“Customer Satisfaction Among Users of the Berkeley-Darfur Stove”

Prepared for University of California Berkeley

Submitted by Potential Energy

June 2021

Summary

Four billion people around the world do not have access to clean cooking energy, costing the world more than $2.4 trillion each year, driven by adverse impacts on health, climate, and gender equality. In Uganda more than 90% of the population and 1.3 million refugees use biomass to meet cooking and heating needs.

In 2015 Potential Energy launched a pilot project in Uganda and in 2017 started selling only the BDS through wholesale contracts with various, NGOs, developing partners and governmental organizations; and via retail outlets in shopping malls, shows, expos, over the phone, and through social media channels. PE conducted a survey in July and August 2020 and March and April 2021, to determine if users of the BDS in Uganda are satisfied with its performance, if they have reduced cooking time and if any changes should be made to the stove.

The results are positive with 87% of the users being happy with the stove, 95% reporting smoke reduction and 96% saving cooking time. Working on the design of the next version of the BDS to make it stronger, prevent rust and improve the charcoal consumption could result in even better results that would have a greater impact in families lives.

Overview

According to the "State of Access to Modern Energy Cooking Services Report" issued by the World Bank in September 2020, four billion people around the world do not have access to clean cooking energy. Around 2.8 billion people still cook with traditional polluting technologies and fuels and another 1.25 billion are considered in transition[1] with some access to clean, efficient, convenient, safe, reliable, and affordable cooking energy. In Sub-Saharan Africa the rate of access to modern sources of energy for cooking stands at 10%.

Makhtar Diop, World Bank Vice President for Infrastructure says that "lack of progress in clean cooking is costing the world more than $2.4 trillion each year, driven by adverse impacts on health, climate, and gender equality. Women bear a disproportionate share of this cost in the form of poor health and safety, as well as lost productivity." He also mentions the possibility of the toll increasing during the ongoing pandemic as household air pollution may make exposed populations more susceptible to COVID-19 and other respiratory diseases.

In Uganda more than 90% of the population uses biomass to meet cooking and heating needs (80% firewood, 10% charcoal and 4% crop residues)[2]. Around 78% of the population use open fires and 80% of the urban population use inefficient traditional stoves. Families spend up to a third of their income in buying fuel for the household or spend hours walking every day to collect

[1] Multi-Tier Framework (MFT): Tier 0 = No access - Tier 5 = Full access. Tier 2 -3 in transition with access to improved cooking services.

[2] MINISTRY OF ENERGY AND MINERAL DEVELOPMENT, UNDP. (2013). Biomass Energy Strategy. Available from: http://www.undp.org/content/dam/uganda/docs/UNDPUg2014%20-%20Biomass%20BEST%20Strategy(compressed).pdf

it[3]. Access to improved cook stoves (ICS) is limited, especially in remote areas, due to different factors such as cost, lack of awareness and sociocultural influences[4].

Deforestation and climate change are now making women and children walk longer distances to fetch firewood resulting in higher exposure to violence and risks. In some districts such as Kitgum, Nebbi, Gulu/Amuru, Nakasongola, Lira, Sironko and Adjumani women and children travel more than four kilometres in search of firewood[5]. Additionally, Uganda is hosting around 1.3 million refugees from DRC and South Sudan. Families in refugee settlements mainly cook in three stone fires or on traditional mud stoves, being exposed to constant smoke inhalation and significantly contributing to local deforestation[6].

Potential Energy (PE) and the BDS in Uganda

After successfully distributing over 45,000 Berkeley – Darfur Stoves (BDS) in Sudan, in 2015 Potential Energy decided to launch a pilot project in Uganda to sell briquettes and more complex Improved Cookstoves (ICS) i.e. gasifiers, through a lease to own scheme due to the high cost of these stoves. The organisation started working with the target of being self-sustained though a business model based on partnerships with local manufacturers of briquettes and distributors of improved cookstoves. PE officially registered in the country in 2016. Due to the high operational expenses resulting from payment collection (this had to most often be collected manually, in-person), in 2017 PE decided to focus on selling only the BDS.

To make BDS easily accessible, PE sells through two main market-based approaches:

- Wholesale contracts with various, NGOs, development partners and governmental organizations. The stoves are strategically placed within established distribution networks to help generating demand since the locals already have much trust in these institutions. Major development partners including Lutheran World Federation (LWF), Dan Church Aid (DCA), Adjumani and Yumbe Districts Local Governments have procured the BDS to distribute as part of their programs with refugees. Organizations like BRAC and One Acre Fund have also purchased the BDS to sell them though their established channels.

