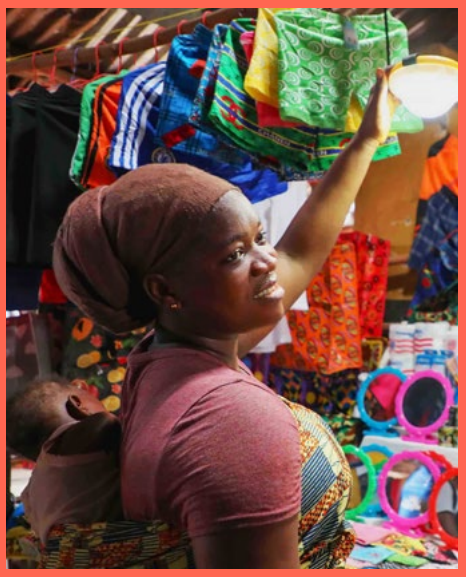
60 decibels

Why Off-Grid Energy Matters 2024






An Impact Performance Report

Why Off-Grid Energy Matters 2024

About 60 Decibels

60 Decibels is a global, tech-enabled social impact measurement company that brings speed and repeatability to impact measurement and customer insights. We provide genuine benchmarks of impact performance, enabling organisations to understand impact relative to peers and set performance targets.

We have a network of 1,200+ researchers in 80+ countries, and have worked with more than 1,000 of the world's leading impact investors, companies, foundations, corporations, NGOs, and public sector organisations. 60 Decibels makes it easy to listen to the people who matter most.

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Thank you

This report is made possible through the support of funders who share a commitment to advancing insights and knowledge in the field of energy access – with a particular focus on listening to end-users. We extend our gratitude to the people working at these organisations.

Funders of this report include UK aid from the UK Government via the Transforming Energy Access (TEA) platform[1], Good Energies, and the Global Energy Alliance for People and Planet. Supporters of our Energy Initiative include the TEA platform, Good Energies, Cygnum Capital, responsAbility, KawiSafi Ventures, Ethex/Energise Africa, Triple Jump, Acumen, and Private Infrastructure Development Group (PIDG). DOEN Foundation, the TEA platform, and Good Energies also funded our Inclusive Energy Opportunity – enabling us to include organisations who've not had this opportunity before.

We recognise the contributions of our many clients who have supported our energy-focused initiatives over the years and signed up for our Lean Data projects. Your investment in our work continues to power our ability to deliver on our commitment to creating meaningful change. To our reviewers: thanks for your feedback and comments; this report is a collaborative effort and is all the stronger for it. Relatedly, thanks to the sector bodies championing and supporting all this work: GOGLA, Clean Cooking Alliance, CLASP, Africa Minigrid Developers Association (AMDA), the Global Distributors Collective (GDC), and others.

We'd also like to show our appreciation to the organisations that graciously allowed us to engage with their customers, a diverse group of more than 250 social enterprises, non-profit organisations, and companies. We simply could not have produced this report without you. It also wouldn't be as beautiful without you! We want to acknowledge and thank organisations for sharing photos to represent your work and your customers.

Most importantly, thank you to the customers we listened to, who gave us their time, and shared their experiences. Your voice matters. And we hope we did a good job of representing it here.

Report Funders

Global Energy Alliance for People and Planet
GEAPP

Good Energies
BY PORTICUS

UKaid
from the British people
Transforming Energy Access

[1] This material has been part-funded by UK aid from the UK government via the TEA platform; however, the views expressed do not necessarily reflect the UK government's official policies.

11
Things to Know About the Impact of Off-Grid Energy

01

The off-grid energy sector is making a material difference for communities around the globe. For more than half of all customers, the quality of their and their families' lives improved significantly as a result of their new-found energy access. The sector continues to reach previously unserved populations – for three-quarters of customers this was their first time having access to the product category[2] they purchased. Energy mobility is strong, with half of families moving to more modern and renewable energy sources with this access.

02

Solar lanterns are small yet mighty. They may not provide the most comprehensive energy access, but the solar lantern still continues to generate the highest impact and customer satisfaction. Their simplicity lends itself well to adoption and ease of use. Whether as a primary or complementary energy source, families use them to move away from polluting and expensive alternatives. Those who use their solar lanterns for productive use see income gains too.

