



**STUDY AND MAPPING OF  
CONSUMER FINANCE MODELS  
FOR CLEAN COOKSTOVES**

**KENYA FINAL REPORT**

**ARC FINANCE**

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# KENYA FINAL REPORT

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# 1 Key Findings

- **Willingness to take up financing was dependent on the perceived level of “formality” of the financing option.** The most preferred consumer financing options were informal and semi-formal mechanisms that did not rely on engagement with a formal finance institution.
- **Participant’s willingness to take up financing was more dependent on the cost of the cookstove, and was not shown to be dependent on the type of cookstove.** Participants were willing to take up informal or semi-formal financing options if they were unable to pay cash. For low-income participants, the threshold at which they were able to pay cash was much lower than for middle and high-income participants.
- **Informal group savings and layaway with a vendor were the most preferred financing options.** Participants were risk averse and preferred to enter into financing models that involved a savings mechanism, like layaway, rather than a borrowing mechanism, like asset finance.
- **Many cookstoves companies in Kenya are piloting consumer financing options.** At the time this research was conducted, a majority of the consumer financing options that cookstove companies were piloting had been running for less than a year.
- **Partnering with MFIs to provide finance for clean and improved cookstoves has had mixed success.** Some cookstove companies have had success in partnering with MFIs to provide finance options to consumers. However, many have been unable to establish an effective and working partnership with an MFI.
- **Partnerships with financial institutions are most effective when the financial institution is focused only on the financing aspect.** Given that the expertise of financial institutions lies with providing financial services, this is where their services will be most effective in partnership with a cookstove company. While financial institutions are not necessarily expert at selling cookstoves they can be an effective partner to provide expertise on the financial and administrative aspects of consumer financing.

## 2 Introduction

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### 2.1 Background

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Arc Finance (Arc) was selected by the Global Alliance for Clean Cookstoves (GACC) to undertake a study on consumer financing mechanisms for clean cookstoves that was designed to identify partners and financial products with the greatest potential to be accepted by target customer segments in Ghana and Kenya. To gather the relevant data, Arc undertook desk research, conducted stakeholder interviews and engaged focus groups with potential consumers in country. Arc also prepared a literature review of all existing country specific data in clean energy, water, ICT and sanitation and other comparable consumer durables sectors. Arc made use of available microfinance data on demand, key legal and policy constraints of providing consumer finance, and consumer income and expenditure patterns.

The research focused on consumer finance products or models that would be the most viable to consumer segments in Ghana and Kenya identified by the Alliance as most likely to adopt clean cooking solutions in the near term. This report summarizes the key research insights, strategic opportunities, challenges, and possible interventions to realize scale up of consumer finance for clean cooking solutions in Kenya.

### 2.2 Report Objectives and Research Rationale

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The goal of this study was to identify viable consumer finance products and delivery models to support the purchase and adoption of clean cooking solutions among target consumer segments in Kenya that were identified by the Global Alliance for Clean Cookstoves (GACC or the Alliance)<sup>1</sup>. This study seeks to inform the Alliance and its partners on the most effective consumer finance model/s with regard to different consumer segments in Kenya, and to identify potential partners for implementing and scaling up access to the identified consumer finance model/s.

Kenya was chosen for this research due to the challenging energy access environment experienced by the vast majority of the population. Kenya is also one of eight countries that has been prioritized by the Alliance for immediate engagement to enhance the demand and supply of cookstoves, as well as foster an enabling environment for a thriving clean cookstoves and fuels market.

Situated in sub-Saharan Africa, Kenya is home to a population of approximately 45 million<sup>2</sup>. Just over 60% of the population is under 25 years and an estimated 76% of the population resides in rural areas<sup>3</sup>. Three quarters of the Kenyan workforce is employed in the agricultural sector and approximately 87% of the population over the age of 15 years can read and write<sup>4</sup>. With a strong agricultural sector, Kenya is the ninth largest economy in Africa: gross domestic product is around USD\$40 billion and gross national income per capita is approximately USD\$860<sup>5</sup>. The growing population presents both opportunities and challenges for the energy sector. While there are increasingly more working-age citizens, the demand for energy continues to grow. And for the three quarters of the population who reside in rural areas, access to adequate energy will be more difficult than for those who reside in an urban area.

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<sup>1</sup> For more information on the research conducted to identify these segments, please see the Alliance's *Kenya Consumer Segmentation Study* (October 2014), available at: <http://cleancookstoves.org/resources/339.html>

<sup>2</sup> UN Population Division (2013) *World Population Prospects: The 2012 Revision*

<sup>3</sup> United States Central Intelligence Agency (2014) *World Fact Book: Kenya*

<sup>4</sup> GACC (2013) *Kenya Country Action Plan 2013*

<sup>5</sup> World Bank (2014) *Country Data: Kenya*

Demand for modern energy is a key economic indicator. While sub-Saharan Africa accounts for 13% of world population, it only constitutes 4% of the world's energy demand<sup>6</sup>. Access to modern energy, which is defined as access to a minimum level of electricity and other forms of energy that are safe and sustainable, is fundamental to development. The International Energy Agency reports that people living in sub-Saharan Africa experience the most limited access to electricity than any other region in the world<sup>7</sup>. Around 80% of household energy is used for cooking in sub-Saharan Africa, and to meet their cooking fuel needs, four out of five people in the region rely on biomass, mainly firewood<sup>8</sup>.

Lack of access to modern energy has significant, negative health consequences. For the Kenyans who rely on biomass to cook, they are at risk of contracting serious, often fatal, diseases due to household air pollution (HAP). Acute respiratory infections, chronic obstructive pulmonary diseases (COPD) like chronic bronchitis or emphysema, as well as lung cancer, asthma, cataracts, and tuberculosis have all been linked to HAP, which is estimated to result in the premature death of over 4 million people annually<sup>9</sup>. In Kenya alone, household air pollution (HAP) causes over 15,000 deaths each year, and directly impacts the health of a further 36 million<sup>10</sup>. Lower respiratory infections, often caused by HAP, are the second leading cause of death in the country<sup>11</sup>. The main cause of HAP in Kenya is the use of biomass in basic cooking devices, together with unventilated indoor spaces for cooking. Awareness of the health impacts of cookstove smoke, however, remains low.

The burden of energy poverty (lack of access to adequate modern energy) and the associated negative health risks disproportionately affect women and children. In Kenya, generally women are generally responsible for cooking, and they do so with their children close at hand. Women exposed to indoor smoke while cooking with biomass fuels are three times more likely to suffer from COPD than others who use electricity, gas or cleaner fuels<sup>12</sup>. It is also estimated that pneumonia caused by HAP is responsible for more than 50% of premature deaths among children under the age of 5<sup>13</sup>. Moreover, for households that collect firewood for cooking, it is the female's responsibility to collect and carry the firewood. Women who are required to spend time collecting wood forego the opportunity to engage in other activities that could benefit their livelihood and well-being. Women are also at risk of violence or abuse when travelling far from home to collect wood.

The smoke from use of solid fuels (without the use of energy conversion technologies) for household energy also emits some of the most important contributors to global climate change, including 21% of global black carbon emissions<sup>14</sup>. Unsustainable harvesting and traditional use of biomass also contributes to deforestation and land degradation<sup>15</sup>.

By reducing fuel use and exposure to harmful cooking smoke, cleaner and more efficient cookstoves and fuels can address many of these negative impacts and deliver a wide range of health, environmental, livelihood, and gender benefits. The Alliance, and its over 1000 public, private, and non-profit global partners, is working to help overcome the market barriers that currently impede the production, deployment, and use of clean cookstoves in developing countries and has set a goal of fostering the adoption of clean cookstoves and fuels in 100 million households by 2020. One of these barriers is providing affordable consumer financing options for cleaner and more efficient stoves and fuels at scale. As a result, this study explores possible consumer financing mechanisms to promote and enable the purchase of clean cookstoves, and identifies the mechanisms most preferred by consumers in Kenya.

<sup>6</sup> IEA (2014) *Africa Energy Outlook: A Focus on Energy Prospects in Sub-Saharan Africa*

<sup>7</sup> GACC (2013) *Kenya Country Action Plan 2013*

<sup>8</sup> Ibid.

<sup>9</sup> World Health Organization (March 2014) *Household Air Pollution: Fact Sheet N.292*

<sup>10</sup> Institute for Health Metrics and Evaluation (2010), available at: <http://vizhub.healthdata.org/irank/heat.php>

<sup>11</sup> Ibid.

<sup>12</sup> World Health Organization (2006) *Fuel for Life: Household Energy and Health*

<sup>13</sup> World Health Organization (March 2014) *Household Air Pollution: Fact Sheet N.292*

<sup>14</sup> Bond, T. C. et al. (June 2013) *Bounding the role of black carbon in the climate system: A scientific assessment*

<sup>15</sup> World Health Organization (2004) Desai, M., Mehta, S., Smith, K. *Indoor Smoke from Solid Fuels: Assessing the Environmental Burden of Disease at National and Local Levels*



## 3 Research Design and Methodology

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### 3.1 Research Design

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#### ***Goals and Objectives***

The team carried out the market research based on a set of agreed upon research goals and objectives. The team also developed several hypotheses to test during the course of the research. For a complete list of these goals and hypotheses, as well additional information on the research design and methodology, see Annex D.

#### ***Development of Consumer Finance Models***

Eight business models were tested during the research. These include: informal group savings, layaway with a vendor, savings with a financial institution, asset finance, loan from a financial institution, employer loan/guarantee, SACCOs loan/guarantee/savings, and remittances.

#### ***Selection of Clean and/or Improved Cookstoves***

The team tested four types of improved cookstoves with the focus group participants in Kenya. Each cookstove was a generic, non-branded model. The stoves were differentiated by the fuel type used. The following types of fuel were selected: wood, charcoal, LPG (liquefied petroleum gas), and biogas. Each type of cookstove was sufficiently different from the others so that useful comparisons between them could be made. The cookstoves also ranged in price in order to determine price sensitivity among focus group participants. See the Kenya Focus Group Report (Annex A) for a description and picture of each cookstove as it was presented to the focus group participants.

### 3.2 Stakeholder Interview Methodology

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Prior to the focus group sessions, the team interviewed a range of stakeholders including banks, microfinance institutions (MFIs), clean and improved cookstove companies, consumer durable companies, government departments, non-governmental organizations, national associations and policy makers. The stakeholder group included organizations that might be potential implementing partners in the future. The interviews were conducted in the field and remotely. The goal of the interviews was to test the viability of the business models being developed, to refine the approach planned for the focus groups, and to gather additional data that would help the project develop the business models and select the products. The team sought information on how these stakeholders currently or previously utilized various consumer financing models to sell improved cookstoves and other consumer durables. They were also asked to comment on the risks, challenges and opportunities of the business models that they used and those that were tested in the focus groups.

### 3.3 Focus Group Methodology

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Prior research carried out for the Global Alliance for Clean Cookstoves (GACC) indicated that low, middle and high-income households residing in both rural and urban areas of Kenya are more willing to purchase a clean and/or improved cookstove in comparison to other selected household items. The research indicates, however, that the price consumers are willing to pay is less than the cost of many imported stoves in Kenya. When asked how much they were willing to pay for a clean and/or improved cookstove, consumers in the Western Region of Kenya provided a relatively low price while consumers in the Central Region provided slightly higher prices. Arc Finance's research built on the above findings and tested the appetite of low, middle and high-income households in the rural and urban areas, and in provincial towns of Kenya, for a variety of financing options to assist with the purchase of a clean and/or improved cookstove.

For this study, methods focused on qualitative research, including ten focus groups sessions. Five focus groups were held in the Central Region of Kenya, and five were held in the Western Region. Each group had a maximum of 10 participants. Upon arrival at every session, participants completed a survey regarding their personal information (age, education, income level), cooking habits and knowledge of improved cookstoves, use of mobile phones, and savings and lending patterns. A summary of participant demographics is presented below.

Each session lasted approximately two and a half hours. During the focus groups, the moderator guided and facilitated discussion among and with the participants that was aligned with the research objectives. The dynamic of the discussion encouraged each participant to contribute their personal preferences in order to achieve a range of opinions on the subject. Though lacking statistical significance, this qualitative market research is useful to understand the arguments and mental processes that people have when forming their opinions, attitudes and values towards cookstoves.

The selected consumer finance models were tested in the focus groups, in accordance with and depending on the socio-demographic profile of the participants. Participants were told that their opinion was sought to determine the viability of each model as a potential means to purchase a clean cookstove. The goal was to determine the participants' willingness to take up a financing option in order to purchase a clean cookstove, and whether this willingness varied according to the type of cookstove. In addition, the most desirable financing options were also determined.

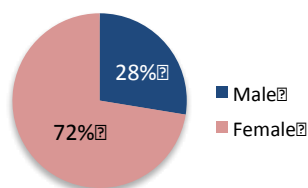
### 3.3.1 Focus Group Demographics

For a full description of the focus group participant demographics and a complete list of participants' occupations, please see the *Kenya Focus Group Report*. The summary below provides a snapshot of the participants who took part in the focus groups.

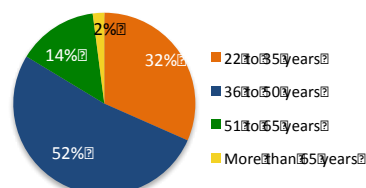
#### Gender and Age

As shown in the graphs below, the majority of participants were female and most were between 22 and 50 years of age.

Gender: Participants



Age: Participants



#### Income

Participants were categorized into quintiles in accordance with their *monthly household income*:

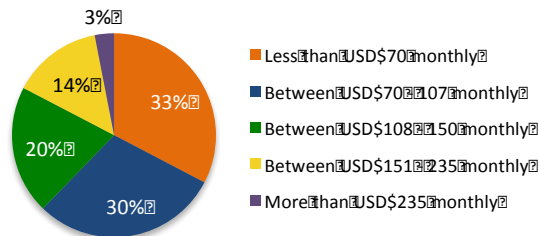
- Quintile 1 (Q1) = less than USD\$70 (also referred to as 'very low income' in this report)
- Quintile 2 (Q2) = between USD\$70 and USD\$107 (also referred to as 'low income')
- Quintile 3 (Q3) = between USD\$108 and USD\$150 (also referred to as 'middle income')
- Quintile 4 (Q4) = between USD\$151 and USD\$235 (also referred to as 'high income')
- Quintile 5 (Q5) = more than USD\$235 (also referred to as 'high income')

As demonstrated in the graph below, one third of the focus group participants were considered very low income; one third reported that they were low income; and, a fifth reported that they were middle income.



### Income Level: Participants

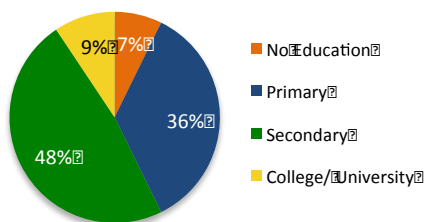
What is your average monthly household income?



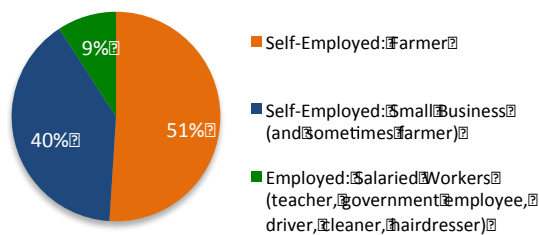
### Education and Occupation

As shown in the graph below, almost half of the participants stated that they had secondary level education. Just over half declared that they were self-employed farmers; 40% stated that they were self-employed in some form of small business; and, the remainder said that they were salaried workers. Typical crops for farmers were maize, beans, sugarcane, tea and coffee. Some farmers had cattle but the main source of income was usually from crops. Small business owners identified themselves as small store (groceries) owners, dressmakers, drivers, carpenters, and electricians among others. And the salaried workers were mostly government employees or teachers. Note that many of the small business owners and salaried workers often engaged in agricultural work in addition to their main source of income.

### Education Level: Participants



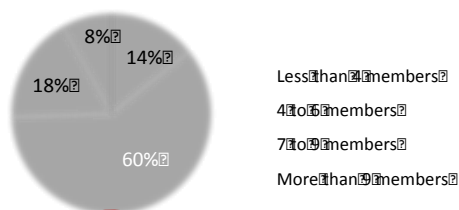
### Occupation: Participants



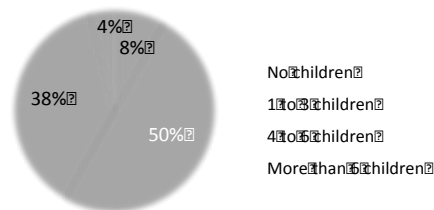
### Household

These graphs below demonstrate that over half of the participants reported 4 to 6 members in their household, and 50% reported 1 to 3 children in the house.

### Number of Household Members: Participants



### Number of Children in the Household: Participants



## 4 Research Results

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### 4.1 Findings Related to the Research Goals

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Initial results showed that:

- Consumers (low, middle, and high-income) prefer to pay for an improved cookstove using an informal or a semi-formal financing option (besides paying cash directly)
- The perceived value of the stove, the associated costs of the financing option, and the level of formality of the financing option all contribute to the consumers willingness to take on financing
- Participants' willingness to take on financing was dependent on the cost of the cookstove, but not necessarily dependent on the type of cookstove
- Overall, informal group savings and layaway with a vendor were two of the participants' most preferred financing options

The research also confirmed and expanded on the expected findings in relation to the research hypotheses.

The team found that the majority of focus group participants, rural and urban, as well as low, middle and high-income participants, preferred to pay cash for an improved cookstove rather than take up a financing option. The most commonly identified way for participants to save enough money to purchase a cookstove was through an informal savings group. While cookstove retailers had a preference for consumers to pay cash, they were aware that providing a consumer financing option could result in increased sales. And as such, many cookstove retailers were piloting financing mechanisms.

The research confirmed that consumers are more willing to engage in an informal loan or a savings mechanism than to take up a formal financing option. The most preferred financing option chosen by consumers was to save via an informal savings group. The second most preferred option was layaway with a vendor, which is a variation of individual savings. These two savings mechanisms, both informal and semi-formal, were preferred over financing options that involved formal financing institutions.

No clear indication for whether consumers would be more willing to take up a financing option for a high-end, more expensive cookstove was identified. There was a blurred division between the rural and urban focus groups; several groups fell into a peri-urban or provincial town category. This made it difficult to differentiate whether consumers in rural areas were less likely to take up formal financing. There was, however, a general aversion to engaging with a formal financial institution and this was more apparent with participants that resided further from urban areas.

## 4.2 Findings from the Stakeholder Interviews

Interviews were conducted with 19 stakeholders in the cookstove sector in Kenya from August to December 2014. Nine of these stakeholders were manufacturers, distributors and/or retailers of cookstoves. Three interviews were conducted with microfinance institutions (MFI) or banks. Two interviews were conducted with energy companies and four interviews were conducted with NGOs and advisory companies. Several other stakeholders were contacted to take part in this study, however, they did not respond within the given timeframe and their opinions are not included in the summary below.

### *Insights from Stove Companies (Manufacturers, Distributors and Retailers)*

**Cookstove companies are in the process of trialing various forms of consumer finance.** While the majority of cookstove sales are currently paid for in cash, most cookstove manufacturers, distributors, and retailers are in the process of piloting various distribution, sales and consumer financing models. Many of these pilots have been in operation for less than a year and it is currently too early to assess their viability. Cookstove companies are continuing to tweak these programs to make them more attractive to consumers.

**Offering an internal financing mechanism can be logistically challenging.** Some cookstove retailers had experience with developing and operating an internal financing mechanism. One of these retailers operated across several regions of Kenya, however, their sales and distribution channels involved limited staffing and local presence. This led to the conclusion that, for their business, it was not cost effective or efficient to administer this type of consumer financing because they did not have sufficient local staff or resources to build relationships with clients and follow up on repayments where necessary. Other retailers, however, who have a stronger local presence, are currently developing an internal financing mechanism and are confident that this will be a viable model due to consumer demand (for their product and for financing) and their strong local sales and distribution presence.

**Working with established MFIs is efficient for some manufacturers.** A limited number of manufacturers have been able to achieve an efficient, working relationship with an MFI. The relationship works well because the manufacturer can focus on producing stoves, while the MFI appraises, administers and bears the risk for offering finance to end consumers. This model tends to work well where there are dedicated sales agents who are located in the MFI branch, have direct access to the MFIs clients, and are only responsible for selling cookstoves. In the example observed during this research, the sales agents were employed by the cookstove manufacturer, which can often lead to better technical and after-sales information provided at the time of sale. However, when the right incentives are provided (i.e. a commission), these sales agents could also be employed by the MFI.

**For other manufacturers, working with MFIs has proven time consuming and not profitable.** Other manufacturers report that establishing a working relationship with MFIs has not been successful. Relationship management, administration, differences of opinion on interest rates, and concerns regarding stockpiling cookstoves remain barriers for many cookstove manufacturers when trying to develop a partnership with an MFI.

**Asset finance repayments can be difficult to recoup.** Cookstove retailers report that when the consumer receives the cookstove upfront through a financing mechanism, they are not consistent with meeting repayments on time and receiving the payment in full can be a long process that requires a lot of follow up with the client.

**Layaway is a foreign concept.** Some manufacturers have previously trialed layaway programs but found them largely unsuccessful. This was attributed to lack of consumer awareness on layaway as a financing mechanism and limited brand reputation. Interestingly, this was not the experience of focus group participants who were aware of the layaway concept.

**The ‘check-off system’ is a popular financing mechanism.** This system, also known as an employer loan, has been widely successful among cookstove retailers. One of the cookstove retailers interviewed used the ‘check-off system’ as one of their main leverages for providing financing for consumers. A majority of the other retailers, however, did not focus solely on this financing mechanism but it often accounted for a consistent 10% to 20% of sales. Many of the employers that retailers targeted for this type of relationship with were large farms and/or factories where agricultural goods were processed. Consequently, the target consumers were employed but low-paid workers and it was often in the interest of the farm to promote the sale of clean cookstoves given that employees often lived on site and the employer could reap the benefits (e.g. healthier employees, less smoke/ pollution, reduced need to cut down trees on the farm for cooking fuel and so on). The ‘check-off system’ was also well known among focus group participants. See section 4.4.4 in this report for a description of how this model works and a further discussion on the benefits and challenges to employer loans.

**Most cookstove distributors do not have access to a line of credit.** There are a few credit facilities and revolving funds that are being developed and should soon be operational, however, access to credit for distributors is limited. Lack of access to credit for cookstove distributors is currently a significant limitation for distributors and a barrier to scaling up operations.

**Cookstove demonstrations are the key to sales.** Cookstove retailers have found that sales agents are often the most successful when they provide demonstrations of the cookstove. While labor and resource intensive, cookstove demonstrations provide awareness, educate consumers and increase sales. These demonstrations are often provided in a group setting, at a marketing event, or even in an outdoor, communal public space. Cookstove demonstrations as a sales, distribution, and awareness raising channel are difficult to scale due to limited time and human resources. It can also be difficult to scale given that the group settings are often informal groups and accessing these groups can be a challenge.

### ***Insights from MFIs and Banks***

**Partnerships with financial institutions are most effective when they are solely focused on the financing aspect.** It was the experience of several stakeholders that financial institutions have a limited capacity to stock, market, and sell cookstoves successfully to their clients. The role of financial institutions in partnership with a cookstove distributor/ retailer therefore should focus on the provision of finance rather than the sale of cookstoves. In situations where a financial institution has successfully had greater involvement in the sales/ distribution model, the financial institution either developed an entirely separate subsidiary to sell cookstoves, or allowed external sales representatives to be present in their branch locations to market and sell cookstoves to their client base.

**Financial institutions can provide access to an additional customer base.** In addition to partnering with a cookstove retailer or distributor to provide finance, financial institutions can also provide access to their clients. This can be beneficial to the reputation of the financial institute and provide access to a new client base for cookstove retailers. Financial institutions are also very aware that providing access to their client base to market and sell cookstoves will reflect on their organization’s reputation. For this reason, one of the financial institutions interviewed had employed a third party to assess the quality of the cookstoves (and other clean energy products) and provide recommendations on which products (and manufacturers) were reputable and of high quality.

### ***Insights from Other Stakeholders***

**Consumer finance mechanisms must be tailored to the client’s situation.** Many Kenyans purchase their cooking fuel on an incremental basis, which is reflective of their income and spending habits. A consumer finance mechanism should aim to mirror this pattern of consumer behavior and allow for incremental payments.

**Informal savings groups are a known distribution model but can be difficult to scale up.** Informal savings groups are very popular in Kenya and cookstove retailers often use these groups to market and

sell their cookstoves. Due to the informal nature of the groups though, gaining access to these groups and following up on payments can be difficult.

## 4.3 Findings From the Focus Groups: Cookstoves and Cooking Fuel

Ten focus group sessions were held in the Central and Western Regions of Kenya. Participants were selected based on their income level, gender, age, education level, and the type of cookstove that they owned. For more information on the methodology of the focus groups and detailed findings, see Arc's *Kenya Focus Group Report*.

### 4.3.1 Ownership and Use of Cookstoves

#### Wood

The 3-stone stove, which uses wood as fuel, was the most common cookstove owned by participants. Participants stated that they used the 3-stone stove to cook local dishes, which were reported to take many hours to cook. Participants said that cooking with a 3-stone stove was convenient when cooking for many people and when they had more time to cook (i.e. in the evening). However, many disadvantages were raised, including: it takes a long time to collect the wood and lots of wood is required to cook on the 3-stone stove; the wood takes a long time to light when it is wet; and, the fire is smoky.



3-stone wood stove in a rural area, Western Region, Kenya

#### Charcoal

Charcoal stoves were used for cooking the evening meal according to the focus group participants. Some participants stated that this was because they had more time to cook, while others pointed out that they were afraid to cook outside at night with their 3-stone stove because someone could come past and take the whole pot of food while they were inside the house. The main advantage that participants provided about charcoal stoves was that they are less smoky than 3-stone stoves. In addition, many participants were of the opinion that food cooked with charcoal tasted better than when using wood because the flavor of the food was not drowned out by the taste of smoke.

#### LPG

Using an LPG stove was viewed as prestigious and a quality of life item to own. Many participants reported that they had a LPG stove and the majority stated that they liked to cook with gas. Participants stated that cooking with LPG was faster, easier, and cleaner than cooking with other fuels. The general trend among participants was that they would use their LPG stove in the morning to prepare breakfast, which usually involved boiling a small amount of water for porridge or a cup of tea.

While several participants stated that they did not find the cost of the LPG stove expensive to purchase, many participants stated that the stove was very expensive to use. Participants noted that the price of

refilling their LPG cylinders had increased substantially due to increasing gas prices and, as a result, the use of their LPG stove was limited and primarily used in the morning and to prepare light meals.



LPG stove with two burners in a middle-income participant's house in a provincial town, Central Region, Kenya

### **Biogas**

Very few participants stated that they owned and used a biogas stove. Those that owned a biogas stove were very positive about it and stated that the main advantage of using biogas was that they no longer had to pay for fuel. The only disadvantage, which was often expressed by participants who did not own a biogas stove, was that it was very expensive to install.

### **Kerosene**

Kerosene, or paraffin, stoves were frequently reported to be used by participants who lived in both rural and urban areas. Participants said they often used their kerosene stove in the morning because it cooked faster and they stated that fuel was not expensive. Many participants who owned a kerosene stove were aware of the negative health effects from using kerosene and stated that they only used it when they did not have other cooking fuels available.

### **Ownership of Several Cookstoves**

It was common to find households in both rural and urban areas with two or three cookstoves. Some participants had more than three cookstoves and a few had only one stove. The most commonly owned stoves included the 3-stone (wood) stove, charcoal stoves and LPG stoves. Several participants had kerosene stoves and some had what they called "African Gas" stoves that used sawdust as fuel. For the majority of the participants who owned multiple stoves, at least one of their stoves was for wood, and this was usually the 3-stone stove.

The main reasons cited for owning more than one cookstove were the availability of fuel, the cost of the fuel, and time efficiency. Participants owned and used multiple stoves in order to balance the time spent cooking and the cost of cooking fuels. For example, many participants stated that they cooked with wood when they had the time as it was cheaper and used gas in the morning when they were in a hurry.

Ownership of three stoves: wood, charcoal and kerosene stoves in a rural area, Central Region, Kenya





The table below provides an indication of the types of stove combinations that participants had and their reasoning for doing so. For a more complete list of stove ownership and participants' rationale, see the *Kenya Focus Group Report*.

**Table x. Ownership of Several Cookstoves by Region**

| RURAL   | URBAN  |
|---|--|
| <b>Own One Stove</b>  | <b>Own Two Stoves</b>  |
| <b>Own a 3-stone (wood) stove</b><br><i>'I have a 3-stone stove, no charcoal or gas.'</i>   | <b>3-stone (wood) stove and a charcoal stove</b><br><i>'I have a charcoal and a 3-stone stove. Charcoal is available and wood is less available. I use charcoal mostly.'</i>   |
| <b>Own Two Stoves</b>   |  |
| <b>3-stone (wood) stove and a charcoal stove</b><br><i>'I use firewood because it is readily available. When it is raining a lot I use charcoal.'</i>   | <b>3-stone (wood) stove and an LPG stove</b><br><i>'I prefer wood because it is cheaper and I can get it more easily. I use gas every morning for making tea. Gas is faster than firewood and I am always in a hurry in the morning.'</i>          |
| <b>3-stone (wood) stove and a kerosene stove</b><br><i>'I have a 3-stone fire and a kerosene stove. But I only use the 3-stone; the kerosene is very expensive.'</i>                                    | <b>Charcoal and an LPG stove</b><br><i>'I use gas in the morning and charcoal in the evenings and weekends when I have more time.'</i>   |
| <b>Charcoal and an LPG stove</b><br><i>'I have charcoal and gas.'</i>   |  |
| <b>Own Three Stoves</b>   | <b>Own Three Stoves</b>  |
| <b>3-stone (wood), charcoal and LPG stoves</b><br><i>'During the day I use wood. During the night I use charcoal. I use gas during the lunch hours when I come in from the garden.'</i>                 | <b>3-stone (wood), charcoal and LPG stoves</b><br><i>'I use the 3-stone in the morning and on weekends. In the evening and when it's raining, I use charcoal. Paying for gas puts me off, so I use it in the morning.'</i>                         |
| <b>3-stone (wood), charcoal and kerosene stoves</b><br><i>'I use the kerosene for breakfast. I use the charcoal when it is cold to cook but also to warm the house. I use firewood during the day.'</i> | <b>Own Four Stoves</b>   |
| <b>3-stone, sawdust and LPG stoves</b><br><i>'I have wood, sawdust and a gas stove.'</i>  | <b>3-stone (wood), charcoal, LPG and electric stoves</b><br><i>'I only use the electric cooker when the gas runs out because it is more expensive than gas. I use charcoal but only on rare occasions. Usually, it is either firewood or gas.'</i> |
| <b>Own Four Stoves</b>  |  |
| <b>3-stone, charcoal, kerosene and LPG stoves</b><br><i>'I have four stoves but I mostly use wood because of costs; it depends on the income that we are getting.'</i>                                  | <b>3-stone, charcoal, kerosene and LPG stoves</b><br><i>'I have gas, a kerosene stove, charcoal and firewood. I like the gas stove the most, but the one I use the most is the firewood stove.'</i>  |



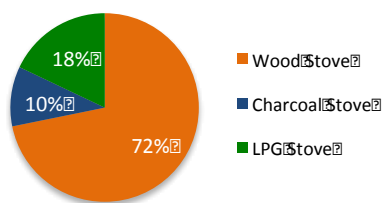
### 4.3.2 Cookstove Costs

Focus group participants reported that they owned at least one of three types of cookstove: a wood stove, a charcoal stove, and/ or an LPG stove. The graph below (left) shows that when asked 'What type of stove do you have now?', almost three quarters stated that they have a wood stove. This graph captures participants initial response, however, as previously noted, most participants had more than one cookstove.

The graph below (right) indicates how much participants paid for their current cookstove. Just under three quarters stated that they have a wood stove and just under half stated that they paid nothing for their cookstove. This indicates that many of the participants who stated that they have a wood stove were referring to a 3-stone stove. The 3-stone stoves are free or cost very little given that it usually involves placing together 3 stones often found in the immediate vicinity. It is also interesting to note that 18 percent stated that they have an LPG stove and 20 percent said that they paid more than USD\$29 for their stove. The typical cost of a simple charcoal stove was 250Ksh (USD\$3); however, prices could range from 200Ksh (USD\$2.50) to 700Ksh (USD\$8).

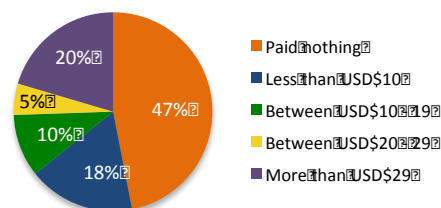
**Cookstove Type: Participants**

What type of cookstove do you have now?



**Cookstove Cost: Participants**

How much did you pay for your current cookstove?

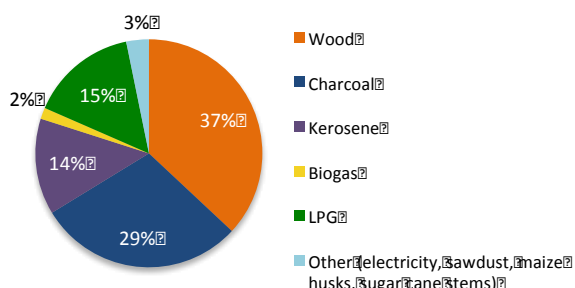


### 4.3.3 Fuel Costs

Each participant was asked to define at the beginning of each focus group in a survey, which types of cooking fuels that they used (all that applied), which fuel they used the most to cook with, and then indicate how much they spent on purchasing the fuel they used the most. The two graphs below are a result of the first two questions and they highlight two important points from the research. The first is that participants are accessing and utilizing a wide variety of fuels for cooking. The graph below (left) shows that participants use more than six different types of fuels to cook. Participants were requested to 'select all that apply' when asked 'What types of fuel do you use to cook?' The second important point to note is that even though there are a wide variety of fuels used for cooking, participants mostly use wood, as shown in the graph below (right). Note that for this question in the survey, participants could only select one answer: the fuel that they used the most among all the fuels that they use to cook.

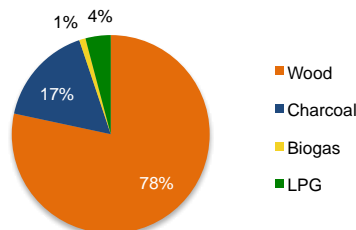
**Type of Cooking Fuels: Participants**

What types of fuel do you use to cook?



**Type of Fuel Most Used: Participants**

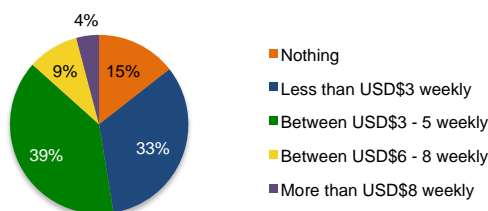
Which is the fuel that you use the most to cook?



The graph below shows how much participants spent on purchasing cooking fuel per week for the fuel that participants used the most. Around one in seven said that they do not pay anything for cooking fuel. A third (33%) of all participants spent less than USD\$3 weekly (USD\$12 monthly) on cooking fuel and just over a third (39%) spent between USD\$3 and USD\$5 weekly (USD\$12 and USD\$20 monthly). There were 13% paying more than USD\$5 weekly or more than USD\$20 monthly on cooking fuel.

### Weekly Fuel Cost: Participants

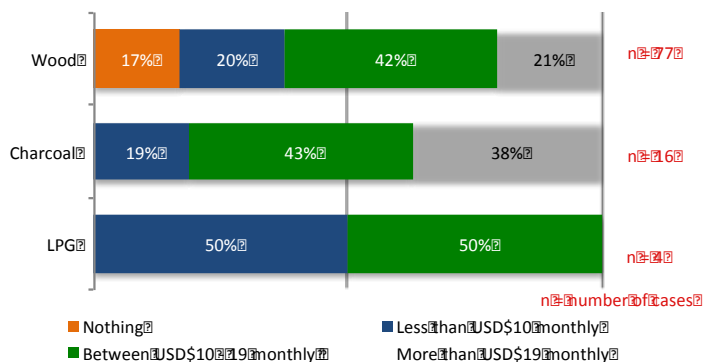
For the fuel you use to cook the most, how much do you spend weekly?  
(all fuels)



The graph below disaggregates the data by fuel type and is shown on a monthly rather than weekly basis. Of the participants who stated that they use charcoal the most as cooking fuel, 38 percent reported that they spend more than USD\$19 per month. For wood, there were 17 percent who said that they spend nothing on fuel yet there were 21 percent who reportedly spent more than USD\$19 per month on purchasing wood. Interestingly, none of the participants who stated that they use LPG the most to cook reported to use more than USD\$19 per month on cooking fuel.

### Monthly Fuel Expenditure: Participants

For the fuel that you use the most to cook, how much do you spend monthly?



In addition to the quantitative data collected from the survey, the following insights were gained during the focus groups.

#### Wood

Many of the participants who stated that they used wood as a cooking fuel also stated that they usually collected wood for free as well as purchased it. Participants stated that they usually purchased wood in bundles of often 500Ksh (USD\$6) or 1,000Ksh (USD\$12), and sometimes for 1,500Ksh (USD\$18). Several participants stated that they could purchase a whole tree for this amount and then cut up the tree themselves. Many reported that these bundles, or one tree, would last for three to four weeks of cooking. As one participant stated, 'I prefer to buy a tree for 800Ksh (USD\$9) or 1,000Ksh (USD\$12) depending on the size. I use about six pieces of firewood during the day (morning, lunch and evening). On average a tree lasts about one month.'

#### Charcoal

Some participants purchased charcoal in large quantities of 10 or 20 kilograms. One bag of charcoal, which was generally reported to weigh around 13 or 15 kilograms, cost between USD\$14 and USD\$18. Others purchased charcoal in small quantities for around 30Ksh (USD\$0.40) or 50Ksh (USD\$0.60), which was just enough to last for one meal or one day.

### LPG

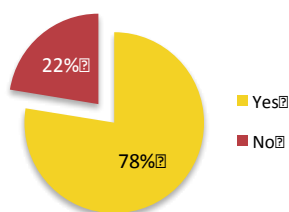
Participants usually spent a large amount of money refilling their LPG cylinders, which would then last for several months. Many participants stated that while it was difficult to get the money together for the upfront refill cost, overall, using LPG worked out cheaper. However, some participants stated that they had stopped using their LPG stove because it was too expensive, while others noted that they would not consider purchasing an LPG stove due to the cost of the fuel. The qualitative information obtained during the focus groups regarding the cost of LPG is interesting to note given that it is quite contrasted by the actual cooking fuel costs reported by participants during the survey they completed before the focus group discussion. As shown in the graph above, none of the LPG users reported using more than USD\$19 per month on cooking fuel.

## 4.3.4 Awareness of Improved Cookstoves

The level of improved cookstoves close to 80 percent of participants stating about them. The high about improved apparent among participants from contrast to areas who lower levels of

**Awareness of Improved Cookstoves: Participants**

Have you heard about clean and improved cookstoves?



awareness about was very high with focus group that they had heard level of awareness cookstoves was more urban participants and provincial towns in participants from rural demonstrated much awareness.

As shown in the graph below (left), of the 78 percent of participants who had heard about improved cookstoves, over a third (36%) had actually bought one. This equates to 27 people out of 98 of total participants in the research who had purchased an improved cookstove. The means of purchasing their improved cookstove was primarily with cash. As shown in the graph below, 70 percent of participants who had purchased an improved cookstove, did so with cash.

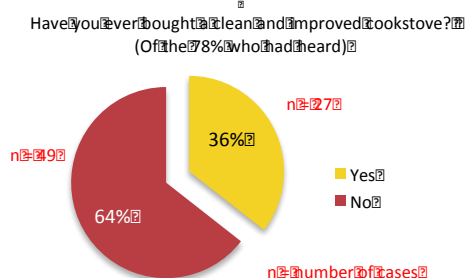
### 4.3.5 Preferred Type of Improved Cookstove

Participants were exposed to four different cookstove models (each using a different fuel): a wood improved cookstove, a charcoal improved stove, an LPG stove, and a biogas stove. Each stove differed in price and fuel type. Note that the wood and charcoal stoves are considered ‘improved cookstoves’ because less efficient and less clean versions exist. The LPG and biogas stoves, are considered ‘clean’ given that they are smokeless regardless of the type or model.

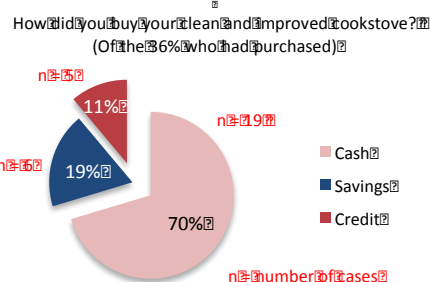
As demonstrated in the table below, the wood improved cookstove was the overall favorite. This include a locally produced artisan improved wood stove, and a factory made improved wood stove. For details on the differences in performance and price between these two types of improved wood cookstoves, see Arc’s *Kenya Focus Group Report*.

**Table x. Preferred Improved Cookstove by Income Segment**

**Purchased an Improved Cookstove: Participants**



**Means of Purchase: Participants**



| Income Segment         | RURAL  | URBAN (Provincial Town)  |
|------------------------|--|--|
| Very Low Income        | Wood ICS<br>(2 focus groups)                                     | -  |
| Low Income             | Wood ICS/ LPG<br>(1 focus groups)                                | -  |
| Low and Middle Income  | Wood ICS<br>(1 focus group)<br>Wood ICS/ LPG<br>(1 focus groups) | Wood ICS<br>(1 focus group)<br>Wood ICS/ Biogas<br>(1 focus group) |
| Middle Income          | Wood ICS/ Charcoal ICS<br>(1 focus group)                        | Wood ICS<br>(1 focus group)  |
| Middle and High Income | -  | Wood ICS/ Charcoal ICS<br>(1 focus group)                          |

## 4.4 Findings From the Focus Groups: Consumer Finance Models

Prior to conducting the research, the team selected and identified a range of innovative financing options to test, each of which is presented in this section of the report. During the focus group sessions, the team tested to see which of these consumer finance models was most commonly used by participants and which models were most attractive for participants purchasing an improved cookstove. Each consumer finance model involves a different set of actors and/or payment processes. During the focus groups, the researchers tested the traits that would make each model attractive.

The team clustered the business models into four different categories, according to financing type: savings (informal savings, layaway, savings with a financial institution), leasing (asset finance), loans (loan from a financial institution, employer loan, SACCO loan), and remittances. The team chose to cluster the business models in this way to differentiate between the level of risk that the participant would be willing to take on and to clearly identify between participant's preference to either save, lease, take out a loan, or seek/use remittances.

While participant's preferences were aligned with the financing type or mechanism of the business models, the team also found that preferences were aligned with the level of formality of each of the business models. As such, the business models were re-categorized to provide greater clarity to participants preferred business models into the following: informal (informal savings via a 'merry-go-round'), semi-formal (asset finance, layaway, employer loan, remittances) and formal financing options (securing a loan with a SACCO, saving with a formal financial institution, securing a loan with a formal financial institution).

The most preferred consumer finance models were informal (savings via a 'merry-go-round') and semi-formal (layaway) financing options. Overall, the general trend was that the less formal the business model was the more participants preferred it. The vast majority of focus group participants disliked the formal financing options, which involved engaging with a formal financial institution (bank, MFI, SACCO) either to save or secure a loan.

The table below summarizes the overall preference of business models as expressed by the focus group participants. Given that focus groups capture rich qualitative data and each participant has a slightly varied perspective and preference to the next participant, the table below is an indication of overall preference. See the discussion below each business model for a more nuanced understanding of participant preferences, likes, and concerns as they relate to each of the consumer finance models.