- Retail sale in shopping malls, shows, expos, over the phone, and through social media channels: The stoves are sold directly to the end user and paid in full not only in Kampala but in major shows and expos organized in different parts of the country. To date have marketing spaces in supermarkets and malls in Kampala such as Capital Shoppers Ntinda, Forest Mall, Mega Standard,

[3] GLOBAL ALLIANCE FOR CLEAN COOKSTOVES ,(No date). Country profiles, Uganda. [Online] Available from: http://cleancookstoves.org/country-profiles/focus-countries/8-uganda.html

[4] GLOBAL ALLIANCE FOR CLEAN COOKSTOVES, (2012). Uganda Market Assessment, Sector Mapping. Available from: http://cleancookstoves.org/resources_files/uganda-market-assessment-mapping.pdf

[5] MINISTRY OF ENERGY AND MINERAL DEVELOPMENT. (2007). Renewable Energy Policy for Uganda. Available from: https://eaenet.org/wp-content/uploads/2017/02/The-Renewable-Energy-Policy-for-Uganda-2007-2017.pdf

[6] UNHCR, GOVERNMENT OF UGANDA. (No date). Uganda Refugee Response portal. [Online] Available from: https://ugandarefugees.org

Senana Supermarket, Urban Supermarket and U-Save Supermarket. Additionally, we have continuously participated in the different energy campaigns and major expos in other regions organized by the Ministry of Energy and Mineral Development (MEMD), development partners and the private sector.

In 2018, the BDS was awarded "Best Innovation in Clean Cooking Technology Design" by the Ministry of Energy and Mineral Development (MEMD) and GIZ. It has also been awarded the Tech Award and the Zayed Future Energy Prize.

Customer satisfaction and stove adoption survey 2020-2021

Objective:

To determine if users of the BDS in Uganda are satisfied with its performance, if they have reduced cooking time and smoke emissions, and if any changes should be made to the stove.

Methodology:

The survey was conducted over the phone in July and August 2020 and in person between March and April 2021, among users in three regions of the country (Northern, Central, Western), where most of the stoves have been sold or distributed. 205 customers from the database who bought or received the stove between 2017 and 2020 were surveyed. 93 users were contacted by phone call and 112 were visited at their homes. 75 users were refugee beneficiaries from developing programs in Northern and Western Regions, and 130 users were from Central and Eastern Regions. All users gave verbal or written consent to be interviewed.

Quantitative and qualitative methods were used for data collection, and it was processed utilizing content analysis and coding. One questionnaire (Appendix 1) with multiple-choice and open questions was used at the interviews. The quantitative data was gathered by the multiple-choice questions and the qualitative data was collected by the open questions.

Findings:

Average household size and cooking habits:

The average household size is 5.5 and they cook an average of 2.5 meals per day. Most families warm up water for tea and bathing in the morning, then cook traditional food (rice, beans, matoke, posho, cassava) for lunch and cook or warm the food for dinner.

In the urban setting families use a variety of stoves, the most common being the traditional cookstove - and in much lower proportions LPG, solar, electric, and improved cook stoves (ICSs).

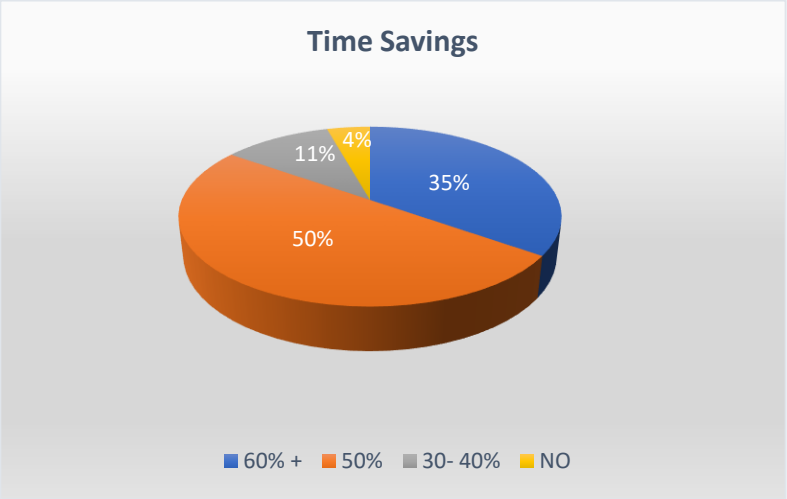
In the rural areas people mostly cook on Lorena stoves, three stone fires, and in some cases with other ICSs distributed just as the BDS as part of development programs.