03

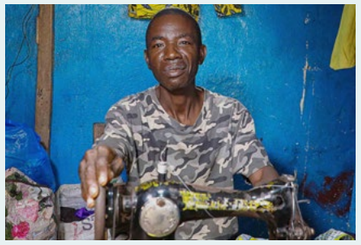
Reaching more rural customers is the sector's greatest opportunity to drive further impact. Over half of customers live in rural areas, so the sector is close to the last-mile by some measure.[3] This is a good thing since impact is greater and satisfaction is higher for the sector's rural customers – who are three times more likely to be living in poverty than their urban peers. Rural customers are more likely to have moved up the energy ladder with their energy access. Furthermore, they're more likely to see improved safety, health, knowledge, and convenience benefits from gaining energy access.

04

Off-grid energy is a more inclusive sector than others but is under-serving lower-income customers. The off-grid sector's Income Inclusivity Rate (IIR) is 0.81.[4] This means the sector is serving relatively higher-income customers compared to national poverty rates. For comparison, the 60 Decibels Agriculture IIR is 0.64 and 60 Decibels Financial Inclusion IIR is 0.58. This is promising for the sector's ability to serve the more marginalised, though still a way to go to reach full representation at 1. Reaching customers living in poverty is a particular opportunity to have greater impact. More broadly, the sector still has work to do to ensure that no one is left behind. Both women customers and those with disabilities are under-represented in more developed markets, and there are scores of people living in nascent markets who remain unreached.

05

Locally-owned and/or women-led enterprises are impact all-stars. We launched our Inclusive Energy Opportunity to shine a light on early-stage locally-owned and/or women-led organisations. Such businesses have traditionally been somewhat neglected in terms of access to capital. And that's a miss, given that locally-owned and/or women-led organisations generate higher impact, are more inclusive (over a range of metrics), and earn better satisfaction rates than their peers, on average. While acknowledging the good work of the many male-led and mostly Western pioneers in the sector, we hope these findings challenge the industry to push harder to open doors, start conversations, and unlock more capital in this direction.



[2] Product categories: solar lantern, solar home system, mini-grid connection, appliance, improved cooking solution. Appliances include solar water pumps, off-grid refrigerators, solar TVs, solar fans.
[3] 58% of people in sub-Saharan Africa live in rural areas. https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=ZG

[4] Relative to the national poverty rates of the countries where organisations provide energy access. More in the Metric Glossary on page 11.

06

A third of customers experience some Consumer Protection related challenges. In partnership with GOGLA, we're excited to introduce our Consumer Protection Score, which looks at customer awareness of key contract terms, customer ability to pay, and ease of use. You can't assess Consumer Protection performance without talking to consumers about their experience. So we did. This year's Consumer Protection Score stands at 68%, which is a starting point from which to push higher.

07

Financing comes with pros and cons. Nearly three-quarters of customers we spoke to use some form of financing to pay for their energy access. Pay-as-you-go (PAYGo) offers a chance to reach new customers and enhance affordability, but has led to some customers taking on more than they can manage. A small but significant 5% find the payments for their energy device to be a significant financial burden, and 30% say they have fallen behind on payments at some point. This presents a credit risk for the sector. Why are customers falling behind? The reasons vary across products, but loss of income, increased living costs, and emergencies are the most common factors shared. The sector needs to continue to focus its attention on this topic.

08

Nearly all off-grid products can contribute to some form of economic impact. While we hear the sector talk of productive use of energy (PUE) devices, we think of PUE as a behaviour rather than a product type. Around 1 in 5 energy customers use their energy access to support or start a business and/or wider income-earning activity. Appliances are the most productively used product category. More than 4 in 5 productive users see an increase in their income. Productive users tend to be less satisfied than home users; this is, in part, related to the greater impact a non-working product can have on financial wellbeing. This group requires additional attention, with PUE still representing a partially unfulfilled opportunity for many.

09

Customers are satisfied, but there's room for improvement. Overall, the off-grid energy sector performs well globally when it comes to customer satisfaction, with a Net Promoter Score® (NPS) of 43.[5] The NPS now is similar to the 45 in our 2020 report. However, looking at individual results relative to the benchmark reveals a wide range of scores. The lowest NPS in our benchmark is -100, and the highest is 91. Check out our ranking chart to understand that scale on page 35.

10

Energy products are not always easy to use. A third of customers experience challenges using their energy product or service (unchanged from 2020). When this happens, customers and their families can't unlock the many benefits of improved energy access. Nearly 25% of the 79,000+ customers we interviewed have unresolved issues which affects impact, satisfaction, and likely future sales. The NPS of customers who face no challenges is 56, while the NPS for those with unresolved issues is a not-so-great 1.

11

Early insights on e-mobility suggest it has the potential to be particularly inclusive. While this isn't a benchmark yet, the emerging sub-sector of e-mobility is an interesting one to watch. Early indications are that e-mobility has the potential to be a really inclusive sector in supporting economic activity and contributing to economic empowerment. Productive use of e-mobility solutions is high, with 98% of people reporting using them for income generation.

[5] The creators of the NPS metric, Bain & Company, say that an NPS above 0 is good, above 20 is great, and above 50 is amazing. But, industries perform very differently across the world so context is important too.

Part 1:

Introduction

“The light has helped me a lot in my shop work.

Before I couldn’t work at night.”

Hello

Welcome back! We missed you.

We're so pleased you've returned for another instalment of Why Off-Grid Energy Matters. We're hoping that like some of the world's favourite films, such as Avatar (Hollywood), Baahubali (Bollywood), and The Wedding Party (Nollywood),[6] this report will be just as thrilling as the first instalment.

So grab a coffee, tea, or beverage of your choice, and settle in. We hope you'll enjoy the following pages of thrills, spills, data, customer quotations, and beautiful charts as we dive into our off-grid world.

We'll be featuring some of the most exciting enterprises, investors, and supporting organisations out there. These incredible people are working to transform how some of the world's most vulnerable communities access and use one of our most life-changing resources: energy.

Why off-grid energy matters

If you're reading this, you likely already know that energy access is a critical component for poverty alleviation and increased prosperity. It catalyses enterprise while supporting safer, brighter communities. And it underpins almost every essential service, including education, healthcare, transport, and communication.

Decentralised or distributed renewable energy solutions (sometimes called DRE) represent an effective way of powering the world's most remote and marginalised communities. They also promote cleaner energy sources, thereby leapfrogging billions of people onto energy provision fit for a low-carbon future.

Across the off-grid world, multiple breakthrough innovations are gaining huge momentum. For example, 4.3 million units of solar energy kits were sold in the first half of 2023; nearly 60% of these were solar lanterns. East Africa, in particular, witnessed the installation of more than 2.2 million off-grid solar energy kits, reaching an estimated 109 million people and supporting entrepreneurial initiatives for 3 million individuals globally.[7]

The scale of the problem is huge.[8]

- Based on current trends, we are not on track to achieve universal electricity access by 2030 (SDG 7.1.1), with **660-674 million people** expected to remain unelectrified in 2030. Electricity access is growing, but progress is uneven – Africa needs more attention, and differences in rural and urban electrification persist.
- We are also not on track to achieve universal access to clean fuels and technologies for cooking by 2030 (SDG 7.1.2), with **~1.8-1.9 billion people** expected to remain without clean cooking access based on current trends. Lack of clean cooking access will persist at a massive scale if the current pace of progress continues.
- Others talk not just of energy access but of energy poverty too – the lack of access to modern energy services. The wellbeing of large numbers of people in lower income countries and some people in middle or even higher income countries is negatively affected by very low consumption of energy, use of dirty or polluting fuels, and excessive time spent collecting fuel to meet basic needs.[9] Some of those big numbers above may under-represent a bigger issue.

So, the off-grid energy sector faces a daunting task. It requires sustained and inclusive growth to keep bridging the energy divide effectively and fulfilling the promise of leaving no one behind. Moreover, while household appliance sales are rising, the potential for off-grid energy to support productive activities, such as solar-powered irrigation or agro-processing, is comparatively underdeveloped.

660-674 million
expected to remain unelectrified in 2030

1.8-1.9 billion
people expected to remain without clean cooking access in 2030

[6] We're also fans of Top Gun, Die Hard, and Toy Story. ;-)
[7] https://www.gogla.org/reports/global-off-grid-solar-market-report/

[8] https://www.seforall.org/data-stories/seforall-analysis-of-sdg7-progress
[9] https://knowledge.energyinst.org/new-energy-world/article?id=138534

What to expect in this report

While general statistics about the sector are important to set the overall context, we want to help you dive into the specifics of social impact. We aim to bring you as close as possible to the actual impact experienced by off-grid energy customers from the ground up.

