the option due to a possible fear of rejection.

More generally there is a need to implement mechanisms that facilitate the sharing of ICS benefits among both parties. The EAST framework can be applied to enhance the development of these mechanisms:

Easy: Information cards and centralized system (toll-free SMS or robo-calling number) that will allow customers to verify and obtain information instantly and hassle free.

Attractive: From the husband’s perspective, buying an improved stove should be attractive, perhaps bundled up with other things that he values (such as mobile airtime, electricity, etc.). If buying an improved cookstove were associated with the ability to buy more mobile airtime, then the prospect may be more attractive.

Social: The purchase of an improved stove can be made social by highlighting norms around ICS usage (e.g. “X just bought an improved cookstove last year”) or inviting the beneficiary to a live demonstration. The live demonstration could be reframed as a communal activity.

Timely: According to the World Bank’s 2015 *Mind, Society and Behavior* report, timing important decisions when **cognitive bandwidth** is high is critical to reducing errors in decision making. This logic can be applied to timing the discussions around improved cookstoves to avoid times when the beneficiaries’ cognitive resources may be heavily taxed (e.g., right after harvest season).



Investment decisions may be compromised if they happen to fall during months when people may be particularly cash strapped because of social obligations.

Chemin, De Laat, and Haushofer 2013



“If I go to my husband and ask him to give me money for an improved cookstove, he’ll just say ‘Well, what’s wrong with the stove we have? Don’t they both do the same job?’”

Focus Group Participant



Social Interdependence

When the accomplishment of each individual’s goals is affected by the actions of others.



Cognitive Bandwidth

The amount of resources that the brain has to process information and make decisions.

Women find it particularly difficult to convince their partners to buy an improved stove

Barrier

The issue of gender dynamics within the family unit has been discussed at length in a variety of previous reports (see GACC; ACCES 2014). These reports mention that women in Uganda have diminished purchasing power compared to their husbands, face more aggravated long-term health impacts from smoke, and spend most of their day cooking or gathering fuel—a phenomenon that has been called “time poverty.”

It is therefore reasonable to assume that women face difficulty trying to convince their partners to provide them with the financial means to purchase an improved stove; what is not clear from previous reports is the extent of the difficulty that they face. We asked participants in the random household survey to what extent they agreed with the statement: “I think I would have significant difficulty in convincing my partner to purchase an improved cookstove.” Women were **3.6x** more likely than men to agree.

What is perhaps surprising is that men may have a fairly high affinity for improved cookstove models—a higher proportion of them believed that all households should have an improved stove (82 percent versus 76 percent for women) and they are more aware of the health impacts of baseline stoves (75 percent versus 62 percent of women agreed that the smoke while cooking is dangerous). Nonetheless, qualitative evidence from focus groups suggests that men may not trust women with household funds that go beyond daily use.

Behavior change technique: Use a voucher system to buy cookstoves

Qualitative data indicate that it is often difficult for the woman to obtain all the funds necessary, as men do not always trust that the money will be used to purchase an improved stove. To counteract the high up-front cost of an improved stove, and the low trust in women’s purchasing habits, a type of layaway payment method can be set up using vouchers, such that a certain number of vouchers need to be purchased (i.e., 5 vouchers = 1 stove) to buy an improved stove. This voucher would be used to instill trust in how the funds are used and reassure the husband that the money is spent on purchasing the cookstove.

An added bonus of the voucher system, as opposed to a traditional layaway system, is that it provides a tangible, self-reinforcing indicator of progression toward a goal.



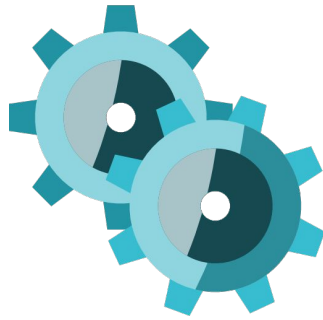
...time burden is a major contributor to women’s ... “time poverty” ...

The time impact of solid fuel cooking also reinforces existing inequitable gender power relationships within the family unit and broader society.

GACC 2015b



Gender-sensitive strategies must consider mistrust between spouses, especially regarding the spending of discretionary income and savings.