Charcoal and firewood are the most consumed fuel countrywide; briquettes, LPG, solar and electricity are used in the urban areas; and crop residues, handmade briquettes are also used in the rural areas.

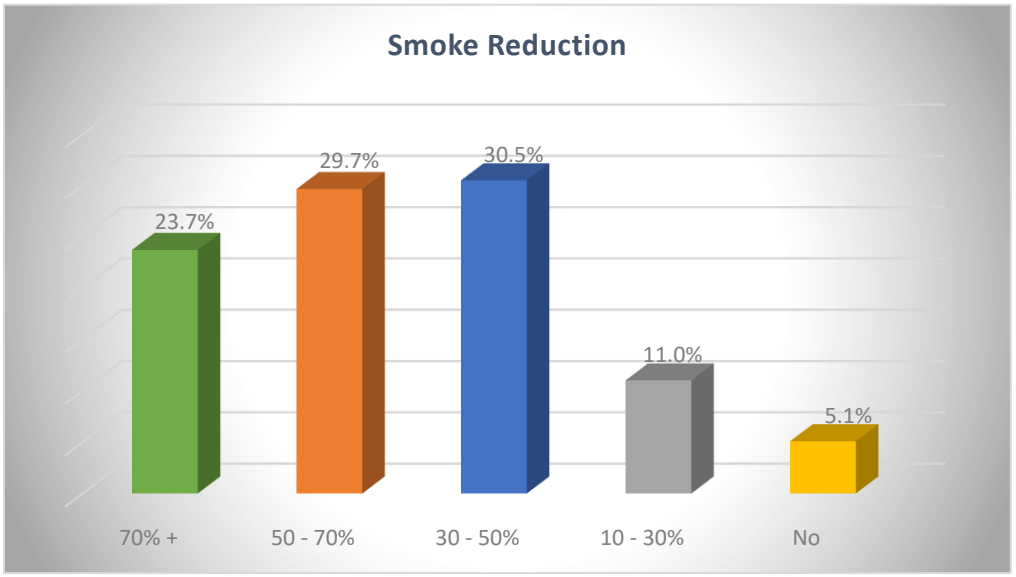
BDS Performance:

The survey was primarily focused on finding out if the users are satisfied with the stove and what needs to be improved. Therefore, the main questions were focused on cooking time reduction, smoke reduction, user satisfaction and what could be improved.

- Time savings: 96% of the participants expressed positive feedback on time savings compared to their other cooking appliances. 35% save 60% of the time; 50% save 50% the time; 11% save 30-40%; and only 4% said they aren't saving time when cooking on a BDS.

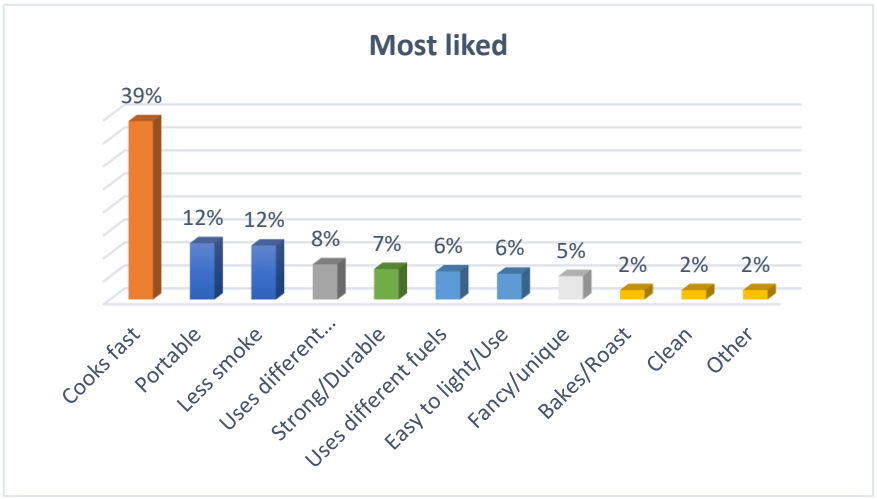


- Smoke reduction: Regarding this question, some participants responded that there's no smoke when cooking on the BDS. Those answers are considered in the group of 70% or more smoke reduction. In many cases it was difficult for the users to estimate the percentage of smoke reduction, however, 95% of them stated that the BDS reduces smoke compared to their previous methods. 30.5% reported reduction of 30-50%; 29.7% reported 50-70% reduction; 23.7% reported 70% or more; 11% between 10 and 30%; and only 5.1% reported not smoke reduction. It is important to mention that no one reported more smoke emissions than their previous cooking methods.

