

Impact and Experience of Cooking with Electric Induction Stoves – a User Experience Survey

Version 1

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1 Introduction

Gamos partnered with BURN Manufacturing to develop, test, and roll-out a pay as you go (PAYG) version of their electric induction cooker (EIC) in four African markets.

The key aim of the PAYG cooker was to develop a technology to integrate directly with mobile money payments systems and will enable low-income households to pay for the EIC in small instalments over time, thereby overcoming the barrier presented by a relatively high initial purchase price. The project included two phases:

- Phase 1: cookers were sold as a bundle with three induction compatible pans. Two thousand of the first generation cookers were deployed in Kenya, Tanzania, Ghana, and Zambia.
- Phase 2: a second generation of cookers with improved PAYG boards and cookware set was based on technical experience and customer feedback. A total of 7,445 second generation cookers were deployed in Kenya, Tanzania, and Ghana. Zambia was dropped from the study because load shedding as a result of severe drought conditions meant that it would be a difficult market to enter.



Figure 1 Phase 2 electric induction cooker and cookware

As part of the Innovate UK funded programme, Gamos carried out a customer survey exercise that aimed to assess development impacts of stove adoption. For the purposes of the study, development impacts have been framed around the SDGs:

- Health (SDG 3 Good health & wellbeing)
- Household cost savings (SDG 7 Affordable and clean energy)
- Gender benefits (SDG 10 Reduced inequalities)
- Emissions reduction (SDG 13 Climate action)

60 Decibels was contracted to carry out two sets of telephone customer surveys:

- Baseline surveys, to be carried out shortly after the customer has purchased a BURN stove;
- Follow-up surveys, to be carried out 3 months after stove purchase, so customers can give an informed view of their experience of using stoves.

This report focuses on making comparisons between the two surveys in order to assess changes and impacts that can be attributed to the adoption of the EIC. Data on the amount of electricity used for cooking by survey participants was provided by BURN.

2 Methodology

Gamos worked with 60 Decibels on the detailed design of the two surveys. 60 Decibels used as many 'stock' questions from their repository as possible, on the basis that these are tried and tested. The questionnaires comprised the sections summarised in Table 1 (an example of the baseline questionnaire is presented in Annex 1, and the follow-up questionnaire in Annex 2).

Table 1 Areas of enquiry in the two surveys

	Baseline	Follow-up
Demographics	includes PPI ¹ questions	✓
Features of stove use	Motivation to purchase	Advantages from experience
Fuel choices (consumption and costs)	✓	✓
Baseline cooking practices	✓	✓
health and standard of living indicators	✓	✓
Experience of using EIC		✓
User satisfaction		✓
Perceptions of impacts		✓

Details of all project customers were submitted to 60 Decibels, who randomly selected the target number of respondents from each country. Different customers were selected for each survey (i.e. it is not a longitudinal study).

The surveys were conducted with customers buying the Phase 2 stoves only. Sales started in September and peaked in October and November. It took a few weeks for BURN to compile and share customer data with 60 Decibels and then piloting highlighted a few questions that needed clarification, so baseline surveys started early October and were completed by the end of November; follow-up surveys started late February 2025 and were completed by the end of March.

The surveys were designed to be conducted with cooks, who had an understanding of cooking practices in the household, and who gained experience of cooking with the induction cooker. Enumerators were furnished with contact phone numbers of the customer, but then asked to speak to the primary cook. This may not have been possible, for example, in cases where male customers were not in the same location as the primary cook. This means that the gender of respondents (Table 4) does not necessarily represent the gender breakdown of cooks.

3 Overview of the data

3.1 Follow-up survey

The follow-up survey included a screening question on whether the EIC was still in use; the rest of the survey was only conducted if it was in use. Overall, 6% of units were no longer in service (see Table 2). Differences between countries were not significant. Most of these stoves were repossessed.

¹ The Poverty Probability Index (PPI) methodology uses a small number of country specific questions to estimate the probability that the household is living below the poverty line. <https://www.povertyindex.org/>

Table 2 Units still in use at follow-up survey

	Ghana	Kenya	Tanzania	Total
No	7 (3.3%)	22 (6.5%)	27 (8.1%)	56 (6.3%)
Yes	208 (96.7%)	318 (93.5%)	308 (91.9%)	834 (93.7%)
Total	215 (100%)	340 (100%)	335 (100%)	890 (100%)

Although a total of 890 follow-up surveys were conducted, only 834 extended to the full survey and provide information that can be compared with the baseline data. For the purposes of this report, only the reduced dataset will be considered. A total of 834 full follow-up surveys and 858 baseline surveys were conducted across the three countries in which the Phase 2 units were sold. Fewer surveys were conducted in Ghana (Table 3) because sales started later than in Kenya and Tanzania, meaning that there was a smaller pool of customers to draw the sample from. Baseline surveys were conducted in October and November 2024 (seven surveys in Ghana were conducted early in December), and follow-up surveys were conducted in February and March 2025.

Table 3 Distribution of surveys across countries

	Baseline		Follow-up	
	Frequency	Percent	Frequency	Percent
Ghana	227	26.5	208	24.9
Kenya	316	36.8	318	38.1
Tanzania	315	36.7	308	36.9
Total	858	100.0	834	100.0

3.2 Demographics of respondents – both surveys

Overall, two thirds of respondents were female (Table 4). The proportion of female respondents was higher among Tanzanian respondents, but in the follow-up survey only (chi square, $p < 0.001$); differences in the baseline survey were not significant.

Table 4 Gender of respondents – by survey

	Ghana		Kenya		Tanzania		Total	
	BL	FU	BL	FU	BL	FU	BL	FU
Female	64.8%	61.1%	65.2%	57.9%	71.1%	74.0%	67.2%	64.6%
Male	35.2%	38.9%	34.8%	42.1%	28.9%	26.0%	32.8%	35.4%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Household sizes vary substantially between the three countries. Table 5 shows that mean household sizes in Kenya were smallest, and this was consistent across both surveys. Households in Tanzania were approximately 1 person larger than in Kenya, and this was also consistent across both surveys. Household sizes in the follow-up sample from Ghana were similar to those in Tanzania, but considerable smaller than in the baseline survey.

Table 5 Household size (adults and children) - by country

Country	Baseline		Follow-up	
	Mean	N	Mean	N
Ghana	6.84	227	4.97	206
Kenya	3.92	310	4.07	299
Tanzania	4.97	301	5.10	308
Total	5.09	838	4.69	813

4 Customer Experience

4.1 Customers' use of stoves

Once they take delivery of their EIC, most customers use it to prepare the majority of their meals (see Table 6). More than that, the majority of customers in all countries use it to prepare nearly all of their meals. Approximately 40% of customers in Ghana and Kenya transition all of their cooking to induction cooking.

Table 6 Proportion of household cooking done with the EIC - by country

	Ghana	Kenya	Tanzania	Total
A little bit (0 - 25%)	3 (1.4%)	4 (1.3%)	2 (0.6%)	9 (1.1%)
Less than half (25 - 50%)	7 (3.4%)	19 (6%)	9 (2.9%)	35 (4.2%)
More than half (50 - 75%)	47 (22.6%)	80 (25.2%)	71 (23.1%)	198 (23.7%)
Almost all (76% - 99%)	63 (30.3%)	89 (28%)	138 (44.8%)	290 (34.8%)
All (100%)	88 (42.3%)	126 (39.6%)	88 (28.6%)	302 (36.2%)
Total	208 (100%)	318 (100%)	308 (100%)	834 (100%)

An estimate of the number of meals prepared in a day using the EIC has been made by multiplying the total number of meals prepared in a day (presented in Table 19) by the mid point of the bins presented in Table 6. This shows that greatest use of the stove is made in Tanzania, on the basis that the number of meals prepared is highest in Tanzania (see Table 7).

Table 7 Estimate of number of meals/day cooked on EIC

Country	Mean	N
Ghana	2.0	208
Kenya	2.2	317
Tanzania	2.5	308
Total	2.3	833

4.2 Control of stove

The vast majority of customers found the stove controls very easy to use (Table 8). Differences in ease of use of controls between countries was not significant (chi square $p = 0.109$).

Table 8 "How easy or difficult do you find using the controls on the BURN Induction Stove?" – by country

	Ghana	Kenya	Tanzania	Total
Very difficult	0 (0%)	1 (0.3%)	0 (0%)	1 (0.1%)
Somewhat difficult	0 (0%)	1 (0.3%)	1 (0.3%)	2 (0.2%)
Neither easy nor difficult	0 (0%)	2 (0.6%)	1 (0.3%)	3 (0.4%)
Somewhat easy	36 (17.5%)	29 (9.1%)	50 (16.2%)	115 (13.8%)
Very easy	170 (82.5%)	285 (89.6%)	256 (83.1%)	711 (85.5%)
Total	206 (100%)	318 (100%)	308 (100%)	832 (100%)

Even if a stove is equipped with easy to use controls, the extent to which cooking energy consumption is optimised depends on the skill of the cook in using the controls, and the motivation of the cook, which influences their behaviour. When asked how they like to use controls, the overall preference is for achieving the best results; however, Table 9 shows some interesting differences between countries. While most cooks in Ghana and Kenya prioritise results, most cooks in Tanzania prioritise minimising costs. Note that the survey was not able to explore the detail of what energy saving behaviours were followed in order to minimise costs, or what cooking techniques were needed to cook food 'just right'. This requires further research employing ethnographic techniques such as this [Kitchen Behaviour Ethnographic Study](#) conducted in Uganda².

Table 9 "How do you like to use the BURN induction stove when cooking" – by country

	Ghana	Kenya	Tanzania	Total
(Declined to answer)	0 (0%)	0 (0%)	1 (0.3%)	1 (0.1%)
I adjust the controls to minimize cost	54 (26%)	77 (24.2%)	167 (54.2%)	298 (35.7%)
I use it at maximum power for fast cooking	35 (16.8%)	33 (10.4%)	69 (22.4%)	137 (16.4%)
I use whatever is needed to cook the food just right	119 (57.2%)	208 (65.4%)	71 (23.1%)	398 (47.7%)
Total	208 (100%)	318 (100%)	308 (100%)	834 (100%)

4.3 Cookware

Overall, customers are clearly not satisfied with the cookware provided with the stoves, as approximately two thirds of customers across all countries felt they were not adequate (Table 10). However, 60% of customers in Ghana felt the pots were adequate, which is contrary to customers from Kenya and Tanzania.

Table 10 "Was the set of pots for your BURN Induction Stove adequate?" - by country

	Ghana	Kenya	Tanzania	Total
No	83 (39.9%)	226 (71.1%)	231 (75%)	540 (64.7%)
Yes	125 (60.1%)	92 (28.9%)	77 (25%)	294 (35.3%)
Total	208 (100%)	318 (100%)	308 (100%)	834 (100%)

Across all countries, it is the small pot provided with the stove that customer use most (Table 11). This is somewhat counterintuitive as previous research suggests that consumers tend to want bigger pots. If this were the case among BURN customers, then we would expect dissatisfaction with the

² <https://meecs.org.uk/wp-content/uploads/2025/04/Kitchen-Behaviour-Ethnographic-Study-Dalberg.pdf>

cookware to be higher among larger households. Across all household sizes, no relationship can be seen, but when looking at only the more common household sizes (3 to 6 persons, which covers 72% of responses), it can be seen that satisfaction drops with larger household sizes (Table 12) (MW U-test, $p = 0.013$).

Table 11 "Which pot do you use most?" - by country

	Ghana	Kenya	Tanzania	Total
Big pot	90 (43.3%)	49 (15.4%)	83 (26.9%)	222 (26.6%)
Skillet	19 (9.1%)	35 (11%)	2 (0.6%)	56 (6.7%)
Small pot	99 (47.6%)	234 (73.6%)	223 (72.4%)	556 (66.7%)
Total	208 (100%)	318 (100%)	308 (100%)	834 (100%)

Table 12 Set of pots for BURN induction stove were adequate, by common household sizes

Household size	No	Yes	Total
3	71 (59.7%)	48 (40.3%)	119 (100%)
4	115 (62.8%)	68 (37.2%)	183 (100%)
5	121 (68.4%)	56 (31.6%)	177 (100%)
6	81 (73.6%)	29 (26.4%)	110 (100%)

The majority of customers across all countries were not able to use their existing cookware with the BURN stove (Table 13). The highest proportion of customers that were able to use their existing cookware were from Ghana (27%). There is no evidence that satisfaction with the pot set depends on the ability to use existing pots.

Table 13 "Are you able to use any of your old pots on the BURN Induction Stove?" - by country

	Ghana	Kenya	Tanzania	Total
No	152 (73.1%)	267 (84%)	283 (91.9%)	702 (84.2%)
Yes	56 (26.9%)	51 (16%)	25 (8.1%)	132 (15.8%)
Total	208 (100%)	318 (100%)	308 (100%)	834 (100%)

4.4 Reasons stove no longer in use

Of the 56 stoves that were no longer in use at the follow-up survey, the majority had been repossessed – see Table 14. Among the 'other' reasons were stoves that failed to operate ($n=4$), customers intended to use it later (e.g. currently travelling away from home; currently using shared meter and waiting to get separate meter installed) ($n=3$), complaints that it burnt the food ($n=2$), and customers who did not receive their stove ($n=2$).

Table 14 Reasons stove was not in use at follow-up survey

	Frequency	Percent
Repossessed	30	54%
Other, please specify:	15	27%
Broken	7	13%
Stolen	3	5%
Given/ sold to someone	1	2%
Total	56	100%

4.5 Failure & repair

Among the stoves no longer in use, seven were broken, equivalent to 0.8% of all customers in the sample; five failed and two were dropped. In addition to the two that were no longer in use because they were dropped, a further 20 were cracked, scratched, or broken. The most common issues were stoves cracked by dropping objects on them (n=9), and scratches arising from general use (n=4).

In addition to the seven that were no longer in use, a further 41 had failed. The vast majority of these were either repaired or replaced by BURN (n=34). Four stoves were left unrepaired³, and no stoves were taken to any other kind of local repair shop.

4.6 Challenges with the stove

Overall, 16% of customers described some form of challenge that they had experienced with their stove (Table 15). A higher proportion of customers in Tanzania registered some form of complaint.

Table 15 "Have you experienced any challenges with the BURN Induction Stove?" – by country

	Ghana	Kenya	Tanzania	Total
No	186 (89.4%)	275 (86.5%)	242 (78.6%)	703 (84.3%)
Yes	22 (10.6%)	43 (13.5%)	66 (21.4%)	131 (15.7%)
Total	208 (100%)	318 (100%)	308 (100%)	834 (100%)

The common themes arising from text descriptions of these challenges are:

Pots:

- The main complaint appears to be that there are not enough pots, so people have to clean between cooking multiple dishes;
- Some complain that the pot is too small, others that the pot is too large, especially for small families; the balance appears to be that more customer felt the pots were too big, and they would have preferred a larger number of small pots.
- Some comments were made about heat transfer, with some respondents feeling that the pots were too light, leading to food burning. Two people mentioned an issue with heat transfer when cooking rice, such that parts of the load is not cooked.

³ It is not clear what the difference is between stoves that were not in use, and those that were not repaired.

Payments:

- The main issue relating to payments is that people are unable to cook after making a payment due to a delay in activating the stove (e.g. 15 to 30 minutes; up to one day); some responses indicate they had experienced this problem, but it is now in the past.
- Others tell of contacting agents to help them with making payments

Electricity:

- Many people complained that the stove uses a lot of electricity, some qualifying that it is more than they were led to believe when making the purchase.
- Two respondents said that once they understood how to use the stove, the consumption reduced; one found the information online.
- On power quality, one said that the stove does not work when the voltage drops, and another complained that the stove causes a surge when turned on that trips the supply.

5 Customer Satisfaction

5.1 Net Promoter Score

Respondents were asked how likely they would be to recommend the EIC to friends and family, on a score on 0 – 10. Respondents are then divided into three categories:

- Detractors (0 – 6)
- Passives (7, 8)
- Promoters (9, 10)

The net promoter score is then calculated as the difference between the proportion of promoters and detractors, and is expressed as a percentage. The results in Table 16 give an overall net promoter score (NPS) of 72%, which should be regarded as “excellent”⁴. There are marked differences between countries, with satisfaction levels highest in Tanzania and lowest in Ghana, but note that these differences are due to the number of Passives – the number of Detractors is consistently low in all three countries, which is encouraging.

Table 16 Net Promoter score categories

	Ghana	Kenya	Tanzania	Total
Detractors	3%	4%	3%	3%
Passives	35%	21%	11%	21%
Promoters	62%	75%	86%	76%
Total	100%	100%	100%	100%
NPS	58%	71%	83%	72%

⁴ <https://www.qualtrics.com/en-gb/experience-management/customer/good-net-promoter-score/#:~:text=From%20the%20absolute%20NPS%20position,on%20turning%20Detractors%20into%20Passive>

The Promoters were asked what it was about the BURN EIC that would cause them to recommend it to friends and family. The key features commonly referred to in the 631 responses were:

- **Time savings** and speed of cooking (n=505).
- **Affordability and cost saving** (n=244). The majority of responses referred to reduced cost of cooking, many commented on how little electricity the stove uses. A few responses referred to the savings plan making the stove affordable.
- **Ease of use** (n=221). Most responses simply said it is easy to use; a few specifically referred to the ease of using the controls.
- **Clean** (n=194). Most specifically referred to the fact that it does not produce smoke, others highlighted that this leads to a clean kitchen. Some mentioned that the stove itself is easy to clean, and others that the pots are easy to clean.

The Passives were asked what it was about the stoves that caused them to give their score; responses included both positive and negative themes:

- **Time** (n=106). Many respondents appreciated that it cooks fast, and others said that it saves time. Other aspects of time mentioned include benefits of automated time control.
- **Pots** (n=48): there were two dominant issues: people complained about the need for special cookware, meaning they were not able to use their old pots, and there were not enough pots provided – they wanted more and smaller pots.
- **Cost** (n=43). Many respondents felt the stoves use a lot of electricity.
- **Ease of use** (n=24). Most responses simply said the stove is easy to use.

The Detractors were asked what BURN could do to make them more likely to recommend the EIC. There was clearly one main theme:

- **Pots** (n=16). Most of these comments called for more and smaller pots.
- **Electricity consumption** (n=5). Respondents would like the stove to use less electricity.
- **Payments** (n=3). Respondents highlighted the activation delay between making payment and the stove working; one suggested a grace period before the stove is locked.

5.2 Meeting expectations

In the baseline survey, respondents were asked why they bought the EIC; responses reflect customer expectations lying behind the purchasing decision. In the follow-up survey, respondents were asked what advantages or benefits they had experienced when using the EIC. The same categories of responses were used, which gives the ability to assess how initial product expectations have been met in practice.

Table 17 shows that the dominant motivation of saving cooking time was exceeded, notably in Ghana; overall, over 90% of follow-up respondents said that the EIC saved cooking time. Overall, the other dominant motivation of cost saving has been met, although savings among Kenyan customers appear to be less than they had expected. Expectations for most of the other features have been exceeded, which indicates that marketing initiatives could do more to promote these positive aspects of cooking with the EIC. Notable issues are the ease of use, which was ranked as the second highest advantage. It's also interesting to see that more customers recognised the benefits of reduced smoke and improved safety after using the EIC. One exception is the perception of it being a modern device, which suggests that although modernity is influential in purchasing decisions, it doesn't really add much to the cooking experience (although this is not the case in Ghana).

Table 17 Comparison of customer expectations (motivation) with experience of using the EIC (advantages) - by country

	Ghana		Kenya		Tanzania		Total	
	Motivation	Advantage	Motivation	Advantage	Motivation	Advantage	Motivation	Advantage
	(N=227)	(N=208)	(N=316)	(N=318)	(N=315)	(N=308)	(N=858)	(N=834)
Saving cooking time	55.9%	81.7%	84.5%	90.9%	88.3%	96.8%	78.3%	90.8%
Reduced spending	43.2%	46.6%	59.8%	38.4%	72.1%	76.6%	59.9%	54.6%
Easy to use/It does not require full-time attention	25.1%	74.0%	38.0%	61.6%	57.5%	74.0%	41.7%	69.3%
It's modern	29.5%	39.9%	39.9%	28.0%	49.5%	29.9%	40.7%	31.7%
Reducing exposure to smoke	15.4%	30.3%	27.8%	53.8%	38.7%	45.8%	28.6%	45.0%
Improved safety of my family	16.3%	45.2%	31.6%	34.0%	30.8%	43.2%	27.3%	40.2%
Cleaner kitchen and home	12.8%	27.9%	22.2%	32.4%	27.9%	44.5%	21.8%	35.7%
Saving space	8.8%	40.9%	7.6%	13.5%	23.5%	22.4%	13.8%	23.6%
Cooking a variety of meals	9.3%	21.6%	7.0%	12.3%	18.7%	28.9%	11.9%	20.7%
Other	3.5%	1.4%	14.9%	0.3%	0.6%	0.0%	6.6%	0.5%

5.3 Pay as you go (PAYGO)

The PAYGO board for the EIC was developed as a means of improving the affordability of the stove. The analysis of responses to the Net Promoter Score questions in Section 5.1 highlights the importance of affordability, although responses focused on reduce fuel costs rather than the payment plan. Respondents were specifically asked if they would have bought the EIC for the retail price if BURN had not offered the payment plan. Results in Table 18 indicate that overall, half of customers depended on the payment plan in order to buy the stove. These findings need to be treated with caution because they were asked in the follow-up survey, by which time respondents had become familiar with the stoves and had gained an appreciation of the benefits arising from using the stove, both of which would tend to increase their retrospective willingness to pay the retail price. In reality, purchasing decisions are made on the basis of incomplete information and in the absence of operating experience, so the importance of the payment plan may be greater than the figures in Table 18 imply.

Table 18 "If BURN had not offered a payment plan, would you have bought the EIC for xxx GHS/KES/TZS?"

	Ghana	Kenya	Tanzania	Total
	(N=208)	(N=318)	(N=308)	(N=834)
No	51%	62%	32%	48%
Yes, by borrowing money	3%	16%	26%	17%
Yes, using household cash	45%	22%	42%	35%
Total	100%	100%	100%	100%

6 Cooking behaviours

6.1 Changes in meals prepared

There is some evidence that customers cook more meals after they purchase an EIC – the mean number of meals cooked is slightly higher among follow-up survey respondents (Table 19). This may reflect suppressed demand among customers that make greater use of traditional fuels that offer a poor user experience.

Table 19 "On average, how many meals did your household cook in a day" - by country and survey

	Ghana		Kenya		Tanzania		Total	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Mean	2.39	2.40	2.56	2.64	2.78	3.01	2.60	2.72
Median	2	2	3	3	3	3	3	3
N	227	208	316	317	315	308	858	833

Further detail of regular cooking events is given in Table 20, which shows that overall, dinners remain the most commonly prepared meal, closely followed by breakfasts. Overall, all meals were prepared more frequently in the follow-up survey, which is consistent with the finding that the mean number of meals increased. Heating water, preparing snacks, and making hot drinks were the events that increased the most, indicating that this is where suppressed demand lies. However, this was driven by large increases in Tanzania, which were offset to an extent by reductions in Ghana (except in heating water, which is the only event that consistently increased across all three countries).

Table 20 Comparison of meals prepared every day - by country and survey

	Ghana		Kenya		Tanzania		Total	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
	(N=227)	(N=208)	(N=316)	(N=318)	(N=315)	(N=308)	(N=858)	(N=834)
Breakfast	73.6%	83.2%	93.0%	90.9%	95.2%	98.1%	88.7%	91.6%
Lunch	58.6%	49.5%	51.6%	56.3%	76.8%	92.9%	62.7%	68.1%
Dinner	83.7%	97.6%	98.4%	93.4%	96.5%	96.4%	93.8%	95.6%
Snack(s)	6.2%	2.9%	17.4%	18.2%	13.3%	39.3%	12.9%	22.2%
Hot drinks (inc porridge)	30.4%	24.0%	31.0%	27.4%	48.3%	76.0%	37.2%	44.5%
Heating water	18.1%	21.6%	15.2%	23.9%	41.3%	59.7%	25.5%	36.6%

6.2 Changes in Who does the cooking

Rather than asking who does the cooking, respondents to the follow-up survey were asked if other household members did more cooking because of the EIC; 23% said this was the case. Most nominated one person that did more cooking (17.4%), and 4.6% nominated two persons that did more cooking. See Table 21 for the persons nominated. A gender analysis of the dominant categories (respondent and spouse) show little evidence of greater male involvement in cooking (see Table 22). Reasons for cooking more centred on ease of use and speed of cooking.

Table 21 Household member that does additional cooking (multiple response)

	N	Percentage (N=834)
Respondent	81	10%
Spouse	80	10%
Female adult	42	5%
Male adult	9	1%
Female child	18	2%
Male child	2	0%
Other	4	0%

Table 22 Gender of person doing more cooking (Respondent and Spouse only)

Household member	N
Both cook more	13
Woman cooks more	126
Man cooks more	9
Total	148

7 Cooking Fuel choices and prices

7.1 Change in fuels

Overall, the number of cooking fuels used fell from a mean of 2.0 in the baseline survey to 1.7 in the follow-up survey (see Table 23). Received wisdom is that when households get a new stove, they stack it with their existing stoves (and fuels) so this reduction, which is consistent across all countries, is somewhat unexpected. Overall, 37% (n=305) of respondents to the follow-up survey used electricity exclusively for cooking. Among those who stacked with a second fuel (55%, n=458), most stacked with LPG (38%, n=317), rather with charcoal (15%, n=128).

Table 23 Mean number of cooking fuels used - by country and survey

	Ghana		Kenya		Tanzania		Total	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Mean	2.34	1.57	1.80	1.72	1.99	1.82	2.02	1.72
N	227	208	314	318	315	308	856	834

Table 24 shows that use of all fuels other than electricity has dropped from baseline to follow-up survey. It is interesting to note that the dominant baseline fuels of LPG and charcoal have both been dropped by 45% of customers overall. However, this masks some differences between countries; a higher proportion of customers in Ghana dropped charcoal, whereas in Kenya, a higher proportion of customers dropped LPG; the drops were balanced in Tanzania. Note that customers appear to have dropped bioethanol in favour of the EIC.

Table 24 Choice of baseline cooking fuels – by country and survey

	Ghana		Kenya		Tanzania		Total	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
	(N=227)	(N=208)	(N=316)	(N=318)	(N=315)	(N=308)	(N=858)	(N=834)
LPG/Gas	91.2%	49.0%	87.3%	42.1%	94.9%	48.4%	91.1%	46.2%
Charcoal	83.7%	7.2%	52.5%	24.8%	74.0%	32.8%	68.6%	23.4%
Electricity	52.9%	100.0%	7.9%	100.0%	23.2%	100.0%	25.4%	100.0%
Bioethanol (KOKO)	0.0%	0.0%	18.7%	1.9%	0.0%	0.0%	6.9%	0.7%
Firewood	5.3%	0.0%	5.4%	1.6%	6.0%	1.3%	5.6%	1.1%
Kerosene	0.4%	0.0%	7.0%	1.3%	1.3%	0.0%	3.1%	0.5%
Solar	0.4%	0.5%	0.3%	0.3%	0.0%	0.0%	0.2%	0.2%

7.2 Cooking Fuel consumption

The mean energy consumption among participants using each fuel is presented in Table 25, and shows that in addition to a reduction in the number of participants using LPG and charcoal, the energy consumption among customers using particular fuels has also decreased. This is to be expected, given that part of their cooking load has been transitioned to electric. The mean energy consumption for each fuel averaged out across all households in each of the samples (with valid fuel use records) is presented in Table 26.

Table 25 Mean energy consumption for different fuels - by country and survey (MJ/week)

	Ghana				Kenya				Tanzania				Total			
	Baseline		Follow-up		Baseline		Follow-up		Baseline		Follow-up		Baseline		Follow-up	
	MJ/wk	N	MJ/wk	N	MJ/wk	N	MJ/wk	N	MJ/wk	N	MJ/wk	N	MJ/wk	N	MJ/wk	N
Firewood	426.1	3	0.0	0	586.7	10	115.5	2	248.3	8	71.9	3	434.9	21	89.3	5
Charcoal	425.7	187	371.9	15	253.0	148	107.0	73	211.7	200	132.6	101	297.9	535	141.7	189
Kerosene	35.3	1	0.0	0	119.1	12	55.2	4	158.9	2	0.0	0	118.8	15	55.2	4
Bioethanol	0.0	0	0.0	0	75.8	50	31.7	6	0.0	0	0.0	0	75.8	50	31.7	6
LPG	134.7	158	89.4	102	71.2	270	56.6	131	98.1	298	86.5	148	96.0	726	77.0	381

Table 26 Total fuel consumption for all fuels averaged across all participants - by country and survey (MJ/week/household)

	Ghana		Kenya		Tanzania		Total	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
	(N=227)	(N=206)	(N=313)	(N=310)	(N=314)	(N=308)	(N=854)	(N=824)
Firewood	5.6	0.0	18.7	0.7	6.3	0.7	10.7	0.5
Charcoal	350.7	27.1	119.6	25.2	134.9	43.5	186.6	32.5
Kerosene	0.2	0.0	4.6	0.7	1.0	0.0	2.1	0.3
Bioethanol	0.0	0.0	12.1	0.6	0.0	0.0	4.4	0.2
LPG	93.7	44.3	61.4	23.9	93.1	41.6	81.7	35.6

7.3 Cooking Fuel Prices

Establishing fuel prices is tricky because each household can pay different prices depending on how much fuel is bought and where from. Electricity prices are complicated if tiered tariffs are in place and if standing charges are applied. Prices in this section have been deduced from reported values paid for amounts of fuel purchased.

Firewood

Only eight respondents provided firewood costs, which is not enough to estimate prices.

Charcoal

Respondents were asked how much charcoal they used in a week (kg/week), and then how much they typically paid for charcoal; this was enumerated in terms of either price per kg, or price per bag, depending on how they usually bought their charcoal. However, they were not asked to estimate the size of a bag, which is needed in order to calculate a price per kg.

Median prices paid per 1kg are presented in Table 27. 50kg is a common charcoal sack size across many countries; if the sack prices are divided by 50kg, this gives the prices given in Table 27. These prices suggest that customers from the baseline survey buying charcoal by the bag in Kenya and Tanzania get a discount of 22% and 27% respectively, which seems reasonable. Discounts at the follow-up survey seem higher, but the number of valid prices is much smaller, so the prices may be less reliable.

Table 27 Charcoal prices

	Ghana (N)		Kenya (N)		Tanzania (N)	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Exchange rate ⁵	15.05 GHS/USD		129 KES/USD		2530 TZS/USD	
1 kg median price	2.7 GHS/kg (152)	10 GHS/kg (9)	50 KES/kg (126)	50 KES/kg (63)	1500 TZS/kg (138)	1500 TZS/kg (91)
1 kg median price	0.18 USD/kg	0.66 USD/kg	0.39 USD/kg	0.39 USD/kg	0.59 USD/kg	0.59 USD/kg
Sack median price	16.8 GHS/kg (35)	4 GHS/kg (5)	39 KES/kg (22)	30 KES/kg (13)	1100 TZS/kg (62)	1200 TZS/kg (10)
Sack median price	1.12 USD/kg	0.27 USD/kg	0.30 USD/kg	0.23 USD/kg	0.43 USD/kg	0.47 USD/kg

⁵ Google; accessed on 22 January 2025.

Kerosene

Only four respondents provided kerosene costs, which is not enough to estimate prices.

Bioethanol

Only six respondents provided bioethanol costs, which is not enough to estimate prices.

LPG

Respondents were asked how often they refilled their LPG cylinder, how big it is, and then how much they typically pay for it to be refilled. These figures were used to calculate the unit price of LPG (per kg), and the weekly cost (see Table 28). Prices do not appear to have changed substantially between the two surveys.

Table 28 LPG prices

	Ghana (N)		Kenya (N)		Tanzania (N)	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Refill frequency - mean (times/year)	15.9 (158)	11.2 (102)	11.4 (270)	9.4 (131)	11.6 (298)	10.6 (149)
Size of cylinder – mean (kg)	10 (159)	9.4 (102)	7.3 (272)	7.1 (134)	10 (299)	9.3 (148)
Price of LPG - mean	19.2 GHS/kg (158)	19.9 GHS/kg (102)	205 KES/kg (272)	204 KES/kg (131)	3850 TZS/kg (299)	3600 TZS/kg (148)
Price of LPG - mean	1.28 USD/kg	1.32 USD/kg	1.59 USD/kg	1.58 USD/kg	1.51 USD/kg	1.42 USD/kg

Electricity

Respondents to the baseline survey were asked how many units they used in a week, and the unit price they pay. Even though their awareness of unit prices was poor, the mean prices in Table 29 seem reasonable. In the follow-up survey, rather than being asked to estimate the units they used, respondents were asked for weekly or monthly costs. It was assumed that electricity prices had not changed since the baseline survey (Table 29), so energy consumption was calculated using these electricity prices.

Table 29 Mean electricity prices

	Ghana	Kenya	Tanzania
Mean price (per kWh)	1.41 GHS (211)	23.6 KES (313)	377 TZS (314)
Mean price (per kWh)	0.09 USD	0.18 USD	0.15 USD

8 Impacts of stove use

8.1 Financial- Cooking fuel costs

The majority of respondents in all countries felt that their cooking costs had reduced since purchasing their EIC (Table 30). Cost benefits were most keenly felt among customers in Tanzania, and least among those from Kenya.

Table 30 “Has your average weekly spending on cooking changed because of the BURN Induction Stove? Please include any payments made for the Induction Stove”

	Ghana	Kenya	Tanzania	Total
	(N=208)	(N=318)	(N=308)	(N=834)
Very much increased	6%	5%	5%	5%
Slightly increased	6%	25%	4%	12%
No change	25%	13%	6%	13%
Slightly decreased	29%	30%	30%	30%
Very much decreased	33%	28%	55%	39%
Total	100%	100%	100%	100%

Table 31 presents weekly expenditure on each fuel averaged out across all households in each sample that provided valid cost data. In terms of the dominant baseline fuels, LPG costs have reduced by 51% in Ghana to 62% in Kenya, and charcoal costs have reduced by 63% in Tanzania to 82% in Kenya. The differences between the two surveys represents the cost savings resulting from fuel substitution, and are expressed as annual savings in USD in Table 32.

Electricity figures derived from the surveys need to be treated with a little caution because they reflect a mix of cooking and non-cooking loads and both surveys experienced challenges with getting accurate data. The increased electricity consumption due to stove has, therefore, been extracted from the Nexus IoT data. The daily average consumption of each of the Phase 2 customers who responded to the follow-up survey has been averaged to give the figures in Table 32.

Non-electric fuel cost savings may have been marginally higher in Tanzania, but the proportional drop was highest in Kenya – 75% compared to 62%. Even though the additional electricity consumption was similar across all three countries, the additional costs in Table 32 vary widely, reflecting differences in the tariffs (see Table 29). This means that while households in Ghana and Tanzania saw fuel cost reductions of over 50 USD/year, costs broke even in Kenya (a marginal increase of 6 USD/year).

The high cost reductions in Tanzania are consistent with customer perceptions, as are positive perceptions among respondents from Ghana; higher electricity costs are also consistent with the finding in Table 30 that a substantial proportion of Kenyan respondents felt their spend had increased.

