USES & IMPACTS OF OFF-GRID REFRIGERATORS

Insights from Kenya, Tanzania and Uganda

AUGUST 2022
EFFICIENCY FOR ACCESS COALITION & 60 DECIBELS

Executive Summary

This report outlines findings of research commissioned by Efficiency for Access and carried out by the 60 Decibels team, where a total of 603 off-grid refrigerator customers were interviewed in Kenya, Tanzania and Uganda between 2018 and 2022.

To assess the impact of off-grid refrigerators on first-time customers and appraise user experience from operating an off-grid refrigerator, 60 Decibels carried out a total of 1,502 phone interviews targeting customers who had purchased their off-grid refrigerators from companies participating in the Global LEAP Results-based Financing programme (Global LEAP+RBF).

The sample size for this research is restricted to sales reported by companies participating in the Global LEAP+RBF programme.

Usage & Impact

79% of customers use their off-grid refrigerator for income-generating activities at their places of business. 37% of customers said their quality of life had significantly improved as a result of having the refrigerator. The most common outcomes were increased income (48%) and business growth (24%). A quarter of off-grid refrigerator users said their diets had changed since purchasing the refrigerator; the ability to diversify diets is a primary driver of these changes. There were also reports of changes in frequency of market visits and cooking in bulk.

Satisfaction & Experience

The Net Promoter Score® (NPS) for refrigerators is 43, which is good. Promoters value good quality and food preservation attributes of the off-grid refrigerator. Detractors complain about poor customer service, inadequate refrigerator capacity and the price. 28% of customers had experienced challenges with using their off-grid refrigerator. 48% had issues with the product parts and the battery. 82% of users interviewed rated the off-grid refrigerator as ‘very good’ or ‘good’ value for money, and 8 in 10 could not easily find a good alternative to the off-grid refrigerator. However, 50% said they have to make unacceptable sacrifices to make payments for the product, with 28% cutting back on consumption of any kind to pay the financing.

Profile & Aspirations

A typical customer was male, 39-years-old and living in a household with five other occupants. Companies participating in the Global LEAP+RBF programme are doing a good job at reaching low-income customers, with 50% living below the international relative poverty line. 50% would like to purchase additional solar appliances in the future, particularly solar TVs and solar water pumps.

Performance Snapshot

Overall, companies participating in the Global LEAP + RBF programme are serving lower income customers who had no prior access to off-grid refrigerators and little access to good alternatives. Maximising impact and resolving customer challenges are key areas to focus on.

Profile

50%

live below the poverty line

Impact

37%

quality of life 'very much improved'

Type of Impact

- 48% reported increased income
- 24% talked about business growth
- 11% reported increased personal savings

Improved Energy Access

84%

first time accessing off-grid refrigerators

Net Promoter Score®

43

on a -100 to 100 scale

Challenges

28%

report challenges: 52% not resolved

Customer Effort Score

3.3

out of a maximum score of 5

Alternatives

83%

don't have easy access to a good alternative

Customer Voice

"For my business, refrigeration is key because I deal with food which is highly perishable so investing in a good reliable refrigerator goes without question." – Female, Kenya

Data Summary

Refrigerator Performance: 1,502 off-grid refrigerator customer phone interviews in Kenya, Tanzania and Uganda in 2018-2022.

Quintile Assessment compares Company Performance with 60dB Energy Benchmark comprised of 119 companies, 35 countries and 51,000+ customers. Full details can be found in Appendix.

Performance vs. 60dB Benchmark

– TOP 20%
– TOP 40%
– MIDDLE
– BOTTOM 40%
– BOTTOM 20%

Contents

Here's what you can find in this report.

We hope you enjoy reading all about off-grid refrigerators and their impact in Africa.

"Before getting the fridge, I was only capable of selling two crates of soda and three packs of water. Now after purchasing the fridge, I have been able to do five crates of soda and five packs of water in a week." – Female, Kenya

Introduction

As part of an effort to scale markets for super-efficient appliances, the Efficiency for Access partnered with 60 Decibels to explore the benefits and potential challenges experienced by off-grid refrigerator customers.

Thanks to:

> UK aid

> EnDev

> Power Africa

> USAID through Powering Agriculture: An Energy Grand Challenge (PAEGC) for generously supporting this programme.

Efficiency for Access is a global coalition promoting energy efficiency as a potent catalyst in clean energy access efforts. Since its founding in 2015, Efficiency for Access has grown from a year-long call to action and collaborative effort by Global LEAP and Sustainable Energy for All, to a coalition of 20 donor organizations. Coalition programmes aim to scale up markets and reduce prices for super-efficient, off- and weak-grid appropriate products, support technological innovation and improve sector coordination. Current Efficiency for Access members lead programmes and initiatives spanning three continents, 62 countries and 34 key technologies.

Global LEAP activities seek to transform the global market for off-grid energy products by harnessing the power of marketplace competition to drive technical and market innovations in the off-grid appliance sector. This unique programme has evolved into a trusted global brand that serves as the de facto source of accurate, actionable information about the quality and energy performance of off-grid appliances.

The Global LEAP programme is implemented through the Efficiency for Access Coalition and managed by CLASP, with support from Power Africa, UK aid, EnDev, Powering Agriculture and USAID. Programme partners include Ideas to Impact, IMC Worldwide, Energy 4 Impact, Acumen, Shell Foundation and GOGLA. More information is available on the Efficiency for Access website.

60 Decibels is a tech-enabled impact measurement company working in over 75 countries. Our repeatable, rapid approach to gathering impact indicators and customer insights (primarily through phone-based surveys) provides our clients with genuine benchmarks of impact performance. These benchmarks enable a deeper understanding of impact, and help to inform better decision-making, as well as data-led impact management. Our clients include over 550 of the world’s leading impact investors, companies, foundations, corporations, NGOs and public sector organisations.

We are proud to be a Climate Positive company.

60 Decibels has offices in London, Nairobi, New York and Mumbai. To learn more, visit www.60decibels.com.

Data Collection

60 Decibels conducted phone interviews in Kenya, Tanzania and Uganda between August 2018 and March 2022, with customers who purchased off-grid refrigerators from companies participating in the Global LEAP+RBF programme. The interviews were conducted in local languages by 60 Decibels researchers.

603 baseline interviews were conducted between August 2018 and March 2021. 417 follow-up interviews and 482 longitudinal interviews were conducted between January 2020 and March 2022. Different metrics were collected during these rounds. We have aggregated all the data collected on these customers to present the insights here. We used averages equally weighted by company in the report. For core indicators, we extracted the differences over the years to illustrate any changes with the growth and development of the market.

To begin with, this is who we spoke to and who the data presents insights on.

6 Companies

603 Voices

Participating Companies

Devergy

Global Ice Tec

M-KOPA

SolarNow

SUNami Solar

Ultratec

Breakdown By Country

Kenya	49%
Uganda	49%
Tanzania	2%

Off-grid Refrigerators

With a wealth of potential developmental impacts brought by refrigerators, the off-grid refrigerator has the potential to play a critical role in improving the incomes and wellbeing of rural households while unlocking specific benefits for women and girls.

Off-grid refrigerators are an emerging appliance with high demand, but low market penetration. 14% of off-grid households surveyed in ten sub-Saharan African countries ranked refrigerators as the first appliance they would purchase upon electrification.[1*] Yet, only 4% of rural households own a refrigerator, and up 16% in rural parts of middle-income countries such as India.[2] Sales of off-grid refrigerators remain low (6,315 in 2021),[3] only a tiny fraction of 22 million units of conventional AC refrigerators sold across sub-Saharan Africa in 2019.[4]

Affordability and availability remain the largest barriers to accessing off-grid refrigerators. These are coupled with an underdeveloped commercial market without strong customer support and after-sale services. If these barriers are addressed, the market is estimated to reach US$14B by 2030.[5]

Refrigerators have the potential to unlock an array of social and economic benefits for consumers living in off-and weak-grid areas. They contribute to various Sustainable Development Goals, from improving health and productivity, to reducing the domestic burden of women and children who are usually responsible for food gathering and preparation. Refrigeration also enables income-generating activities for small businesses through the sale and storage of drinks and perishable items. However, refrigerators are one of the most difficult products to optimise for energy efficiency while maintaining prices that off-grid consumers can afford.

To catalyse the market, the inaugural Global LEAP Awards competition for off-grid refrigerators took place in 2017, with a second competition in 2019, recognising products that offer a strong balance across price, energy efficiency, performance and reliability. Winners and Finalists of the competition were also eligible to participate in the Global LEAP Results-based Financing programme (Global LEAP+RBF), which provides financial incentives to appliance manufacturers and off-grid solar distributors who distribute large quantities of Global LEAP Awards Winning and Finalist Products.

Between 2019 and 2020, Global LEAP+RBF programme facilitated the procurement and distribution of over 4,800 Global LEAP Awards Winning and Finalist refrigerators in East Africa, Senegal and Zambia, sold by nine participating distributors. This represents more than a third of the off-grid refrigerator market (37%), as GOGLA sales data records 13,376 refrigerators sold in East Africa in 2019 and 2020, cumulatively. 60 Decibels conducted thousands of interviews with these consumers to verify the purchase of eligible products and collect additional consumer insights.

*All references are listed in the Appendix.

Customer Profile & Aspirations

- Demographics
- Prior cooling sources
- Adoption persona
- Availability of alternatives
- Income profile
- Future aspirations

"The refrigerator does not use electricity, which is not available in our area. Solar works any time of the day and at night because of the good battery." – Female, Uganda

Customer Profile: Demographics

38% of refrigerator customers are female, the average household size is 5.7 and there is a wide range in age, with the average being 39 years old.

There was a wide degree of variability in age demographics, with customers' ages ranging between 21 and 72, suggesting that off-grid refrigerator value propositions are appealing to a broad demographic.

However, the average age, household size and education of these customers has remained fairly consistent from 2018 to 2021.

Conversely, we saw that female reach has increased from 25% in 2018/19, to 45% in 2021. Although there has been an increase in domestic sales, sales to businesses remain the most viable.