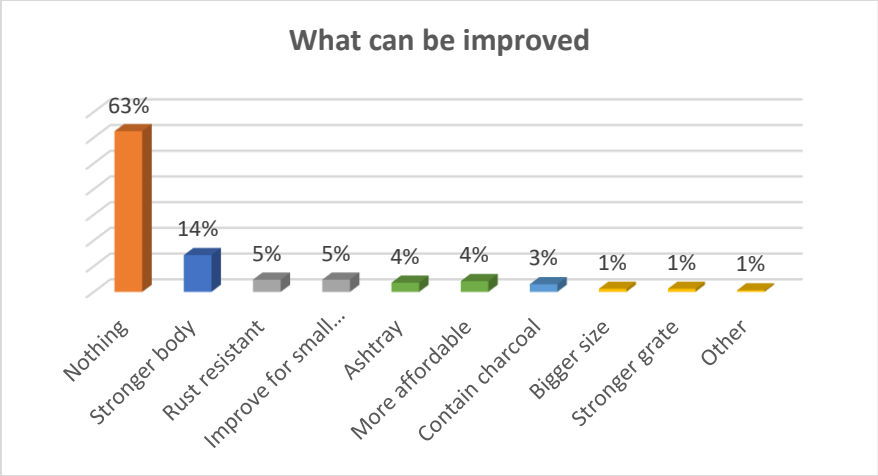


- Customer satisfaction: Most users are happy (23%) or very happy (64%) with the stove. 13% however, are disappointed with it.

The most liked things about the BDS are that saves time (39%); it's portable (12%); and emits less smoke (12%).



- What can be improved: When asked the users what could be changed to improve the stove, 63% of them didn't have any suggestions; 14% expressed that the body of stove needs to be stronger or thicker; 5% recommended to make it rust resistant; another 5% referred that it is difficult to remove the small saucepan especially when cooking with firewood. They recommended to redesign the provision for small saucepans. 4% recommend improving the ashtray and another 4% said the stove should be cheaper.



Conclusion:

The overall results are positive with 87% of the users being happy with the stove, saving time and fuel. This survey reassures results from previous lab test and customer satisfaction studies conducted in South Sudan and Uganda. The BDS is a good stove to transition to clean cooking as it provides access to cleaner, more efficient, convenient, safer, reliable, and affordable cooking energy. However, it is important to note the areas of opportunity to improve the stove for the future. Working on the design of the next version of the BDS taking into consideration the feedback obtained, could result in even better results that that would benefit the project on the long run and have a greater impact on people's lives.

Appendix 1.

Customer satisfaction survey

Date:
Name:
Phone number:
Stove serial number:
Date of purchase:

Introduction

- Greetings, introduce yourself (Remember to say you are calling from Potential Energy)
- Confirm they bought the BDS and aren't confusing it with another stove.
- Explain the reason of the call/visit and ask if they have 5 minutes to answer some questions.
- Start the interview following the questionnaire.
- Record any additional information considered relevant to the survey.

Questionnaire:

1. When did you buy the BDS? (Compare to our records)

2. How long has the BDS been in use? (Did they started using the stove immediately after purchase?)

3. How did you cook before getting the BDS?

A) Three stone fire B) Self-built clay stove C) Traditional stove D) ICS-clay

E) ICS-Solar F) LPG G) Other_____

4. How often and for how many hours do you cook on the BDS? (e.g. Every day for 5 hours)

5. How many meals do you cook every day and for how many people?

6. What meals do you cook on the BDS?

7. What kind of fuel do you use to cook on your BDS and how often?

A) Firewood:

B) Charcoal:

C) Briquettes:

D) Other:

8. How do you get your fuel?

A) Buy - Money spent daily/weekly/monthly_____

B) Collect – How often? _____

9. Do you cook faster on a BDS compared to your previous cooking method?

60% faster B) 50% faster C) 30-40% faster D) 10-30% faster E) NO

10. Have you noticed less smoke since you started cooking on a BDS?

More than 70% B) 50 - 70% C) 30 - 50% D) 10- 30% E) NO

11. How happy are you cooking on your BDS?

Very disappointed 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 Very Happy

12. What are the 3 things you like the most about the BDS?

13. What would you like to change to improve your BDS?

Any other comments: