SNV

Netherlands Development Organisation

Grassroots solutions for scaling up improved cookstove access in Uganda

A Last-Mile Community **Market Intelligence Report**

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Market Intelligence Report

August 05, 2014

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Acronyms and Abbreviations

AES	African Energy Stove and Construction Ltd
BEEP	Bumbobi Environmental Energy Project
BEETA	Biomass Energy Efficient Technologies Association
CBO	Community Based Organization
CI	Confidence Interval
CIRCODU	Centre for Integrated Research and Community Development Uganda
CREEC	Center for Research in Energy and Energy Efficiency
ECOTRUST	Environment Trust for Uganda
EUF	Energy Uganda Foundation
FGD	Focus Group Discussions
FOWE	Friends of Wealthy Environment
GACC	Global Alliance for Clean Cookstoves
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GVEP	Global Village Energy Partnerships
HHs	Households
hr	Hour
ICS	Improved Cookstove
ICSEA	Improved Cookstove for East Africa
ILF	International Lifeline Fund
IRES	Integrated Renewable Energy systems
MEMD	Ministry of Energy and Mineral Development
MFI	Micro Finance Institution
MDGs	Millennium Development Goals
MI	Market Intelligence
NGO	Non-Governmental Organization
ODK	Open Data Kit
PEES	Prime Energy and Environment Savers
PoA	Program of Activities
SACCO	Savings and Credit Cooperative Organizations
SESSA	Save Energy Saving Stoves for Africa ltd
SMEs	Small and Medium Enterprises
UFDI	United Family Development Initiative
UGX	Uganda shillings
UNACC	Uganda National Alliance for Clean Cooking
UNBS	Uganda National Bureau of Standards
WWF UCO	World Wide Fund Uganda Country Office

Acknowledgement

Centre for Integrated Research and Community Development Uganda (CIRCODU) thanks the cooperation, technical and logistical support from SNV Uganda during the process of conducting the study and reporting. Specifically we extend our thanks to Ms. Joyce DeMucci and Mr. Job Mutyaba who worked tirelessly with the consultant to make this report a success.

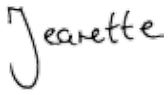
Many thanks also go to all stakeholders who willingly accepted to share information that was helpful for this market intelligence study.

Foreword

There is a new global demand to scale up access to clean cooking technologies and renewable fuels as a means of reducing environmental degradation and empowering women who are often the most affected by traditional household air pollution and its related effects. Solutions to reduce diseases and death caused by household air pollution however, ought to be anchored on sustainable and scalable market-based approaches. This has been one of the missing components in the improved cook stove value chain in Uganda. Despite more than three decades of interventions in the renewable energy sector in Uganda, approximately only 10% of the population is accessing clean energy for cooking. This highlights the dire need to find sustainable and scalable approaches for integrated cook stoves (ICS) distribution.

SNV has been working in Uganda's energy sector providing technical support to the Uganda Domestic Biogas Programme since 2009. In 2014 SNV expanded its renewable energy product offering to include improved cook stoves and Pico solar photovoltaic systems. Currently SNV is working with stakeholders to develop long-term sustainable market based solutions that encourage investments from public and private sector stakeholders while scaling up access to ICS among last mile consumers. To kick start the process, SNV commissioned a market intelligence study to understand the ICS market through the eyes of the intended client – the 85% Ugandans who stay in rural communities.

I have the pleasure of introducing to you this market intelligence report which highlights the main opportunities needed to overcome ICS adoption challenges. While the study was carried out in Eastern Uganda, the results depict what exists in different communities across the country because the significant similarities of rural life in Uganda. It is our hope that the results and recommendations presented in this report will be used to generate a discussion on how to build a more sustainable distribution mechanism that will increase ICS supply and demand among potential last mile users.



Jeanette de Regt
Country Director
SNV Uganda

1. Introduction

1.1 Background

Uganda's energy consumption matrix stands at about 90% biomass, 7% petroleum products and 2% of electricity produced from hydro and thermal power plants. Only 12% of the total population is estimated to have access to electricity of which only 1% comprises the rural population. People in Uganda depend almost exclusively on dim kerosene-fired lamps for light. Around 95% of the country's population have to use the expensive and dangerous fuel because they do not have access to the electricity grid ad other modern energy alternatives. To exacerbate the worrying situation, the use of biomass hugely depends on traditional technologies such as three-stone fireplaces that have very low efficiencies (10%-17%). Consequently, communities are facing growing scarcity of access to firewood and charcoal with demand ever increasing while supply remains unsustainable

Government, NGOs, private sector and development partners have been implementing a number of improved cookstoves (ICS) interventions however, access to ICS remains very low especially in rural [last mile] communities. Most funding for ICS has been through projects and programmes that in the end fail to attain sustainability beyond the implementation period. Consequently, adopters are frustrated after project periods with no access to repair, new ICS and other related services.

1.2 SNV in the energy sector

SNV has been working in Uganda's energy sector providing technical support to the Uganda Domestic Biogas Programme. In 2014, SNV expanded its portfolio in renewable energy sector by adding support to scaling up market-based approaches to distribution of improved cookstoves and Pico solar photovoltaic (PV) systems. SNV is working with stakeholders to develop long-term sustainable market based solutions that will encourage investments from public and private sector stakeholders while scaling up access to ICS and pico solar PV among last mile consumers.

1.3 Overview of the MI study

CIRCODU was contracted by SNV Uganda to undertake a Market Intelligence (MI) study for the Improved Cookstove (ICS) sector in Uganda. The general objective of the study was to provide a solid basis for SNV's market development, relationship brokering, capacity building of key stakeholders in the value chain and further sharpening all planned interventions. Through this market intelligence study, SNV aimed at finding fact-based and practical recommendations on how best Integrated Renewable Energy Services (IRES) project should design, develop implement and validate ICS business models in Uganda.

The study sought to understand the market dynamics through covering three thematic areas below:

Enhancing implementation capacity: Under this theme, the consultant sought to identify the key stakeholders and partners in the production, marketing and distribution and financial support of improved cookstoves in Uganda in order to determine current production levels of ICSs, opportunities and barriers, market distribution approaches and accessibility to finances for scale-up of cookstove projects. With this information, CIRCODU has recommended the potential financing institutions, best marketing approaches including distribution networks and methods to reach the last mile users.

Stimulating Demand: This thematic area dealt with assessment of availability of the various cookstove types in the market place, and their current pricing structures as well as the demand-related challenges (financial, social, technical, infrastructural, etc) that need to be addressed to increase penetration of ICSs in urban and rural communities in Uganda. As a result, a market price scenario that reflects future supply and demand has been recommended as well as the value chains to be followed/ established to reach the last mile users.

CIRCODU has also documented demand-side challenges and recommended what ought to be done and the steps to be taken to develop the ICS market, scale up and sustainable uptake of ICS to last mile consumers in Uganda.

Creating an enabling environment: The consultants concentrated on the factors that contribute to building a good business environment for ICS. An assessment of the current stove standards and related characteristics such as durability, efficiency, emission ratings, safety and ease-of-use was done. This also involved policy analysis and institutional framework assessment. Recommendations have been made on key actions for supporting the grading process for household stoves as well as critical interventions to influence policies for increasing sustainable distribution methodologies of cookstoves. Options have also been proposed for improving organizational effectiveness to support SMEs, producers, NGOs and other stakeholders to deliver ICSs to last mile users.

1.4 Methods and Approach

The study was conducted using the following approaches; literature review, household surveys, FGDs, key informant discussions and stakeholder consultation workshops/ meetings.

Household surveys: The HH surveys were conducted in 303 households (154HHs in rural, 149HHs in urban) in Mbale and Buikwe districts as shown in Table 1. The sample size was determined to comply with the sampling requirements of 90% CI and 10% margin of error. The surveys were administered in households selected randomly within the districts. Only willing households were surveyed. It was also mandatory that the respondents were above 18 years old. The best effort was made to attain an appropriate geographic sampling while still adhering to all aspects of random sampling. The survey tool was uploaded on phone-based ODK survey platform for easy and fast data collection process.

Table 1: Distribution of households surveyed by district

District	Number of HHs	
	Rural	**Urban**
Mbale	76	78
Buikwe	85	64
Total	154	149

Eighty-four percent (84%) of the respondents were females and the rest were males. The majority of the respondents were in the age bracket of 20-40 years with an average age of 37 years. It is also important to note that 54% of the respondents were spouses of household heads and 37% were household heads. The sample therefore quite fairly represented household members who are either directly involved in cooking activities or making decisions on acquiring of household fuels and cooking technologies.

Focus Group Discussions: Focus group discussions with 8 groups (4 FGDs in rural, 4FGDs in urban) were conducted in Mbale and Buikwe, as shown in Table 2. Mobilization was done with the help of the local leaders. Each group had between 7-15 participants for the purposes of easy management. The discussions carried out during the study were specific, more so; on the cooking practices, cookstoves commonly used in the area, the fuels mostly used, stove preferences, willingness-to-pay, ICS awareness activities in the areas, stove accessibility and financing opportunities.

Key Informant Discussions: Key Informant Discussions were conducted with a total of 34 stakeholders in the cookstove value chain in Uganda. These included stove builders, marketing and distributions groups, donors and NGOs, policy makers, financial institutions and stove testing centers.

Stakeholder consultations workshops/meetings: Information was gathered from three stakeholders' meetings in Mbale, Buikwe as well as Kampala.

Literature survey: Literature survey was conducted mainly focusing on the improved cookstove sector in Uganda.

Table 2: FGDs distribution in Mbale and Buikwe districts

District	Region	Number of Participants in Mixed groups	Number of Participants in Women groups	Number of Participants in Men groups	Location
Mbale	Urban	10	-	-	Mbale town
	Rural	-	9	-	Namanyonyi
	Rural	-	9	-	Busiu Women Group
	Urban	-	-	18	Bumbobi
Buikwe	Urban	-	11	-	Buikwe Town Centre
	Urban	7	-	-	Biukwe District
	Rural	-	-	11	Nyenga-Sunga
	Rural	-	-	17	Kikube-Kizingo Parish

2. Study Findings

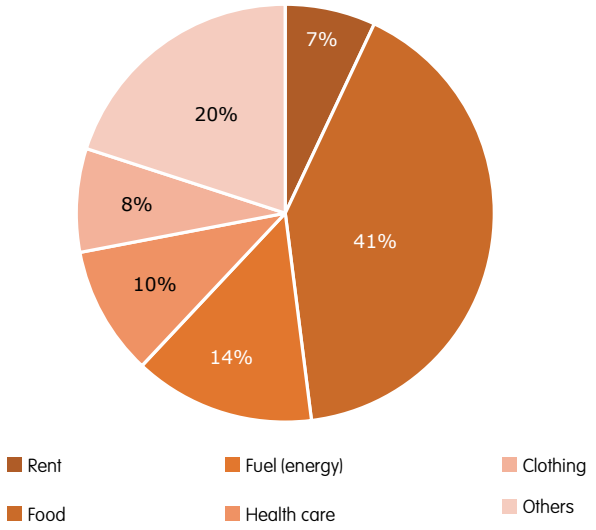
2.1 Household Socioeconomic Characteristics

The study determined the average household size to be 7 persons. The main source of household income was found to be Agriculture (46%) while other major sources of HH income were found to be commerce (25%) and service jobs (18%). The average monthly expenditure of the households was found to be UGX 180,000- as calculated from the sum of different expenditure items shown in Table 3. Based on the daily expenditure, the households can be regarded to lie above the poverty line of 1.25 dollars per day[25]. Households' expenditure on energy fuels is second to that on food and hence, households are likely to adopt technologies that would help reduce the fuel expenditure.

Table 3: Household monthly average expenditures

Items	#respondents	Average expenditure (UGX)
Rent	295	11,750
Food	280	71,800
Fuel (energy)	284	25,200
Health care	211	18,200
Clothing	197	14,100
Others	222	35,500

Figure 1: Average household monthly expenditure on selected items (UGX)



Nearly all the surveyed HHs (99%) live in houses that have iron sheets as roofing material and 75% of these have houses that are built with burnt bricks and cement/mud. This indicates that the households can afford purchasing an ICS. In terms of education, it was found out that 67% of the households have all their children attending schools compared to 13% that are not able to send all their children to school. Households that didn't have school going children were 20%.

It was also found out that most of the HHs (37%) use kerosene lanterns (lamps) followed by *"tadoobas"* (30%) as means of lighting in their homes. Electricity is also used by 29% of the respondents, mainly in the urban areas. Therefore, households that can afford to purchase kerosene lamps or use electricity for lighting have the potential to purchase ICS.

The majority of HHs (65%) use covered pit latrines, 3% use uncovered pits, 32% use Ventilated Improved Pit (VIP) latrines while less than 1% of households still use the bushes. This is an indicator that, 97% who have covered and VIP latrines, can afford to purchase an ICS.

Also, 97% of the HHs responded to own electronic equipment such as mobile phones and radios among others. This finding also indicates that the households that can afford to purchase electronics are most likely able to purchase ICSs.

Based on the above findings on socio-economic indicators, it can be held that the majority of the households in Mbale and Buikwe have the potential to purchase ICS to replace the existing traditional cookstoves.

2.2 Cooking practices

92% of the HHs surveyed cook food for home consumption only while 6% cook food for both domestic and commercial purposes (restaurants). Given that the average household size was found to be 7 people, the most applicable type of ICSs would be domestic stoves of sizes ranging from size 0 to size 2, as commonly known in the ICS circles.

The majority of households surveyed (above 50%) were found to cook in separate enclosed kitchens both in the rainy and dry seasons (shown in Figure 1). For this type of households, both potable and fixed stoves are relevant. During the dry season, 10.6% of households cook completely outside but this reduces to 1% in the rainy season. Cooking inside the main houses is still done by 7.6% households in the dry season, which increases to 20.1% in the rainy season (Figure 1). For this type of households, only potable domestic stoves can apply.

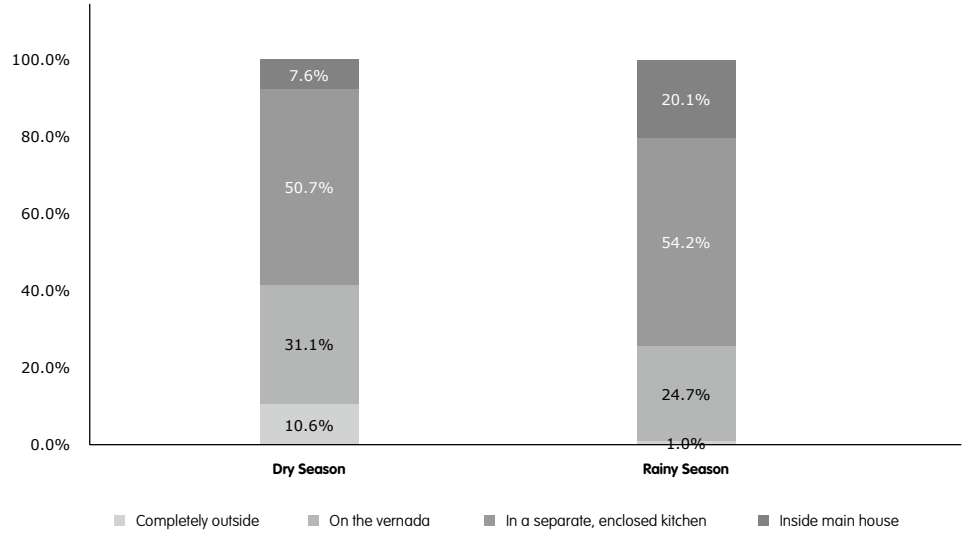


Figure 2: Seasonal variation in cooking place

2.3 Stove usage

Of the 303 households surveyed, a total of 231 households were found to regularly use one type of cookstove for their cooking, with 3-stone open fires (48%) and unimproved charcoal stoves (37%) being the most used types as shown in Figure 2. Of the remaining households (72) that regularly use more than one type of stove, 78% use 3-stone open fire as one of the stoves. Improved charcoal and wood stoves are being used by a small proportion (11%) of households. Users of ICSs were found to have brands from Ugastove, Okello Kuc, UFDI, Lorena and SESSA stoves.

As shown in Figure 3, the wood stoves (unimproved and improved) used in households are mainly fixed stoves while charcoal stoves are mainly portable.

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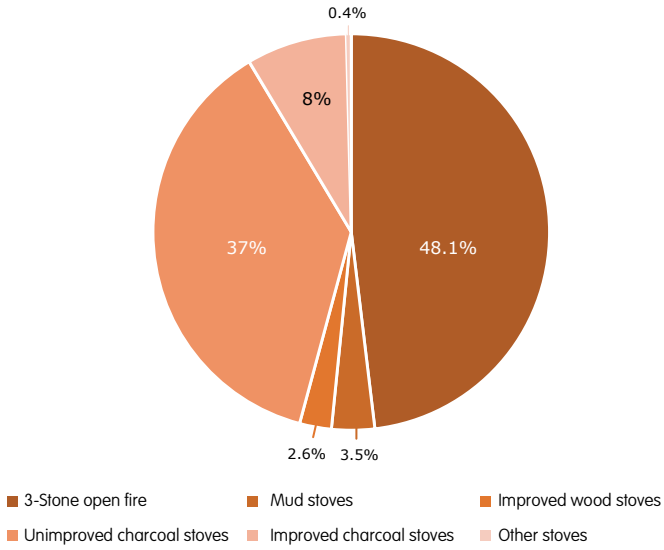


Figure 3: Regularly used cookstoves

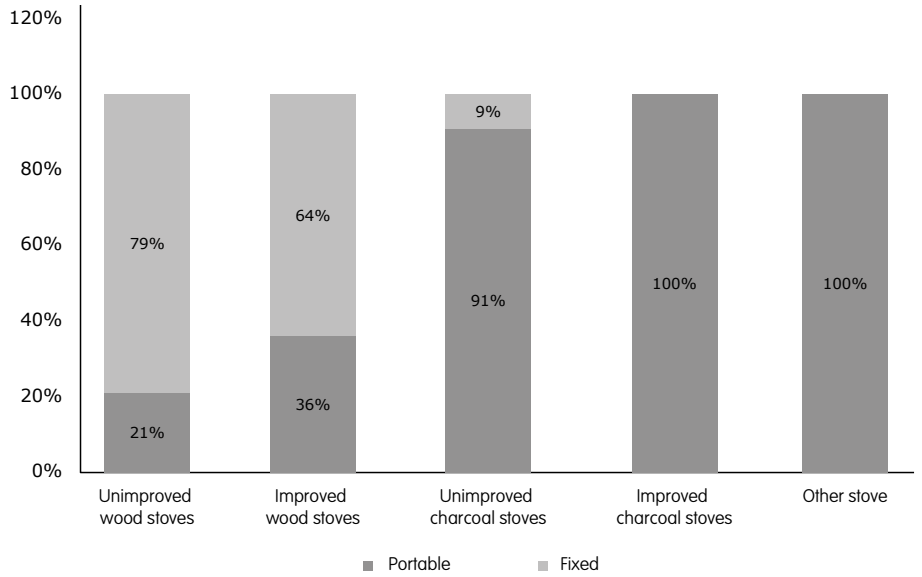


Figure 4: Type of stoves used

Limited use of ICSs in the households is partially attributed to the absence of established ICS producers in Buikwe and Mbale districts. In a baseline study commissioned by ECOTRUST in Mt Elgon region (2013)[1], about 5 local cookstove artisans were identified, who included UFDI, Mafabi, BEEP, among others. Two of the five artisans produce improved charcoal stoves only while the rest produce both improved charcoal and woodstoves. All the artisans reported to make only household stoves but there production capacity was less than 100 stoves.

During the FGDs, Mr. Lamu Wanyera of Bumbobi Environment Energy Project, a local ICS producer of dual mud stoves with a production capacity of less than 100 stoves, said his main limitation is lack of funding to scale up the business.

There are limited stove programs in the districts. The study found two NGOs active in the two districts. Caritas Lugazi Diocese, a pastoral social development arm of Lugazi Diocese (covering the Mukono, Kayunga, Buikwe and Buvuma districts) through its energy program has constructed lorena cookstoves in 90,000 households, and 50 schools since 2006[2]. Given that the program is spread across 4 districts, the impact is still very low.

"Reach out Nkokonjeru parish HIV/AIDS Initiative", an NGO based in Buikwe district is involved in making and marketing energy saving cooking stoves to schools and health centers[3]. So far they have constructed 4 institutional stoves and 40 household fixed stoves.

2.4 Accessibility of cookstoves to last mile users

3-stone fireplaces and other unimproved wood stoves were generally free. By comparison, users of both unimproved and improved charcoal stoves reported having purchased them. This may reflect the higher value attached to charcoal stoves in comparison with firewood stoves in general.

Most of the households that bought unimproved charcoal stoves indicated to have purchased them from retail outlets (54%), while households that purchased improved charcoal stoves indicated to have purchased them mainly from open market or exhibitions (38%) as shown in Figure 4. This discrepancy shows a greater abundancy of unimproved charcoal stoves closer to the last-mile customers who depend more on retail shops near them for supplies. The findings indicate that there is a good network of retail outlets in the districts which should be taken advantage of as selling points for ICSs as well.

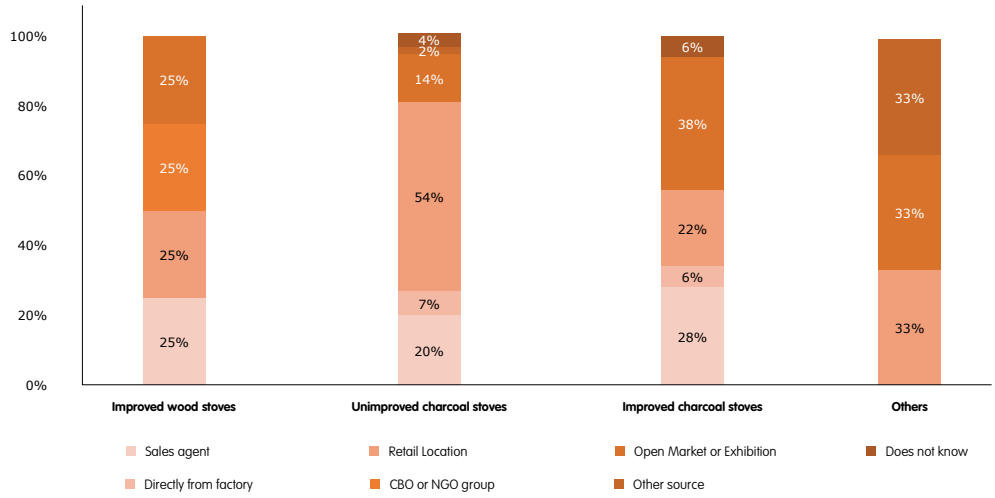


Figure 5: Sources where stoves were purchased

Ritah, a farmer in Namanyonyi village in Mbale, points out that to increase access of ICS in communities; awareness campaigns should be conducted as well as use of women groups to vend ICS. She further adds that she would borrow money from her group to buy an ICS.

In order to increase access to ICS in the communities, the respondents indicated that opening up retail outlets in both rural and urban communities as well as use of CBOs or women/youth groups would be the best approaches to use (Figure 5). The other approaches recommended include doo-to-door sales, use of mobile trucks, church gatherings, use of village meetings/gatherings as well as stove demonstrations on open market days.

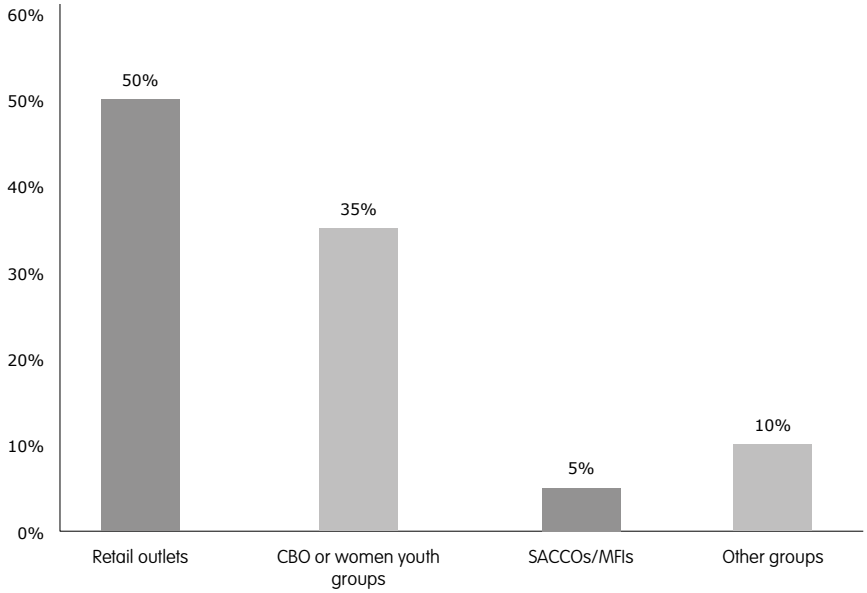


Figure 6: Ways of making ICS accessible to last mile users

It should be mentioned that 51% of the households indicated willingness to vend ICS in the communities. This points to the potential that exists in opening up retail outlets across the communities in the two districts.