Point of Discussion

Could the increase in female customers be driven by campaigns targeting women?

About the Customers We Spoke With

	2018/19 Data (n = 126)	2020 Data (n = 259)	2021 Data (n = 218)	Average (n = 603)
% of Total Sample	21%	43%	36%	--
% Female	25%	38%	45%	38%
% Male	75%	62%	55%	62%
% Business	80%	81%	70%	79%
Average age (years)	40	38	39	39
Average household size (# of people)	6.8	5.9	5.0	5.7
% Rural	--	87%	72%	76%
% At least upper secondary educated in household	29%	32%	31%	30%

Customer Profile: Prior Cooling Sources

84% of customers are accessing an off-grid refrigerator for the first time, which suggests that companies participating in the Global LEAP+RBF programme are reaching an under-served customer base.

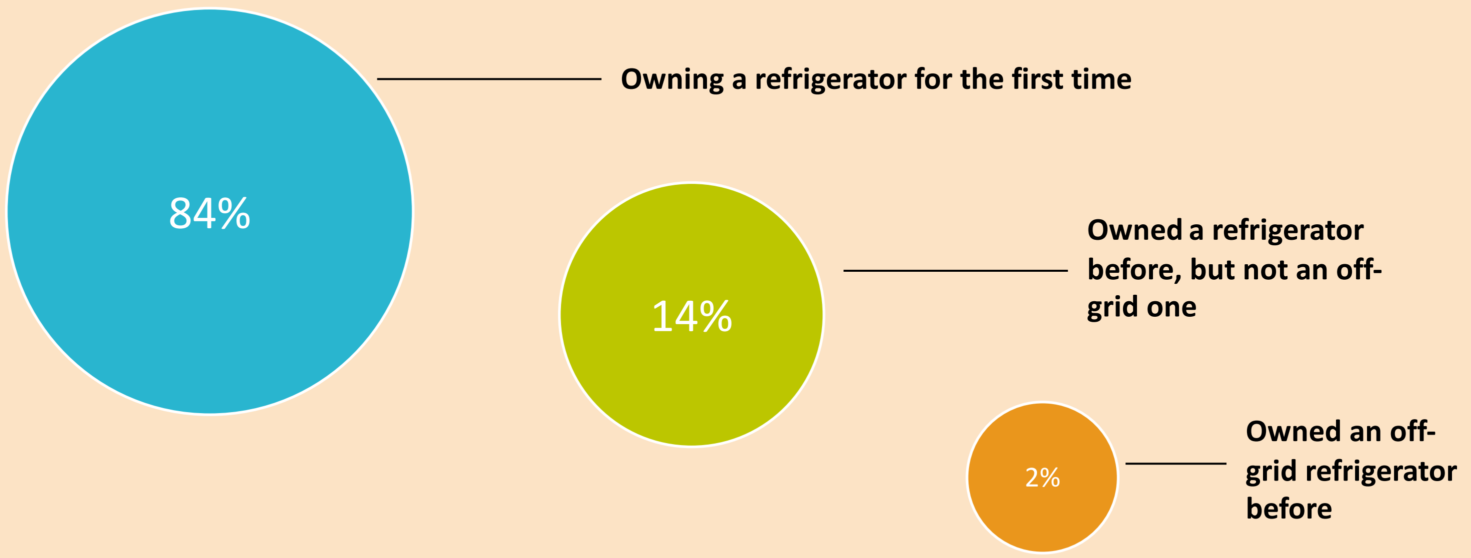
Majority of customers are owning a refrigerator for the first time. Prior to purchasing their off-grid refrigerator, 91% of the respondents did not have any cooling alternative to keep their food or drinks cool, while 9% used a friend's or family member's fridge. Also, 85% do not have grid electricity.

The most accessible and relatively affordable refrigerators in the represented countries are AC refrigerators that run on main power.

Poor grid connectivity and lack of affordable refrigerators could be the main contributing factors to low uptake of refrigerators.

First Access

Q: Did you own a refrigerator before this recent purchase of an off-grid refrigerator? (n = 584)



Customer Profile: Adoption Persona

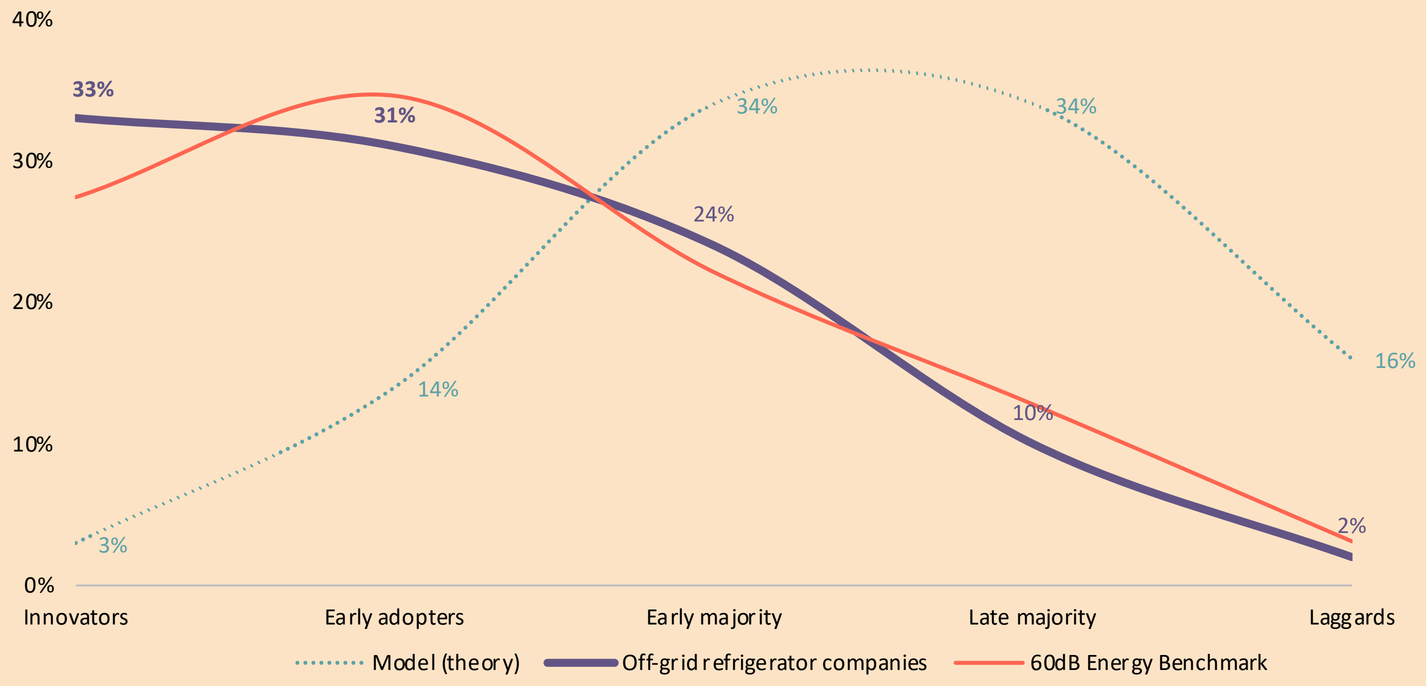
Off-grid refrigerator customers are more likely to be innovators or early adopters of products/technology in a market (64%) than average, when compared to the model (17%).

This metric helps us understand off-grid refrigerator customers' likelihood of adopting new products. This is most often shaped by education, risk appetite, income level and personality, as well as access. The theory comes from the *Diffusion of Innovations* by Rogers (1962).

The 64% of customers categorised as Innovators or Early Adopters are likely to try new products before the general market.

Innovation Adoption Persona of the Off-Grid Refrigerator Customers We Spoke With*

Data relating to customer characteristics (n = 556)



*We did not use these categories in the question, but created statements to describe each category. A customer would cthen hoose one that described them best.

Customer Profile: Availability of Alternatives

8 in 10 customers could not easily find a good alternative to the off-grid refrigerator.

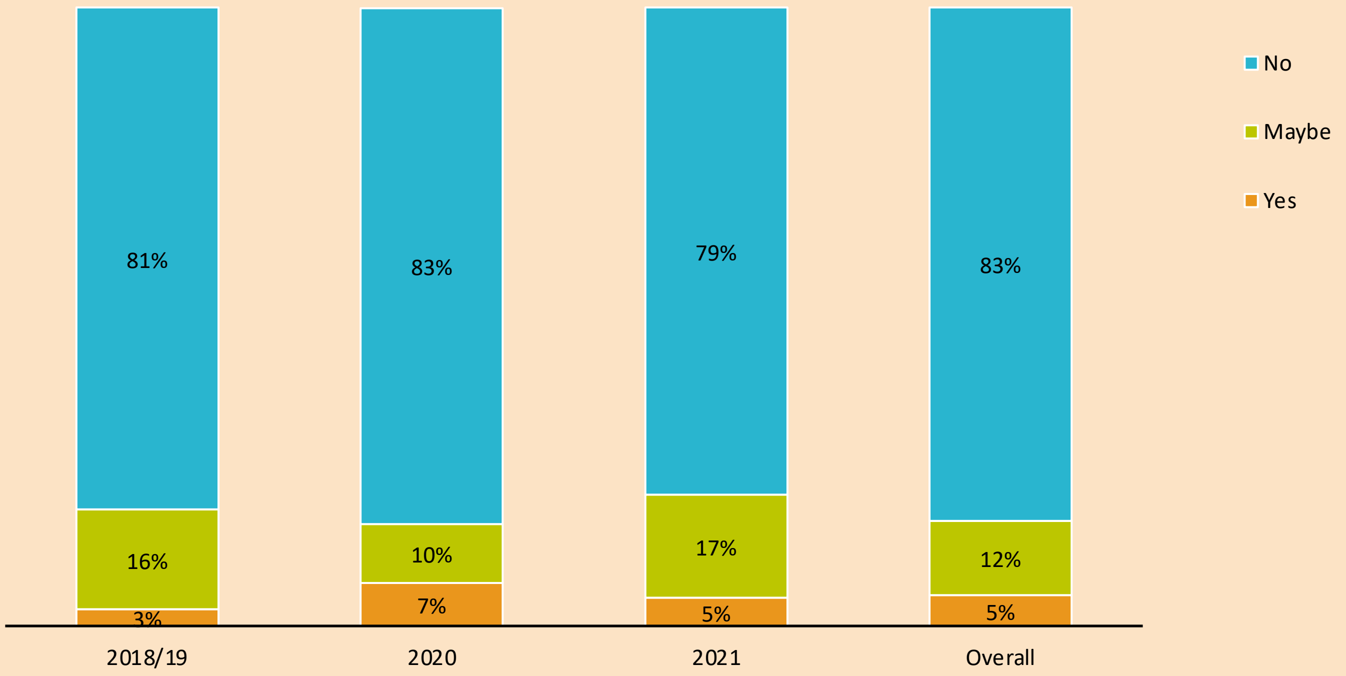
Availability of alternatives provides insight into the competitive landscape, and the degree to which companies are providing a scarce product/service. This also helps to understand customers' decision making, especially in relation to product options within the local market.

The proportion of customers who could not easily find a good alternative remained high across the interview period, which suggests that these companies are serving a customer base that doesn't have many perceived options or choice. This could indicate a need for enhanced consumer awareness on the available technologies.

Male customers were more likely to report having access to alternatives (7%), compared with female customers (2%).

Access to Alternatives

Q: Could you easily find a good alternative to [Company] off-grid refrigerator? (n = 570)



Customer Profile: Income Inclusivity

The income profile of customers that companies participating in Global LEAP+RBF programme in Kenya are serving is in line with the national average, suggesting they are doing a good job at reaching low income customers.

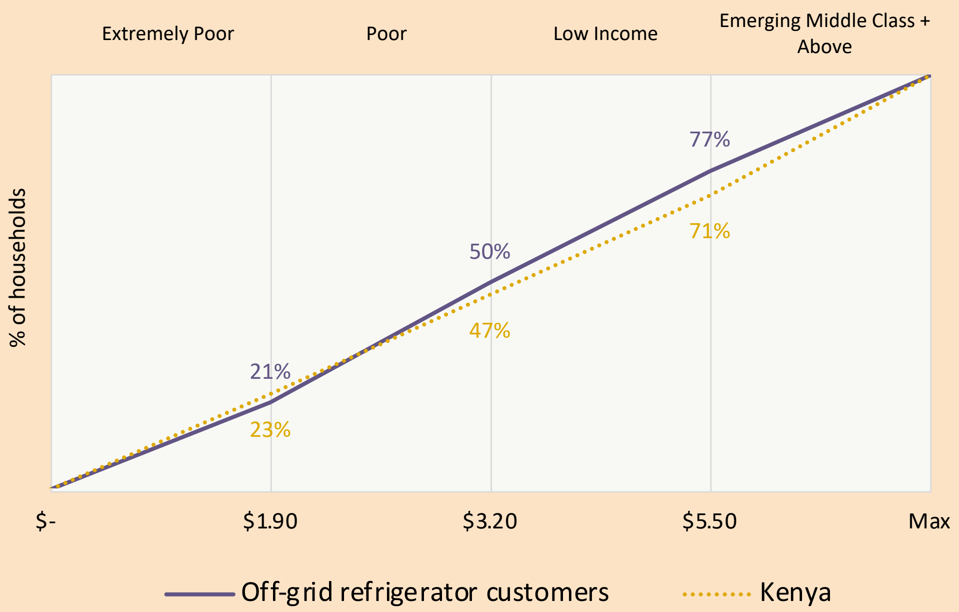
Using the Poverty Probability Index®, we measured how the income profile of Global LEAP+RBF customers compares to the Kenya average. This comparison reveals whether off-grid refrigerators are under- or over-penetrating certain income segments. It is a way of gauging one type of inclusivity: income level.

Kenya is classified as Lower-Middle Income country by the World Bank, meaning that those that live below $3.20/day are considered to be living in poverty.

The Inclusivity Ratio for companies selling refrigerators within the Global LEAP+RBF is 1.02, which is higher than the 60dB Energy Inclusion Benchmark of 0.80.

Income Distribution of Global LEAP+RBF Company Customers Relative to Kenya Average

% living below $xx per person / per day (2011 PPP) (n = 296)



Inclusivity Ratio

Degree that companies participating in Global LEAP+RBF programme reach low-income customers in Kenya

1.02x

We calculate the degree to which companies participating in the Global LEAP+RBF programme are serving low-income customers compared to the general population. 1 = parity with national population ; > 1 = over-serving; < 1 = under-serving.

See Appendix for calculation.

Future Aspirations

Information on the aspirations customers had for accessing new and different appliances may provide insight for companies when thinking about bundled offerings, cross-product marketing and selling additional products.

50% of customers said they would like to purchase another solar product in the future. These insights suggest that companies are doing a good job at demonstrating the benefits of solar-powered technology and the value proportion is seemingly beneficial to customers.

Nearly half of customers would like to purchase additional appliances in the future, particularly solar television sets and water pumps.

Interest In Purchasing Other Solar Products

Multiple choice (n = 356)

- **45%** would like to purchase an upgraded or additional off-grid refrigerator
- **43%** would like to purchase a solar television, 23% already owned
- **27%** say they'd like to buy a solar water pump, 1% already owned
- **26%** wanted to buy an improved cookstove, 7% already owned
- **24%** are looking to buy an upgraded or additional solar home system*, 20% already own
- **22%** would like to buy a solar fan, 2% already owned

*Off-grid refrigerators were bundles with dedicated solar home systems.

Satisfaction & Experience

- Acquisition channel
- Motivation to purchase
- Net Promoter Score & drivers
- Value for money
- Customer challenges
- Over-Indebtedness

"The fridge keeps going on and off. The power of the battery has decreased, and the agents have failed to give me a good solution." – Male, Uganda

Acquisition Channel & Decision to Purchase

40% of customers heard about the off-grid refrigerator through word of mouth. Pursuing tactics like promoting brand ambassadors and client referral in communities could help reach more customers.

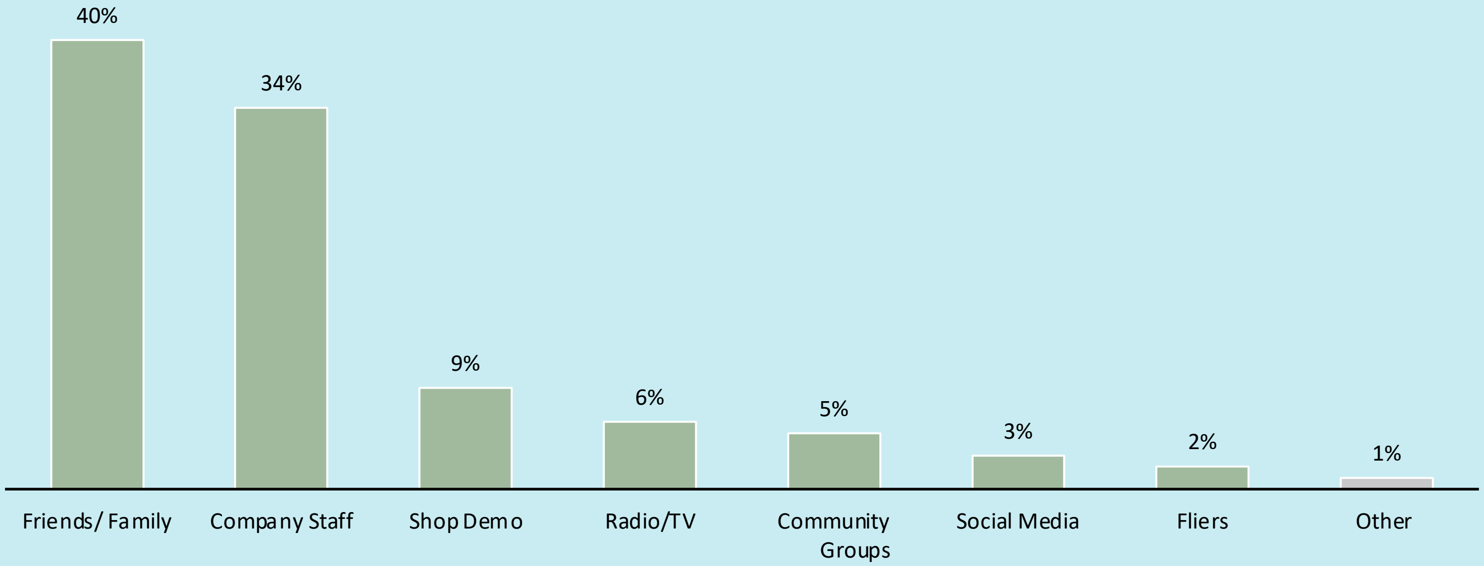
Hearing about how customers find out about the off-grid refrigerator provides insights into how marketing and sales strategies are working and who is being targeted.

For example, for 62% of customers, it was the male head of household who first heard about the off-grid refrigerator. This may suggest that there are certain sales and marketing strategies that are better reaching men versus women. Actively reaching women may require more consideration of acquisition channel opportunities.

In 56% of households, it was the male adult(s) alone who made the decision to purchase the off-grid refrigerator.

Acquisition Channel

Q: How did you/they hear about it? (n = 434)



Motivation to Purchase

Finding out what motivated customers to purchase an off-grid refrigerator can offer insights into how to best target and market to potential users.

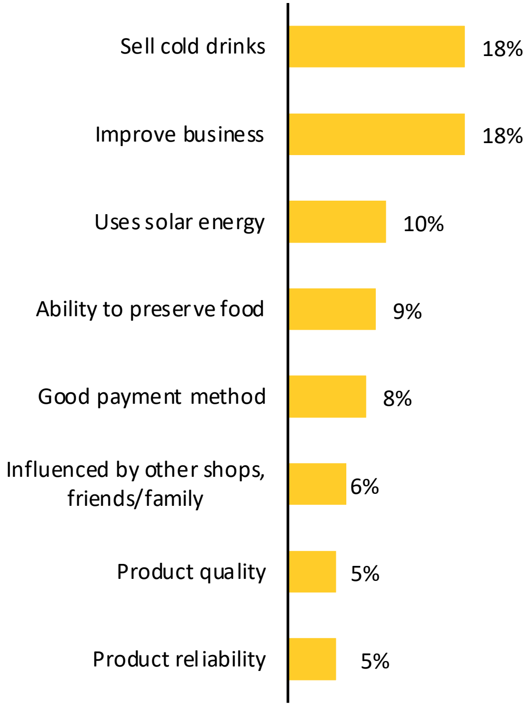
Most of the respondents were motivated to purchase the solar product to sell cold drinks and increase their income.

We also asked a closed-ended question to find out what customers were interested in using the refrigerator for before purchasing. Almost half of those interviewed (45%) mentioned they wanted to generate more income, 31% wanted to enjoy cold drinks, and 21% talked about reducing food spoilage.

Selling cold drinks and the prospect of boosting their business were the top two motivators for purchasing an off-grid refrigerator.

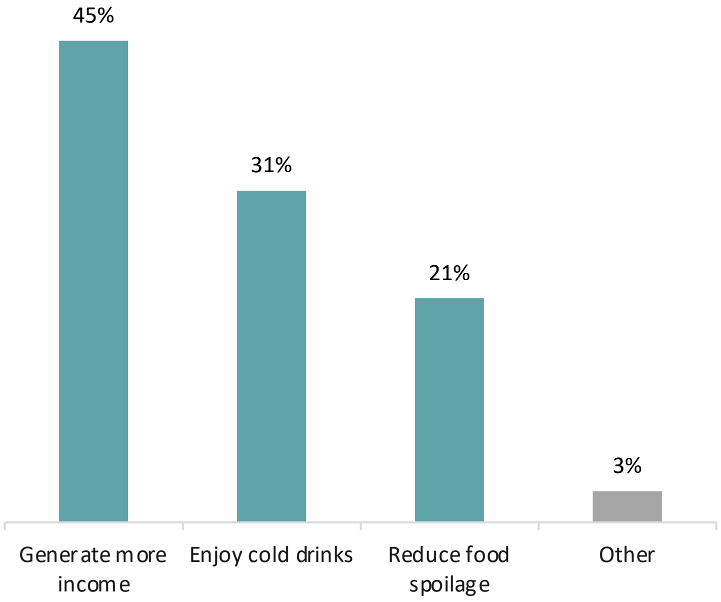
Motivation to Purchase

Q: What motivated you to purchase this new off-grid refrigerator? (n = 589). Open-ended, coded by 60 Decibels.



Interest in Using the Refrigerator

Q: Were you interested in using the refrigerator for any of the following: (may select multiple) (n = 523)



Customer Satisfaction: Net Promoter Score

The Net Promoter Score® for off-grid refrigerators is 43*, which is good.

The Net Promoter Score® is a gauge of customer satisfaction and loyalty. Anything above 50 is considered very good. A negative score is considered poor.

Asking respondents to explain their rating provides insight into what they value and what creates dissatisfaction. These details are on the next page.

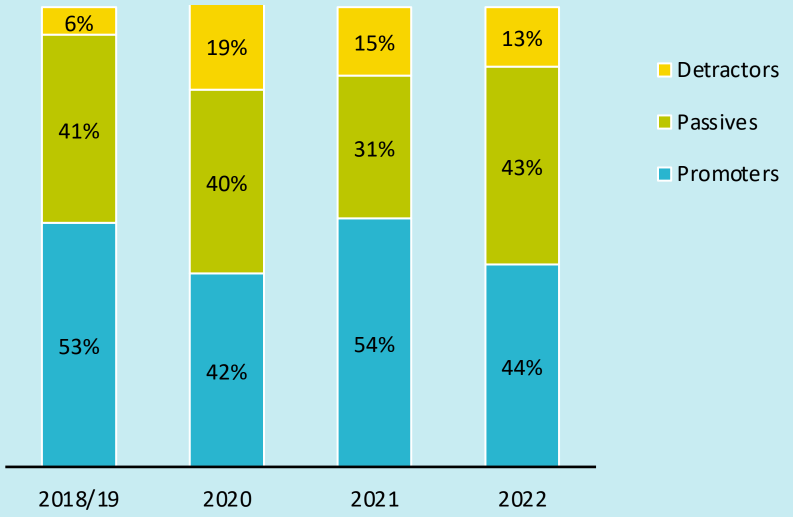
Challenge rates and issue resolution shapes NPS too:

- 43 NPS for customers with no challenges
- 29 NPS for those with resolved challenges
- -8 for those with unresolved challenges

There was no difference in NPS by gender.

Net Promoter Score® (NPS)

Q: On a scale of 0 to 10, how likely are you to recommend the [company] off-grid refrigerator to a friend or family member, where 0 is least likely and 10 is most likely? (n = 791)



NPS	47	23	39	32
n =	114	200	284	195

*Weighted average by company

NPS Benchmarks

Selected 60 Decibels Benchmarks

60 Decibels Global average 588+ companies	**43**
East Africa average 156+ companies	**41**
Energy average 119+ companies	**48**

"Increased efficiency; meals are prepared on time without the hustle of going to the market to buy frequently. There is also more time management." – Male, Kenya

NPS Drivers

Promoters value good quality and food preservation attributes of the off-grid refrigerator. Detractors complain about poor customer service, inadequate refrigerator capacity and the price.

53% Promoters :)

They love:

1. Good quality of product
   (59% of all Promoters / 31% of all Respondents)
2. Business improved/ business growth
   (9% of Promoters/ 5% of all Respondents)
3. Preserves food/ keeps fresh longer
   (6% of all Promoters/ 3% of all Respondents)

“The fridge is good and does not produce a foul smell. It is easy to clean. Anyone buying it for home or business use should be in for a treat.” – Female, Kenya

Tip:

Highlight the above value drivers in marketing.

Promoters are powerful brand ambassadors — can you reward them?

37% are Passives : |

They like:

1. Good quality of product
   (54% of Passives / 18% of all Respondents)
2. Preserves food/ keeps fresh longer
   (13% of Passives / 4% of all Respondents)

But complain about:

1. Inadequate refrigerator capacity
   (10% of Passives/ 3% of all Respondents)

“Apart from the issue I had at the beginning, the fridge has been working very well.” – Male, Uganda

Tip:

Passives won’t actively refer you in the same way that Promoters will.

What would it take to convert them?

10% are Detractors : (

They want to see:

1. Improved customer experience
   (16% of all Detractors/ 2% of all Respondents)
2. Reduced price
   (11% of all Detractors / 2% of all Respondents)
3. Improved refrigerator capacity
   (8% of all Detractors/ 1% of all Respondents)

“It was working well, but now I have never been assisted. The agent who brought it said I am all by myself, he cannot help me!” – Male, Uganda

Tip:

Negative word of mouth is costly.

What’s fixable here?

Value for Money

82% of customers consider their off-grid refrigerator ‘very good’ or ‘good’ value for money.

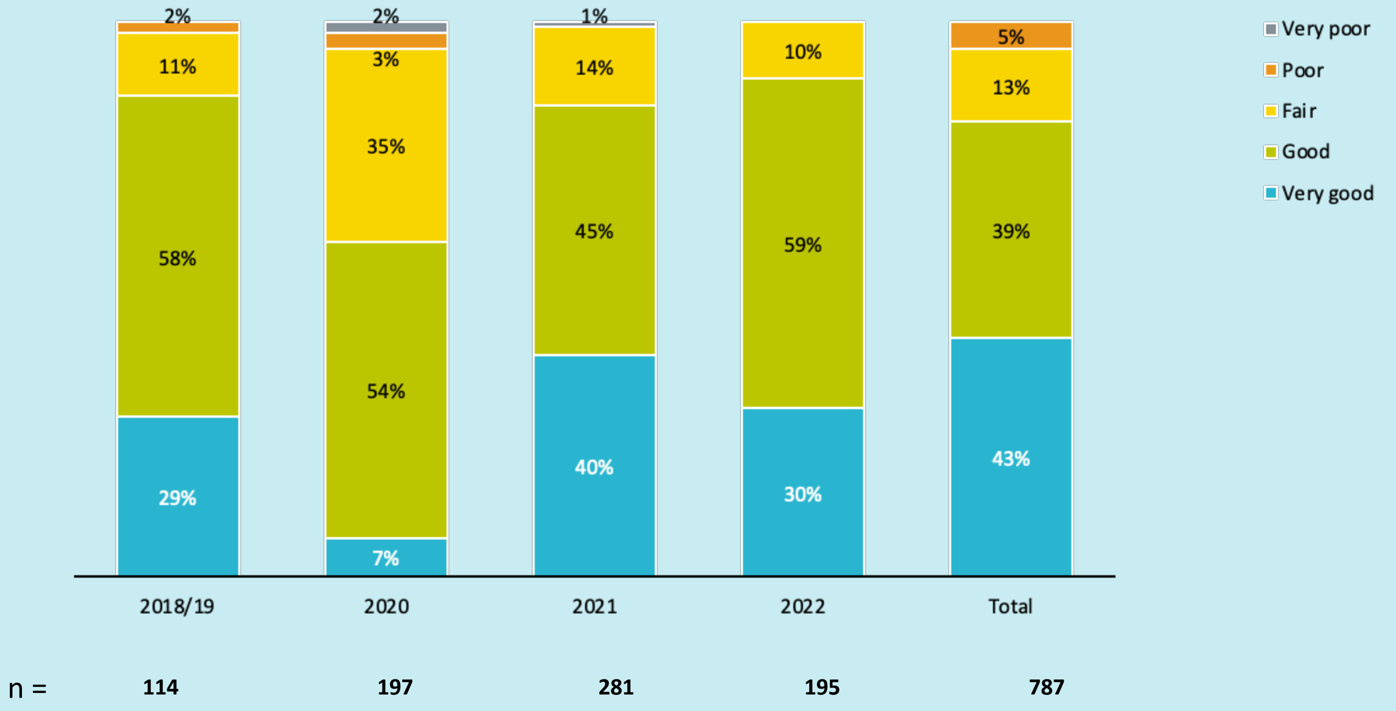
Value for money rating significantly decreased in 2020, with only 61% rating ‘very good’ or ‘good’, compared to 87% in 2018/19. Given that the majority of customers use their refrigerator at their place of businesses, they may be weighing their purchase costs against the unfavourable economic situation brought on by the COVID-19 pandemic.

The NPS for customers who rated their refrigerator to be ‘very good’ value for money was higher (79) when compared to the NPS for those who rated it as ‘very poor’ (-33).

Female customers were more likely to rate the value for money of their refrigerator to be ‘very good’ (32%), than male customers (25%),

Value for Money

Q: How do you rate the value for money of your off-grid refrigerator? (n = 787)



Over-Indebtedness

We asked the 96% of customers who bought their product on credit how they felt about their repayments and whether they ever struggle to make payments for their off-grid refrigerator. 33% of customers say they have other loans or credit.

In all households, the loan repayments are the responsibility of the male head of the household.

Though 52% of users are able to service their repayments without concern, there is evidence of over-indebtedness impacting customers.

Male customers were slightly more likely to report that their repayments were not a burden (58%), compared to female customers (51%).

Nearly half of customers have to make unacceptable sacrifices in order to make product repayments.

Over-Indebtedness Metrics

<table>
<tr><td>Repayment for the off-grid refrigerator</td><td colspan="2">69% were using their income to make payments for their off-grid refrigerator
27% used their savings
4% borrowed from a formal or informal lender</td></tr>
<tr><td>Repayment burden</td><td colspan="2">48% of customers said that their solar product repayments were a burden, with 13% saying it is a ‘heavy burden’.
52% of customers say the repayments are not a problem.</td></tr>
<tr><td>Consumption</td><td colspan="2">28% of customers said they sometimes have to cut back consumption to make repayments, and 2% do regularly.
23% rarely have to cut back consumption. However, for the majority (47%) they never have to.</td></tr>
<tr><td rowspan="2">Unacceptable sacrifices</td><td colspan="2">50% have had to make unacceptable sacrifices in order to make repayments; of these, 2% say it is ‘regularly’.</td></tr>
<tr><td>42% of those who had made unacceptable sacrifices had made them for other reasons before purchasing their off-grid refrigerator.</td><td>58% of those who had made unacceptable sacrifices had made them only after purchasing their off-grid refrigerator.</td></tr>
</table>

Customer Challenges & Customer Service

Challenge rates have decreased from 2020, but issue resolution is still low.

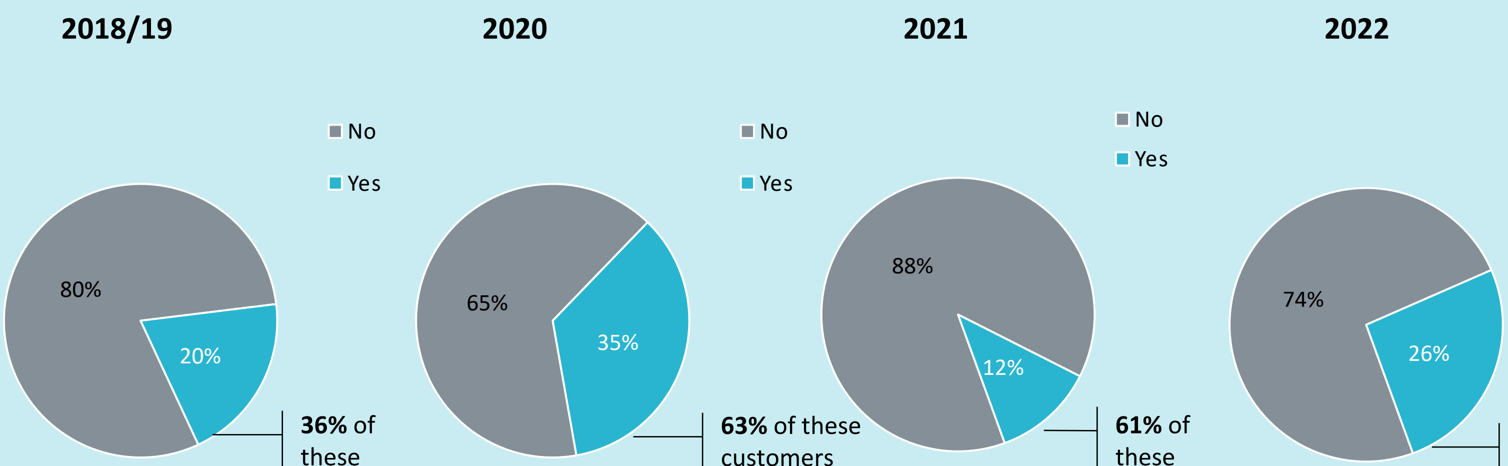
Using all data, 28% of customers had experienced challenges. 52% had not had their challenge resolved. Unresolved challenges can encourage negative word-of-mouth and detract from positive impact. Companies should prioritise resolving customer issues. The next page shows the most common issues reported.

Customers who have experienced a challenge were asked how easy it was to get an issue handled. This is the Customer Effort Score (CES), and it is the average rating of all customers.

The CES is 3.3 out of 5, showing that customer service or after-sales care is fair. The company with the highest CES had a 3.7, while the lowest was a 2.9. There was also a large variation in the challenge rate among the companies, ranging from 0 to 67%.

Proportion of Customers Reporting Challenges

Q: Have you experienced any challenges [working with/using] [company] off-grid refrigerator? (n = 792)



36% of these customers said that their challenge had not yet been resolved.

63% of these customers said that their challenge had not yet been resolved.

61% of these customers said that their challenge had not yet been resolved.

71% of these customers said that their challenge had not yet been resolved.

Customer Challenges: Top Issues

We ask the challenges question framed by customer experience rather than fault. Therefore, challenges can sit in three different themes and can be best addressed in different ways. Often the customer (and our Research Assistants) won't know which category the challenge fits into:

> Technical fault - there is something wrong with the product. This is best addressed through discussions with manufacturing.

> Mismatched expectations - the customer says the product/service isn't working because they expected it to work differently but it is working as intended. A review of marketing materials or sales pitches may be useful here.

> Misuse - the customer isn't using the product properly; often not deliberately. Installation guidance or user training may help reduce these issues.

Top reported challenges were issues with product parts, poor battery and poor payment method.

Most Common Issues for 28% of Customers Who Say They Have Experienced a Challenge

Q: Please briefly explain the challenge you have faced. (n = 188). Open-ended, coded by 60 Decibels.

48%	mentioned **issues with parts of the refrigerator** (12% of all respondents)	"The lights inside stopped working some time ago. The green light that shows the refrigerator is on goes on and off. I think it is a problem of the wire from battery to refrigerator." – Male, Uganda
20%	talked about **poor battery or defective condenser** (5% of all respondents)	"The battery had stopped working but when I called [company], they looked at it and gave me a new one." – Female, Uganda
13%	reported **delays after payment** (3% of all respondents)	"Whenever I pay money to use the refrigerator, the company does not put me back in time and I lose some days on the money I paid." – Male, Kenya

Performance & Features of Off-Grid Refrigerators

Cooling capacity and energy consumption were the highest rated features.

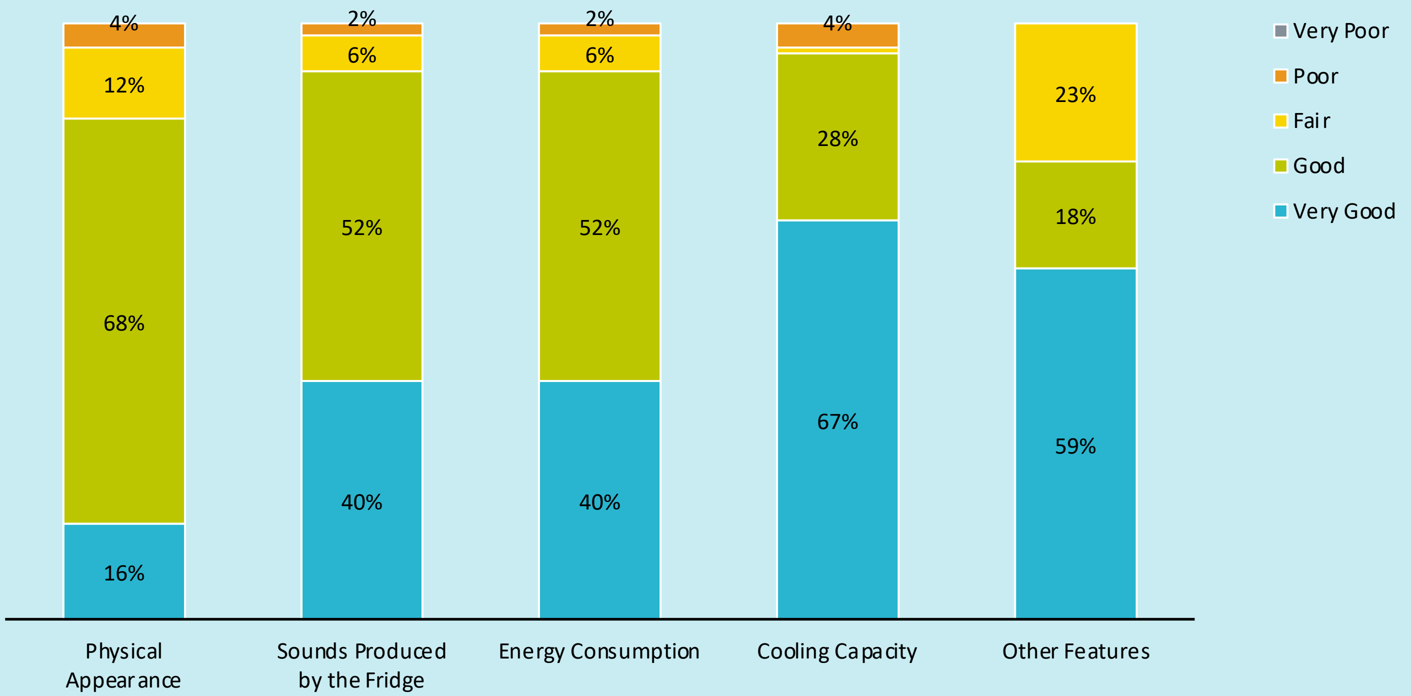
We sought to understand how the customers perceived the different features of the off-grid refrigerator such as energy consumption, cooling capacity, and physical appearance. Almost all customers expressed satisfaction with the product's energy consumption and cooling capacity attributes, terming them as 'good' or 'very good'.