Table 31 Mean weekly expenditure on cooking fuels - by country and survey

	Ghana		Kenya		Tanzania	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
	(N=226)	(N=207)	(N=316)	(N=312)	(N=315)	(N=308)
	GHS/hhold/wk	GHS/hhold/wk	KES/hhold/wk	KES/hhold/wk	TZS/hhold/wk	TZS/hhold/wk
Firewood	0.4	0.0	17.7	2.1	71.4	27.6
Charcoal	24.2	5.2	211.7	39.1	6752.1	2464.6
Kerosene	0.0	0.0	21.4	2.7	75.6	0.0
Bioethanol	0.0	0.0	73.2	3.1	0.0	0.0
LPG	38.1	18.8	272.7	104.7	7745.5	3094.9
Total (ex electricity)	62.7	23.9	597	152	14645	5587
USD						
Total (ex electricity)	\$4.2	\$1.6	\$4.6	\$1.2	\$5.8	\$2.2

Table 32 Annual household cost savings for different fuels – by country

USD/hhold/year	Ghana	Kenya	Tanzania
Firewood	1.22	6.30	0.90
Charcoal	65.67	69.58	88.05
Kerosene	0.15	7.53	1.55
Bioethanol	0.00	28.26	0.00
LPG	67.11	67.70	95.51
Electricity ⁶	-21.66	-51.48	-36.74
Total	112.49	127.90	149.28

Although respondents were asked to consider the cost of the stove repayments in their assessment of changes in overall cooking costs (Table 30), they were also asked how much of a burden they felt these payments to be. Results in Table 33 shows that only 13% of all respondents felt they were a burden, and this was most keenly felt in Kenya.

Table 33 Perception of stove repayments as a burden

	Ghana	Kenya	Tanzania	Total
	(N=208)	(N=318)	(N=308)	(N=834)
Not a burden	91%	81%	92%	88%
Somewhat of a burden	7%	19%	8%	12%
A heavy burden	1%	1%	0%	1%
Total	100%	100%	100%	100%

Project fuel cost savings can be estimated by multiplying up the specific savings above by the number of project customers in each country – see Table 34 and Table 35.

⁶ Based on metered stove electricity consumption.

Table 34 Project annual fuel cost savings - Phase 2 customers only

		Ghana	Kenya	Tanzania	Total
		(N=366)	(N=3540)	(N=3539)	(N=7445)
Firewood	USD/year	448	22315	3186	25949
Charcoal	USD/year	24035	246315	311622	581972
Kerosene	USD/year	56	26673	5491	32220
Bioethanol	USD/year	0	100037	0	100037
LPG	USD/year	24561	239667	338013	602241
Electricity	USD/year	-7928	-182229	-130020	-320177
Total	USD/year	41171	452778	528291	1022241

Table 35 Project annual fuel savings - Phase 1 and 2 customers

		Ghana	Kenya	Tanzania	Total
		(N=569)	(N=4060)	(N=4321)	(N=8950)
Firewood	USD/year	696	25593	3890	30179
Charcoal	USD/year	37366	282497	380480	700343
Kerosene	USD/year	87	30591	6705	37383
Bioethanol	USD/year	0	114731	0	114731
LPG	USD/year	38183	274872	412702	725758
Electricity	USD/year	-12326	-208997	-158751	-380073
Total	USD/year	64006	519288	645026	1228320

8.2 Cooking times

There is a widespread view among respondents that they have been able to save time as a result of using the EIC (Table 36). This perception is most strongly held among respondents from Tanzania, and least among those from Ghana.

Table 36 "Have you seen any change in time spent on activities because of your BURN Induction Stove?"

	Ghana	Kenya	Tanzania	Total
	(N=208)	(N=318)	(N=308)	(N=834)
Very much increased	4%	5%	4%	4%
Slightly increased	6%	3%	4%	4%
No change	29%	13%	2%	13%
Slightly decreased	20%	32%	21%	25%
Very much decreased	40%	47%	69%	53%
Total	100%	100%	100%	100%

Overall, cooking times appear to have dropped by approximately 15 minutes a day (15%) – see Table 37. This overall figure is dominated by mean time savings among customers in Tanzania, who saved 40 mins/day (35%). This is much greater than savings observed by customers in Kenya, who saved 12 mins/day (13%). Figures indicate that cooking times increased among customers in Ghana by 10 mins/day. The perceptions in Table 36 are consistent with these relative time savings (i.e. highest in

Tanzania and lowest in Ghana), but increased cooking times in Ghana are not consistent with the perception among the follow-up survey respondents that most of them have saved time.

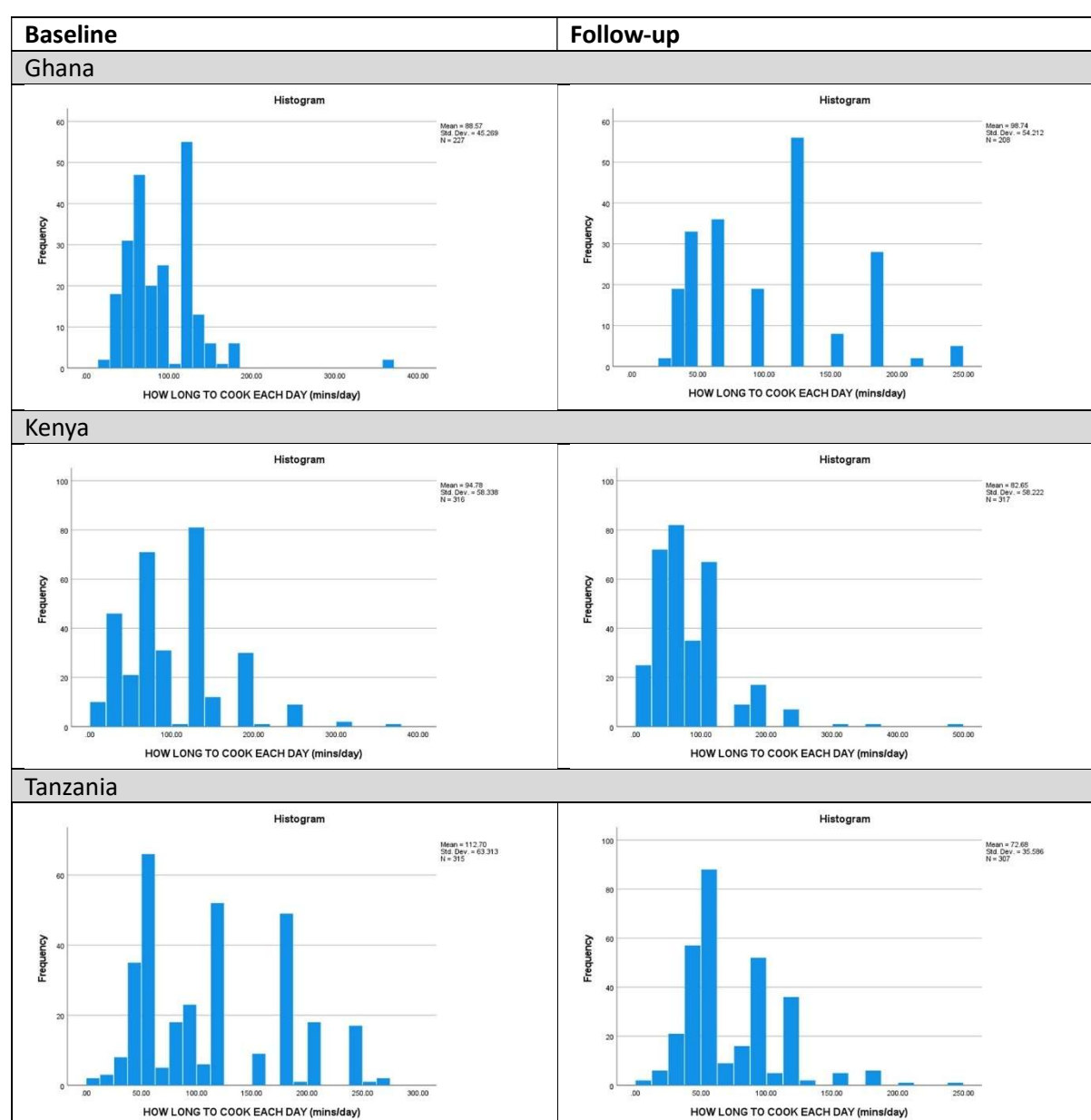
All distributions of cooking times are positively skewed by relatively small numbers of people who cook for long times – see Table 38. This means that the mean figures are higher than median cooking times. Median figures indicate that the “average” customer in both Kenya and Tanzania saves 30 minutes a day, but cooking times among customers in Ghana still increased by approximately 10 mins/day.

Both measures have their drawbacks: mean times are skewed by customers with long cooking times, and median times are influenced by the almost discrete nature of cooking times – respondents tend to give an answer to the nearest half hour.

Table 37 Time spent cooking (min/day) - by country and survey

Min/day	Ghana		Kenya		Tanzania		Total	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
n	227	208	316	317	315	307	858	832
Mean	89	99	95	83	113	73	100	83
Median	81	90	90	60	90	60	90	60

Table 38 Distribution of cooking times



Where customers use multiple fuels, it is not possible to allocate part of the time spent cooking to each of those fuels. However, it is possible to compare the time spent cooking among customers who used only a single fuel (Table 39). These figures indicate that charcoal requires half an hour per day more than cooking with either electricity or LPG.

Table 39 Time spent cooking using single fuel only (N>5)

Single fuel (N)	Survey	Mean (mins/day)	Median (mins/day)	Std. Deviation
Charcoal (24)	Baseline	107	120	42.3
LPG (170)	Baseline	83	60	46.4
Electricity (305)	Follow-up	82	60	51.1

Most respondents (80%) gave a description of what they did with the additional time liberated by using the EIC. The dominant themes were:

- Leisure, mostly resting (unspecified), relaxing and watching TV.
- Household activities, mostly household chores (e.g. housework, cleaning, washing dishes), but also spending time with children, including supporting with schoolwork.
- Income generation; mostly spending more time working and focusing on business; some respondents specifically mentioned spending more time on their own shops.

Project time savings can be estimated by multiplying up the specific savings above by the number of project customers in each country – see Table 40.

Table 40 Project annual time savings

	Ghana	Kenya	Tanzania	Total
Project customer savings - Ph2 only	(N=366)	(N=3540)	(N=3539)	(N=7445)
hours/year	-22642	261123	861536	1100016
Project customer savings – Ph1 & Ph2	(N=569)	(N=4060)	(N=4321)	(N=8950)
hours/year	-35201	299480	1051906	1316185

8.3 Health

There is a strong view that family health has improved because of the EIC (Table 41). This is strong among customers from Kenya and Tanzania, 70% of whom felt health had improved. Customers from Ghana were more measured, as 40% felt there had been an improvement that they could attribute to the EIC.

Table 41 “Has the health of you or your family changed because of the BURN Induction Stove?”

	Ghana	Kenya	Tanzania	Total
	(N=208)	(N=318)	(N=308)	(N=834)
Got much worse	0%	0%	1%	0%
Got slightly worse	0%	0%	0%	0%
No change	60%	30%	27%	36%
Slightly improved	15%	24%	22%	21%
Very much improved	24%	46%	50%	42%
Total	100%	100%	100%	100%

Respondents were asked about practical experience of two health issues – respiratory complaints over the previous two weeks (coughing, and difficulty in breathing), and sore eyes after cooking. Overall, the total number of respondents experiencing at least one of these health conditions dropped from 12% to 2%, which is consistent with the positive perception of improvements in health (Table 41). A breakdown in Table 42 and shows that incidence rates of respiratory complaints and sore eyes were similar at baseline: 9% and 8% of all respondents respectively; both dropped to 1% in the follow-up survey. Note that complaints at the baseline survey were mostly reported by customers from Ghana. Although complaints from Ghana dropped hugely at the follow-up survey, they still remained marginally higher than the level of complaints reported by customers from Kenya and Tanzania.

While at the baseline survey, the two conditions were partially aligned, there was minimal coincidence at the follow-up survey. Table 43 shows that both respiratory complaints and sore eyes were experienced by only one third of respondents with one or other complaint, but this dropped to only one respondent in the follow-up survey.