Intervention Vectors

10. Intervention Vectors

This report considers a number of important behavioral barriers that limit ICS uptake in Uganda. Next to each barrier, we have already presented very preliminary thoughts on behavior change techniques that have the potential to increase ICS uptake. The present section prioritizes and organizes our insights into an action plan, categorized under two potential “intervention vectors.”

By intervention vector, we are referring to a cohesive pilot program that allows the implementation team to integrate, prototype and test multiple behavior change techniques at a relatively low cost. Importantly, these vectors **do not** address all of the barriers we have presented here—nor do they necessarily tackle the barriers we consider most important. What they aim to do, however, is provide the highest possible return on investment given the final goal of increasing ICS uptake. The barriers we will discuss in this section are:



Access Point

The creation of a dedicated ICS sales and information access point that can be used as a vector for testing and comparing different ICS models, offering credit mechanisms, delivering sales support mechanisms to mobile sellers and shopkeepers, publicize public demonstrations, coordinate warranty programs, etc.



Information Line

The creation of an informational phone / SMS line that can be used as a vector to provide information about ICS models, verify the legitimacy of sales people doing rural runs, schedule deliveries to customers, schedule resupply to stores, provide credit mechanism information to consumers, etc.

Access Points

Our fieldwork indicates that widespread ICS access is both extremely important (along all the categories in this report) and very much lacking (even in very central/urban parts of Uganda). Lack of access is an obvious structural barrier to consumers who are looking to purchase an improved stove. However, perhaps more important, it drives down overall consumer confidence in the product and counteracts any notion that owning an improved stove is a cultural norm. Thus, in the long term, if access is not properly addressed, it may prove to be a choke on demand that limits the return on investment in all other ICS-related efforts.

The obvious solution to increasing access is to increase the number of access points—whether shops carrying multiple ICS brands, single-branded ICS shops, or on-demand mobile sellers. However, based on stakeholder interviews, there is currently no business model that makes the scaled creation of such access points worthwhile for private sector players. Thus, it seems that a key priority for future work should be to create a profitable, sustainable, and scalable model for access points that can serve as an example to players looking to increase sales across the country.

As a first step toward this, we propose designing and testing one or several pilot access points in downtown Kampala that are specifically intended to:

1. Hone in on a profitable, sustainable, and scalable model for a wide network of ICS access points
2. Provide an ICS information point that allows consumers to gain first-hand experience with various ICS models
3. Leverage their access to consumers to prototype and test various behavior change techniques presented in this report

This section briefly describes the features that we envision for such an access point. Importantly, our report does not suggest a concrete blueprint for the access point. Such an effort would require a separate project phase and should address concerns such as:

- The participatory role of various stakeholders (manufacturers, distributors, financing organizations) as well as stock ownership considerations
- The exact mechanism and entity that would manage the access point
- The relationships needed to bring the access point to scale once a scalable model is found



“I need to know someone who bought an improved cookstove from a particular store if I’m going to trust that store.”

Focus Group Participant



“The biggest barrier to cookstove uptake will be to get users to try the stoves.”

Stakeholder Interview

As a first step toward this blueprint, we suggest, based on the insights found in this report, several features that we believe the access point should test:

Multiple cookstove models

A common concern in both focus groups and household surveys was that consumers had not actually seen more than one type of improved cookstove and therefore did not feel that they could make confident purchasing decisions. Having multiple demo models available at the access point would, at the very least, provide an opportunity to counteract this.

Hands-on demonstrations

A key prerequisite for trust is to either have first-hand experience with an improved cookstove or speak with a friend/neighbor who has. Therefore, we suggest that access points can have designated times when consumers can try different ICS models hands-on, perhaps alongside a baseline stove.

Information booklet

A key issue, especially in the context of complex gender roles, is a lack of clear, concrete, and evidence-based information to support the purchase of an improved stove. Information booklets can be an effective way of presenting key ICS benefits—particularly those that a husband and wife can rally around.

Sales tactics testing

Interestingly, an access point would be a useful tool to allow for the testing of various sales tactics in an A/B way that provides an evidence base for sales potentially across Uganda. Importantly, given the large differences between consumers in different geographies, these must be “tactics” (i.e., flexible and personalized) as opposed to static strategies.

Referral program

A centralized access point can test a referral system that provides consumers with a tangible incentive to recommend improved stoves to people in their social network—since a recommendation from a friend is known to be much more effective than from other sources.

Vernacular term

A common name for “improved cookstove” can be tested and popularized at access points.

Packaging

One hypothesis that we have presented in this report is that current ICS packaging does not allow women to easily carry stoves. Physical packaging with handles can be piloted at the access point—ideally in a way that makes the argument (if it is indeed the case) that manufacturers can increase profit margins by providing this benefit more widely.

Delivery

Given the weight of the stoves, it is possible to test a delivery system that allows consumers to pay a small additional fee to have a stove carried home for them.

Financing options

Given that consumer finance is a key barrier to ICS purchases, pilot stores can be leveraged to provide personalized advice regarding the types of financial products (both savings and credit) that can allow a specific household to eventually own an improved stove.

Marketing collateral

A physical access point presents the opportunity to test marketing collateral based on insights in this report—e.g., the idea of reframing baseline stoves as the “luxury” option since they cost more in the long term.

Spare parts

Since consumers do not feel confident in the warranties and guarantees that come with an ICS purchase, the access point could offer spare parts (e.g., top rings) for purchase.

Public demonstrations

The existence of an access point at a very central location would allow for the testing of public demonstrations of various formats—in particular, we believe that it is important to develop a model demonstration that can easily (e.g., using a checklist) be administered by untrained mobile sellers. This checklist can then be distributed without the need for extensive training programs.

Social franchising

The key priority for any access point, beyond providing critical information about the effectiveness of various ICS selling strategies, is to hone in on a profitable, sustainable, and scalable model that can be used to promote private sector growth around the country. Once this goal has been achieved, social franchising represents one potentially promising way to expand the successful model across the region. Further work is needed to flesh out the implementation strategy behind this (local partners, incentives, ownership of stock, etc.).

Localized, stated preferences

In order to make interventions effective and scalable, local offers must meet local demand. Thus, it is crucial to understand consumer choices and attitudes at a local level. To this end, we propose that access points be used to deliver short discrete choice experiment studies that would potentially yield information that can increase the effectiveness of:

- Cookstove assortment
- Locally attractive offers and promotions
- Locally adjusted financing options
- Localized communication strategies
- Marketing collateral
- Social network adjustments
- Access point localization

Centralized information line

Based on our work so far, we believe that a centrally located access point is a potentially powerful way to work toward a scalable social franchise model for ICS stores. That said, we are also cognizant that over 80 percent of Uganda's population lives in rural areas.

To tap into this population and increase awareness, understanding, access, and trust, we also believe it is crucial to test a system that empowers consumers country-wide to access ICS-related information and services. With this in mind, we propose what we think could be a high-return and relatively low-risk way of supporting this goal: a centralized toll-free phone/SMS/USSD line. Given the almost ubiquitous penetration of mobile phones in Uganda, such a service would be accessible to a large number of people.

In addition, conversations with distributors have already revealed that engagement with USSD/SMS services are very high—although further research is needed with local partners to determine returns and to confirm that this is true at scale. We envision a centralized phone/SMS/USSD service as testing the following functions.

Personalized and automated credit advice via USSD

Given that consumer finance was identified as a major barrier to uptake, in particular among populations residing in lower-income, rural areas, we believe that providing consumers a centralized system that asks them several questions (e.g., three) and identifies for them what the most optimal financing option is would be potentially effective. This kind of system would have at least two added benefits: (i) it would provide data about the ICS-related finance preferences of consumers around the country; (ii) it would be a potential opportunity to partner with credit providers—perhaps even the same telecommunications companies that operate the centralized phone/SMS/USSD line—to offer consumer-finance-related services.

Socially franchised staffing model

One potentially interesting feature that can be tested via a centralized phone line is making local representatives available to answer queries that are specific to the region of the caller. Each such agent would be provided with brief training and would then serve as an info-point for consumers in the area. One potential extension of this implementation is to have a decentralized version of this system where the calls would be routed to local members of the community that can answer caller queries. This would also act as a soft-test of the social franchise aspect of the physical access point and help form the relationships and networks that can later be extended to socially franchising the access points. In addition, having a social franchise component to the phone line would allow the system to be primarily staffed by women who have experience cooking—even cooking the same types of meals as those calling.