2.5 Stove prices

As mentioned earlier, 3-stone fire places and other unimproved wood stoves were cost-free for households on the other hand, the average cost of improved cookstoves was UGX 26,300. Charcoal stoves costs ranged from UGX 5,300 for unimproved charcoal stoves, UGX 14,000- for improved charcoal stoves as shown in Table 4.

Table 4: Amount of money paid to purchase household stoves

	#respondents	Average cost (UGX)
Improved wood stoves	4	26,300
Unimproved charcoal stoves	123	5,300
Improved charcoal stoves	31	14,000
Other stoves	3	19,000

Demand Side Findings

2.6 Willingness to pay

When potential ICS users were asked how much they would be willing to pay for ICSs, they indicated an average of UGX 16,000 for an improved wood stove, and UGX 11,000- for an improved charcoal stove. The stove prices mentioned above, in particular for improved

wood stoves, are much lower than the stove prices for most types of improved (rocket) stoves on the market. Therefore, focusing on low cost improved wood and charcoal stoves for these communities will be necessary.

Stephen, a local farmer in Bakhumeka II village, Mbale, says that he has not been able to acquire an ICS because it is expensive. He also says ICS are only in the Mbale town so not easily available in villages. He however acknowledges that the ICS are good since they can help save the scarce and expensive fuel

2.7 Fuel usage

Firewood and charcoal are the main fuels used in households for cooking and heating, with firewood used by the 57% of the households and charcoal used by 42% of the households. The rest (1%) use kerosene. This indicates that there is potential for both wood and charcoal ICSs in the districts.

Also important to note is that 64% of the households purchase their main cooking fuel while 31% collect their main cooking fuel. The rest (5%) both buy and collect fuel. Over the past 3-5 years, households reported an increase in their monthly fuel expense from average of UGX 22,000- to UGX 40,000 as shown in Table 5. Furthermore, the time taken to gather firewood increased from 2.4 hrs /week to currently 3.6 hrs /week over the same period. With the current deforestation rate as well as population growth, this trend is expected to continue. This situation will compel the households to find alternative ways of reducing fuel consumption hence presenting an opportunity for uptake of ICSs.

Table 5: Changes in fuel costs and collection time over 3-5 years

	N	Average
Amount spent currently (UGX/month)	192	40,000
Amount spent 3-5yrs ago (UGX/month)	155	22,000
Time spent currently (hrs/week)	94	3.6
Time spent 3-5 years ago (hrs/week)	90	2.4

Therefore, with the increase of fuel prices as well as the time taken for gathering fuel, it is expected that, households' willingness to acquire ICSs will progressively continue to increase.

Households already using ICSs (33 charcoal stove users and 9 wood stove users) indicated realizing fuel savings. Majority users (55%) of improved charcoal stoves estimated fuels savings of 50% followed by 33% that estimated about 25% fuel savings (Figure 6).

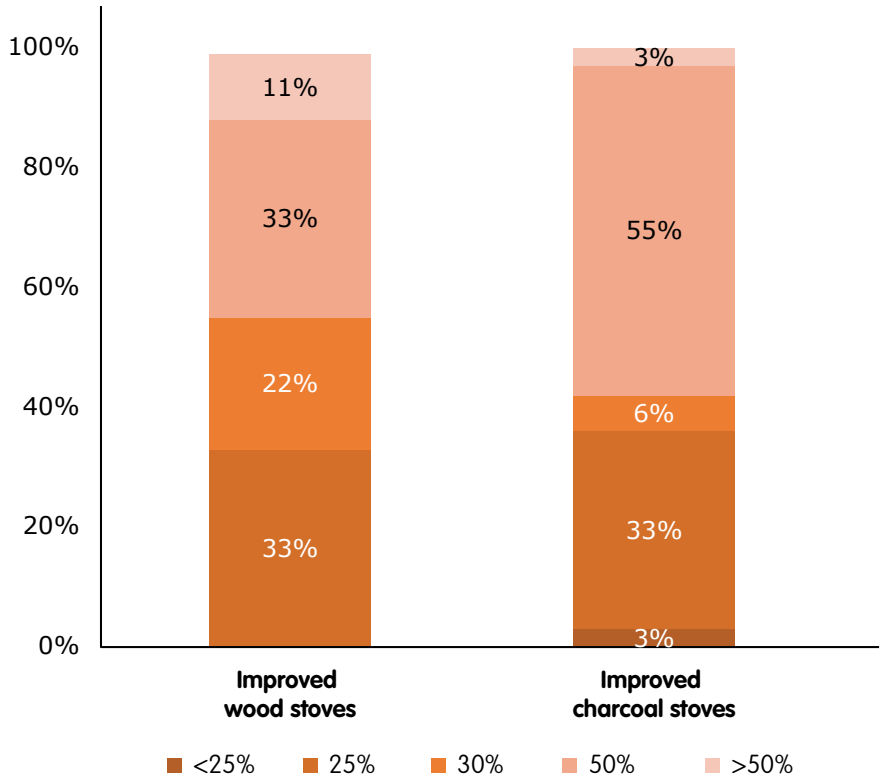


Figure 7: Estimated quantity of fuel savings

2.8 Consumer's opinions and knowledge of ICSs

The majority households (71%) reported having ever heard about ICSs before while 29% have never heard about ICS. Of those who have heard about ICS, 40% heard from a neighbor or by word of mouth, 23% from radio adverts, and 11% from market day promotions or exhibitions. Other major sources of information about ICS reported include NGO campaigns (10%), retail promotion/information (9%) and newspapers (4%). The results clearly indicate that awareness creation among last mile users is still lacking. Concerted effort needs to be taken to fill the knowledge gap that exists.

The majority of households (94%) indicated willingness to purchase ICS. The main motivations for purchasing ICS include fuel saving (41%), reduction of cooking time (22%), stove durability (16%) and reduced kitchen smoke (10%) as shown in Figure 7.

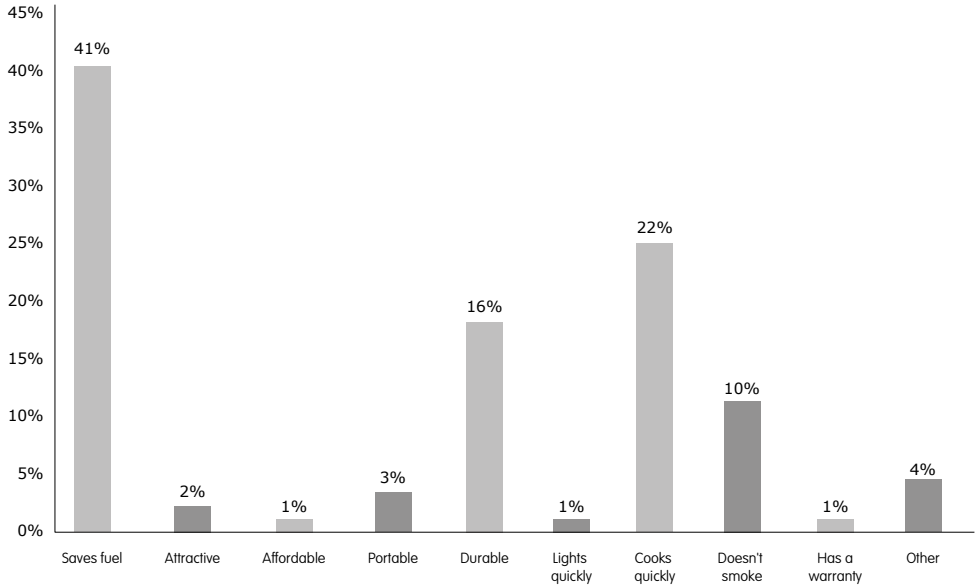


Figure 8: Reasons for purchasing ICS

Of the households (94%) that indicated willingness to purchase ICSs, 53% preferred improved charcoal stoves, 37% preferred improved wood stoves while 10% were interested in both improved wood and charcoal stoves (Figure 8). Majority (91%) of those interested in improved charcoal stoves prefer portable stoves while households who prefer wood stoves are split equally between portable and fixed type of stoves (Figure 9). It should be said, therefore, that the potential for both improved charcoal and wood stoves exists in the two districts. Both portable and fixed improved wood stoves are relevant for households in the two districts.

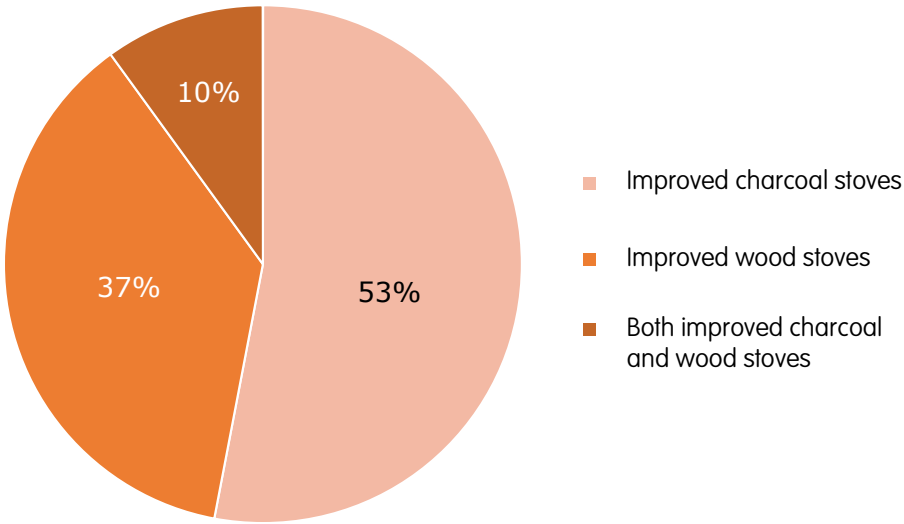


Figure 9: Type of ICS that households would buy

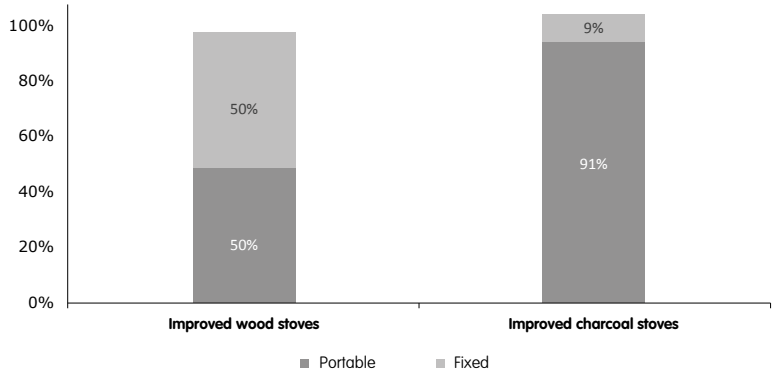


Figure 10: Model of ICS that respondents would buy

When asked what first consideration the households would have in mind when considering purchasing ICS, majority (61%) mentioned fuel savings, followed by stove durability (16%) as shown in Figure 10. Asked what the second characteristic that they would be consider, respondents mentioned cooking time (26%), and fuel savings (22%) and lastly stove durability (18%). The third consideration was established to, be stove durability topped the list (29%), followed by cooking time (22%). In summary Fuel savings is the core consideration followed by cooking time and then durability. It is important to note as well that cost didn't feature as highly as would be traditionally expected. These characteristics were evident among current users of ICS as well as the potential customers as reflected in figures 7 & 10.

The findings are important in development of marketing and awareness messages in order to motivate last mile users to purchase cookstoves. Also, it is important that stove producers put the above factors into consideration when designing ICSs in order to meet the expectations of the ICSs users. In order to sustain the ICS market, effort should be made in ensuring the last mile users are satisfied with the type of ICS they purchase in terms of fuel savings, durability and cooking time.

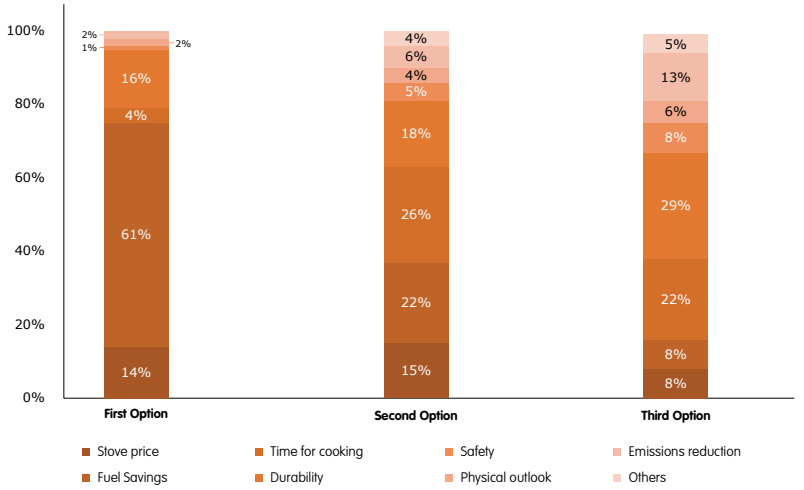


Figure 11: Key things considered when purchasing ICS

In order to find out how ICSs rank in order of importance as a household commodity, respondents were asked to prioritize what they would purchase first among the following household items-

1. saucepan (cooking pot),
2. flask,
3. blanket and
4. an ICS.

As shown in Figure 11, the ICS was preferred most to the rest of the items selected as first choice by 50% of households. The second choice item was a saucepan (cooking pot). The blanket topped the list of third choice while the flask was preferred as the fourth choice. The main reasons given for ranking the ICS first include fuel saving and the basic food preparation requirement that households consider to be most important.

Households also indicated that they would pay, on average, UGX 12,500- for the saucepan, UGX 13,200- for the flask, UGX 33,200- for the blanket and UGX 15,000- for the ICS as shown in Table 6.

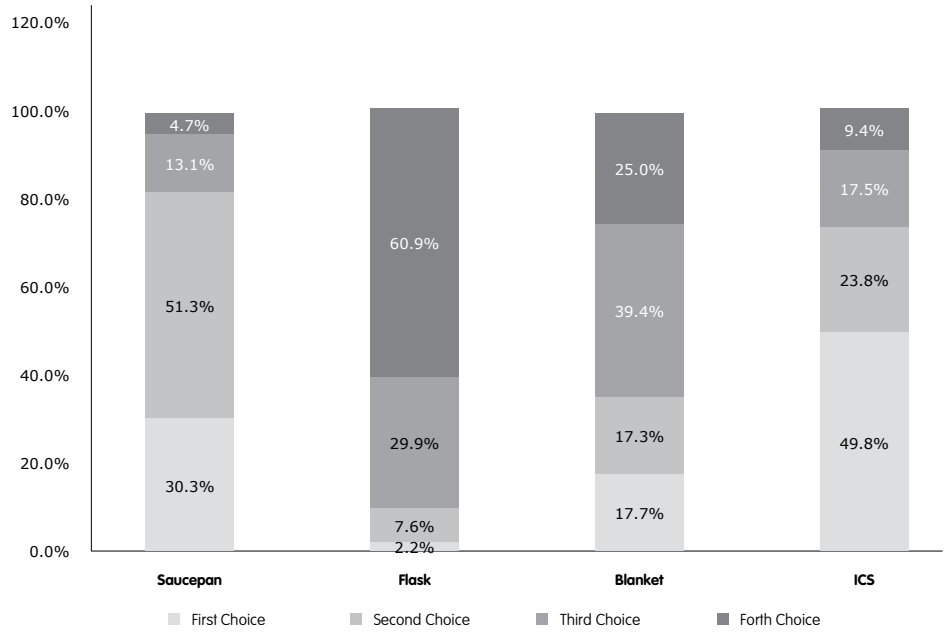


Figure 12: Choices between saucepan, ICS, flask and blanket

Table 6: Average prices at which households would buy household items

	N	Average (UGX)
Saucepan	277	12,500
Flask	275	13,200
Blanket	275	33,200
ICS	276	15,000

2.9 Financing mechanisms of ICSs

Access to consumer finance for ICS is still a major challenge in Uganda. When the respondents were asked what alternative financing mechanisms they would consider if they didn't have upfront funds to purchase ICS, the majority (57%) indicated that they would prefer installment payments or stove credit. Other households (24%) would prefer to take time and first collect/accumulate the required funds while only14% would prefer to take a loan from an MFI or friend as shown in Figure 12.

It is obvious then that loans for ICS are not a recommended option since despite the fact that 63% of households reported to be members of SACCOs or village saving schemes, only 14% are willing to take a loan to purchase ICSs.

Figure 12: Alternative financing mechanisms for acquiring ICS

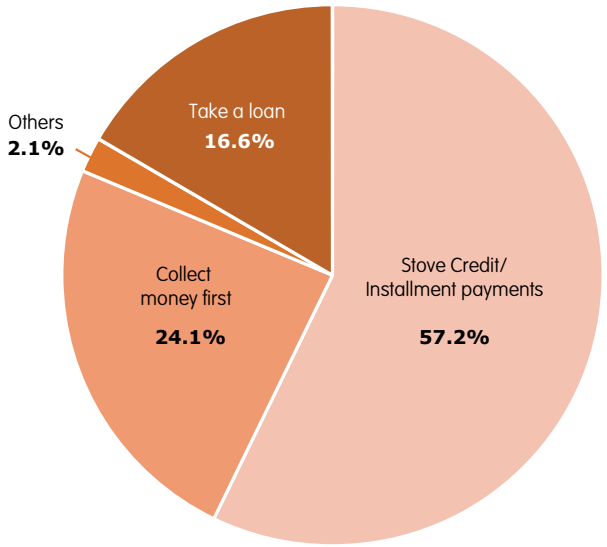


Figure 13: Alternative financing mechanisms for acquiring ICS

2.10 Other demand side findings

Both results from household and FGDs indicate several challenges faced by potential last mile users that tend to lower the demand for ICS. They include the following:

- **Lack of information.** A sizable portion of the potential last mile users is not aware of existence of ICSs. Of those that are aware, the majority have learnt about ICSs from their neighbors. From FGDs, it indicates that the adverts about ICSs are often in English and yet most of the locals do not understand English, therefore they end up missing out on the information. Without appropriate and adequate awareness creation, marketing, and outreach, last mile users remain unaware and or uncomfortable with ICSs. Some of the potential consumers of the cookstoves usually demand to see the product and know how it works before deciding on whether to purchase it or not.
- **Lack of stove access.** There are few distributers or vendors in areas beyond Kampala, which makes ICS accessibility hard. The mobile trucks which sell the stoves only stop in the trading centers and do not reach the villages, so people in the villages do not have

access to the stoves. In addition, the ICS production levels for local stove artisans are very low and cannot satisfy the market.

- **High stove prices.** Many users are not able to afford purchase of ICSs, particularly wood stoves because of the high prices. Many potential users do not have cash to pay for ICSs[4]. This is against the background that most of the wood users have 3-stone open fires that are freely acquired and may not find it worth to spend "a lot" of money purchasing ICS.

3. Discussions

The study found out that there is limited use of ICSs in households in Mbale and Buikwe. This has been attributed to limited ICS access due to low levels of local ICS production and insufficient distribution and marketing networks; lack of sufficient awareness creation and high stove prices among other causes. Despite the above, the market for ICSs in the districts is big, due to rise in fuel prices and fuel gathering time.

In addressing the above limitations, an assessment has been made of the value-chain players in the ICS subsector, focusing on the available opportunities and potentials, existing gaps and challenges in ICS production, marketing and distribution, financing, policy and institutional frameworks.

3.1 Cookstove production and supply

There are several Ugandan ICS manufacturers existing today, many of who are located in and around Kampala[5 6]. Of these, only Ugastove and Green Bioenergy are able to produce stoves in quantities exceeding 5000 per month. Some of the manufacturers include ILF, EUF, SESSA, AES, FOWE, PEES, Ecostove, Josa Green, Green Bio-Energy, BM, AWAMU Biomass Energy Ltd among others as shown in Table 7. Other small production centers exist all over the country, but often with low production capacity.

A new type of ICS produced locally in Uganda is Ecostoves that use volcanic stones as fuel. The stoves are used for cooking as well as lighting for households. The stoves are sold through corporate institutions and organizations and can be purchased through installment payments. Potential end users can acquire loans from Post Bank purposely to acquire these stoves.

In addition to local production, stoves have been imported into Uganda over the past 3-5 years by mainly UpEnergy. These stoves, which are mainly wood burning, include brands like Envirofit, JikoPoa, Biolite and Ezy Stoves. The sale of the imported stoves which was initially concentrated in urban and peri-urban areas[7] has currently spread to other parts of the country. According to UpEnergy, 500 stoves are currently sold per month across the country.

Despite all the above, the ICS production and importation numbers are still too low to cover the ICS market in the country. Secondly, most of the local ICS manufacturers mainly produce improved charcoal stoves and only a handful are producing improved wood stoves. Moreover, even the few producing wood-burning stoves, do so in very small numbers. Given that firewood users are the majority in Mbale and Buikwe and the whole country in general, the ICS production gap is even wider for the wood using cluster.

The price range for improved charcoal stoves (from size 0 to size 3 which are suitable for domestic use) is UGX 10,000 – 35,000 - while for wood stoves, the price ranges from UGX 35,000 to as high as UGX 175,000 with the exception of Lorena stoves whose prices ranges from UGX 5,000- 20,000 (Table 7). The stove prices, particularly for improved wood stoves, are quite high for the majority of firewood users to afford. There is need for financing interventions to make these stoves affordable to the potential last mile users.

Table 7: Type of improved cookstoves

Stove builder/ Importer	Type of stoves	Cost of stove	Monthly production	Monthly production 3-5 years ago
Ugastove	Improved charcoal stoves	UGX13,000- UGX 25,000	7,000	300_500
	Rocket (wood) stoves	UGX 35,000	-	
ILF[8]	Improved charcoal stove	$8-$11	1,500	
EUF	Improved charcoal stoves	UGX 16,000-UGX 25,000	2,500	
	Rocket (wood) stoves	UGX 35,000-UGX 50,000	750	
SESSA	Improved charcoal stoves	UGX 8,000-UGX 25,000	4,000	
FOWE	Improved charcoal stoves	UGX 25,000-UGX 65,000	300	150
	Rocket (wood) stoves	UGX 80,000	90	
AES	Improved charcoal stoves	UGX15000-UGX30000	2,000	100+
Environmental Degradation Sensor	Improved briquette stoves	UGX 10,000-UGX 25,000	130	
Promoters of Efficient Technologies	Charcoal stoves	UGX18000-UGX25000	600	
Green Bio-Energy	Improved charcoal stoves	UGX20,000- 32,000	6,000	100+
BM stoves	Improved charcoal/ wood/saw dust stoves	UGX14,000-35,000	4,000	1,200
Bumbobi Environmental Energy Project	Lorena Stoves	UGX 5000-20000	<10	
UpEnergy	Ezy stove, Green Bio-Energy, Biolite	UGX 60,000 – 175,000		500
Ecostoves	Solar stoves,	750,000	2,000	
	charcoal and briquette stoves	30,000-35,000	2,500	

The ICS producers and suppliers face the following challenges.

i) **Lack of access to finances:** Producers struggle with lack of access to enterprise financing to scale up their businesses. With an exception of those with access to carbon project funding, ICS producers have to mobilize funds internally. Given the high prices of raw materials, there is need to create financial linkages in order for the ICS producers to scale-up their business as well as curb down the high stove prices benefiting from the economies of scale.

ii) Poor quality products: A commercial market for improved stoves exists in the whole country but many stoves are of poor quality. Most of the artisans lack technical skills as well as technological capacity (in terms of equipment and other infrastructure) to produce good quality stoves.

iii) Access to raw material. There is a growing increase in raw material costs as a result of long distances traveled to outsource the materials such as clay. This, not only has impacts on the stove prices, but also hinders the production rate.