Table 42 Incidence of health issues - by country and survey

	Ghana		Kenya		Tanzania		Total	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Respiratory complaints								
Coughing	40	3	3	1	11	2	54	6
Difficulty breathing	17	1	6	0	0	0	23	1
% experiencing issue	25%	2%	2%	0%	3%	1%	9%	1%
Sore eyes								
Occasionally (1)	35	6	8	2	4	2	47	10
Frequently (few days/week) (2)	16		0		0		16	
Daily (3)	4		1		0		5	
mean score	1.44	1	1.22	1	1.00	1	1.38	1
% experiencing issue	24%	3%	3%	1%	1%	1%	8%	1%
Combined								
% experiencing either issue	34%	4%	4%	1%	4%	1%	12%	2%

Table 43 Alignment of health conditions

	Baseline		Follow-up	
Respiratory complaints only	35	4.1%	6	0.7%
Sore eyes only	29	3.4%	9	1.0%
Both	39	4.5%	1	0.1%
None	755		818	
Total	858	12.0%	834	1.9%

Reductions in the number of cooks experiencing either respiratory complaints or sore eyes across all units deployed under the project can be estimated by multiplying up the reductions in incidence (Table 42) by the number of project customers in each country – see Table 44.

Table 44 Reductions in the number of cooks experiencing either health issue

	Ghana	Kenya	Tanzania	Total
Project customer savings - Ph2 only	(N=366)	(N=3540)	(N=3539)	(N=7445)
Number of cooks	110	112	89	751
Project customer savings – Ph1 & Ph2	(N=569)	(N=4060)	(N=4321)	(N=8950)
Number of cooks	171	129	108	903

8.4 Gender impacts

Respondents were asked if they had noticed any reduction in a number of cooking related hazards commonly experienced by women. The issues that women felt were most affected by switching to cooking with electricity were injuries from cooking with fuels (e.g. burns, wounds) and physical pain and discomfort (e.g. back, joint, muscle pain) – see Table 45. Benefits were most keenly felt among customers from Kenya. There is some coincidence of these benefits (women noting an improvement in more than one issue); Table 46 shows that approximately one half of women noted some improvement in at least one issue.

Table 45 Perceived reduction in cooking related hazards - female respondents only

	Ghana	Kenya	Tanzania	Total
	(N=127)	(N=184)	(N=228)	(N=539)
Injuries due to cooking	24%	57%	23%	35%
Injuries due to fuel collection or preparation	6%	23%	17%	16%
Physical pain, long-term musculoskeletal issues	19%	22%	10%	16%
Domestic violence - cooking or fuel collection	4%	12%	8%	9%
GBV during fuel collection	3%	10%	7%	7%

Table 46 Number of gender benefits experienced since switching to electric cooking – female respondents only

	Ghana	Kenya	Tanzania	Total
	(N=127)	(N=184)	(N=228)	(N=539)
1	38%	22%	22%	26%
2	5%	22%	15%	15%
3	2%	8%	3%	4%
4	1%	2%	1%	1%
5	0%	5%	0%	2%
Total	45%	59%	41%	48%

The number of women benefiting from one or more of the hazards explored across all units deployed under the project can be estimated by multiplying up the proportion of female respondents experiencing some benefit (Table 46) by the number of project customers in each country – see Table 47.

Table 47 Number of women benefiting from a reduction in cooking related gender based hazards

	Ghana	Kenya	Tanzania	Total
Project customer savings - Ph2 only	(N=366)	(N=3540)	(N=3539)	(N=7445)
Number of women	164	2097	1444	3577
Project customer savings – Ph1 & Ph2	(N=569)	(N=4060)	(N=4321)	(N=8950)
Number of cooks	255	2405	1763	4301

8.5 Overall Standard of Living

The study includes indicators relating to specific impacts of clean cooking – financial, time, health, and environmental. It may also be that benefits arising from using the EIC can have an impact on

perceptions of overall quality of life. The baseline study included the following question on standard of living that tried to capture the overall effect of these impacts at the household level:

“Right now, do you feel your standard of living is getting better, is the same, or getting worse since you purchased the BURN (ECO) induction stove?”

This question was based on one of the questions in the Gallup World Poll that makes up the Optimism index (Gallup, 2020). It was chosen because of its relationship to both financial life and personal health - other indices covered by the World Poll.

The results show that overall, customers in all countries feel overwhelmingly positive that their standard of living is getting better (Table 48). However, there is no evidence that this perception changed between the two surveys. In both surveys, customers in Ghana were less positive than those in Kenya and Tanzania.

Table 48 Perception of change in overall standard of living - by country and survey

	Ghana		Kenya		Tanzania		Total	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
N	227	208	316	318	315	308	858	834
Getting worse (-1)	0%	0%	1%	1%	0%	0%	0%	0%
No change (0)	21%	18%	3%	6%	4%	4%	8%	8%
Getting better (1)	78%	82%	96%	94%	96%	96%	91%	91%
DK / can't say	1%	0%	0%	0%	0%	0%	0%	0%

In addition, respondents to the follow-up survey were asked specifically if the BURN EIC had led to any change in their quality of life. Over 90% of respondents felt that the EIC had improved their quality of life, and this was consistent across all countries (Table 49).

Table 49 “Has your quality of life changed because of the BURN Induction Stove?”

	Ghana	Kenya	Tanzania	Total
	(N=208)	(N=318)	(N=308)	(N=834)
Got slightly worse	0%	0%	1%	1%
No change	8%	4%	2%	5%
Slightly improved	38%	36%	43%	39%
Very much improved	54%	59%	53%	56%
Total	100%	100%	100%	100%

When respondents were asked for the reason for their response to this question, answers tended to focus on the stove itself e.g. cost, faults, use.

- Worse: the small number of issues included complaints about repayments and high costs; others highlighted positive features of the stove (e.g. reduced costs, clean), implying that quality of life was influenced by other factors.
- No change: the main reason was that life carried on as normal, with no relationship to the stove. Other issues were infrequent use of the stove, and high costs.
- Improved: most common issues are time savings related to speed of cooking, comparisons with previous cooking fuels (LPG and charcoal), reduced costs, ease of use (many

respondents referred to reduced stress associated with cooking), and reduced smoke linked to improved health.

Reasons for improved quality of life closely match the stated advantages of the stoves in Table 17, although it is interesting that so many respondents made the link to improved health.

8.6 Environmental Impact

Project fuel savings can be estimated by multiplying up the specific savings (Section 7.1) by the number of project customers in each country – see Table 50 and Table 51).

Table 50 Project annual fuel savings - Phase 2 customers only

		Ghana	Kenya	Tanzania	Total
		(N=366)	(N=3540)	(N=3539)	(N=7445)
Firewood	kg/year	6959	215165	67239	255197
Charcoal	kg/year	216845	612133	592122	2101192
Kerosene	litre/year	84	20107	5275	19956
Bioethanol	litre/year	0	100281	0	77189
LPG	kg/year	20693	151561	208427	391745

Table 51 Project annual fuel savings - Phase 1 and 2 customers

		Ghana	Kenya	Tanzania	Total
		(N=569)	(N=4060)	(N=4321)	(N=8950)
Firewood	kg/year	10819	246771	82096	306785
Charcoal	kg/year	337117	702051	722961	2525946
Kerosene	litre/year	130	23061	6440	23991
Bioethanol	litre/year	0	115012	0	92792
LPG	kg/year	32170	173825	254483	470936

CO₂ emissions reductions have been calculated using a method based on calculation tool for the Gold Standard Methodology for metered and measured energy cooking devices⁷. Calculations are only loosely based on this methodology because it assumes that electricity consumption from the EIC devices (the project devices) is measured, but the traditional fuel usage is not known. It, therefore, uses specific energy consumption figures to estimate the amount of baseline fuels that will be displaced by measured use of the project devices. In this study, both the baseline fuel consumption and the 'project' fuel consumptions (both traditional fuels and electricity) are known, so it is not necessary to include the steps that calculate baseline fuels displaced.

Baseline and project traditional fuel consumption figures are based on the figures in Table 26. As noted, electricity consumption figures need to be treated with caution because they reflect a mix of both cooking and non-cooking loads. It is also noted that there were challenges with getting accurate consumption data from survey respondents. Cooking electricity consumption figures have, therefore, been drawn from an analysis of stove usage data gathered by the BURN Nexus IoT platform, which

⁷ <https://globalgoals.goldstandard.org/431-2-mecd-er-calculation-tool/>

will be accurate⁸. The emissions analysis is based on the mean electricity consumption figures in Table 52.

Table 52 Average daily energy consumption of Phase 2 units - by country⁸

	Ghana	Kenya	Tanzania
N	346	3343	3338
Mean (kWh/day)	0.650	0.816	0.642
Median (kWh/day)	0.373	0.439	0.408

The analysis uses default emissions factors and fuel calorific values from the Gold Standard methodology, which are presented in Table 53.

Table 53 Default fuel related values

Calorific value (net)	Emissions factor (CO ₂)	Emissions factor (nonCO ₂)
TJ/tonne	tCO ₂ /TJ	tCO _{2e} /TJ
0.0156	112	9.46
0.0295	165.22	44.83
0.0473	63.1	0

The calculations include an allowance for leakage emissions, which are an allowance for some additional use of traditional fuels that should be displaced by the project stoves. For example, reduced demand for charcoal among project customers could suppress local charcoal prices, leading to increased use among other charcoal users. A default adjustment factor of 0.95 has been used, as recommended in Option 1 of the methodology⁹.

The methodology arrives at specific emissions reduction figure i.e. per stove. Project emissions reductions have been calculated by multiplying these figures by the number of stoves distributed in each country, drawn from the data analysis report⁸. Table 54 indicates that the 8,950 stoves distributed under the project save approximately 5,400 tCO₂ a year. This can be expected to amount to 27,000 tCO₂ over a five year device life span.

⁸ Scott, Batchelor, & Chaaya. 2025. Data Analysis Report (5) (D6 WP5)

⁹

file:///C:/Users/nigel/OneDrive/Innovate%20BURN%202022/60dB/Follow%20up%20survey/407_V4.0_EE_ICS_Reduced-Emissions-from-Cooking-and-Heating-TPDDTEC.pdf

Table 54 Summary of emissions reductions – by country

		Ghana	Kenya	Tanzania	
Baseline fuel consumption					
Wood	tonne/year	0.019	0.063	0.021	
Charcoal	tonne/year	0.642	0.219	0.247	
LPG	tonne/year	0.107	0.070	0.106	
Project fuel consumption					
Wood	tonne/year	0.000	0.003	0.002	
Charcoal	tonne/year	0.050	0.046	0.080	
LPG	tonne/year	0.051	0.027	0.048	
Electricity	kWh/year	237	298	234	
Country specific values					
fNRB		35%	38%	59%	
Grid emissions factor	tCO ₂ e/MWh	0.578	0.5	0.5	
Grid losses (Transmission & distribution)		20%	20%	20%	
Specific emissions					
Baseline emissions	tCO ₂ e/device/year	2.071	0.826	1.249	
Specific Project emissions:					
Traditional fuels	tCO ₂ e/device/year	0.203	0.177	0.418	
Electricity	tCO ₂ e/device/year	0.165	0.179	0.141	
Leakage		0.104	0.041	0.062	
Emissions reduction	tCO ₂ e/device/year	1.600	0.429	0.628	
Project emissions reductions					Total
Phase 2 devices		366	3541	3539	7446
Phase 2 emissions reduction	tCO ₂ /year	585	1519	2223	4327
Phase 1&2 devices		569	4060	4321	8950
Phase 1&2 emissions reduction	tCO ₂ /year	910	1741	2714	5365

It should be noted that there is some debate over the fNRB values that should be used in emissions reductions methodologies. The values in Table 54 have been taken from a 2024 study by Ghilardi & Bailis¹⁰, as the most recent source. Urban values have been used, where available (these tend to be slightly higher than urban values). These values are important because overall emissions reductions are highly sensitive to fNRB.

9 Summary of Key Findings

Customer experience

- 6% of units were no longer in service – most were repossessed.
- The vast majority of customers found the stove controls very easy to use.

¹⁰ https://cdm.unfccc.int/Sunset_CMS_ControlledSlots/public_inputs/sunsetcms/storage/contents/stored-file-20240624161613578/Report_on_Updated_fNRB_Values_20%20June%202024.pdf

- Most cooks in Ghana and Kenya control their stove in order to cook the food just right, while most cooks in Tanzania prioritise minimising costs.
- 16% of customers described some form of challenge that they had experienced with their stove (21% in Tanzania). The main issues were:
 - Cookware: not enough, too big (on balance)
 - Delays in unlocking stove after making payments
 - The stove uses more electricity than they had been led to believe.
- Net Promoter Score of 72% - regarded as excellent. Lower in Ghana (58%).
- Features influencing customer satisfaction (NPS) include:
 - Saving time – speed of cooking, and automatic control
 - Costs (cost savings are positive, high costs are negative)
 - Ease of use
 - Clean (positive)
 - Cookware (negative)
 - Delays in unlocking stove after making payments.
- Most customer expectations when purchasing the EIC were exceeded by the time of the follow-up survey. Ease of use was more highly appreciated than had been expected, as were the benefits of reduced smoke and improved safety.
- Insights into issues with cookware:
 - two thirds of customers across all countries felt the cookware provided with the stoves was not adequate;
 - across all countries, it is the small pot provided with the stove that customer use most;
 - satisfaction with pots drops with larger household sizes;
 - the majority of customers across all countries were not able to use their existing cookware with the BURN stove.
 - half of customers depended on the payment plan in order to buy the stove; this figure may be suppressed by positive experience of using the stove by the time of the follow-up survey .

Cooking behaviours

- Customers use EIC to prepare over 2 meals/day on average
- Higher numbers of meals cooked once people start use the EIC may reflect suppressed demand among households that use difficult fuels (notably charcoal).
- Heating water, preparing snacks, and making hot drinks were the events that increased the most, indicating that this is where suppressed demand lies
- Although 23% of respondents to the follow-up survey said that other household members did more cooking because of the EIC, these appear to be almost entirely women and may, again, reflect meeting suppressed demand. There is little evidence of greater male involvement in cooking.

Cooking fuel choices

- Most customers use the EIC to prepare the majority of their meals. 36% transition fully.

- The average number of cooking fuels used fell from a mean of 2.0 to 1.7, contradicting the received wisdom that households tend to stack new devices with old. It is consistent with the finding that 36% transitioned fully to electric cooking.
- Use LPG and charcoal (dominant fuels at baseline) have both been dropped by 45% of customers. A higher proportion of customers in Ghana dropped charcoal, whereas in Kenya, a higher proportion of customers dropped LPG.
- In Kenya, it appears that the EIC has displaced bioethanol – this needs further investigation to confirm.

Impacts of using EIC

Financial:

- The majority of respondents in all countries felt that their cooking costs had reduced since purchasing their EIC
- LPG costs reduced by between 51% in Ghana and 62% in Kenya,
- charcoal costs reduced by between 63% in Tanzania and 82% in Kenya.
- Non-electric fuel costs dropped by between 62% (Ghana and Tanzania) and 75% (Kenya)
- Even though the additional electricity consumption was similar across all three countries, differing tariffs mean that the additional costs vary widely.
- households in Ghana and Tanzania saw fuel cost reductions of over 50 USD/year; costs broke even in Kenya (a marginal increase of 6 USD/year).

Time saving:

- There is a widespread view among respondents that they been able to save time as a result of using the EIC
- cooking times appear to have dropped by approximately 15 minutes a day (15%); however this figure is dominated by respondents from Tanzania who saved 40 mins/day; those from Kenya saved 12 mins/day, and those from Ghana spent an additional 10 mins/day.
- When considering only customers who cook using a single fuel only (using data from both surveys), it can be seen that charcoal requires half an hour per day more than cooking with either electricity or LPG, i.e. the EIC does not offer substantial time savings over cooking with LPG.
- Time liberated from cooking was used leisure, household activities, and income generation.

Health:

- There is a strong view that family health has improved because of the EIC; this ranges from 40% in Ghana to 70% in Kenya and Tanzania.
- Incidence of two health issues (respiratory complaints - coughing, and difficulty in breathing) and sore eyes after cooking both dropped between the two surveys. High levels of complaints at the baseline survey were reported by customers from Ghana; these dropped at the follow-up survey (from 34% to 4%) to become only marginally higher than complaints reported by customers from Kenya and Tanzania (both dropped from 4% to 1%).

Gender based hazards:

- Reductions in experience of five cooking related hazards were evident; half of women noted some improvement in at least one issue.

- The issues that women felt were most affected by switching to cooking with electricity were injuries from cooking with fuels (e.g. burns, wounds) and physical pain and discomfort (e.g. back, joint, muscle pain).

Standard of living:

- Over 90% of respondents felt that the EIC had improved their quality of life.
- Respondents in all countries felt overwhelmingly positive that their standard of living is getting better; however, this was the case in both surveys so there is no evidence of any change in overall standard of living.

Environment:

- CO₂ emissions reductions have been calculated using a method based on calculation tool for the Gold Standard Methodology for metered and measured energy cooking devices. The calculations have used the default emissions factors and fuel calorific values provided.
- Baseline and project traditional fuel consumption figures are based on survey figures averaged out across all households in each survey. These have been multiplied by the number of Phase 1 and Phase 2 units deployed in the project.
- Cooking electricity consumption figures have been drawn from an analysis of stove usage data gathered by the BURN Nexus IoT platform.
- 8,950 stoves distributed under the project save approximately 5,400 tCO₂ a year. This can be expected to amount to 27,000 tCO₂ over a five year device life span.

Overall project impacts

Total project savings in each of these key impact areas have been estimated by multiplying up the savings and reductions deduced from the survey findings by the number of units deployed in the field (both Phase 1 and Phase 2 units). These have been summarised in Table 55. This may be slightly optimistic, given that the surveys were conducted with Phase 2 customers only and the Phase 2 units were expected to perform better than the Phase 1 units.

Table 55 Summary of key impact indicators (based on Phase1 and Phase 2 units)

	Ghana	Kenya	Tanzania	Total
Financial				
Annual fuel cost savings (USD/yr)	64,000	519,300	645,000	1,228,300
Time poverty				
Annual cooking time savings (hr/year)	35,200	299,500	1,051,900	1,316,200
Health				
Reduction in number of cooks experiencing issue	170	130	110	900
Gender				
Number of women benefiting from a reduction in cooking related gender based hazards	260	2,410	1,760	4,300
Overall				
Improving standard of living				No change
Environment				
Emissions reductions (tCO ₂ /year)	910	1,740	2,710	5,370

Annex 1 Example of Baseline Questionnaire

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BURN Baseline Induction Stove Survey

Kenya

A.	Respondent ID	
B.	Survey date	dd-mm-yyyy
C.	Survey start time	hr:min
D.	Research Assistant name	

Instructions for Research Assistant

- Text in grey and in [brackets] is guidance to navigate the survey (e.g. skip questions).
- Shaded answer options are to be read out. Unshaded options are not to be read out, only marked with answer.
- Response type is indicated for each question: single-select (SS), multiple-select (MS), numeric (NM), or open-ended (OE).

Hello, can I speak to [Customer Name]? My name is [Research Assistant Name] and I am calling from a company called 60 Decibels. I am conducting research on behalf of BURN to get your feedback on the cooking experience in your household. This interview is voluntary and will not affect the service you receive from BURN but if you have the time, we value your feedback so BURN can identify opportunities for improving.

C.	Do you have 20 minutes to talk to me? Survey_Conseil_1_mc_ss_v1_c=NG	Yes	No
			Could I call back at another time that is more convenient for you?

Great, before we start, I will just read out how the information you give us in this conversation will be shared and used.

- The information you share will only be seen by my team and BURN and its partners.
- We will ask you at the end of the interview once you know what you have shared with us, whether you would prefer to be kept anonymous or if you would be happy for us to share your name with BURN. No problem if you would like to be anonymous but note that BURN will not be able to respond directly to any complaints or problems you may share.
- We sent you an SMS recently informing you about this call. This SMS was sent on behalf of BURN from 60 Decibels.
- Thanks so much for being patient. I know that was a lot of information, but we'd love to get onto the fun part of the conversation.

G.	Are you happy to continue with the interview? Survey_Conseil_2_mc_ss_v1_c=NG	Yes Thanks so much, let's get started.	No No problem, thank you for your time. [End survey]
			No Could I speak to the primary cook? [if primary cook is not available, ask for their name and number] Name: Phone number: [If no, end interview]

Thank you. I will first start by asking you questions about the BURN induction stove.						
1.	Who first heard about the BURN induction stove in the household? (SS)	Respondent	Spouse/ Partner	Other female adult	Other male adult	Other: [record]
2.	How did [answer to Q1] first hear about the BURN induction stove? (SS)	Friends / Family	Shop	Company staff/ sales agent	Demo	Groups
		Marketing – fliers	Marketing – social media	Marketing – radio/TV	Other: [record]	Don't know/can't say
3.	Before purchasing the BURN induction stove, how familiar were you with induction stoves? Would you say: (SS)	Not familiar at all – I had no idea what an induction stove was before the BURN induction stove	Not very familiar – I knew what induction stoves are, but I had never used one before	Acquainted through others – I know someone who owns an induction stove, but I haven't seen it in operation.	Moderate familiarity – I've seen an induction stove in operation a few times, perhaps at a friend's or relative's place.	Experienced – I have owned or used an induction stove before purchasing the BURN induction stove
4.	Who made the decision to buy the BURN induction stove? (MS)	Respondent	Spouse/ Partner	Joint (respondent & partner)		
		Other female adult	Other male adult	Other: [record]		
5.	Which statement best describes [answer to Q4] when thinking about buying new innovations, products, or services? (SS)	[I am/they are] often the first person in the community to try new innovations [I am/they are] often in the earlier group of the community to try new innovations, but not the first [I/they] try innovations when I've seen some of the community try and test it first [I/they] try innovations when I've seen many of the community try and test it first for some time [I/they] try innovations only when most of the community have tried and tested them for some time				
6.	What motivated [answer to Q4] to purchase the BURN induction stove? (MS)	To save cooking time				
		Easy to use/It does not require full-time attention				
		To reduce spending				
		To reduce exposure to smoke				
		To improve safety of my family (fire hazards, burns etc.)				
		Cleaner kitchen and home				
		To cook a variety of meals				
		Save space				
		It's modern				
		Other: [record]				
Don't know/can't say						

7.	Who will make regular payments for the BURN induction stove? (SS)	Respondent	Spouse/Partner	Other female adult	Other male adult	Other: [record]
8.	Did you need to make an electrical upgrade – or get any electrical work done – in your home before you could safely use the induction stove?	Yes		No [Go to Q'0]		
9.	How much did it cost?	[currency]				
I want you to now think back on how cooking was done in your household prior the BURN induction stove.						
10.	What sources of energy or fuel were you using for cooking before the BURN induction stove? (MS)	Charcoal	Firewood	Kerosene	LPG/Gas	Electricity
		Bioethanol such as KOKO	Pellets (biomass)	Biogas	Solar	Other: [record]
11.	What were your two primary sources of fuel for cooking? (MS) Pro_G...rent_Primary_Energy_Source_ms_55	Charcoal [Go to Q'2]	Firewood [Go to Q26]	Kerosene [Go to Q33]	LPG/Gas [Go to Q48]	Electricity [Go to Q55]
	RA to ask Q12 – Q47 according to the two fuel types used by respondents.	Bioethanol such as KOKO [Go to Q40]	Pellets (biomass) [Go to Q16]	Biogas [Go to Q47]	Solar [Go to Q55]	Other: [record] [Go to Q55]
Thank you. I'd like to ask about your usage of charcoal prior to the BURN induction stove.						
12.	How often did you buy charcoal before the BURN induction stove? (SS)	Daily				
		Once a week				
		----- times a week [insert number]				
		Once a month				
		----- times a month [insert number]				
		Rarely (Less than once a month)				
On average, how much time was spent buying charcoal for cooking by household members per week? For: (NM)						
13.	Adult men	hours/week				
14.	Adult women	hours/week				
15.	Girls	hours/week				
16.	Boys	hours/week				
17.	On average, how many kilograms of charcoal did your household use for cooking in a week before the BURN induction stove? (NM)	Kg/week				
18.	How much did it cost you to buy 1 kg or 1 bag of charcoal? (NM)	1 kg/1 bag [record which unit used]				
Thank you. I'd like to ask about your usage of pellets prior to the BURN induction stove.						
19.	How often did you buy pellets before the BURN induction stove? (SS)	Daily				
		Once a week				
		----- times a week [insert number]				

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		Once a month	
		----- times a month	[insert number]
		Rarely (Less than once a month)	
On average, how much time was spent buying pellets for cooking by household members per week? For: (NM)			
20.	Adult men		hours/week
21.	Adult women		hours/week
22.	Girls		hours/week
23.	Boys		hours/week
24.	On average, how many kilograms of pellets did your household use for cooking in a week before the BURN induction stove? (NM)		Kg/week
25.	How much did it cost you to buy 1 kg or 1 bag of pellets? (NM)		
Thank you. I'd like to ask about your usage of firewood prior to the BURN induction stove.			
26.	How often did you buy firewood before the BURN induction stove? (SS)	Daily	
		Once a week	
		----- times a week	[insert number]
		Once a month	
		----- times a month	[insert number]
		Rarely (Less than once a month)	
On average, how much time was spent collecting or buying firewood for cooking by household members per week? For: (NM)			
27.	Adult men		hours/week
28.	Adult women		hours/week
29.	Girls		hours/week
30.	Boys		hours/week
31.	On average, how many kilograms of firewood did your household use for cooking in a week before the BURN induction stove? (NM)		Kg/week
32.	On average, how much money did the household spend on firewood for cooking in a week before the BURN induction stove? (NM)		[currency]/week
Thank you. I'd like to ask about your usage of kerosene prior to the BURN induction stove.			
33.	How often did you buy kerosene before the BURN induction stove? (SS)	Daily	
		Once a week	
		----- times a week	[insert number]
		Once a month	
		----- times a month	[insert number]
		Rarely (Less than once a month)	

On average, how much time is spent buying kerosene for cooking by household members per week? For: (NM)		
34.	Adult men	hours/week
35.	Adult women	hours/week
36.	Girls	hours/week
37.	Boys	hours/week
38.	On average, how many liters of kerosene did you spend on cooking in a week before the BURN induction stove? (NM)	Liters
39.	How much did it cost you to buy 1 liter of kerosene? (NM)	Ksh/ltr
Thank you. I'd like to ask about your usage of bioethanol prior to the BURN induction stove.		
40.	How often did you buy bioethanol before the BURN induction stove? (SS)	Daily Once a week ----- times a week [insert number] Once a month ----- times a month [insert number] Rarely (Less than once a month)
On average, how much time is spent buying bioethanol for cooking by household members per week? For: (NM)		
41.	Adult men	hours/week
42.	Adult women	hours/week
43.	Girls	hours/week
44.	Boys	hours/week
45.	On average, how many liters of bioethanol did you spend on cooking in a week before the BURN induction stove? (NM)	
46.	How much did it cost you to buy 1 liter of bioethanol? (NM)	
Thank you. I'd like to ask about your usage of biogas prior to the BURN induction stove.		
47.	On average, how many hours per week did you spend managing and maintaining the biogas system (e.g., collecting and preparing feedstock, cleaning) before using the BURN induction stove? (NM)	hours/week
Thank you. I'd like to ask about your usage of LPG prior to the BURN induction stove.		
48.	How often did you refill your Gas/LPG before the BURN induction stove? (SS)	Daily Once a week ----- times a week [insert number] Once a month ----- times a month [insert number] Rarely (Less than once a month)

On average, how much time is spent refilling the gas cylinder for cooking by household members each time you needed a refill? For: (NM)				
49.	Adult men	hours/week		
50.	Adult women	hours/week		
51.	Girls	hours/week		
52.	Boys	hours/week		
53.	How big is your Gas/LPG cylinder?	Kg		
54.	On average, how much did you spend refilling your Gas/LPG before the BURN induction stove? (NM)	Ksh		
[To be asked of all respondents] Thank you. I'd like to ask about your usage of electricity .				
55.	How often did you buy electricity units before the BURN induction stove?/How much did you pay for electricity per month, on average? (SS) RAs: Differentiate those on pre-pay (buy units in advance) and those on post pay (those who pay for their electricity bills after use).	Daily		
		Once a week		
		----- times a week	[insert number]	
		Once a month		
		----- times a month	[insert number]	
		Rarely (Less than once a month)		
			[currency]	
Did not use electricity before				
56.	On average, how many electricity units did you buy per week before the BURN induction stove? (NM)	units/week		
57.	On average, how much does one unit of electricity cost? (NM)	Ksh/unit		
58.	Which of these electric appliances do you use in your household? (MS)	Microwave	Rice cooker	Blender
		Kettle	Toaster	Electric Pressure Cooker
Thank you. I'd like to ask about cooking arrangements in your household before the BURN induction stove.				
59.	On average, how many meals did your household cook in a day before the BURN induction stove? (NM)			
60.	Which of the following did you do every day before the BURN induction stove? (MS)	Cook breakfast	Cook lunch	Cook Supper/Dinner
		Make hot drinks (e.g. tea, coffee, porridge)	Heat water for bathing or washing	Other: [record]
61.	What were the most common staple foods in your household? (OE) RAs: Staple food refers to food typically consumed regularly and in large quantities, forming a significant part of a household's diet.	"		

62.	Who typically did the cooking in the household before the BURN induction stove? (MS)	Respondent Spouse/partner of respondent (husband/wife) Other female adult Other male adult Female child Male child Other: [record]			
63.	On average, how much time did it take to cook meals each day (including snacks and heating water)? (NM)	_____ hours Record fractions e.g. 2 and 1/2			
Thank you. I would now like to ask the last few questions about you and your household. This helps BURN understand its customers better.					
64.	In the past two weeks, have you experienced any of the following symptoms while cooking? (MS) RA: This question is focused on respiratory health	Coughing	Difficulty breathing or Fast, short, rapid breaths	None of the above	
65.	How often do you experience sore or irritated eyes during or after cooking? (SS)	Never (You have not experienced sore eyes during or after cooking)	Occasionally (In the past month): (You have experienced sore eyes a few times in the past month.	Frequently (Up to most days a week): You experience sore eyes on multiple days each week, but not every day.	Daily (Every day): You experience sore eyes every day during or after cooking
66.	Now, I have a question I'd like to ask about your life more broadly. Right now, do you feel your standard of living is getting better, is the same, or getting worse since you purchased the BURN induction stove? (SS)	Getting better	The same	Getting worse	Don't know/Can't say
67.	In which county does your household reside?				
68.	Including yourself, how many people live in your home?	Adults (18 and over):		Children (under 18):	
69.	Over the past 7 days, did the household either purchase / consume / acquire any bread? (SS)	Yes	No	Don't know or can't say	
70.	Over the past 7 days, did the household either purchase / consume / acquire any meat or fish? (SS)	Yes	No	Don't know or can't say	
71.	Does your household own any towels? (SS)	Yes	No	Don't know or can't say	
72.	Are you willing to share your age with me? Pro_Age_Consest_msc_ss_v1_ENG	Yes		No [Go to H]	

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72A	Enter age: (NM) Pro_Age_num_v1_E-NG		
H	At the beginning of the call, I said we would keep your name and details private. Now that you know what you have shared with me today, would you like to share your name and your responses with BURN, or would you prefer to remain anonymous? (SS) Respondent: Anonymity (Check if 0 as v1_E-NG)	Yes	No No problem. We confirm we will keep your identifying details anonymous, but please note that BURN will not be able to respond directly to you on any complaints or problems. We will share this information from all respondents more broadly though. [Go to J]
I	Do you mind if some of your answers and your name are used when making marketing materials? (SS) Respondent: Anonymity Marketing (no ss v1_E-NG)	Yes, you may use	No, please do not use
J	Can you just confirm your name? (OE)		

Thank you very much for your time. We will use this information to inform BURN how they can improve their product for you and future customers. I have a great day!

K.	Customer gender Pro_Gender_mc_ss_v1_E-NG	Female	Male
L.	Survey end time Survey_End_time_v1_E-NG	hr:min	
M.	Language used Survey_Language_mc_ss_v1_E-NG		

Annex 2 Example of Follow-up Questionnaire

60 _ decibels

BURN (ECO) Induction Stove Follow-Up Survey

[Country]

A.	Respondent ID	
B.	Survey date	dd-mm-yyyy
C.	Survey start time	hr:min
D.	Research Assistant name	

Instructions for Research Assistant

- Text in grey and in [brackets] is guidance to navigate the survey (e.g. skip questions).
- Shaded answer options are to be read out. Unshaded options are not to be read out, only marked with answers.
- Response type is indicated for each question: single-select (SS), multiple-select (MS), numeric (NM), or open-ended (OE).

Hello, can I speak to [Customer Name]? My name is [Research Assistant Name] and I am calling from a company called 60 Decibels. I am conducting research on behalf of BURN (ECO) to get your feedback on the cooking experience in your household. This interview is voluntary and will not affect the service you receive from BURN (ECO) but if you have the time, we value your feedback so BURN (ECO) can identify opportunities for improving.

E.	Do you have 20 minutes to talk to me? Survey_Consent_1_mc_ss_v1_ENG	Yes	No Could I call back at another time that is more convenient for you?
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Great, before we start, I will just read out how the information you give us in this conversation will be shared and used.

- The information you share will only be seen by my team and BURN (ECO) and its partners.
- We will ask you at the end of the interview once you know what you have shared with us, whether you would prefer to be kept anonymous or if you would be happy for us to share your name with BURN (ECO). No problem if you would like to be anonymous but note that BURN (ECO) will not be able to respond directly to any complaints or problems you may share.
- We sent you an SMS recently informing you about this call. This SMS was sent on behalf of BURN (ECO) from 60 Decibels.
- Thanks so much for being patient. I know that was a lot of information, but we'd love to get onto the fun part of the conversation.

F. Informed consent	Are you happy to continue with the interview? Survey_Consent_2_mc_ss_v1_ENG	Yes Thanks so much, let's get started.	No No problem, thank you for your time. [End survey]
G	Are you the primary cook in your household? Pro_Product_Primary_User_mc_ss	Yes	No Could I speak to the primary cook? [if primary cook is not available, ask for their name and number] Name: Phone number:

	How often do you buy pellets since buying the BURN (ECO) induction stove? (SS) bespoke_	Once a week ----- times a week [insert number] Once a month ----- times a month [insert number] Rarely (Less than once a month)
9.	On average, how many kilograms of pellets does your household use for cooking in a week since buying the BURN (ECO) induction stove? (NM) bespoke_	Kg/week
10.	How much does it cost you to buy 1 kg or 1 bag of pellets? (NM) bespoke_	
Thank you. I'd like to ask about your use of firewood since buying the BURN (ECO) induction stove.		
11.	How often do you obtain (Buy or collect) firewood since buying the BURN (ECO) induction stove? (SS) bespoke_	Daily Once a week ----- times a week [insert number] Once a month ----- times a month [insert number] Rarely (Less than once a month)
12.	On average, how many kilograms of firewood does your household use for cooking in a week since buying the BURN (ECO) induction stove? (NM) bespoke_	Kg/week
13.	On average, how much money does the household spend on firewood for cooking in a week since buying the BURN (ECO) induction stove? (NM) bespoke_	[currency]/week
Thank you. I'd like to ask about your use of kerosene since buying the BURN (ECO) induction stove.		
14.	How often do you buy kerosene since buying the BURN (ECO) induction stove? (SS) bespoke_	Daily Once a week ----- times a week [insert number] Once a month ----- times a month [insert number] Rarely (Less than once a month)
15.	On average, how many liters of kerosene do you buy for cooking in a week since buying the BURN (ECO) induction stove? (NM) bespoke_	Liters