**Table x. Evaluation of Consumer Financing Options**

| Level of Preference        | Business Models   |
|----------------------------|---|
| <b>Most Preferred</b>      | <ul style="list-style-type: none"> <li>✓ Informal Savings via a "Merry-go-round" (all income levels)</li> <li>✓ Layaway with a Vendor (all income levels)</li> </ul>                        |
| <b>Sometimes Preferred</b> | <ul style="list-style-type: none"> <li>✓ Saving with a Financial Institution (low-middle and middle income levels)</li> <li>✓ Employer Loan/Guarantee (middle-high income level)</li> </ul> |
| <b>Seldom Preferred</b>    | <ul style="list-style-type: none"> <li>✓ Asset Finance - Rent to Own (very-low income level)</li> </ul>   |
| <b>Least Preferred</b>     | <ul style="list-style-type: none"> <li>✓ SACCO Loan/Guarantee/Savings (very-low, low, low-middle income levels)</li> <li>✓ Loan from a Financial Institution (all income levels)</li> </ul> |

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Uncommon Usage</b> | ✓ Remittances (all income levels) |
|-----------------------|-----------------------------------|

The table below provides an indication for focus groups preference by income level. The three different forms of informal savings (individual savings, informal group savings, and saving with a susu collector) are all highlighted in yellow. Asset finance is shaded in green. The table demonstrates that savings and asset finance were the most preferred business models across each income level.

**Table x. Evaluation of Consumer Financing Options by Income Level**

| <b>Income Level</b>        | <b>Very Low Income</b><br>(2 focus groups) | <b>Low Income</b><br>(1 focus group) | <b>Low and Middle Income</b><br>(4 focus groups) | <b>Middle Income</b><br>(2 focus groups) | <b>Middle and High Income</b><br>(1 focus group) |
|----------------------------|--|--------------------------------------|--|--|--|
| <b>Level of Preference</b> |  |                                      |  |  |  |
| <b>Most Preferred</b>      | Merry-go-round                             | Merry-go-round                       | Merry-go-round                                   | Merry-go-round                           | Layaway  |
| <b>Sometimes Preferred</b> | Asset Finance                              | Layaway                              | Layaway  | Layaway                                  | Merry-go-round                                   |

## Findings Related to Informal Financing Options

The team considered business models to be informal financing options if they involve the individual, the individual's family and/or friends and possibly other third parties where there are no formal or legal agreements in place. According to this definition, informal savings via a 'merry-go-round' is considered an informal financing option.

### 4.4.1 Informal Savings via a 'Merry-Go-Round'

With this model, the consumer would make regular monetary contributions to an informal savings group. These groups are often held with women and meet on a regular basis (weekly, fortnightly, monthly). Each time the group meets a different member takes home the collective contributions of the group. The consumer would utilize the money that they receive when it is their turn to collect the group's contributions to purchase a cookstove.

For participants who were already participating in a merry-go-round, they were asked how often and how much they save with their group. The table below summarizes the responses from participants by income level.

| Frequency and Amount Saved at Merry-Go-Rounds  |   |
|--|---|
| Low Income Level   | Low and Middle Income Level   |
| <p><i>Weekly Contributions</i></p> <p>a) We contribute 150Ksh (USD\$1.7) on a <i>weekly</i> basis<br/>= <i>USD\$85 yearly</i></p> <p>b) We contribute 300Ksh (USD\$3.5) on a <i>weekly</i> basis<br/>= <i>USD\$169 yearly</i></p> <p><i>Biweekly Contributions</i></p> <p>c) We contribute 200Ksh (USD\$2.3) on a <i>bi-weekly</i> basis<br/>= <i>USD\$56 yearly</i></p> <p><i>Monthly Contributions</i></p> <p>d) We contribute 200Ksh (USD\$2.3) on a <i>monthly</i> basis<br/>= <i>USD\$28 yearly</i></p> <p>e) We contribute 300Ksh (USD\$3.5) on a <i>monthly</i> basis<br/>= <i>USD\$42 yearly</i></p> | <p><i>Weekly Contributions</i></p> <p>a) We contribute 50Ksh (USD\$.6) on a weekly basis<br/>= <i>USD\$28 yearly</i></p> <p>b) We contribute 500Ksh (USD\$6) on a weekly basis<br/>= <i>USD\$288 yearly</i></p> <p><i>Biweekly Contributions</i></p> <p>c) We contribute 200Ksh (USD\$2.3) on a bi-weekly basis<br/>= <i>USD\$56 yearly</i></p> <p><i>Monthly Contributions</i></p> <p>d) We contribute 200Ksh (USD\$2.3) on a monthly basis<br/>= <i>USD\$28 yearly</i></p> <p>e) We contribute 500Ksh (USD\$6) on a monthly basis<br/>= <i>USD\$71 yearly</i></p> <p>f) We contribute 1,000Ksh (USD\$12) on a monthly basis<br/>= <i>USD\$144 yearly</i></p> <p>g) We contribute 2,000Ksh (USD\$24) on a monthly basis<br/>= <i>USD\$288 yearly</i></p> |

**Table x. Informal Savings Group Practices**

Once the business models were presented and discussed, this option was the most preferred business model by focus group participants because it was familiar and trusted. There is a strong informal savings culture in Kenya in both urban and rural settings. A majority of the focus group participants belonged to an informal savings group and some had already used money saved through their group to purchase a cookstove.

An informal savings group allows consumers to save consistently and on a regular basis (weekly, fortnightly, monthly) without the temptation or ability to spend, which would be possible if they saved individually. Some informal savings groups make an agreement at the beginning of the saving rotation



to all purchase the same item. Several participants had previously been involved in this type of savings group and stated that one of the benefits was that they could negotiate a discount due to the bulk order. The disadvantage of using this model however is that it takes a long time to save and purchase a cookstove in a group setting. Depending on the number of people in the savings group, the frequency of savings, and amount saved, it can take around 12 months to save for a cookstove using this model.

Women of all levels of income (low, middle and high) have high participation rates in informal savings groups. As a type of informal savings group, 'merry-go-rounds' are ongoing, meet regularly and can often double up as important social events. Other variations of the informal savings group offer additional financial support through insurance mechanisms and 'table banking', which offers access to loans through the group. While fewer male participants were involved in 'merry-go-rounds' than female participants, several male participants were involved in an informal savings group that offered additional financial services.

For small scale, local manufacturers and distributors, this model to distribute and sell improved cookstoves is already in use and is proving effective. Local contacts provide access to informal groups where cookstove retailers can demonstrate how to use the cookstove at a savings group meeting. Cookstove demonstrations create awareness and are a known effective sales method. Several of the stakeholders interviewed were engaging with informal savings groups at the community and local levels to distribute and sell clean cookstoves. Some manufacturers directly approach consumers and request to attend their informal savings group to market their cookstoves, while others collaborate with partners (local entrepreneurs, community leaders) to gain access to local savings groups. Savings groups without administrative assistance are considered informal. However, there are formalized institutions that assist savings groups with administration and record keeping, which makes the groups slightly more formal. The institutions or organizations that provide administrative assistance may also retail cookstoves and other consumer durables to their savings groups. For large cookstove manufacturers, distributors, and retailers, this model can be difficult to scale up due to challenges gaining access to informal savings groups, the time required for the whole group or an individual within the group to save for the cookstove, and the limited sales potential based on the number of members in the group.

**Table x. Summary of the Findings on Informal Savings Groups**

|  | Likes   | Dislikes  |
|--|---|---|
| <b>Focus Group Participants</b><br>(Demand Side) | <ul style="list-style-type: none"> <li>• Very common practice, well known and extensively used by all income levels</li> <li>• Commitment to save with a dedicated goal to purchase a cookstove and/or other items</li> <li>• Have already used this saving mechanism to buy household goods (including cookstoves)</li> <li>• Encouragement from the group to continue saving consistently</li> <li>• Would not be able to access the funds to spend the money on something else</li> <li>• Potential to negotiate with the vendor for a better price if the whole group purchases together</li> <li>• Accessible way to save (informal, easy to organize, easy to join and be a member, usually does not</li> </ul> | <ul style="list-style-type: none"> <li>• Takes a long time to save collectively</li> <li>• In some of the savings groups, all the participants must agree on the same item, which they will all purchase at the end of the savings cycle; however, not all group members necessarily want the same stove or item</li> <li>• Distrust among low and very low income participants that they will be repaid by other group members when it is their turn to receive the group's money</li> <li>• Distrust that the informal group and the money collected will be managed appropriately</li> <li>• Seasonal income – difficult to contribute on a regular basis</li> <li>• Afraid of repercussions if unable to meet one of the payments (to the group)</li> </ul> |

|   |  |   |
|---|--|---|
|   | <p>require collateral or a credit assessment)</p> <ul style="list-style-type: none"> <li>• Save with people that are known and trusted (i.e. friends, neighbors)</li> <li>• Group leader could purchase the stoves on behalf of the rest of the group, alleviating the other group members from negotiating price</li> </ul> |   |
| <p><b>Industry Stakeholders</b><br/>(Supply Side)</p> | <ul style="list-style-type: none"> <li>• Limited risk to the vendor</li> <li>• Limited cost to the vendor</li> </ul>   | <ul style="list-style-type: none"> <li>• Difficult to scale</li> <li>• Difficult to gain access group meetings due to their informal nature</li> <li>• Resource intensive (time) to visit savings groups and market to them directly</li> <li>• Number of sales limited to the number of group members</li> <li>• May need to wait several months before a group member/s able to purchase a stove (depending on savings amount and frequency)</li> </ul> |

### ***Findings Related to Semi-Formal Financing Options***

Semi-formal financing options include commercial actors (manufacturers and retailers), employers, money transfer agencies, or e-commerce businesses. Semi-formal financing options go beyond the informal actors (family and friends), excludes formal actors (formal financing institutions), and involves some type of agreement or transaction. Therefore, the semi-formal business models are asset finance, layaway with a vendor, employer loan/guarantee, and remittances. Each of these business models involve an arrangement with a third party that is not a friend, family member, or financial institution.

Remittances could also be considered as a formal financing option because they involve money transfer agencies, which are a type of financial institution. The transfer agency is a formal institution, but for the purposes of this summary, remittances are considered as a semi-formal business model because a transfer agency is not a bank. Furthermore, the money transfer agency or e-commerce site does not provide credit or bear any financial risk for facilitating the remittances.

#### **4.4.2 Layaway**

This financing option allows the consumer to put a cookstove on hold with a vendor and then pay installments to the vendor until the cookstove is paid off. The consumer receives the cookstove once the cookstove has been paid in full. The payments can vary; they could be for a fixed amount due at fixed intervals or the consumer could be free to make payments when they choose.

Following the preference for the informal savings group model, layaway with a vendor was the most preferred financing option. Participants liked this model because they could determine the frequency of their payments, which would involve limited risk and avoiding the potential default repercussions if asset finance or a loan had been taken on originally. Dealing directly with a cookstove vendor was viewed positively as participants perceived that purchasing items elsewhere – through a SACCO, a financial institution, or a retailer – could incur additional costs. Furthermore, layaway was a well-known and used financing mechanism to purchase household items in Kenya.

For consumers, however, the deterrent to engaging in layaway was that it could take a long time to pay off the stove because there are no structured payments; the stove price could decrease or a new model could come out while they are still making payments; and, they must continue with the layaway or forfeit the money if they change their mind. A majority of participants felt that the ongoing commitment to purchase the stove while paying via layaway was positive; however, there were a few participants who found this to be negative. Those participants were also concerned about placing trust in a cookstove vendor. They felt that the vendor may close shop before the cookstove had been received, there may be a disagreement over the layaway account balance, or the vendor might not release the cookstove once they had completed their layaway. The time and transportation costs to get to a vendor to make a payments were also concerns.

For cookstove retailers, layaway incurs administrative costs but is essentially risk-free for the seller. Furthermore, the vendor could address many of the concerns raised by focus group participants. The vendor could suggest layaway payment plans with payment frequency and amounts that relate to consumers' ability to pay. This would provide the consumer with a structured payment plan, which would provide additional incentive to make payments (without the pressure to make the payment if they were not able to) by outlining when the consumer could hope to finish their layaway and receive their stove. Given the high usage of mobile phones in Kenya, the vendor could also provide the option for layaway payments to be made via M-Pesa (a mobile transfer service). Interestingly, one of the interviewed stakeholders had trialed a layaway program and found it to be largely unsuccessful. This stakeholder found layaway to be an unfamiliar concept with consumers and suggested that this was one of the reasons that the program had been unsuccessful. While a number of factors contribute to successfully implementing a financing option, brand reputation and awareness are an important consideration prior to implementing layaway given focus group participants concerns about placing trust in a vendor.

**Table x. Summary of the Findings on Layaway**

|  | Likes   | Dislikes  |
|--|---|---|
| <b>Focus Group Participants</b><br>(Demand Side) | <ul style="list-style-type: none"> <li>• Relatively well known financing mechanism</li> <li>• Commitment to save with a dedicated goal to purchase a cookstove</li> <li>• Payments are tailored to individual circumstance - Able to decide the amount and frequency of when payments are made</li> <li>• Less risky as no pressure to meet structured repayments</li> <li>• Used by urban, middle and high income participants (not rural or low income urban participants)</li> <li>• Enjoyment from receiving the stove after it is paid for</li> <li>• No collateral required</li> <li>• Mobile payment mechanisms can limit time and transportation costs to make payments</li> <li>• Prefer to pay directly to a vendor (rather than to a financial institution)</li> <li>• Incentive to complete payments to avoid forfeiting deposit</li> </ul> | <ul style="list-style-type: none"> <li>• Could take a long time to pay off due to lack of incentive or pressure to make payments</li> <li>• Potential disagreements with the vendor over how much had been paid towards the stove</li> <li>• Unable to withdraw or change their mind if they no longer wanted the cookstove</li> <li>• Stove price may decrease or become outdated if new model is released before completing payments</li> <li>• Urban, middle and high income participants felt that layaway was not necessary for a stove under USD\$45</li> <li>• Participants wary of making mobile payments before receiving or 'seeing' the product</li> <li>• Perceived as something that would only be offered in big retail stores in urban areas</li> <li>• Intimidating to shop at a large retail stores (and make small payments towards a stove)</li> <li>• Time and resource intensive to travel to the store</li> <li>• No large retail stores in the vicinity</li> <li>• The vendor may move or shut down before the layaway payments are completed and they receive the stove</li> <li>• Might not complete all the payments and forfeit the deposit</li> </ul> |
| <b>Industry Stakeholders</b><br>(Supply Side)    | <ul style="list-style-type: none"> <li>• Easy to set up</li> <li>• Low start-up costs</li> <li>• Relatively minimal costs to manage</li> <li>• Very limited risk for the vendor – no default risk</li> <li>• Opportunity to build customer loyalty and encourage repeat purchases</li> <li>• Can entice consumers that may otherwise make the same purchase elsewhere</li> <li>• Mobile payment mechanisms can reduce the administrative and account keeping burden</li> </ul>  | <ul style="list-style-type: none"> <li>• Consumers did not return to complete their payments (according to one of the stakeholders interviewed)</li> <li>• Consumers did not finish paying off the stove at the end of the specified layaway period and received their layaway deposit back instead of the stove (according to one of the stakeholders interviewed)</li> <li>• Administrative and account keeping costs</li> <li>• Consumers wary to trust retailers with their savings</li> <li>• Requires strong brand reputation and market presence to encourage trust</li> </ul>   |



### 4.4.3 Asset Finance

With this financing option, the consumer receives the cookstove up front from a vendor and then makes payments to the vendor until the cookstove is paid off. The installments are usually for a fixed amount and due at fixed intervals.

Prior to the discussing cookstove financing options, focus group participants were asked how they would like to purchase a cookstove. Many participants stated that they would like to purchase a cookstove on credit: to receive the stove upfront and then make (often small but regular) repayments to complete the payment of the stove. The table below summarizes participants suggested credit models, indicating how much they would like to pay and how often.

| Pay on Credit   |  |   |
|---|--|---|
| Very Low Income   | Low Income   | Middle Income   |
| <i>Monthly Repayments</i><br>a) Pay monthly installments of 200-500Ksh (USD\$2-6) until the payment is complete<br><br>b) Pay monthly installments of 700Ksh (USD\$8) over 6 months<br><br>c) Pay monthly installments of 700Ksh (USD\$8) over 12 months<br><br>d) Pay monthly installments of 1,000Ksh (USD\$12) over 3 months<br><br>e) Pay monthly installments of 1,300Ksh (USD\$15) over 12 months | <i>Monthly Repayments</i><br>a) Pay monthly installments of 200-300Ksh (USD\$2-4) over 12 months | <i>Weekly Repayments</i><br>a) Pay a cash deposit up-front and then pay weekly installments of 500Ksh (USD\$6) over 4 weeks<br>b) Pay weekly installments of 1,000 (USD\$12) over 4 weeks<br><br><i>Biweekly Repayments</i><br>c) Pay biweekly installments of 500Ksh (USD\$6) over 6 weeks<br><br><i>Monthly Repayments</i><br>d) Pay monthly installments of 1,000Ksh (USD\$12) over 3 months<br>e) Pay monthly installments of 2,000 (USD\$24) over 2 months |

**Table 6. Spontaneously Suggested Credit Models by Income Level**

The credit models suggested by participants shows a range of preferences; some wish to pay daily, some weekly, and others monthly. Interestingly, participants preferences and suggested credit – or asset finance – models closely corresponded to their prevailing savings habits and income generation. For example, participants who already saved 200KSH or 500KSH (USD\$2 or USD\$6) with their merry-go-round on a weekly or monthly basis, suggested that this same format would also be a good model for paying off a cookstove.

The option to engage in asset finance to purchase a cookstove was understood by participants as a rent to own option. This model received mixed responses from focus group participants. Some participants favored asset finance while others disliked it. Others had difficulty understanding the concept of how asset finance worked when they were offered the option to lease the cookstove on asset finance. For participants who viewed asset finance positively, the advantage was that receiving the stove upfront provided an opportunity to benefit from the fuel savings and an incentive to meet the repayments. Others felt that if they received the stove upfront they would 'relax' and not be disciplined to continue with the repayments. The main concern that participants expressed, however, was their ongoing ability to meet the repayments and the possible repercussions if they were unable to meet one of the repayments. While some consumers purchase their fuel and their ability to meet asset finance repayments would be improved with fuel savings, this is not applicable for those who collect wood. Another concern that participants raised was that they would pay more for the stove due to the associated costs that the vendor would charge them due to the cost of providing asset finance.

This financing option would be best suited to formally employed consumers receiving a regular salary. Several of the interviewed supply-side stakeholders had either previously run or were planning to run an asset finance program. Those who had previously provided asset finance to their consumers found that it was difficult to follow-up on and receive repayments in full. These companies, however, did not have a local presence and noted that this could have contributed to the program's limited success.

**Table x. Summary of the Findings on Asset Finance**

|  | Likes   | Dislikes   |
|--|---|--|
| <b>Focus Group Participants</b><br>(Demand Side) | <ul style="list-style-type: none"> <li>• Able to enjoy and use the stove before completing payment for it</li> <li>• Able to lower energy and fuel costs immediately</li> <li>• Improves purchasing power</li> <li>• Potential to meet repayments with the money saved from reduced energy/fuel costs</li> <li>• Direct relationship with the vendor – perceived as cheaper than if purchased through a third party</li> <li>• Opportunity to build credit rating and gain access to other financial services</li> <li>• Mobile payment mechanisms can limit time and transportation costs to make payments</li> </ul>  | <ul style="list-style-type: none"> <li>• Fear of not being able to meet the ongoing repayments</li> <li>• Fear of repossession of the cookstoves (and potentially other items) if unable to meet the repayments</li> <li>• Lack an incentive to continue paying if already in possession of the stove</li> <li>• Previous negative experience with asset finance</li> <li>• Potential for disagreements regarding account management (how much has already been paid off)</li> <li>• Perception that if the stove was faulty they would not be able to return it as they would have already used it</li> <li>• Risk of becoming over indebted</li> <li>• Regular income source needed to ensure that repayments can be met</li> <li>• Price of the cookstove might be more expensive in order to cover the costs of other consumers who had defaulted</li> </ul> |
| <b>Industry Stakeholders</b><br>(Supply Side)    | <ul style="list-style-type: none"> <li>• Potential for scale up</li> <li>• Providing the stove as collateral can reduce business risk</li> <li>• Very limited risk or resource burden for the vendor if the asset finance is managed by an external third party (depending on the way the relationship is set up)</li> <li>• Partnering with an external third party (e.g. MFI or bank) to administer and manage the asset finance can reduce costs and risk</li> <li>• Mobile payment mechanisms can reduce the administrative and account keeping burden</li> <li>• Potentially low default rate (when clients are appropriately appraised – from the experience of one of the stakeholders)</li> </ul> | <ul style="list-style-type: none"> <li>• If the asset finance is managed 'in house' it is costly and risky to administer</li> <li>• Potentially difficult to verify and track consumers when following up on repayments</li> </ul>   |



#### 4.4.4 Employer Loan

For this model to work, the consumer is required to be employed and be receiving a regular salary. The vendor and the employer enter into an agreement to allow the vendor to sell cookstoves to the company's employees. The employees purchase and receive the cookstove up front. The employer pays the vendor and then subtracts the amount of the cookstove from the employee's salary, usually over a time period rather than one lump sum deduction.

Known as the 'check-off system' in Kenya, this financing model received positive comments from middle and high-income participants who were employed. However, a majority of the focus group participants were self-employed and this financing mechanism was not relevant for their situation. This is consistent with the Kenyan labor market more broadly, as much of the population is not formally employed. Where this financing mechanism was applicable, participants stated that the benefits of this option were that the stove would be received up front, it would be easy to make repayments given that their employer would organize the deductions (from their salary), and these would be a relatively small amount. However, purchasing through one's employer was seen as both negative and positive. Some participants felt that the cookstove prices would be lower because their employer would be purchasing in bulk, whereas others felt that their employer would add a margin, resulting in increased prices.

Many of the supply-side stakeholders had a small but regular percentage of sales that were sold via a 'check off system'. The sales made from employer loans are often based on relationships with large organizations. According to interviews, cookstove retailers have successfully sold to low, middle, and high income consumers via this financing mechanism. Low and very low-income consumers are typically accessible through sales made to farms and factories, while middle and high-income consumers tend to be reached through sales to large corporations.

One of the main challenges to offering sales via an employer loan is that it can take a lot of time and effort to establish and maintain a working relationship with an employer who is willing to offer a 'check-off system' to their employees. It may not be entirely clear who the decision-makers are or what the internal processes are in order to establish an ongoing relationship with large corporations. However, once established, these relationships can be a consistent source of sales for cookstove vendors.

**Table x. Summary of the Findings on Employer Loans**

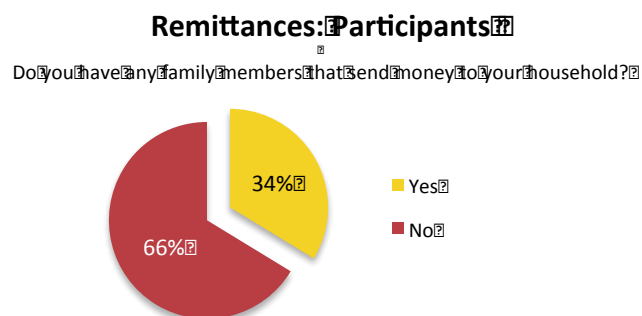
|  | Likes   | Dislikes  |
|--|---|---|
| <b>Focus Group Participants</b><br>(Demand Side) | <ul style="list-style-type: none"> <li>Well known and commonly used finance mechanism used by salaried employees (referred to as the 'check-off system')</li> <li>Able to receive the stove upfront and benefit from the stove before completing payments</li> <li>The employer may be able to receive a discount on buying the stoves in bulk, which could be passed on to the consumer</li> </ul> | <ul style="list-style-type: none"> <li>Not applicable – many participants were not salaried workers</li> <li>Some salaried employees said that the 'check-off system' is better suited to more expensive items (e.g. car, school fees)</li> <li>Did not like the idea of having money automatically deducted from their salary</li> <li>Limited trust in the employer – some participants felt that the employer</li> </ul> |



|   |   |  |
|---|---|--|
|   | <ul style="list-style-type: none"> <li>• Convenient and easy – no need to remember to make payments</li> <li>• Relationship with employer already established</li> <li>• No collateral required</li> </ul>  | would benefit and receive profit from the sale of the stove  |
| <b>Industry Stakeholders</b><br>(Supply Side) | <ul style="list-style-type: none"> <li>• Once a relationship is developed with an employer, this can provide a regular and stable stream of sales</li> <li>• Limited risk for the vendor (depending on how the business relationship is set up)</li> <li>• Access to large potential markets</li> <li>• Time and resource efficient marketing</li> <li>• No risk of consumer default (depending on how the business relationship is set up)</li> <li>• Potentially easier than partnering with a financial institution (although possibly reach fewer customers)</li> </ul> | <ul style="list-style-type: none"> <li>• Difficult to navigate corporate decision-making to reach an agreement with the employer</li> <li>• Can take a long time to cultivate and maintain a working relationship with an employer</li> <li>• The employer may not market or limit the ability of the vendor to market the cookstoves</li> <li>• High staff turnover will negatively affect the party who bears the risk of default</li> </ul> |

#### 4.4.5 Remittances

For this model to consumer needs close friend living part of the consumer asks friend to send purchase a consumer then cookstove when money; either money transfer transfer or online money transfer.



be applicable, the to have a relative or abroad or in another country. The the relative or close them money to cookstove. The purchases the they receive the through a traditional agency, mobile phone

Prior to participating in the focus group, each participant completed a questionnaire on his or her current finances. In response to whether they receive remittances, 34 percent of participants said that they did. Of the 34 percent that said that they receive remittances, the majority (78%) stated that these are domestic remittances and the remaining 22 percent stated that they are remittances received from family members living abroad.

International remittances received in Kenya are an increasingly important source of income<sup>16</sup>. In general, however, focus group participants did not feel comfortable asking relatives or friends abroad to send money to purchase a cookstove. Participants stated that they usually ask for a larger amount of money to cover the cost of something that they could not afford on their own (e.g. a car or an emergency). There were a few participants who were positive about this model. A small number of participants had already or were in the process of using remittances to purchase a cookstove and a handful of participants felt that their relatives would support their request and send them money to purchase a cookstove. One participant relayed that her sister who lives abroad would be willing to support the purchase of a clean cookstove through remittances because they had grown up in the same house and knew the harmful effects and inconvenience of cooking on a traditional stove.

The potential of this business model in the future is high. A good product combined with the level of formality of the institution (remittance agency) is very likely to motivate consumers to change their perception with regards to using remittances to buy a cookstove. In addition, people might not be requesting money specifically to purchase a stove but may use a portion of it to buy a cookstove. Other research has shown that remittance receivers in developing countries use the money to cover household expenses, including energy costs, including cooking fuel.

One of the supply-side stakeholders has been retailing improved cookstoves on an e-commerce website for over a year. While limited efforts have gone into marketing cookstoves on the website to date, a number of cookstoves have been purchased, both from abroad and domestically, and sent to recipients within Kenya.

**Table x. Summary of the Findings on Remittances**

|  | Likes   | Dislikes   |
|--|---|--|
| <b>Focus Group Participants</b><br>(Demand Side) | <ul style="list-style-type: none"> <li>Some participants felt that their relatives would send them money for a stove if they asked</li> <li>Some participants were in the process of purchasing a stove using remittances</li> <li>Family members are often familiar with the family home, cookstove, and the negative effects of cooking with lots of smoke from traditional cookstoves</li> </ul> | <ul style="list-style-type: none"> <li>Not applicable – many participants did not receive remittances</li> <li>Those that did receive remittances often did not receive them on a regular basis</li> <li>Culturally not appropriate to specifically ask for 'money for a cookstove' because cookstoves were considered cheap, everyday items unlike an emergency or school fees, which they often felt they could ask for (though use of remittance to pay for household and energy costs was not tested)</li> </ul> |
| <b>Industry Stakeholders</b><br>(Supply Side)    | <ul style="list-style-type: none"> <li>Limited risk for the vendor</li> <li>Increasingly easy to facilitate remittances with e-commerce sites</li> <li>Limited transaction, operational, and start-up costs</li> <li>Targeted and direct marketing possible online</li> </ul>   | <ul style="list-style-type: none"> <li>Raising awareness with diaspora</li> <li>Developing appropriate and strategic marketing</li> <li>Need to develop strong and rapid delivery channels once stove has been purchased, including delivery, installation (where necessary), and after-sales service</li> </ul>   |

<sup>16</sup> World Bank (2011) Ngugi, R. *Remittance Markets in Africa, Chapter 6: Kenya*



### Findings Related to Formal Financing Options

Formal financing options are those that involve a formal financial institution such as a bank, MFI, SACCO, or a credit union. Under this definition, these formal mechanisms include securing a loan from a SACCO, securing a loan from a formal financial institution, and saving with a formal financial institution.

#### 4.4.6 SACCO Loan/ Savings

For this model to be valid, the client is required to be a member of a SACCO. The vendor and the SACCO enter into an agreement to allow the vendor to sell improved cookstoves to the SACCO's members. The member purchases the improved cookstove and receives it up front. The SACCO pays the vendor and then subtracts the amount of the cookstove from the member's account, usually over a time period rather than one lump sum deduction. This model is a hybrid between securing a loan with a formal financial institution and the employer loan model except that the intermediary is a SACCO (a formal financial institution) rather than an employer. Note that for farmers in Kenya, SACCOs are similar to employers in that they usually facilitate the payment for the farmer's produce.

There are around 5,000 Savings and Credit Co-Operatives (SACCOs) in Kenya. SACCOs are extremely well known and widespread in Kenya and can range from ten to over 100,000 members. Among the focus group participants, SACCOs were very common in the Central region, however, less so in the Western region. Many of the low and middle-income participants in the Central region that belonged to a SACCO expressed dislike for this model. On a general note, many were not satisfied with the management of the SACCO they were in and, more specifically, they felt that purchasing a cookstove through their SACCO would be more expensive due to additional charges imposed by the SACCO.

However, many of the supply-side stakeholders interviewed were successfully selling cookstoves in partnership with a SACCO or several SACCOs. The advantage of distributing and selling cookstoves through SACCOs is that they are well-organized and known entities to many Kenyans. Partnering with SACCOs can provide access to hundreds or even thousands of potential consumers. And in most of the partnerships between SACCOs and cookstove distributors, the SACCOs take on risk for collecting the loan repayments once the stove has been sold. Many SACCOs already sell consumer durables to their members. This can be an advantage because SACCO members already know and trust the quality and value of the items sold through their SACCO. Whereas for others, prior negative experience when purchasing through their SACCO can be a barrier for cookstove distributors aiming to appeal to SACCO members. For distributors, the disadvantage of partnering with SACCOs is that they are sometimes cut out of the business transaction as SACCOs begin to work more closely with cookstove manufacturers.

**Table x. Summary of the Findings on SACCO Loan/ Savings**

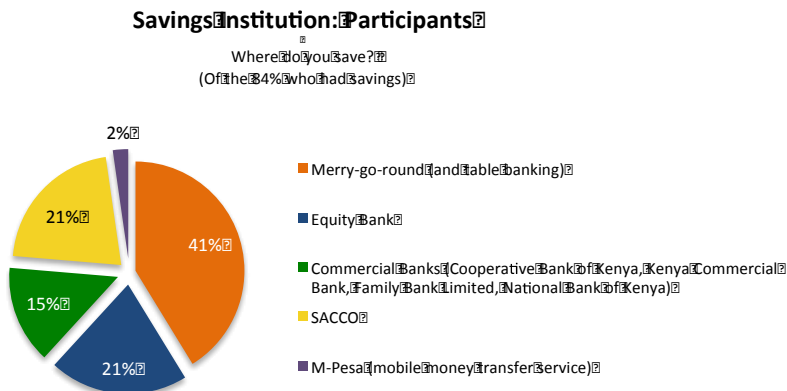
|  | Likes  | Dislikes   |
|--|--|--|
| <b>Focus Group Participants</b><br>(Demand Side) | <ul style="list-style-type: none"> <li>SACCOs are well known</li> <li>Many participants already had an account with a SACCO</li> <li>SACCOs are popular in rural and urban areas</li> <li>SACCOs are known to sell consumer durables</li> <li>A useful financing mechanism when low on cash</li> </ul> | <ul style="list-style-type: none"> <li>The SACCO might add additional costs to the cookstove</li> <li>Distrust SACCOs and their management</li> <li>Would take too long to receive the cookstove because the SACCO can take up to a year to reimburse the sale of agricultural products</li> <li>Participants in the Western Region felt that SACCOs were not very common in their region</li> </ul> |
| <b>Industry Stakeholders</b><br>(Supply Side)    | <ul style="list-style-type: none"> <li>Potentially increase client base and borrower base in the long term</li> </ul>  | <ul style="list-style-type: none"> <li>Can take a lot of time and effort to establish and maintain a relationship with a SACCO</li> </ul>  |

|  |  |  |
|--|--|--|
|  | <ul style="list-style-type: none"> <li>• Improve client's financial education and ability to leverage their finances through additional financial services provided by the SACCO</li> <li>• Limited risk for the cookstove vendor (depending on how the relationship with the SACCO is set up)</li> <li>• Ability for the cookstove vendor to leverage the SACCOs reputation with their consumers</li> </ul> | <ul style="list-style-type: none"> <li>• The brand and product reputation for both the SACCO and the cookstove vendor are interdependent</li> <li>• Limited ability to reach unemployed, rural and remote consumers</li> </ul> |
|--|--|--|

#### 4.4.7 Savings with a Financial Institution

With this model, the consumer would save money with a financial institution in their personal account and then withdraw money to purchase a cookstove.