3.2 Marketing and distribution

There are various players involved in the marketing and distribution of ICSs in Uganda as categorized below;

i) Stove manufacturers. Nearly all the local stove manufacturers are involved in marketing and distribution of their cookstoves directly to last mile users. There are several reasons for this. Firstly, the manufacturers want to maximize the profits by going all the way through the value chain to last mile users. Secondly, manufacturers are hesitant to surrender the sales business to middlemen whom they fear may distort the market by inflating stove prices and or ignore ICS businesses suddenly hence creating a chain gap. Thirdly, manufacturers want to get direct feedback from the users/retailers as one way of keeping market relationships for future supply and quality control.

ii) Distributers. They are involved in the value chain mainly through purchase of cookstoves directly from the producer, transporting them and selling them to other retailers or last mile users in another part of the country. Middlemen can provide the market linkages missing between cookstoves producers and retailers and may be beneficial in the Ugandan and Regional market where producers struggle to reach the market. Major players include UpEnergy, who distribute Green Bio energy stoves and improved wood cookstoves, mainly imported in the country and Living Goods that distributes stoves for Ugastove, UpEnergy, Green Bio energy and SESSA.

iii) Retailers. Established manufacturers like Ugastove use retailers as one major channel for stove sales. Retailers are often the ones that make the final sale to the end user. These are mainly owners of shops (hardware, supermarkets) and sell cookstoves alongside many other consumer commodities. Retailers often perform limited marketing activities and rely on customers to hear about them through word of mouth or take advantage of passing trade[11].

iv) End users. The cookstoves market in Uganda is estimated to be approximately 5 million households. The total number of households with improved cookstoves is around 600,000 households[12]. In Mbale alone, with a population 441,300[13], the number of households without ICS is estimated at 56,000 (considering a household size of 7 people and 11% ICS usage). There is a huge market for ICS that is yet to be covered.

There exist multiple challenges in the distribution and marketing of ICS. These include

- **Transportation costs.** Transporting bulky stoves over long distances comes with high costs. Most stove manufacturers or businesses do not own transport systems hence rely on hiring vehicles to distribute stoves.
- **Limited distribution networks.** Due to vendor liquidity constraints to purchase stock, there are very few ICS selling points existing, especially in the rural areas. Most of the selling points are concentrated in town centers.
- **Lack of marketing skills.** Most players, particularly stove manufacturers and vendors, do not have sufficient marketing or business skills to get ICSs to the last mile users[14].
- **Lack of awareness creation.** There is limited engagement of ICS distribution and marketing players in awareness creation in communities, especially in rural areas[15]. Much of the awareness or promotional activities are done on mobile trucks that traverse town centers, or open markets/exhibitions.

3.3 Financing Mechanisms

Carbon financing and financial institutions are the two main options which ICS value chain players can benefit from to enhance their businesses.

Carbon finance: Carbon credits have opened up new sources of revenue[16] presenting a significant opportunity for local and foreign improved cookstove manufacturers to attract financing to increase their production and distribution capacity to reach previously unreachable market segments. Also, carbon funds provide an opportunity for consumers to access high quality stoves at significantly reduced cost.

Mr. Kigolo of ECOTRUST pointed out that ECOTRUST, in conjunction with the districts of Mbale, Manafwa and Bududa is developing a carbon project in the Mt. Elgon region. This project is registered under the Uganda Carbon Bureau's ICSEA PoA. The role of ECOTRUST is to train local artisans on ICS and provide ICS liners to households. Households provide the rest of the materials (sand or soil and bricks) for construction of stoves.

Currently, only cookstove builders under the Impact Carbon's "Fuel Efficient Cookstoves, Uganda" project i.e. EUF, SESSA, AES receive ICS carbon credits in Uganda. Other projects that are in the pipeline and notable is the Uganda Carbon Bureau's ICSEA PoA, an 'umbrella' for projects that disseminate improved cookstoves using wood or charcoal --covering East Africa. The PoA was registered in August 2012.

However, the following should be taken into consideration regarding the use of carbon financing.

a) Direct price subsidies. Findings from surveys show that direct price subsidies of clean cookstoves deter market development. Direct price subsidies may, in fact, increase barriers for commercialization as it reduces the intrinsic value of clean cookstoves which lowers customers' willingness to pay.[17]

b) Entry of carbon finance-subsidized stoves into the markets will make it harder for other ICS manufacturers to compete if they cannot access the funding.

c) ICS businesses should be willing to undertake rigorous monitoring activities as it a core requirement to access carbon finance.

Financial Institutions: There are several institutions that are involved in offering financial support to ICS players in the country, as shown in Table 8. There are other stakeholders who offer indirect financial support in form of capacity building (e.g trainings for ICS manufacturers) and awareness creation such GIZ and UIRI. GVEP International offers Loan Guarantees for Institutional cookstove manufacturers.

Table 8: Financial institutions that support ICSs in Uganda

No	Institution	Financial Facility	Target Products	Conditions for accessing Facility
1	Micro Finance Support Center-Mbale	Environment Loan	ICSs	- A legal company or SME - Legal entity e.g. SACCO, cooperatives, MFI, etc - Clear Financial statements
2	Busiu SACCO	Energy Loan	All Renewable Energy Products	- Membership to SACCO - Minimum of 2 month's saving - Interest rate of 2% per month - Maximum loan of UGX10millions
3	Post Bank Uganda	ICS Loans	ICSs	- A signed MOU - Account holder with the bank - Collateral is required - Interest rate of 20% p.a
4	Buikwe Twezimbe SACCO	Willing to give ICS loans	Currently give other loan products	- Minimum loan of UGX 100,000- and Maximum loan of UGX 10 million - Repayment period of loan is 3 months - Interest rate 2.5% per month
5	Centenary Bank	No loan specific to ICS	- Microfinance loan (up to UGX 30 million - Commercial loan (over UGX 30millions - Youth loan (5million unsecured)	- Collateral - Account holder - Proof of ownership of business

3.4 Policies

Uganda's Renewable Energy Policy was adopted in 2007 whose targets were to increase the rate of adoption of efficient charcoal stoves from 20,000 in 2007, to 2,500,000 by 2017 in urban areas and efficient fuel wood stoves from 170,000 in 2007, to 500,000 by 2012 and 4,000,000 by 2017. In addition, the policy was to offer training opportunities for Jua kali artisans at the village level for the manufacture, installation and maintenance of efficient cooking stoves. To meet the targets, the following activities were to be carried out by the Ministry of Energy and Mineral Development (MEMD): conducting awareness campaigns, setting up quality control and standards, promoting technology, training of artisans/entrepreneurs, training of trainers and conducting monitoring and quality control.[18] However, the status of how much has been achieved is unknown

The limitations in the policy formulation and implementation include the following:

i) The energy policies are silent on financing mechanisms to achieve the target numbers for improved cookstoves to the last mile consumer for example The Renewable Energy Policy 2007.

ii) Lack of resources have led to limited action in meeting the policy's targets[19]

iii) The country has not had the financial and technical support, nor created the enabling conditions required to attract the level of private investment needed to create a thriving market for clean cookstoves and fuels. It may thus appear as though the area of clean cookstoves is not considered a priority among the several activities by the government.

iv) There is no policy that limits sale of un-tested stoves in the market, hence poor quality stoves continue to be sold on the market.

v) There is weak collaboration between government and private sector in the drive to meet the policy targets

3.5 Cookstove standards

Uganda has a biomass cookstove standard that came into force in 2007[25]. From the discussions with UNBS, it was noted that the current standard only looks at efficiency. This is attributed to low level of participation in the development of the standards. However, the revision, by a Technical Committee comprised various players including UNACC members, is under way to include other testing parameters like emissions, durability and safety.

It has also been noted that there is ignorance on the standards among ICS players and those who are aware do not adhere to it. The effect of this is continued production of substandard stoves with high variability in quality.

3.6 Institutional Frameworks

The ICS sector has been littered with discrete players that do play different roles, in manufacturing, marketing/distribution, financing, capacity building among others. This can be attributed to the competition for the market between players.

However, efforts are being made to create common platforms for ICS business players to reach last mile users. The largest framework is UNACC that brings together all players across the cleaning cooking sector, both government and private. Having been officially registered in May 2013, UNACC has been consolidating its role in the Ugandan clean cooking energy sector as a sector coordinator. Based on the several strategic objectives and needs of UNACC, 7 different standing committees, each comprised of various ICS players in the subsector, have been set-up. They include Standards and Testing, Policy and Advocacy, Development and Distribution, Resource Mobilization and Finance, Membership Development, Monitoring & Evaluation and Communication/ Secretariat. UNACC will galvanize the sector players and form one voice through which the sector challenges of substandard stoves, lack or insufficient ICS awareness, lack of access to finances among others will be addressed.

4. Recommendations

This section presents key recommendations of what needs to be done create and sustain a viable Cookstove business subsector in Uganda.

4.1 ICS sector general Recommendations

4.1.1 Enhancing Implementation Capacity

ICS Production: To scale up ICS production, ICS manufacturers need the following support:

- Access for finance. This can potentially be in form on loans from financial institutions (Micro Finance Support Centre, Post Bank, SACCOs among others) or local/international grants
- Technical training on stove design and stove quality assessment. This form of support can be provided by UNACC.

The consultant recommends that, manufacturers should concentrate on production alone to be able to meet the market demand and ensure quality issues of the products are addressed. To keep a good feedback flow from the end users to the manufactures, UNACC's monitoring and evaluation activities should work towards bridging this gap.

The ICS production processes determine over 80% of the stove price. The consultant recommends that, ICS manufacturer improve their production processes through mechanization/automation. This does not only lead to reduced stove prices but also improved production capacities.

Marketing and distribution: In order for ICS to reach last mile users both in urban and rural areas, the following are recommended.

- **Awareness and Marketing:** ICS players, under the UNACC umbrella, should take advantage of the existing avenues to disseminate information about ICS as widely as possible. For example, the Ministry of Energy and Mineral Development, in partnership with Vision Group, runs a quarterly ICS awareness campaigns that cover all regions of Uganda. There is also a need to create a basket fund to support marketing for all UNACC members. Contributions towards this fund could come from UNACC members as well as grants from partners. In addition, UNACC should produce and distribute widely a catalogue of technologies with contacts of producers during marketing campaigns.
- **Distribution:** The consultants recommend that ICS manufacturers be linked with distribution and marketing groups of, not only ICSs, but other products[21]. Such approaches have been carried out by Unilever with the Wonderbag and Envirofit products. The approach reduces transportation costs and efficiency of ICS distributions. Potential linkages exist with companies like, Coca Cola, Pepsi, Mukwano, Bell and Nile breweries who have a wide network of distribution points across the country.

  To reduce distribution costs for individual ICS manufacturers and distributors, the innovation of "scheduled transportation system is recommended. With this system, multiple players are able to make scheduled ICS deliveries of cookstoves to different regions of the country and each would contribute to the delivery costs (hiring of vehicles and fuel costs). There are several transportation companies like DHL, Posta Uganda, TNT, Daks Couriers and Yellow Pages that the ICS players can form a working relationship to achieve this. There are also various private or company transportation trucks that move on all routes in the country could be mobilized to transport stoves in

various regions of the country. However this will require a high level of coordination between the players because the involved ICS manufacturers may not have stove orders at the same time. It is recommended that UNACC, through its market development and distribution committee coordinate this effort.

In addition, the use of intermediary brokers who purchase stoves from manufacturers and sell them to end users is a good approach that would allow most ICS builders to concentrate on their core role of manufacturing stoves. However, the intermediaries operate a low margin business, having to hire vehicles to transport the products across the country and sell them at a small mark up. To make the business worthwhile they need to be able to buy upfront in large quantity and support is needed to provide credit facilities to such businesses. Taking advantages of linkages with existing distribution players as well as access to credit facilities from financial institutions would overcome the challenges.

- **Retailing and vending:** There is need to identify interested retailers and vendors across the districts to enable ICS products to be further sold down the value chain. Already established ICS manufacturers like Ugastove, have networks of ICS retailers across many districts in Uganda but are limited to urban centres. From field household surveys and focus group discussions in Mbale and Buikwe, it was noted that in order to increase access to ICS in the communities, opening retail shop outlets as well as use of CBOs or women/youth groups is needed. For example, 51% of 303 households surveyed indicated interest in vending ICSs in the communities, an indicator that there is significant potential for dealership in the communities.

  It has also been noted that the main avenue for awareness creation in communities has been word of mouth or neighborhood effect. Through the use of the basket fund mobilized by UNACC, marketing support should be offered to retailers/vendors in advertising their stoves. Techniques such as simple signboards and banners, and

distributing posters in the local area, may attract customers to their outlets.

Retailers should also be encouraged to engage in promotional activities such as attending local markets and community meetings and perhaps employing mobile sales people to promote products in new areas. Door to door sales as well as stove demonstrations in communities will boost ICS uptake and exhibitions.

ICS manufacturers/distributors should offer trade credits to vendors to overcome liquidity constraints. The vendors can pay a reasonable agreed amount of the cost of stoves at delivery, with the rest of the funds payable as agreed between the two parties. The consultants recommend that UNACC takes a lead in mobilizing finances to create a Revolving Fund, which stove builders or distributors can use to give stove credits to new vendors who may not enough capital to stock stoves. Basically, the vendors would be expected to sell the stoves and clean the trade credit with the respective manufacturers or distributors. The vendors should be able to carry-on the business after the credit is withdrawn. Then the manufacturers or distributors can move the credit to new vendors and the chain goes on.

4.1.2 Stimulating demand

The prices of domestic wood and charcoal ICS generally range from UGX 7,000-UGX 60,000 and UGX 10,000-UGX 35,000 respectively depending on the stove sizes and brand. It has been found out that the prices of stoves have increased averagely by UGX 3,000 – over the past 1-5 years. Based on this, it can be said that the stove prices will not change significantly over the next 3-5 years.

Majority (94%) of respondents indicated willingness to purchase ICS at an average price of UGX 16,000 for an improved wood stove, and UGX 10,000- for an improved charcoal stoves. Given the household size of averagely 7 people and the majority cooking for domestic purposes, the stove sizes ranging from size 0 to size 3 will be appropriate.

The large differences in cooking practices, cultural differences, fuel access and availability, implies a need for highly customized stoves to ensure long-term adoption[22].

In order to make ICS more accessible to the communities, it is recommended that multiple retail outlets be opened in the communities and CBOs or women/groups be involved in selling ICSs.

The two main financing alternatives deemed appropriate for acquiring ICS by households that may not have funds to 'pay and take' ICS include the following, in order of most preferred;

- Payment in installments
- Taking stove on credit

These innovative approaches should be used whenever appropriate. These alternatives are applicable when the end user and the stove vendor know each other and or meet regularly. For example, CBOs, women/youth groups. SACCOs can offer stove credits to community members where they operate however, loans for ICS were deemed as a low ranking option compared to the other two mentioned.

4.1.3 Creating an enabling environment

There is need for government to provide more financial resources to the ICS sector for capacity development of ICS producers and awareness creation of ICSs country wide.

The consultant recommends that UNBS fast tracks the revision of the cookstove standard so that it can be implemented. It is also important that testing and certification of ICS for quality be conducted. A handful of stove testing facilities, that can supplement UNBS in this process, exist within Kampala with the most experienced being the Centre for Research in Energy and Energy Conservation (CREEC)[23], CIRCODU and Chemipher. It is recommended that the testing centers be strengthened with technological capacity to provide a wide range of testing services.

It is also recommended that all players in the ICS subsector be members of UNACC, a common platform that can be able to marshal resources for the sector, create linkages, agitate for policies that support ICSs and create a level ground for fair competition among the players. UNACC, through its responsible committees, should fast track the process of countrywide identification of ICS players and bringing them on board.

It is recommended that ICS players through UNACC engage more financial institutions (banks, MFIs, SACCOs) to offer financial products that target ICS. The involvement of many financial institutions that support ICSs businesses and ventures is an opportunity to address the liquidity constraints that most of the players in the production, distribution/marketing as well as end usage face in Uganda today.

4.2 Action Points SNV

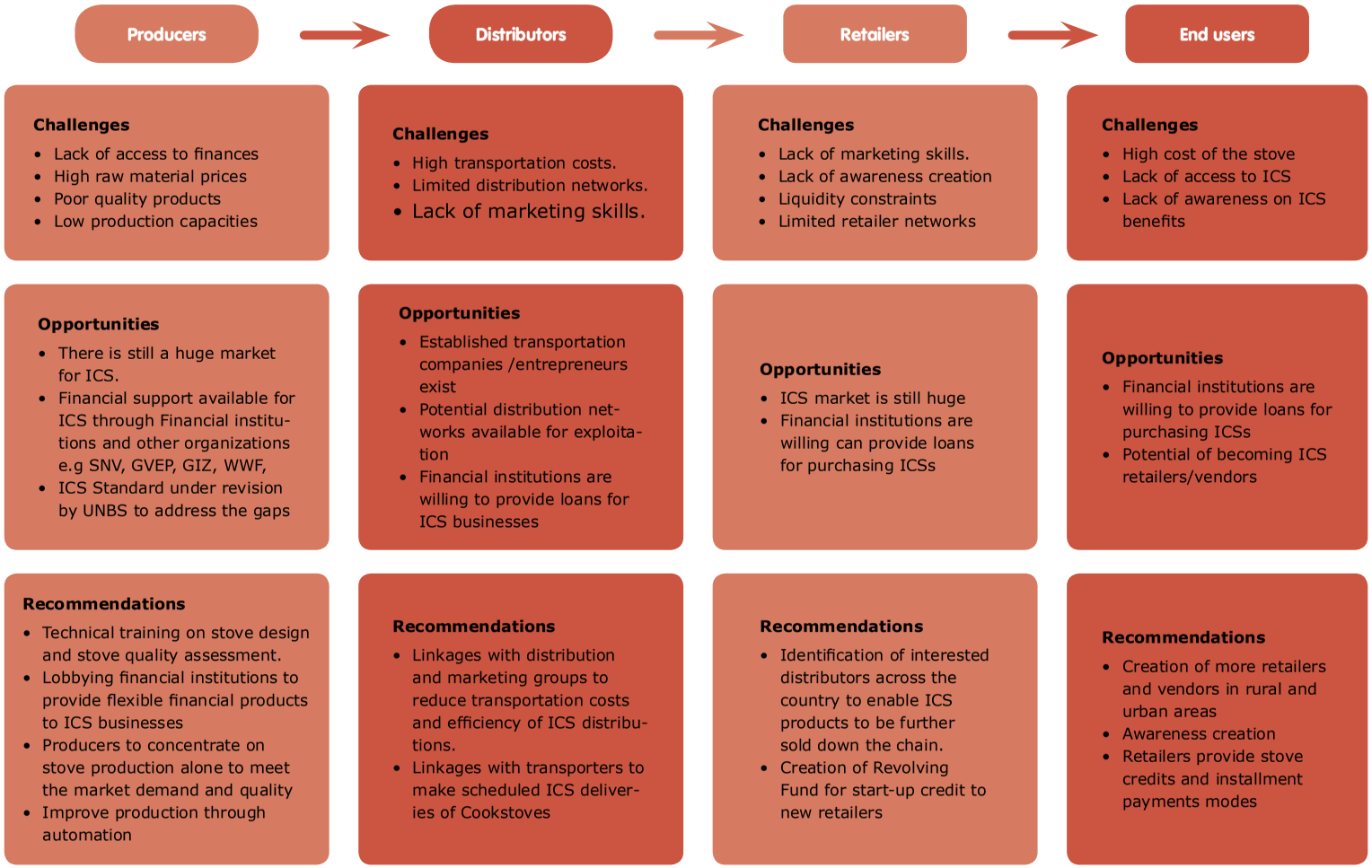
The consultants recommend the following:

- SNV, together with UNACC, should take lead in engaging government to provide more financial resources to the ICS sector for capacity development of ICS producers and awareness creation of ICSs country wide.
- SNV, together with UNACC, should take lead in lobbying financial institutions to provide financial products to ICS businesses for scale-up. This entails proper packaging of ICS businesses to make attractive for banks to consider. The financial products should be flexible in terms of repayment period, loan amount and interest rates to suite the different categories of ICS businesses.
- SNV should coordinate with stakeholders in UNACC who are in position to offer practical technical training on stove design and stove quality assessment to ICS producers. Such stakeholders include, GIZ, UIRI, UNBS, CREEC, CIRCODU and GVEP. The training packages could involve, production guidelines or procedures, material requirements, equipment and stove testing.
- SNV should link ICS producers to sources of equipment that is necessary to

mechanization of production processes. SNV should develop equipment catalogs to enable local ICS producers to use in the identifying the priority equipment for mechanization. SNV should also facilitate exchange visits of selected ICS producers to countries where ICS production is advanced, e.g. China and Kenya to enhance the learning process.

- SNV should take the lead in awareness creation through field ICS demonstrations on usage preferably at the village level and localized media messages. SNV should coordinate with other stakeholders involved in ICS awareness creation e.g. MEMD, GIZ, GVEP, ECOTRUST, Ministry of Water and Environment to make a joint effort to cause impact. To be more effective, the awareness creation should involve district natural resources officers, local politicians, religious leaders, cultural leaders, environment advocates, and community based organizations, women and youth groups, and retailers/ vendors.
- SNV should take lead in developing awareness creation messages that clearly bring out key information that will drive potential last mile users to purchase ICSs. Such information include, fuel savings that result in money or time savings, reduced cooking time, safety of users, increased durability of stoves and reduced indoor air pollution.
- SNV should drive the creation of the basket fund to support market of ICS. This can be done through UNACC's resource mobilization taskforce. Contributions towards this fund could come from UNACC members as well as grants from Global Alliance for Clean Cookstoves, Africa Clean Cooking Energy Solution (ACCES) and other organizations.
- SNV should work with UNACC to provide a platform for potential ICS distributers and producers/importers to discuss modalities for ICS transportation. Critical issues include safety of products, distribution costs/incentives and distribution routes. SNV should call for bids for interested distributors to show interest in the ICS distribution businesses.
- SNV, through UNACC, should also link ICS producers and distributions to potential transportation companies and individuals who have infrastructure to ship ICSs. The ICS producers/distributers will be responsible for directly dealing with the transporters.
- SNV should encourage ICS producers/distributers to coordinate their business activities to take advantage of "scheduled transportation systems to reduce the shipping costs.
- SNV should work with UNACC in mobilizing finances to create a Revolving Fund, which stove builders or distributors can use to give stove credits to new vendors who may not have enough capital to stock stoves. The revolving fund could be generated from internal UNACC member subscriptions, government, donor organizations and grants. The revolving should be managed by UNACC. As a result of the revolving fund, the vendors are able to payment in installments and stove credits to last mile users who may not have funds to pay for the stoves all at once.
- SNV should facilitate testing centers to conduct laboratory and in-field tests for ICS to create a basis for a general label indicating the minimum ICS standard.

The recommendations are summarized in the chart below.



5. Appendix

Appendix A: Copy of the Household Survey

Survey #: _____

MARKET INTELLIGENCE STUDY: Household Survey Uganda

Introductory Remarks:

Good morning/afternoon, my name is _____. I am here on behalf of Centre for Integrated Research and Community Development Uganda (CIRCODU) which is working in conjunction with SNV Uganda office. CIRCODU is an organization that promotes health awareness, sustainable energy utilization and environment conservation through research and development. I am happy that you have made time for us. We are here today to talk to you about the improved cook stove you use and any other cooking, heating, and lighting devices that you have in your household. If you would like to participate in the survey, we will ask you some questions about your household energy practices. This survey will take about 20 minutes. By participating in this survey, you will help to inform the cook stove subsector. All the information we collect will be kept private. Your name will not appear anywhere. Any other facts that might point to you will not appear in the report on this survey.

ASK: Do you agree to participate? 1. Yes 2. No→If No, terminate the interview

1. Date: _____ (e.g. 27/Mar/2009)	2. Start time: _____ (e.g. 14:50)	3. Interviewer's name:
4. GPS Location:		5. Household ID
6. Region (select one, do not ask): 1. Rural 2. Urban		7. District: 1. Mbale 2. Buikwe
8. Division/Town:		9. Zone:
10: Name of HH Head:		11: Phone number of HH head:
12: Name of Respondent:		13: Sex of respondent *(Do not ask: circle response):* 1. Male 2. Female
14. Relationship with household head 1. Household head 2. Spouse of household head 3. Child 4. Other (specify)		
15. Age of respondent (years):		16: Phone number of respondent:

SECTION A: STOVE TYPES AND USES

	QUESTION	RESPONSE *(circle or enter)*
A1	List the types of stove the user cooks with **regularly** *(select all that apply)*	1. Three stone fire 2. Improved wood 3. Unimproved charcoal 4. Improved charcoal 5. Other stove (specify)
A2	What stove model do you cook with?	1. Portable 2. Fixed 3. Both portable and fixed
A3	How did you acquire the stove	1. Bought it 2. Given to me as a gift 3. Constructed it myself 4. Other (specify)
A4	***(If you bought stove),*** Where did you buy this improved stove? *(circle only one)*	1. Sales agent came to my house 2. Directly from factory 3. Retail location 4. CBO or NGO group (specify): _____ 5. Open Market or Exhibition 6. Other (specify):_____

A5	***If you bought,*** *how much did you pay for the stove?*	**Enter amount for each stove size:**
A6	Are improved cookstove selling points available in your community/subcounty/district?	1. Yes 2. No 3. Not sure
A7	***If the HH has ICS,*** Which of the following statements best reflects your opinion *(if the answer to this question is 2, 3, or 4, please skip the next questions and proceed to question A9):*	1. My improved stove saves me fuel 2. My improved stove costs me more fuel 3. I spend the same on fuel no matter what stove I use 4. I'm not sure
A8	If it saves, how much fuel and money does it save? *(select only one)*	1. Less than one quarter 2. One quarter 3. One third 4. One half 5. Greater than one half
A9	Does the food prepared with ICS taste the same as the one prepared on a traditional stove?	1. Yes 2. No 3. Not sure
A10	Do you think your ICS produces less smoke than unimproved cookstove?	1. Yes 2. No 3. Not sure
A11	***HH using exclusively unimproved/ traditional cook stove,*** Have you ever heard about ICS?	1. Yes 2. No ***(Explain to the respondent about ICS and skip to A14)***
A12	*(If yes or already using improved cookstoves)* How did you first hear about the improved stove?	1. Radio advertisement 2. Market day promotion 3. Word of mouth/neighbor/friend 4. Newspaper or other print advertisement 5. NGO campaign 6. Retailer promotion/information 7. Other (specify): _____

A13	If yes, what three main things do you know about improved cook stoves	1. It saves fuel 2. It is attractive 3. It is affordable 4. It is portable 5. It is durable/lasts long 6. It lights quickly 7. It cooks quickly 8. It conveys higher status/ part of a modern kitchen 9. It doesn't smoke 10. It has a warranty 11. It is locally made 12. Other: (specify)……
A14	What do you think is the best way to create awareness about improved cookstoves in your community	1. Radio advertisement 2. Market day promotion 3. Word of mouth/neighbor/friend 4. Newspaper or other print advertisement 5. NGO campaign 6. Retailer promotion/information 7. Other (specify):
A15	Would you buy an ICS?	1. Yes 2. No ***(Skip to Qn A19)***
A16	***If no to Qn A15,*** Give three main reasons you would not buy an improved cookstove?	1. Expensive 2. Does not cook well 3. Difficult to find 4. It too heavy 5. It is too small for big pots 6. It is slow to cook 7. It breaks quickly 8. It requires too much attention 9. It burns food 10. It does not light quickly 11. Other: (specify)……
A17	***If yes to Qn A15,*** Give three main reasons you would buy the improved stove?	1. It saves fuel 2. It is attractive 3. It is affordable 4. It is portable 5. It is durable/lasts long 6. It lights quickly 7. It cooks quickly 8. It conveys higher status/ part of a modern kitchen 9. It doesn't smoke 10. It has a warranty 11. It is locally made 12. Other: (specify)……

A18	What type of ICS would you buy if you had the money to purchase?	1. Improved wood stove 2. Improved charcoal stove 3. Both 4. Others (specify):____
A19	If improved charcoal or wood, what type or model would you prefer?	1. Portable 2. Fixed
A20	How much money would you be willing to pay?	**Enter amount:**
A21	What are three most important things that you would consider when purchasing a stove? (Please rank them)	1. Stove price 2. Fuel savings 3. Time of cooking 4. Durability 5. Safety 6. Physical outlook 7. Emissions reduction 8. Others
A22	If you were presented with the choice of purchasing a saucepan, flask, blanket and stove, which one would you buy first, second, third and last?	1. Saucepan_____ 2. Flask_____ 3. Blanket:_____ 4. Stove_____
A23	How much money would you be willing to pay for the items?	1. Saucepan_____ 2. Flask_____ 3. Blanket:_____
A24	(If the stove is not the first choice), why is the stove not preferred?	
A25	(If the stove is the first choice), why do you prefer the stove to other items?	
A26	If you did not have cash to pay for the stove, what options would you prefer to acquire the stove?	1. Take a loan from Sacco/MFI/Friend 2. Take stove on credit 3. Pay for stove in installments 4. Prefer to collect money until it is enough to pay off the stove 5. Others (specify):
A27	How best can improved cookstoves be made more accessible to your community?	1. Open retail shop outlets 2. Use CBO or women/youth groups 3. Use Saccos/MFIs and community saving schemes 4. Others (specify):

A28	Are you a member of any community saving scheme, or Sacco and MFI?	1. Yes 2. No
A29	Would you be willing to sell improved cookstoves in your community?	1. Yes 2. No 3. Not sure

SECTION B: COOKING PRACTICES

B1	What is currently your household's primary cooking fuel?	1. Charcoal 2. Wood 3. Gas/LPG/Biogas 4. Kerosene 5. Crop residue 6. Other (specify)_____
B2	Do you buy or gather the main cooking fuel?	1. Gather 2. Buy 3. Both gather and buy
B3	**If you buy,** how much money do you spend per month on purchasing fuel?	Enter amount:
B4	How much money did you spend per month on fuel purchase 3-5 years ago?	Enter amount:
B5	If you gather, where do you gather?	1. Garden 2. Forest 3. Both garden and forest
B6	If you gather, how much time do you spend per week gathering fuel?	Enter time:
B7	How much time did you spend per week gathering fuel 3-5 years ago?	Enter time:
B8	What type of cooking do you carry out in your home?	1. Domestic 2. Commercial 3. Both Domestic and Commercial 4. Institutional *(specify): .....*
B9	How many <u>people</u> do you cook for per day (on average)?	Enter number:
B10	How many *<u>meals</u>* do you cook for your family per day? (on average)?	Enter number:
B11	Which meals do you cook during the day? (circle all that apply)	1. Breakfast 2. Lunch 3. Dinner 4. Tea 5. Other (specify): _____

B12	How many people do you cook for at Breakfast per day? (on average):	Enter number:
B13	How many people do you cook for at Lunch per day? (on average):	Enter number:
B14	How many people do you cook for at Dinner per day? (on average):	Enter number:
B15	How many people do you cook for at Tea per day? (on average):	Enter number:
B16	How many people do you cook for Other meal per day? (on average, if applicable):	Enter number:
B17	Where is the main cooking place for your household during the **dry season?** *(select only one)*	1. Completely outside house (open air) 2. On the veranda (partially covered) 3. In a separate, enclosed kitchen 4. Inside main house (enclosed kitchen) 5. Other (specify): .....
B18	Where is the main cooking place for your household during the **rainy season?** *(select only one)*	1. Completely outside house (open air) 2. On the veranda (partially covered) 3. In a separate, enclosed kitchen 4. Inside main house (enclosed kitchen) 5. Other (specify): .....

SECTION C: CUSTOMER SATISFACTION QUESTIONS

C1	Which of the benefits of the ICS is most important to you? *(circle only one)*	1. It saves fuel 2. It is attractive 3. It is affordable 4. It is portable 5. It is durable/lasts long 6. It lights quickly 7. It cooks quickly 8. It conveys higher status/ part of a modern kitchen 9. It doesn't smoke 10. It has a warranty 11. It is locally made 12. Other (specify) _____

C2	What three main things do you dislike about your main cookstove? *(circle all that apply)*	1. It is slow to cook 2. It breaks frequently/quickly 3. Nowhere to repair it from 4. It emits smoke 5. It is too small for big pots 6. It is too heavy 7. Priced too high 8. It requires too much attention 9. Other (specify) …… 10. Do not dislike anything about the stove
C3	Is it easy or difficult to meet your household energy needs with your cookstove?	1. Easy 2. Difficult 3. Not sure
C4	**For those with ICS,** Would you recommend the ICS to a friend?	1. Yes 2. No 3. Not sure
C5	**If yes,** why?	
C6	**If no,** why?	

SECTION D: SOCIOECONOMIC QUESTIONS		
D1	How many people live in your household (total number)?	Enter number:
D2	How many children under 10 years old live in your household?	Enter number:
D3	Do all children (ages 6 to 18) currently attend school (government, private, NGO/religious, or boarding)?	1. Not all attend 2. All attend government schools 3. No children ages 6 to 18 4. All attend, and one or more attend a private, NGO/religious, or boarding school
D4	What is the highest grade that the female head of household/spouse completed?	1. No female head/spouse 2. P.5 or less, or none 3. P.6 4. P.7 to S.6 5. Higher than S.6 6. Do not know or no response

D5	What is your household's main source of income?	1. Agriculture 2. Commerce 3. Service Job 4. Salaried Position (corporate, gov't, etc.) 5. Temporary Employment 6. Unemployed /no income 7. Other (specify): .....
D6	What is your family **monthly** expenditure on the following items? (Probe using expenditure items)	1. House rent:_____ 2. Food:_____ 3. Household fuels:_____ 4. Health care:_____ 5. Clothing:_____ 6. Others:_____ Enter Total UGX_____per month
D7	What is the major construction material of the roof?	1. Thatch, straw, or other 2. Iron sheets 3. Tiles
D8	What is the major construction material of the external wall?	1. Un-burnt bricks, 2. Mud and poles, 3. Thatch/straw, timber, 4. Burnt bricks with mud, other 5. Burnt bricks with cement 6. Cement blocks
D9	What is the main source of lighting in your dwelling?	1. Firewood 2. Tadooba, or other 3. Paraffin lantern, 4. Grid electricity 5. Generator 6. Solar
D10	What is the type of toilet that is mainly used in your household?	1. Bush (none) 2. Covered pit latrine (private or shared), 3. VIP latrine (private or shared), 4. uncovered pit latrine, 5. flush toilet (private or shared)
D11	Does any member of your household own electronic equipment (e.g. TV, radio, cassette, phone etc.) at present?	1. Yes 2. No

E1.	**Notes/Observations:**	
E2.	Interview end time: _____ (i.e. 15:20)	

Appendix B: FGD Guide

Introductory remarks

"Good day, we would like to thank you for coming today to this meeting. My name is …….. Here are my colleagues I have come with; we are all working at CIRCODU. We are conducting a study on improved cookstoves on behalf of SNV. Today we will talk to you about cooking practices and demand/supply of energy saving appliances in this area. The information you share with us today is very important because you will help us to determine which improved stoves and other energy saving appliances should be brought in this district of Buikwe/Mbale depending on their function and price. It is important that throughout this meeting you share with us your thoughts about the cook stoves and other energy saving appliances. Please do let us know what you think, whether positive or negative comments. Do keep in mind this is not a test, there are no right or wrong answers. When we ask you a question, think about what you would tell a good friend and share it with our team members. Your input today will inform our work here in Mbale/ Buikwe, other regions in Uganda and other countries in East Africa. Thank you in advance for your cooperation. If you have any questions, please feel free to ask them now or to ask them later on during the meeting directly to our colleague or to me. Do you have any questions?"