Frequently asked questions through SMS/USSD

Using a USSD menu accessible through SMS, consumers can easily access answers to general ICS-related queries that are likely to impact their purchase decision. In addition, this format can be used to provide specific information on how to maintain and care for an improved stove, how to prepare certain meals on one, etc.

Localized languages

Although system information needs to be decided centrally, the delivery should be done at a local level, using dialects that are spoken by local populations. Conversations with distributors have revealed that telecommunications companies already have ways of locating a specific mobile phone—a system can leverage this technology in order to provide a local version of the information delivered to each person, in the appropriate language.

Automated license checks

One significant trust issue that we encountered was that, although mobile sellers are very effective in selling improved stoves, they are not trusted by consumers. Given that the potential purchaser (especially in rural regions) has never seen, and may never see, the mobile seller again, it is difficult for them to disburse the equivalent of 1 month (or more) of disposable income for a product that is unfamiliar and potentially fake. To counteract this, we propose leveraging the centralized line to verify mobile sellers, thus ensuring that they are trustworthy (e.g., certified by a central entity). Although institutional trust is generally very low in Uganda, qualitative data from focus groups indicates that this mechanism would alleviate consumers' fear of being scammed.

Scheduled distribution

One significant barrier that we observed, relevant particularly in rural contexts, is the reality that mobile sellers visit certain regions only a few times a year. Given the seasonality of savings and spending, this makes the timing of their visit especially important and potentially a limiting factor for sales. One possible way to counteract this would be to form ICS groups that can order a larger volume of cookstoves at a time. The centralized phone line could be leveraged to facilitate placing an order. Furthermore, such a system could even allow distributors to provide a discount, further incentivizing the purchase. Finally, such a program would facilitate testing referral programs—whereby the person organizing the group ICS order receives their stove at a steep discount or for free.

Paid surveys

In order to successfully scale the access point vector presented earlier, it is crucial to have highly detailed and localized information about consumers. A centralized messaging platform would provide a critical research tool—for example, a small amount of airtime can be given to participants for completing a survey. In exchange, they could answer simple questions about their attitudes toward improved cookstoves, in order to better localize sales efforts.

Barriers	Access Points	Info Line
Shopkeepers overestimate consumers' ICS awareness		
Word-of-mouth is low		
Consumers underestimate ICS prices		
There is no common term for ICSs		
Health risks from smoke are poorly understood		
ICS fuel savings are poorly understood		
ICSs are perceived as luxury goods		
ICSs' time savings are poorly understood		
Low trust in institutional ICS recommendations		
No standardized ICS demonstration		
Consumers underestimate need to convince partners		
Limited mechanisms to convince partners of ICS		
Women face more difficulty convincing their partners		
Shopkeepers do not widely offer credit		
SACCOs are widely mistrusted		
Cost of credit is too high		
Consumer savings are difficult		
Lack of incentive to provide credit for cheaper ICS models		
ICSs inadequate for certain cooking needs		
ICSs have durability issues		
Cheap ICSs are too heavy for women to carry		
ICS colors not politically sensitive		
Warranties are lacking and mistrusted		
Low consumer access to shops carrying ICSs		
Poor supply-side variety		
Mobile sellers face logistical challenges		

Table 1: This table shows all of the barriers we have identified in the report, as well as the two intervention vectors we have proposed in this section. We evaluated the potential of each vector to address each barrier—the ones with the most potential are shown with a full circle and the ones with the least, with empty circles. Importantly, “potential” does not necessarily mean that a vector *directly* addresses a barrier—in some cases, a vector unlocks important learning that can later be applied at scale.

11. Closing Remarks

This report has presented the findings of a behavioral audit that identifies core behavioral barriers to ICS uptake, suggests behavior change techniques to overcome them, and provides a very preliminary overview of intervention vectors that have the potential to address multiple barriers.

While we believe that the behavioral barriers and change techniques presented here are a step toward unlocking the demand side of the uptake equation, we are also cognizant of the fact that much work remains to be done on the supply side in order to guarantee properly capitalized private sector players who can assure the supply chain necessary to avoid market spoilage. With this in mind, we believe that the efforts described in this report must be closely aligned with supply-side efforts, in a way that involves key stakeholders on the ground and empowers them to be agents of change.

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