The majority of participants (84%) stated that they had savings in some form of institution or savings mechanism. A variety of institutions were provided, including: 41% who stated they had savings via a merry-go-round; 36% reported a savings account in a commercial bank (of which 21% were saving with Equity Bank) like Cooperative Bank of Kenya, Kenya Commercial Bank, Family Bank Limited and National Bank of Kenya; 21% had savings with a SACCO (often used by agricultural workers); and, 2% had savings Pesa, the transfer stored in M-mobile money service.



When presented during the focus group discussion, this model generated mixed reactions. Participants felt that the advantages of saving with a formal financial institution to purchase a cookstove were that they could choose the best stove for their needs (instead of purchasing with a group as some merry-go-rounds do); they could save at their own pace, and they would be able to purchase the stove quicker than if they saved with their informal savings group. Several participants had actually saved and paid for a clean cookstove using this model. However, strong negative aspects to this model were also raised. Participants stated that if they had savings with a formal financial institution, these funds were saved for large expenses, emergencies, and essential items. Given that all of the focus group participants already

had a stove, even if it was a traditional stove, purchasing a clean and improved cookstove was not viewed as essential and therefore many were not willing to use their savings to purchase a cookstove.

This model may be attractive to middle and high-income consumers, who receive regular wages into their formal financial institution accounts. For low-income consumers, particularly those who do not receive a regular wage and do not regularly access an account with a formal financial institution, this is not the most appropriate model.

None of the financial stakeholders that were interviewed for this study offered a savings product for the purchase of clean and improved cookstoves.

**Table x. Summary of the Findings on Saving with a Financial Institution**

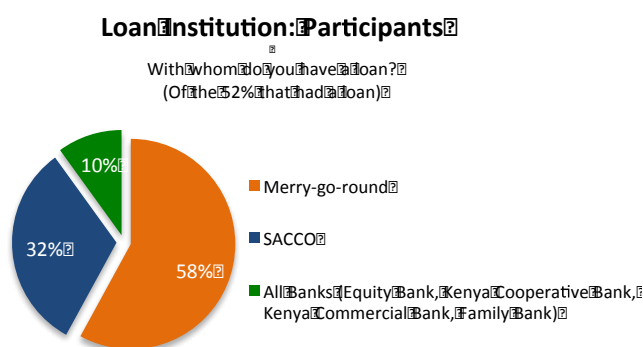
|  | Likes   | Dislikes   |
|--|---|--|
| <b>Focus Group Participants</b><br>(Demand Side) | <ul style="list-style-type: none"> <li>• Able to save at own pace</li> <li>• Able to choose the cookstove that suits individual needs (rather than group decision and purchase with a merry-go-round)</li> <li>• Able to save relatively quickly on an individual basis</li> <li>• Potential to receive interest on their savings</li> <li>• Savings secure from theft</li> </ul> | <ul style="list-style-type: none"> <li>• Opening and maintaining an account with a financial institution was perceived as costly and time consuming</li> <li>• Too costly (time and money) to travel to a financial institution to deposit money, and the amount they wish to deposit may be less than the transportation costs to get to the branch</li> <li>• Not enough money to deposit – concern that their deposit amount would be too small to deposit</li> <li>• Going to a financial institution is an intimidating experience</li> <li>• Lack of incentive or pressure to save (as opposed to group pressure when saving with a merry-go-round)</li> <li>• Negative previous experience (savings depleted due to account fees)</li> <li>• Money saved with a financial institution is primarily kept for emergencies and large expenses (e.g. medical bills, school fees)</li> </ul> |
| <b>Industry Stakeholders</b><br>(Supply Side)    | <ul style="list-style-type: none"> <li>• Potentially increase client base and possibly increase borrower base in the long term</li> <li>• Improve client's financial education and ability to leverage their finances through additional financial services</li> </ul>  | <ul style="list-style-type: none"> <li>• Limited viability for a dedicated cookstove or energy savings account product</li> <li>• Limited ability to reach unemployed, rural and remote consumers</li> </ul>   |



#### 4.4.8 Loan from a Financial Institution

Utilizing this financing option, the consumer would receive credit from a bank, MFI or a credit union and use the credit to purchase a cookstove. The consumer would then repay the bank or the MFI for the credit amount.

In the survey taken prior to the focus groups, half of the participants (52%) said that they currently had a loan. They were mostly middle and high-income participants from the Central region. Most people (58%) had taken loans from a merry-go-round and or a SACCO (32%), while only 10% of participants had asked for a loan from a formal financial institution (that was not a SACCO).



This mechanism is the most formal of all the business models and it was least preferred financing option. This is because it would be necessary to have an account with a formal financial institution and to enter into a loan agreement, which depending on the institution, involves a binding legal contract, a credit rating check, possibly a guarantor or collateral, as well as interest and fees. It also requires the consumer to travel to the branch location, incurring time and transportation costs. Many participants stated that loans from financial institutions were requested for large expenses like purchasing land or investing in income-generating activities.

Interestingly, several of the supply-side stakeholders have formed a partnership to provide finance through loans from formal financial institutions for the purchase of clean cookstoves. While this program has only been operational for less than a year, it has been well received by consumers. At the time of writing, hundreds of cookstoves had already been sold using this mechanism. Some of the negative aspects raised by focus group participants, like requiring a guarantor, are addressed in the mechanism that was developed. The program targets existing customers of the financial institution, so the accounts already exist. The potential loan recipients do not require a guarantor, and loan applications are assessed within a short time frame.

Similar to saving with a financial institution, securing a loan with a financial institution could be best suited to middle and high-income consumers who already have savings accounts and receive a regular salary.

**Table x. Summary of the Findings on Loans from a Financial Institution**

|   | Likes  | Dislikes  |
|---|--|---|
| <b>Focus Group Participants (Demand Side)</b> | <ul style="list-style-type: none"> <li>Would provide an opportunity to open an account with a financial institution</li> <li>Build a relationship and credit history with a financial institution</li> <li>Convenient if already an existing customer</li> </ul> | <ul style="list-style-type: none"> <li>Difficult to obtain a loan: <ul style="list-style-type: none"> <li>- need to be able to read the contract</li> <li>- often requires a credit check</li> <li>- might need a guarantor or collateral</li> </ul> </li> <li>Expensive – fees and interest</li> <li>Loans were generally perceived as viable for expensive items (e.g. car, land, school fees)</li> </ul> |



|   |  |  |
|---|--|--|
|   |  | <ul style="list-style-type: none"> <li>• Fixed repayments</li> <li>• Fear of repercussions if they default</li> <li>• Low income participants viewed this option as too costly and cumbersome to obtain</li> <li>• Middle and high income participants viewed this option as unnecessary given that they could use other means to purchase a stove</li> </ul>  |
| <b>Industry Stakeholders</b><br>(Supply Side) | <ul style="list-style-type: none"> <li>• Limited credit checks if consumer is already a client</li> <li>• Limited risk for the vendor</li> </ul> | <ul style="list-style-type: none"> <li>• Need to develop a relationship and partner with a financial institution</li> <li>• Need to develop strong and efficient monitoring systems for warehousing and sales</li> <li>• Cost of providing microcredit</li> <li>• Risk of default and cost to collect missed or late payments</li> <li>• Risky for the financial institution's reputation if the product sold and associated with them are faulty or not good quality</li> </ul> |

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## 4.1 Summary of the Research Findings

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The results of the research indicated that the most preferred financing models were informal and semi-formal. Overall, saving with an informal savings group, followed by layaway with a vendor were the most preferred financing options. It was predicted that informal savings mechanisms, like the individual group savings or 'merry-go-round', would be preferred. Layaway with a vendor is a variation of saving and is consistent with the idea that consumers prefer a financing mechanism that involves saving rather than taking on a loan (credit).

The team identified that the perceived value of the stove, the associated costs, and the level of formality all contribute to the consumers willingness to take up financing options. While consumers of all income ranges shared their preference for informal and semi-formal financing options, they had different preferences regarding when they would be willing to take on financing options. This was closely tied to the cost of the stove and subsequent willingness to purchase the cookstove. Participants were generally willing to take up an informal or semi-formal financing option if they were unable to pay cash. Low-income participants were willing to take on financing for most of the clean and improved cookstoves that were demonstrated. Middle and high-income participants, however, were more willing to take up a financing option for the more expensive stoves as they had the capacity to pay cash for the less expensive stoves.

No clear indication was demonstrated for whether consumers would be willing to take on financing for high-end, more expensive cookstoves. Some participants stated that they would be interested in a loan from a financial institution to install a biogas stove. However, there were not enough participants who chose high-end, expensive cookstoves (like biogas) to make this comparison and establish a clear trend.

## 5 Recommendations

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### 5.1 Consumer Finance Products for Scale Up in Kenya

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Focus group participants identified informal and semi-formal financing options as their most preferred models. Informal group savings followed by layaway with a vendor were selected as the most preferred financing options. These models were perceived by the consumer as relatively informal. Informality was one of the most liked aspects of these two models because participants believed that the financing options were accessible and inexpensive.

#### **Layaway**

Layaway with a vendor was identified as a preferred business model for financing the purchase of a cookstove. While this is a relatively informal mechanism, it has the potential for scale up. Layaway can be offered internally or possibly administered by a third party. It is a low-risk, low-cost financing mechanism for cookstove distributors and retailers. Administering a layaway program involves a certain amount of cost, however, it is substantially less than the cost of capital to finance a loan or provide cookstoves on credit. The risk is mostly borne by the consumer, and focus group participants raised concerns about their ability to trust cookstove vendors with their savings. These concerns can be addressed through building brand reputation, and using an easy, well-known payment system (like M-Pesa).

Each of the consumer financing options that were tested come with opportunities and challenges as well as different levels of risk for consumers and cookstove retailers. In order to identify the best consumer finance products for scale, it is important to highlight not only the business models that were most preferred but also the traits of these models. Favorable aspects of the preferred business models can be adapted to other financing mechanisms to create effective and scalable businesses.

Economic and social differences can vary widely between regions and no one single financing option will be the most appropriate for all consumers. From a business perspective, the sales and distribution capacity (size of the company, geographical location, retail model) of the company will have a large impact on the best consumer finance model to adopt. For consumers, perceived risk, predictability of disposable income, and income level affect their preference for various financing options.

### 5.2 Financing Partners

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In order to successfully implement and scale layaway and other financing options in Kenya, cookstove manufacturers and retailers have the option of offering these financing models internally or by partnering with other institutions. Engagement with potential implementing partners would involve developing relationships with manufacturers, distributors, and retailers to improve their internal capacity to provide semi-formal financing options. Alternatively, fostering partnerships between financial institutions and manufacturers, distributors, or retailers can bring these mechanisms to market. The benefit of providing finance internally is that companies can realize higher profits; however, administering internal finance can be costly, and time consuming. Partnering with another institution can relieve the administrative burden of providing finance, but may lead to challenges regarding the consumer's perception, experience, and after-sales service of the financing mechanism.