Customers were less satisfied with physical appearance of the refrigerator, with many citing the small size*.

*The average size was 100L

Off-Grid Refrigerator Features

Q: Thinking about the features of the off-grid refrigerator, how would you rate them? (n = 368)



Exploring Impact

- Impact on quality of life
- Impact on market visits and cooking
- Impact on diet
- Impact on businesses

"My diet has changed because I buy a lot of meat and sausages and you know they stay for long, instead of throwing food because it has gone bad, I usually store it in the refrigerator." – Female, Kenya

Impact Performance: Quality of Life

37%* of customers say their quality of life has 'very much improved'. This is lower than the 60dB Energy Benchmark of 54%.

To gauge the depth of impact, customers were asked to reflect on whether their quality of life has changed because of their off-grid refrigerator. In total, 83% said their life had improved, with 37% of all customers saying it had improved significantly.

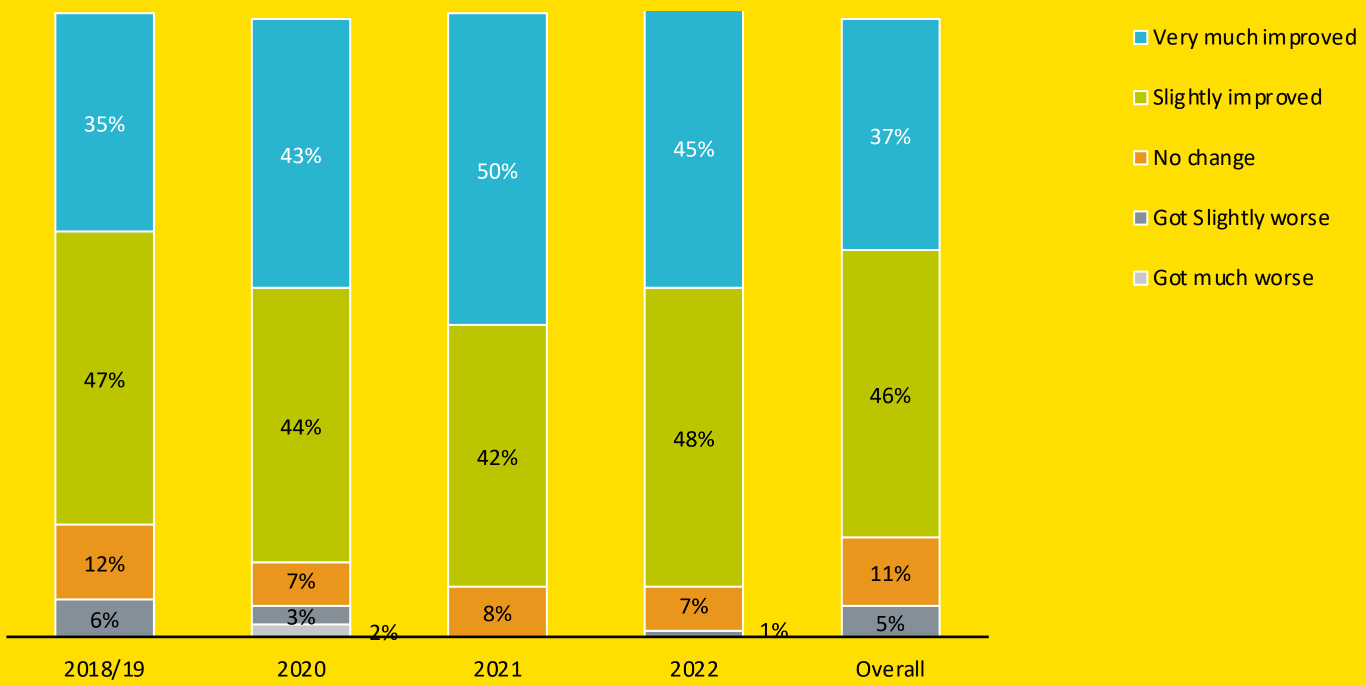
There were no significant jumps in perceived quality of life across the duration observed.

Customers who hadn't experienced challenges were more likely to say that their quality of life had improved (93%) than those who had experienced challenges (83%). There was no significant difference by gender.

The next page explores common themes in these quality-of-life outcomes.

Perceived Quality of Life Change

Q: Has your quality of life changed because of [Company] off-grid refrigerator? (n = 790)



*Weighted average by company

Quality of Life: Top Outcomes

Customers were asked to describe – in their own words – the changes they were experiencing because of the off-grid refrigerator.

The top quality of life improvements focused on financial gains and the activities these additional funds enabled.

Other improvements include:

- Improved lifestyle (10%)
- Decreased costs (9%)

7% reported that their quality of life had not changed.

Increased income and business growth were the top outcomes being experienced by 72% of off-grid refrigerator customers.

Top Three Self-Reported Outcomes for 83% of Off-grid Refrigerator Customers Who Say Quality of Life Improved

Q: Please explain how your quality of life has improved. (n = 726). Open-ended, coded by 60 Decibels.

48% reported **increased income in their businesses**

"The refrigerator has made it easy for me to earn more money since I can sell more drinks in a month. This has helped me to raise more capital for my business." – Male, Kenya

24% reported **business growth**

"Ever since I acquired this refrigerator, I have been able to expand my business by reinvesting the money I earn. This refrigerator has made it easy for me to make more money than I expected." – Male, Uganda

11% reported **increased personal savings**

"I can now make great savings and purchase things for my family with ease since my profits have increased." – Female, Kenya

Impact on Market Visits & Cooking

The impacts on market visits is mixed, though nearly half of the customers reported a reduced number of market visits. The majority of customers have not experienced changes in the frequency of cooking in bulk.

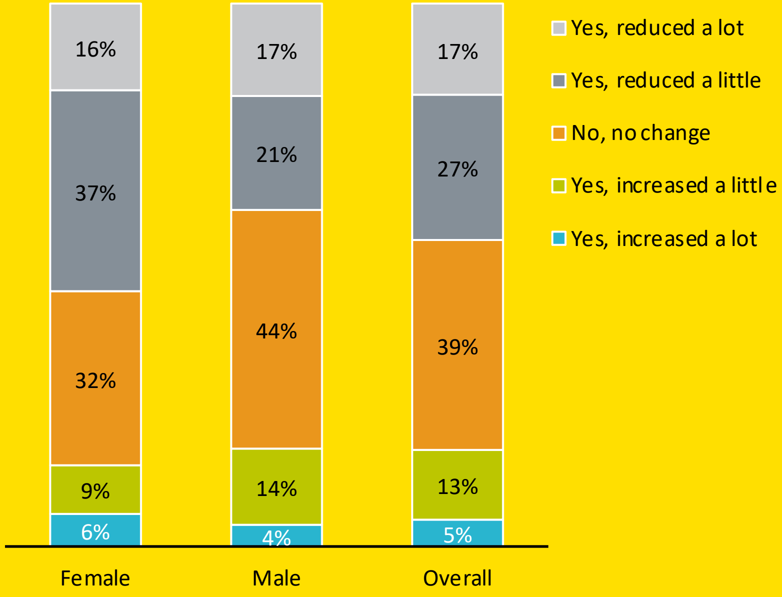
We asked customers if they had experienced any changes in the frequency of their market visits and cooking in the few months they had their refrigerators. Nearly half of customers have experienced a reduction in market visits, with 17% saying that market visits have reduced a lot.

Majority of them use the refrigerator for business purposes, which may explain this increase as a result of additional business. In addition, frequent restocking may be due to the size of the refrigerators, which some respondents felt was too small for their needs.

Business use may also explain why more than half reported they had not experienced any changes in the frequency of cooking in bulk.

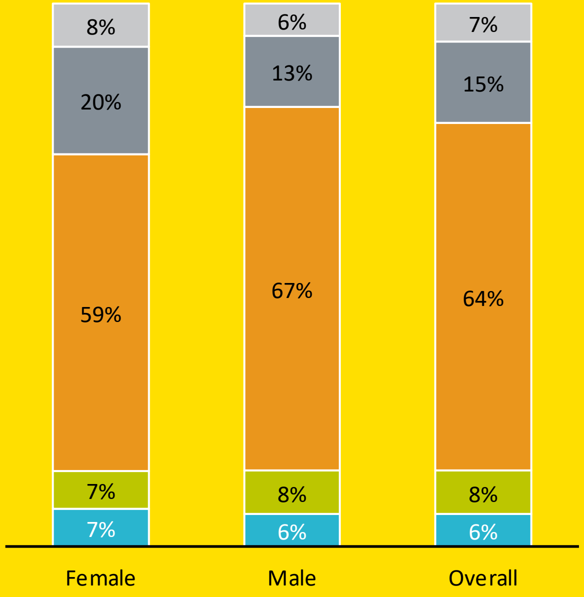
Market Visits

Q: Thinking about your experience since purchasing the refrigerator, has the number of times you visit the market changed? (n = 353)



Cooking in Bulk

Q: Thinking about your experience since purchasing the refrigerator, has the number of times you cook in bulk changed? (n = 346)



Impact on Diet

25% of off-grid refrigerator users said that their diet had changed since purchasing the refrigerator. The ability to diversify diet is a primary driver of these changes.

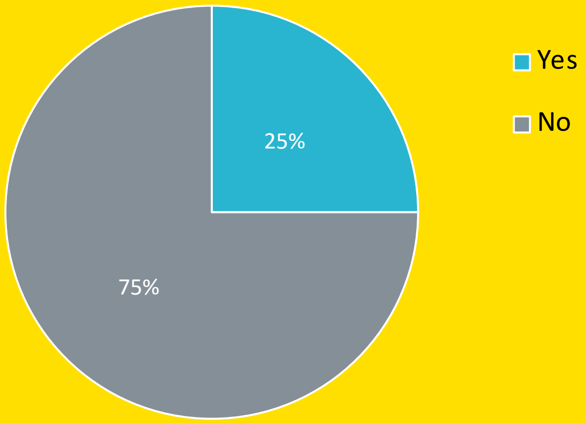
To better understand specific dietary impacts of off-grid refrigerators, we asked these customers if they had experienced any changes to their diets since they purchased the refrigerator.

This question was asked during follow-up and longitudinal data collection rounds. The follow-up rounds were conducted six months after the customers purchased the refrigerator, on average, and the longitudinal rounds were conducted one year after follow-up rounds. We observed an increase in the proportion of customers who said that their diet had changed between the follow-up (17%) and longitudinal (64%) rounds.

72% said their diet had grown more varied.

Changes in Diet

Q: Has your diet changed in any way since purchasing the refrigerator? (n = 510)



Top Outcomes

Q: Please explain? (n = 171)

1. Ability to diversify diet (72%)

"I buy and store different food stuffs in my refrigerator which I can have at any time without struggling to look for them when I am preparing to cook." – Male, Kenya

2. Increased consumption of fresh and nutritious foods (56%)

"I can now have fruits preserved and other products that would go bad if they were not in the refrigerator. Therefore, I can eat what I want without worrying that they would go bad." – Female, Uganda

Impact on Businesses

79% of customers use their off-grid refrigerator at their place of work, not at home. 5% of those who use the product at home are also use it for income-generating activities such as selling sodas and juice to people in the neighbourhood. Overall, 87% are using their refrigerator for income-generating activities.

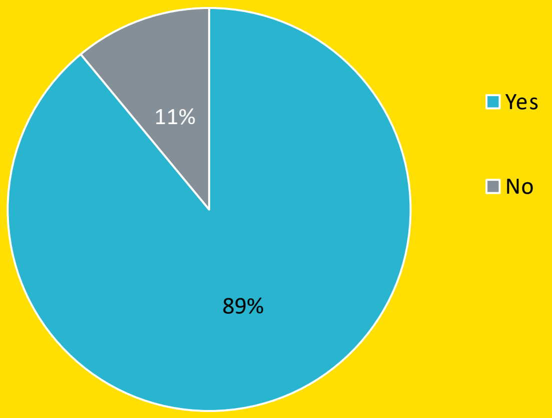
During follow-up rounds, 89% of these business users said that they had seen an evolution in their business as a result of having the refrigerator. More than half of customers (54%) experiencing a business change mentioned an increase in income because of their product.

Male customers who use their product for business were more likely to report an evolution in their business (94%), compared to female business customers (84%).

89% of off-grid refrigerator business users reported that their businesses had evolved as a result of the product.

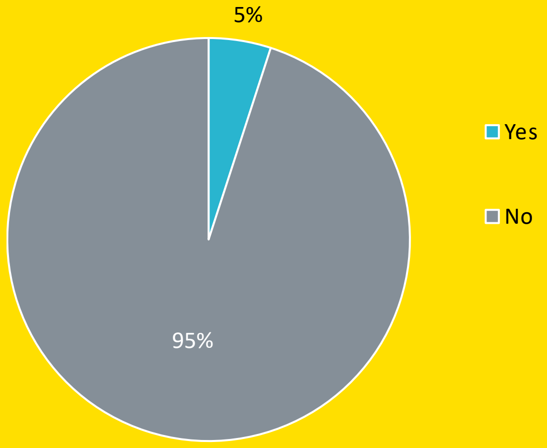
Evolution for Business Users

Q. Has your business evolved in the past [time since last interview] related to the [Company] [product]? i.e. can you offer services differently to customers or any new services? (n = 476)



Income Generation for Home Users

Q. In the past [time since last interview], have you used the [Company] [appliance] for income-generation?(n = 127)



Additional Insights

- COVID-19 insights
- Customer voices

"I have used the money I make from selling drinks stored in the refrigerator to re-invest in my business. This has increased my earnings and I can now pay school fees for my children without borrowing." – Male, Kenya

Listening in the Time of COVID-19

2020 onwards has been an unprecedented time, with people facing both a global pandemic and economic shutdown, particularly in 2020 and 2021.

Results & Our Benchmarks

We know this is a difficult time for many. We added four COVID-19 related questions into our survey with refrigerator customers to give space for customers to talk about this from 2020 onwards. We also recognise that customer experience and impact performance more generally may be affected by the pandemic and how it is affecting families and companies' ability to operate.

60 Decibels COVID-19 Insights Dashboard

To understand the impact of COVID-19, we spoke to people around the globe to understand how this crisis affected them. We spoke to 50,000+ people in 32 countries about how COVID-19 affected their lives.

You may find both the public COVID insights dashboard we have created useful to explore insights, as well as our 2021 report, Listening During COVID-19: A Year in Review.

External Factors

We know that certain outside factors will likely affect how refrigerator customers feel and fare. We have seen some correlations related, particularly to how stringent government measures are to control the spread of the disease. You may find the Oxford University COVID19 Government Response Tracker useful for providing context on the experiences of the customers.

Awareness & Concern About COVID-19

We asked customers questions related to COVID-19 to assess awareness and effects of the pandemic on them.

66% of them are concerned about COVID-19, with the deadly quality of the virus commonly mentioned as the most concerning factor.

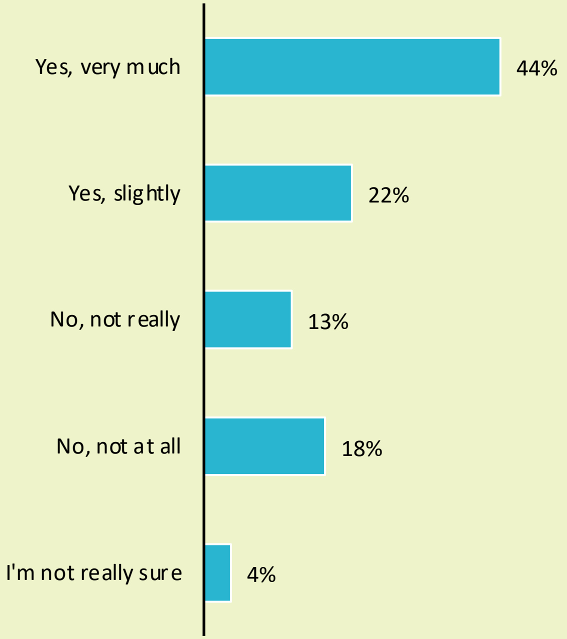
60dB COVID-19 Dashboard

You can find out more about how families around the world were coping with the pandemic and see how RBF customers are doing relatively on our online dashboard. Please visit: http://bit.ly/60dB-Covid

The most common concern around COVID-19 was the deadliness of the virus.

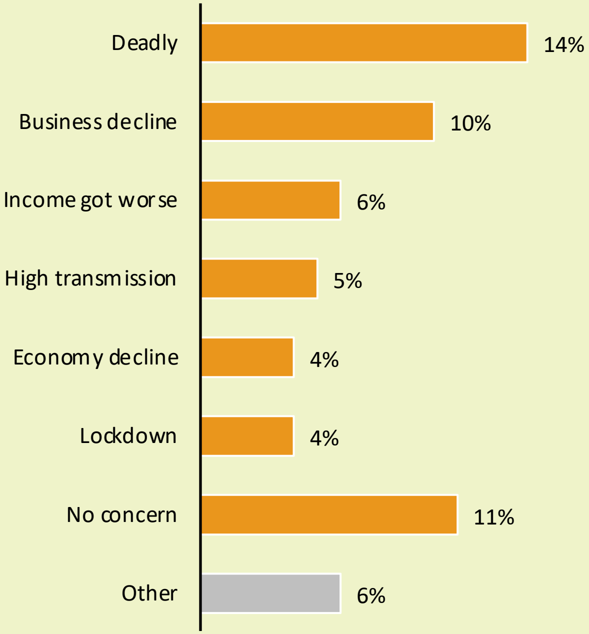
Level of Concern Over COVID-19:

Q: Are you concerned about COVID-19? (n = 315)



Concerns

Q: Could you explain your answer and let me know how you're feeling about COVID-19 right now? (n = 318). Open-ended, coded by 60 Decibels



Support To Cope With COVID-19

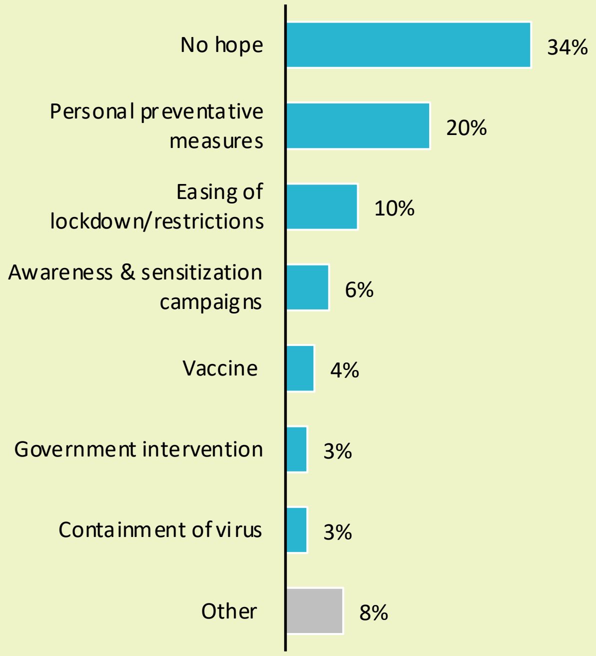
Customers reported financial assistance, business support and ability to work/earn income as the key things that could improve their lives during the pandemic.

We asked customers what actions being done by others were giving them hope and what one thing could improve their life at this time to support them to cope with the pandemic and associated measures.

A quarter of customers mentioned financial assistance, and 13% mentioned business support as some things that could improve their life.