1. What cookstoves do you commonly use in this area?
2. What cooking fuels are commonly used in your community? Which ones are readily available? Which ones are least available?
3. Do you buy or gather the cooking fuels? If you buy, how much money do you spend on fuel per day/week/month? If you gather, how many hours do you spend in collecting fuel per day/week/month?
4. Have you heard about improved cookstoves? If yes, how did you know?
5. What do you know about improved Cookstoves?
6. How many of you own improved cookstoves and what types are they?
7. If you own improved cookstoves, where did you get them?
8. Are there cookstove vendors/distributers in your community/ subcounty/town/district? If yes, are they easily accessible?
9. Are those stoves produced locally in the community/subcounty/district? (If Yes or no, where?
10. For those with no ICS, what barriers have stopped you from acquiring these stoves?
11. What are the advantages of an ICS over three stone fire or traditional metallic/ceramic charcoal stoves? *(Probe and rank: ease of use, fuel/money savings, food taste, reduced indoor air pollution)*
12. (For those that own ICS), do you still use traditional cookstoves alongside improved cookstoves? If yes, why?
13. (For those with ICS), how much did you buy each stove?
14. Do you think that price was low, moderate or high for the stove? If high, how much would you be willing to pay for the stove? If low, what appropriate price would you recommend?
15. Of the saucepan, flask, blanket and stove, which one would you buy first, second, third and last? Explain why? How much money would you be willing to pay for each of these items?
16. What are the most important things that you would consider when buying and improved Cookstoves (rank them: cost, fuel efficiency, durability, physical appearance, emissions,

safety)

17. Do you think the use of improved cookstoves is good for the environment? If yes, why?
18. What awareness creation activities about improved cookstoves are conducted in your community? Who are the players involved?
19. In which ways can ICSs be made more accessible to your communities?
20. Suggest ways that would help your community have access to these products?
21. Are you aware of any financing opportunities that help people acquire improved cookstoves? If yes, what are these sources?
22. Do you belong to any village saving scheme, or SACCO or MFI in your communities? Would you go to these groups to get a credit to buy ICS?
23. Why would you not go for a loan from these SACCOS or MFI?
24. What measures or policies or programs have been put in place in your community/ subcounty/district to increase accessibility of improved cookstoves?

Appendix C: Key Informant Discussion Questions

CONTACT INFORMATION		
1. Date: _____ (i.e. 27/Mar/2010)	2. Start time: _____ (i.e. 14:50)	3. Interviewer's name:
4. Institution Name:	5. Institution Phone:	
6. Respondent's Name:	7. District:	
8. Respondent's Title:	9. Division/Subcounty:	
10. Respondent's tel. contact	11. LC1/Zone:	
12. Institution ID:		

GENERAL INFORMATION	
A1	What is your legal status?
A2	What management structure do you have in place?
A3	What training arrangements do you have to improve skills of your personnel?
A4	Who are your partners in your cookstove business and what are their roles?

ICS PRODUCTION *The questions are specific to stove builders*	
B1	What type and numbers of improved cookstoves do you manufacture per year?
B2	Where do you source your raw materials for making ICS? Are these sources sustainable? Are the sources accessible?
B3	Who are the other main producers of improved cookstoves?
B4	What is the average sale price of the domestic improved cookstoves that you produce?
B5	Give a breakdown of costs that inform the pricing of the stoves

B6	How best can these costs be reduced?
B7	What was the average sale prices of the stoves 1-5 years ago?
B8	How do you ensure quality of the stoves that you manufacture?
B9	Have your stoves been tested for efficiency, emissions, durability, safety and ease of use? If yes, how are they rated? If no, why have your stoves not been tested?
B10	What incentives do you give to your clients to increase uptake of improved cookstoves by last mile users? (e.g. credits, warrant, linkage to financing sources etc)
B11	Of the stoves you manufacture, which one do you produce least? Explain why.
B12	Of the stoves you manufacture, which one do you produce most? Explain why
B13	Are there stoves (sizes/types) that your clients often ask for that you don't manufacture? If yes, why don't you manufacture them?
B14	Which stoves do consumers normally ask for?
B15	What are the most common complaints amongst (potential) stove purchasers?
B16	What do (potential) stove purchasers like most about the stoves?
B17	What do (potential) stove purchasers consider first when purchasing your stoves (e.g cost, outlook, durability etc)
B18	What are the sources of finances for your business?
B19	What are the alternative financing opportunities for improved cookstoves?
B20	What are the conditions for accessing finances for improved cookstoves? Are these conditions favorable? If no, what recommendations do you give to address this challenge?
B21	What are the challenges that are faced in ICS production?
B22	What can be done to overcome the above challenges?
B23	What are the plans for your improved cookstove business for the next five years?
B24	What linkages do you have with other businesses?
B25	What are your opinions on specialization of roles in the cookstove chain (e.g builders concentrating on building stoves for distributors to market/sale)? What are the advantages and disadvantages?
B26	In your view, how can we increase uptake of ICS to the last mile consumer?

ICS MARKETING AND DISTRIBUTION

The questions are specific to stove builders, vendors, importers and other organizations that support the distribution of cookstoves in Uganda

C1	What type of improved cookstoves do you deal in?
C2	How is long have you been in business?

C3	(If the institution does not manufacture improved cookstoves)Where do you source your improved cookstoves?
C4	Who are the other main players where one can buy improved cookstoves?
C5	(If the institution does not manufacture improved cookstoves) For which price do you buy the domestic improved cookstoves?
C6	What was the price at which you bought improved cookstoves 1-5 years ago?
C7	What is the average price at which you sell the domestic improved cookstove?
C8	What was the average price at which you sold the domestic improved cookstoves 5 years ago?
C9	How many stoves do you approximately sell per month?
C10	What distribution structure do you use to reach the last mile consumers? Why do you prefer this structure?
C11	How do you create awareness about the improved cookstoves your deal in? What informs the choice of the method you use?
C12	What incentives do you give to your clients to increase uptake of improved cookstoves by last mile users? (e.g. credits, warrant, linkage to financing sources etc)
C13	Who are the other main players involved in marketing and distribution of improved cookstoves?
C14	Of the stoves you supply, which one do you sell least? Explain why.
C15	Of the stoves you supply, which one do you sell most? Explain why
C16	Are there stoves (sizes/types) that people often ask for that you don't manufacture/deal in? If yes, why don't you manufacture or deal in them?
C17	What are the most common complaints amongst (potential) stove purchasers?
C18	What do (potential) stove purchasers like most about the stoves?
C19	What are the sources of finances for your business?
C20	What are the alternative financing opportunities for improved cookstoves?
C21	What are the conditions for accessing finances for improved cookstoves? Are these conditions favorable? If no, what recommendations do you give to address this challenge?
C22	What are the challenges faced with your distribution and marketing model?
C23	What can be done to overcome the above challenges?
C24	What are the plans for your improved cookstove business for the next five years?
C25	What linkages do you have with other businesses?
C26	What are your opinions on use of transport scheduling (use of shared means of transportation) in cookstove distributions channels?
C27	In your view, how can we increase uptake of ICS to the last mile consumer?

POLICIES AND REGULATIONS *Specific to stove builders, policy makers (MEMD, Ministry of Trade and Industry, Ministry of Water and Environment), Regulators (UNBS, NEMA, UIA, NFA), Sector players such as NGOs (WWF UCO, GIZ etc), carbon-project developers (IC, UCB, ECOSTRUCT) , testing centers (CIRCODU, CREEC, Chemipher*	
D1	Through what activities/programs are the policies being implemented?
D2	What has been the impact of the policies on the adoption of ICS in Uganda?
D3	What policy gaps exist that you think are affecting the adoption of ICS? How can the gaps be filled?
D4	What gaps exist in cookstove standards for Uganda? What measures should be/have been taken to address these gaps?
D5	What strategies are in place to cookstove players conform to the standards
D6	Are the standards being implemented? If no, why?
D7	What challenges are faced in implementing the standards?
D8	What grading systems are used for cookstoves in Uganda?
D9	What grading systems exist for cookstoves at international level? How can these systems be tailored for Uganda?
D10	What local agencies do exist to help stove builders and distributors assess the quality of their stoves against the recommended standards?
D11	Do these agencies have deliberate programs to sensitize builders/distributors on where and why to do the testing?
D12	What challenges do the testing agencies face in assessing stove quality against standards? How can the challenges be addressed?
D13	In your view, how can we increase uptake of ICS to the last mile consumer?

FINANCING INSTITUTIONS *Interview Banks, MFIs, Carbon project developers, existing carbon funded ICS project, UNACC, GACC*	
E1	What financing facilities do you have in place that would benefit improved cookstove projects/ventures in Uganda?
E2	What are the conditions for accessing these facilities?
E3	How do you make the public aware of these facilities?
E4	What carbon markets are available /accessible to the local improved cook-stove sector?
E5	What are the requirements for accessing the carbon markets?
E6	What challenges/constraints exist in accessing the carbon markets? What recommendations do you give to overcome these challenges?
E7	What donor funding opportunities exist for improved cookstoves?
E8	How do you publicize these donor funding opportunities to the public sector?
E9	In your view, how can we increase uptake of ICS to the last mile consumer?

6. References

1 ECOTRUST 2013, Feasibility Assessment for establishment of an Improved Cook-stoves Carbon Off-Set Project in the Mt. Elgon Region (Districts of Mbale, Manafwa and Bududa), Baseline Kitchen Survey and Clean Cook-stove Survey Report

2 Caritas Lugazi 2014, http://www.caritaslugazi.org/about-us/, last visited on May 30, 2014

3 PCIA 2014, http://www.pciaonline.org/reach-out-nkokonjeru-parish-hiv-aids-initiative, Last visited on May 30, 2014

4 Levine.D, Beltramo.T, Blalock. G et'al, 2013. What impedes the efficient adoption of products? Evidence from randomized variation in sales offers for improved cookstoves in Uganda.

5 GVEP International 2012, Accelerating Access to Energy; Global Alliance for Clean cookstoves; Uganda Market Assessment, sector mapping, March, 2012

6 MercyCorps 2013, Market Analysis for Fuel Efficient Cook Stoves in the Acholi Sub-Region, Uganda, http://www.mercycorps.org/sites/default/files/usaidffp2008ugandahpschhenergymarketanalysis.pdf

7 GVEP International 2012, Accelerating Access to Energy; Global Alliance for Clean cookstoves; Uganda Market Assessment, sector mapping. GVEP International; March, 2012

8 GACC 2012, Uganda Market Assessment – Sector Mapping, 2012, http://www.cleancookstoves.org/resources_files/uganda-market-assessment-mapping.pdf

[9] GACC 2012, Uganda: Draft Market Assessment Executive Summary, http://www.cleancookstoves.org/resources_files/uganda-executive-summary.pdf

[10] GVEP International 2012, Accelerating Access to Energy; Global Alliance for Clean cookstoves; Uganda Market Assessment, sector mapping. GVEP International; March, 2012

[11] GVEP International 2012, Accelerating Access to Energy; Global Alliance for Clean cookstoves; Uganda Market Assessment, sector mapping. GVEP International; March, 2012

[12] GACC 2012, Uganda Market Assessment – Sector Mapping, 2012, http://www.cleancookstoves.org/resources_files/uganda-market-assessment-mapping.pdf

[13] Estimated Population of Mbale In 1991, 2002 & 2012". Citypopulation.de. Retrieved 29 June 2014

[14] http://www.gvepinternational.org/sites/default/files/deep_cookstoves_report_lq_for_web.pdf

[15] http://static.squarespace.com/static/51bef39fe4b010d205f84a92/t/51f237c4e4b07e4e5ac4e0f6/1374828484103/Full_report_Maketing_for_the_BOP.pdf

[16] GVEP International 2012, Accelerating Access to Energy; Global Alliance for Clean cookstoves; Uganda Market Assessment, sector mapping. GVEP International; March, 2012

[17] Light our fire-Commercializing clean cookstoves. DIFFERGROUP.COM, 7th November, 2012

[18] Government of Uganda , 2007, The Renewable Energy Policy for Uganda, Ministry of Energy and Mineral Development, MEMD, 2007

[19] http://www.gvepinternational.org/sites/default/files/deep_cookstoves_report_lq_for_web.pdf

[20] Boerhof, Els, Audrey Choi, and other working group members, 2011. "Finance and Investment Working Group Consultation." Personal communication, 2011.

[21] GVEP International, 2012, Accelerating Access to Energy; Global Alliance for Clean Cookstoves; Uganda Market Assessment, sector mapping. GVEP International; March, 2012

[22] Light our fire, commercializing clean cookstoves. DIFFERGROUP.COM, 7th November, 2012

[23] http://www.gvepinternational.org/sites/default/files/deep_cookstoves_report_lq_for_web.pdf

[24] http://www.newvision.co.ug/news/640813-67-of-ugandans-vulnerable-to-poverty.html

[25] Uganda Standard (2007), US 761 Biomass standard

Publisher: SNV Uganda
Coordination: Ms. Joyce DeMucci, Mr. Job Mutyaba
Consultant: Centre for Integrated Research and Community Development Uganda - **CIRCODU**
Design & layout: Footprint Creations Ltd
Photos: SNV Uganda

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