16.	How much does it cost you to buy 1 liter of kerosene? (NM) bespoke_	Ksh/ltr
Thank you. I'd like to ask about your use of Koko since buying the BURN (ECO) induction stove.		
17.	How often do you buy bioethanol (Koko) since buying the BURN (ECO) induction stove? (SS) bespoke_	Daily Once a week ----- times a week [insert number] Once a month ----- times a month [insert number] Rarely (Less than once a month)
18.	On average, how many liters of bioethanol do you buy for cooking in a week since buying the BURN (ECO) induction stove? (NM) bespoke_	
19.	How much does it cost you to buy 1 liter of bioethanol? (NM) bespoke_	
Thank you. I'd like to ask about your usage of biogas since buying the BURN (ECO) induction stove.		
20.	On average, how many hours per week do you spend managing and maintaining the biogas system (e.g., collecting and preparing feedstock, cleaning) after using the BURN (ECO) induction stove? (NM) bespoke_	hours/week
Thank you. I'd like to ask about your usage of LPG since buying the BURN (ECO) induction stove.		
21.	How often do you refill your Gas/LPG since buying the BURN (ECO) induction stove? (SS) bespoke_	Daily Once a week ----- times a week [insert number] Once a month ----- times a month [insert number] Rarely (Less than once a month)
22.	How big is your Gas/LPG cylinder? (NM) bespoke_	Kg
23.	On average, how much do you spend each time you refill your Gas/LPG since buying the BURN (ECO) induction stove? (NM) bespoke_	Ksh
[To be asked of all respondents] Thank you. I'd like to ask about your use of electricity .		
24.		Daily

	(Pre-pay) How often do you buy electricity units since buying the BURN (ECO) induction stove? (SS) OR (Post pay) How much do you pay for electricity per month, on average? IRAs: Differentiate those on pre-pay (buy units in advance) and those on post-pay (those who pay for their electricity bills after use). bespoke_	Once a week		
		----- times a week		[insert number]
		Once a month		
		----- times a month		[insert number]
		Rarely (Less than once a month)		
		[currency]		
		Does not use electricity		
25.	(Pre-pay Only) On average, how much do you spend on electricity units per week since buying the BURN (ECO) induction stove? (NM) bespoke_	[Currency]		
[To be asked of all respondents] Thank you. I'd like to ask about your use of the BURN (ECO) induction stove.				
26.	Was the set of pots for your induction stove adequate? (SS) bespoke_	Yes		No
27.	Which pot do you use most? (SS) bespoke_	Big Pot	Small Pot	Skillet
28.	Are you able to use any of your old pots on the induction stove? (SS) bespoke_	Yes		No
29.	Has your stove top cracked/scratched/broken? (SS) bespoke_	Yes		No [Go to Q31]
30.	What caused this scratch/ crack/ breaking? (OE) bespoke_	"		
31.	Has the induction stove ever failed? (SS) bespoke_	Yes		No [Go to Q33]
32.	If yes, where did you get it repaired? (SS) bespoke_	Not repaired	BURN repaired it	BURN replaced it
		Local repair shop	Specialized appliance shop	Other: [record]
33.	Do you use the BURN (ECO) induction stove for income - generation? (SS)	Yes		No
Thank you. I'd like to ask about cooking arrangements in your household with the BURN (ECO) induction stove.				

34.	What proportion of the household cooking is done with the induction stove? (SS) Cooking_Product_Use_Proportion	100%	75%	50%	25%	None
35.	On average, how many meals does your household cook in a day (NM) bespoke_					
36.	Which of the following do you do every day since buying the BURN (ECO) induction stove? Do you: (MS) RAs: we want to know all the activities a respondent does. bespoke_	Cook breakfast	Cook lunch	Cook Supper/Dinner	Make Snack(s)	
		Make hot drinks (e.g. tea, coffee, porridge)	Heat water for bathing, washing, or drinking	Other: [record]		
37.	Does your household cook more often now than before buying the induction stove? (SS) bespoke_	Yes			No [Go to Q39]	
38.	If yes, what additional cooking activities does your household do now? (MS) bespoke_	Cook breakfast	Cook lunch	Cook Supper/Dinner	Make Snack(s)	
		Make hot drinks (e.g. tea, coffee, porridge)	Heat water for bathing, washing, or drinking	Other: [record]		
39.	On average, how much time does it take to cook meals each day (including snacks and heating water)? (NM) Record fractions e.g. 2 and 1/2 bespoke_	Hours				
40.	Do other members of your household cook more often now because of the BURN (ECO) induction stove? (SS) bespoke_	Yes			No [go to Q42]	
41.	Who cooks more often, and why? (MS) bespoke_	Respondent		"		
Spouse/partner of respondent (husband/wife)		"				
Other female adult		"				
Other male adult		"				
Female child		"				
Male child		"				
Other: [record]		"				

Thank you for sharing this. Now I will ask a few questions about your BURN (ECO) Induction Stove and experience with [Company]:

42.	On a scale of 0 to 10, how likely are you to recommend the BURN (ECOA) induction stove to a friend or family member, where 0 is not at all likely and 10 is extremely likely? (SS) Exp_NPS_product_mc_ss_v1_ENG	0	1	2	3	4	5	6	7	8	9	10	
43.	[[If 0-6:]] What actions could [company] take to make you more likely to recommend the BURN (ECOA) induction stove to a friend or family member? Exp_NPS_product_detractor_oe_v1_ENG [[If 7-8:]] What specifically about the BURN (ECOA) induction stove caused you to give it the score that you did? Exp_NPS_product_passive_oe_v1_ENG [[If 9-10:]] What specifically about the BURN (ECOA) induction stove would cause you to recommend it to a friend or family member? (OE) Exp_NPS_product_promoter_oe_v1_ENG												
44.	Have you experienced any challenges with using the BURN (ECOA) induction stove? (SS) Exp_Challenges_Product_mc_ss_v1_ENG	Yes							No [go to Q48]				
45.	What was your challenge with the BURN (ECOA) induction stove? (OE) Exp_Challenges_oe_v1_ENG												
46.	Has your challenge using the BURN (ECOA) Induction Stove] been resolved? (SS) Exp_Challenges_Resolved_mc_ss_v1_ENG	Yes							No				
47.	Do you agree or disagree with this statement? Overall, BURN made it easy for me to handle my issue. (SS) Exp_Challenges_Ease_Of_Resoluti on_mc_ss_v1_ENG	Strongly agree		Somewhat agree		Neither agree or disagree		Somewhat disagree		Strongly disagree			
48.	How easy or difficult do you find using the controls on the induction stove? (SS) bespoke_	Very easy		Easy		Neither easy nor difficult		Difficult		Very difficult			
49.		Saving cooking time											
		Easy to use/It does not require full-time attention											

	What advantages/benefits have you experienced from using the BURN EIC? (MS)	Reduced spending Reducing exposure to smoke Improved safety of my family (fire hazards, BURN (ECOAs etc.) Cleaner kitchen and home Cooking a variety of meals Saving space It's modern Other: [record] Don't know/can't say				
50.	Which of the following best describes how you like to use the BURN INDUCTION STOVE when cooking? (SS) bespoke__	I use it at maximum power for fast cooking I adjust the controls to minimize cost I use whatever is needed to cook the food just right Other: [record]				
Thank you, now we'd like to understand what, if any, differences the induction stove has contributed to your life.						
51.	Has your quality of life changed because of the BURN (ECOAs) induction stove? Has it: (SS) Imp_QOL_mc_ss_v1_ENG	Very much improved	Slightly improved	No change	Got slightly worse	Got much worse
52.	[If improved] How has it improved? (OE) Imp_QOL_improve_oe_v1_ENG [If no change] Why has it not changed? (OE) Imp_QOL_nochange_oe_v1_ENG [If got worse] How has it become worse? (OE) Imp_QOL_worse_oe_v1_ENG					
53.	Has your average weekly spending on cooking fuel changed since having the BURN (ECOAs) induction stove? Please include any payments made for the induction stove. Has it: (SS) Imp_Cooking_Spending_mc_ss_v1_ENG	Very much increased	Slightly increased	No change	Slightly decreased	Very much decreased
54.	Has the health of you or your family changed over the last 3 months? Has it: (SS) Imp_Health_HH_Members_mc_ss_v1_ENG	Very much improved	Slightly improved	No change	Got slightly worse	Got much worse
55.	Have you noticed any change in the time spent on daily cooking activities because of your BURN (ECOAs) induction stove? For example, has the stove allowed you	Very much increased [go to Q56]	Slightly increased [go to Q56]	No change [go to Q58]	Slightly decreased [go to Q57]	Very much decreased [go to Q57]

	to free up time for other tasks you couldn't do before? (SS) Imp_Time_Spent_Activities_mc_ss_v1_ENG					
56.	You mentioned that your time spent on cooking has [increased or decreased]. Could you explain what has contributed to this change?					
57.	[if decreased in Q55] Please can you explain what you now do with your freed-up time? (OE) Imp_Usage_Free_Time_oe_v1_ENG					
58.	In the past two weeks, have you experienced any of the following symptoms while cooking? (MS) RA: This question is focused on respiratory health	Coughing	Difficulty breathing or Fast, short, rapid breaths		None of the above	
59.	How often do you experience sore or irritated eyes during or after cooking? (SS)	Never (You have not experienced sore eyes during or after cooking)	Occasionally (In the past month): (You have experienced sore eyes a few times in the past month.)	Frequently (Up to most days a week): You experience sore eyes on multiple days each week, but not every day.	Daily (Every day): You experience sore eyes every day during or after cooking	
60.	Have you experienced fewer symptoms of heat stress (e.g., excessive sweating, fatigue, dizziness) since adopting electric cooking? (SS)	Yes	No	Not Applicable		
61.	Have you noticed a reduction in any of these after switching to electric cooking? (MS)	Physical/sexual/verbal abuse during cooking fuel collection (e.g. when collecting gas cylinders, buying charcoal) Scolded, punished, or hit for burning food or taking too much time to collect cooking fuels Physical discomfort, pain, or long-term musculoskeletal issues (such as back, joint, or muscle pain) Injuries due to cooking fuel collection or preparation Injuries (such as burns, wounds, etc.) due to cooking with charcoal, kerosene, pellets, LPG, KOKO, etc. None of the above				
62.	Thinking about the BURN (EOA) induction stove payments, are they a heavy burden, somewhat of a burden, or not a problem? (SS) Exp_Repayment_Burden_mc_ss_v1_ENG	A heavy burden	Somewhat of a burden		Not a problem	
63.	Now, I have a question I'd like to ask about your life more broadly.					

	Right now, do you feel your standard of living is getting better, is the same, or getting worse since you purchased the BURN (ECO) induction stove? (SS) bespoke_	Getting better	The same	Getting worse	Don't know/Can't say
64.	Including yourself, how many people live in your home?	Adults (18 and over):		Children (under 18):	
65.	Are you willing to share your age with me? Pro_Age_Confirmed_mc_ss_v1_ENG	Yes		No [Go to H]	
62. A	Enter age: (NM) Pro_Age_num_v1_ENG				
H	At the beginning of the call, I said we would keep your name and details private. Now that you know what you have shared with me today, would you like to share your name and your responses with BURN (ECO), or would you prefer to remain anonymous? (SS) Respondent_Anonymity_Check_mc_ss_v1_ENG	Yes		No No problem. We confirm we will keep your identifying details anonymous, but please note that BURN (ECO) will not be able to respond directly to you on any complaints or problems. We will share this information from all respondents more broadly though. [Go to J]	
I	Do you mind if some of your answers and your name are used when making marketing materials? (SS) Respondent_Anonymity_Marketing_mc_ss_v1_ENG	Yes, you may use		No, please do not use	
J	Can you just confirm your name? (OE)				

Thank you very much for your time. We will use this information to inform BURN (ECO) how they can improve their product for you and future customers. Have a great day!

K.	Customer gender Pro_Gender_mc_ss_v1_ENG	Female	Male
L.	Survey end time Survey_End_time_v1_ENG	hr:min	
M.	Language used Survey_Language_mc_ss_v1_ENG		