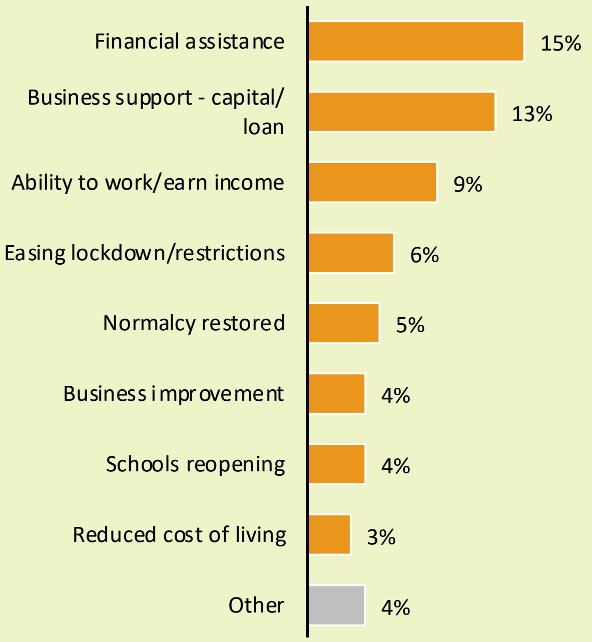
Sources of Hope

Q: Can you tell me, what actions, if any – by friends, community, government or others – are giving you hope right now? (n = 318). Open-ended, coded by 60 Decibels



What One Thing Could Improve Life

Q: Related to this pandemic, what one thing could improve your life at this time? This could either be something that you currently do not have, or something that you currently do not have enough of. (n = 285). Open-ended, coded by 60 Decibels



Customer Voices

We love hearing customer voices.

Here are some that stood out.

Impact Stories

88% shared how their off-grid refrigerator had improved their quality of life

"When it is hot, I also get to enjoy cold drinks, it makes me happy. I do not get any stress because of fear of some drinks going bad when they are not bought." - Female

"Customers are there always ready to buy the drinks, especially during hot weather. There is an increase in income compared to before. I am able to save something small at the end of every week." - Male

"I see a very big improvement in my life, my profits have increased, I preserve my drinks well without any toil like traveling to the centre for ice blocks." - Female

"My income has improved; this has helped me with emergency issues that used to bother me a lot. I also do not struggle with some expenditures around the house." - Male

"Whenever I pay my loan for the refrigerator every month, I find that I have some balance, meaning I will own the refrigerator soon if things remain like this, which is a sign of improved life." - Male

"I have been able to generate an increased income from the business and also reduce on my expenses which has helped in meeting my personal and family needs without much struggle like before." - Female

Opinions On Value Proposition

52% were Promoters and were highly likely to recommend

"With the refrigerator I have at home, I can keep food and eat when it is still fresh. I can keep medication for my chicken. It has helped me a lot." - Female

"I recommended it to a friend, and she got one for her shop because I saw its importance and customers can get cold drinks. Someone can also repay slowly." - Female

"The refrigerator is environmentally-friendly and does not pose much risk as compared to the electrically powered one." - Female

Opportunities For Improvement

30% had a specific suggestion for improvement

"The company should get us a toll-free number. Most of the times, I get people who can become customers but never know where to refer them." - Male

"The refrigerator is nice and valuable, improves income and status quo of the business. I wish the prices would be subsidised. Bring a discount to also those who pay on time." - Male

Appendix

The 60 Decibels Energy Benchmark

The 60dB Energy Benchmark is made up of the average performance of the energy company projects conducted since 2016. This includes 120+ off-grid energy companies across 280+ Lean Data projects.

We have completed Lean Data projects for some companies in multiple countries, for multiple services, or multiple timeframes; providing deeper learning over time or cross-geography.

Energy companies: mini-grid providers, solar home system, solar lantern, off-grid appliances, improved cooking solutions and more.

Companies we've worked with

- Acacia Innovations
- Africa Green Tech
- Altech
- AMDA
- ARED
- Arnergy
- ATEC
- Auxano Solar
- Azuri
- Baobab+
- Bboxx
- Bidhaa Sasa
- BioLite
- Bonergie
- BrightLife FINCA Plus
- BURN
- Circle Gas (M-Gas)
- d.light
- Davis & Shirtliff
- Deevabits
- Devergy
- Easy Solar
- Ecozen
- Emel Solar
- Energy+
- ENGIE Fenix
- ENGIE Mobisol
- ENGIE PowerCorner
- EnVenture
- FINCOOP SACCO
- Frontier Markets
- Futurepump
- Global Ice Tec
- Green Energy Biofuels
- Greenlight Planet
- Greenserve
- Greenway Grameen
- GVE Projects
- Harness Energy
- HelloSolar
- Husk Power Systems
- Ignite Power
- IMED
- Inspirafarms
- International Lifeline Fund
- Jaza Energy
- Jumeme
- Kalangala Infrastructure Services (KIS)
- Kazang Solar
- KCKM
- Koolboks
- KopaGas
- Lendable
- LIB Solar
- Lumir
- Lumos
- Mango Energy
- Mega Global Green
- M-KOPA
- Mobile Power
- Mobility for Africa
- MREF
- Mwangaza Light
- Mwezi
- NAL OffGrid
- Nizam Bijili
- NRSP
- OffGridBox
- OMC Power
- Ongeza
- Oolu Solar
- OPES Solutions
- Orb Energy
- Otago
- PACOS Trust & Tonibung
- PACT
- Parami Energy
- Pawame
- PEG
- Pollinate Group
- PowerGen
- Powerhive
- Pro Engineering
- Promethean
- PSFI
- Qotto
- REDAVIA
- Rubitec
- RUH
- RVE.SOL
- SCODE
- SELCO
- SHYFT
- Simusolar
- SOGEPAL
- Solar Panda
- Solar Sister
- Solaris Offgrid
- SolarNow
- Solutions Height
- SP ECO Fuel
- SparkMeter
- Standard Microgrid
- Sun Power
- SUNami Solar Kenya
- SunCulture
- Sunny Irrigation
- SunnyMoney
- SupaMoto
- Talent & Technology
- Tara Urja
- Techno-Hill
- Trend Solar
- Ultratec
- Umeme
- upOwa
- VITALITE
- WANA Energy
- Winock Solar
- Winsol
- Zambuko Trust
- Zhidao
- ZOLA Electric
- Zonful Energy
- Zuwa

Sampling Information

The sample size used in this report provides a 95% confidence level and 2% confidence interval that the data represented in this report is representative of the customer base.

60 Decibel's Lean Data approach focuses on collecting data in an efficient way.

While we have taken time to consider the appropriate number of people to interview in order to generate insights that are representative of the RBF, this is still a sample of customers and won't represent all views and nuances.

In particular, as we used phones as our interview medium, any customers without phones are less likely to be represented – though due to the nature of the included companies' business models, this wasn't a major concern.

Recent changes to business model, product, or marketing may not be reflected in these customers' experiences. In addition, this project collected data from a certain point in time which may mean some answers are affected by seasonality, and/or reflective of any changes in product type and/or geographic locations depending on any sales campaigns, expansion, partnerships, or focus areas.

From a list of the 1,650 customers' information CLASP shared with the 60 Decibels' team, the 60 Decibels team randomly selected a sample for the baseline interviews. The 60 Decibels research team then interviewed from this list, making a maximum of three attempted calls each time. The 60 Decibels Researchers are all locals of the countries we work in, so they are culture and context aware, and conduct interviews in local languages.

The 60 Decibels team also ran a check on the geographical distribution of respondents compared to the full company customer lists to check representation. We did not find any bias based on county or region.

Calculations & Definitions

For those who like to geek out, here's a summary of some of the calculations we used in this deck.

Metric	Calculation
Net Promoter Score®	The Net Promoter Score is a common gauge of customer loyalty. It is measured through asking customers to rate their likelihood to recommend your service to a friend on a scale of 0 to 10, where 0 is least likely and 10 is most likely. The NPS is the % of customers rating 9 or 10 out of 10 ('Promoters') minus the % of customers rating 0 to 6 out of 10 ('Detractors'). Those rating 7 or 8 are considered 'Passives'.
Inclusivity Ratio	The Inclusivity Ratio is a metric developed by 60 Decibels to estimate the degree to which an enterprise is reaching less well-off customers. It is calculated by taking the average of Company % / National %, at the $1.90, $3.20 & $5.50 lines for low-middle income countries, or at the $3.20, $5.50 and $11 lines for middle income countries. The formula is: $\sum_{x=1}^{3} \frac{([Company]\ Poverty\ Line\ \$x)}{(Country\ Poverty\ Line\ \$x)} / 3$
Customer Effort Score	How easy do you make it for your customers to resolve their issues? This measure captures the aftersales care and customer service. Customers who have experienced a challenge are asked to what extent they agree with the statement: Do you agree or disagree with statement: Overall, [Company] made it easy for me to handle my issue : disagree (1), somewhat disagree (2), neither agree or disagree (3), somewhat agree (4), agree (5). The CES is the average score between 1 and 5. It is an important driver of uptake, adoption, and referrals, as well as of impact.

References

A list of the references mentioned in the report.

[1]Leo, B., et al, What Can We Learn About Energy Access and Demand from Mobile-Phone Surveys? Nine Findings from Twelve African Countries, CGDEV, 2018.
[2]Efficiency for Access Coalition, The State of the Off-Grid Appliance Market Report, 2019
[3]GOGLA, Global Off-Grid Solar Market Report Semi-Annual Sales and Impact Data H1 and H2, 2021
[4]Euromonitor International. (n.d). Market sizes [Refrigeration Appliances, 2014-2019] [Data set]. Passport. Retrieved November 23, 2020 from https://www.euromonitor.com
[5]Efficiency for Access Coalition, The State of the Off-Grid Appliance Market Report, 2019

EFFICIENCY
FOR
ACCESS

60_decibels

I can now eat fresh food.

I used to struggle to buy ice .

I was interested in the payment plan.

My family is

very

>healthy

>happy

>safe

>hopeful

now.

Have questions? Get in touch:

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