The report is split into three sections:

First we explore the **Impact** of the off-grid energy sector. We share the outcomes of energy access on families' quality of life, spending, productivity, as well as who is experiencing these impacts.

Next up – **Insights**. Here, we provide another range of cross-cutting lessons drawn from our quantitative and qualitative data collection. This section focuses on customer experience and includes insights relating to Consumer Protection, industry-first insights on the impact of locally-owned and women-led organisations, and more on the impact of businesses as they scale and grow.

After you've read about the impact and insights at a sector level, we've crafted a special section of **Sub-Sector** data for you. All information is in one place, from solar lanterns to cookstoves. There's lots to learn from stepping outside of our silos, so do consider a read of all the sections, even if your work typically focuses on one area.

Finally, you won't want to miss our new section on **Awards**, where we reveal top-performing companies from our Index from 2020-2023!

> "The TV helps me to watch programmes on current affairs in the country. I am updated with what is happening in the country and the world.

Who did we talk to?

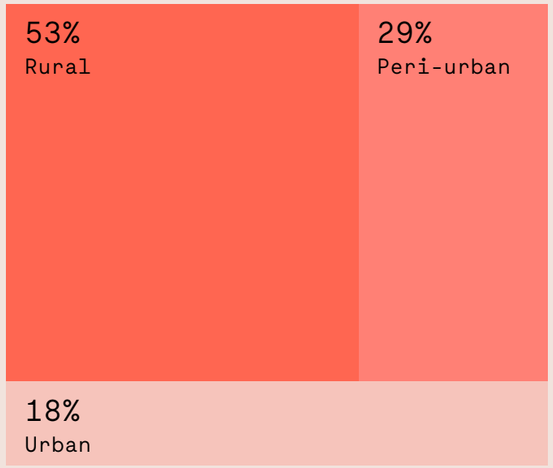
79k+ Respondents

474 Projects

31 Countries

164 Companies

Location



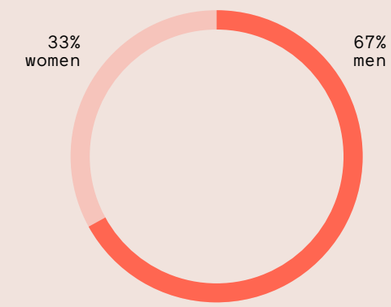
Age

18 min. age

41 avg. age

100 max. age

Gender



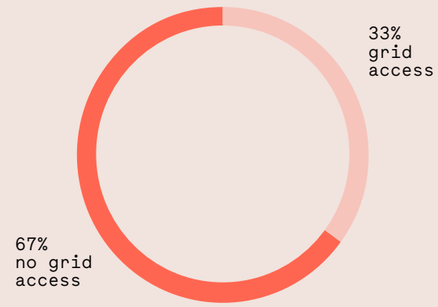
Disability

Disability Prevalance Rate

Household Size

Average Household Size

Electricity Access



A Guide to This Report

79k+
Respondents

474
Projects

31
Countries

164
Companies

Where this data comes from

This report is the world's most comprehensive social impact assessment of off-grid energy to date. The findings come from 79,000+ individuals who purchased an off-grid energy device and spoke to us about their experience of it – be that a solar lantern, an improved cookstove, a solar-powered irrigation pump, or something else. That's more people than the population of Dominica![10]

These are customers of more than 160 organisations who design and/or deliver different off-grid products or services and innovate across a range of different business models – whether financing, distribution, product (ownership), or service (usage/utility). We connected with these companies through their investors or funders, directly, or through our Inclusive Energy Opportunity.

The random sample of customers we interviewed from these companies ranged in age from 18 to 100. They encompass men and women who live and work in diverse settings, from remote villages to bustling cities. Some have families or run businesses; some do both. Some customers are comfortable with risk and want the latest technology available. Others – often linked to financial standing – are happier to wait for technology to be tried, tested, and trusted. They live in different countries, speak different languages, and come from different starting points regarding their previous energy access.

Our research includes information from close to 500 data collection projects from 2020 onwards.[11] The data will take you on a journey across more than 30 countries. Almost two-thirds of these are in East Africa, a fifth come from West Africa, and the remainder is split between Southeast and Southern Asia and Latin America.

The people we spoke to offer a unique window into their lived experiences, defining the impact and benefits of these services in their own words. In turn, this has allowed us to define metrics, measure impact based on what is most material to those users, and build benchmarks around these metrics.

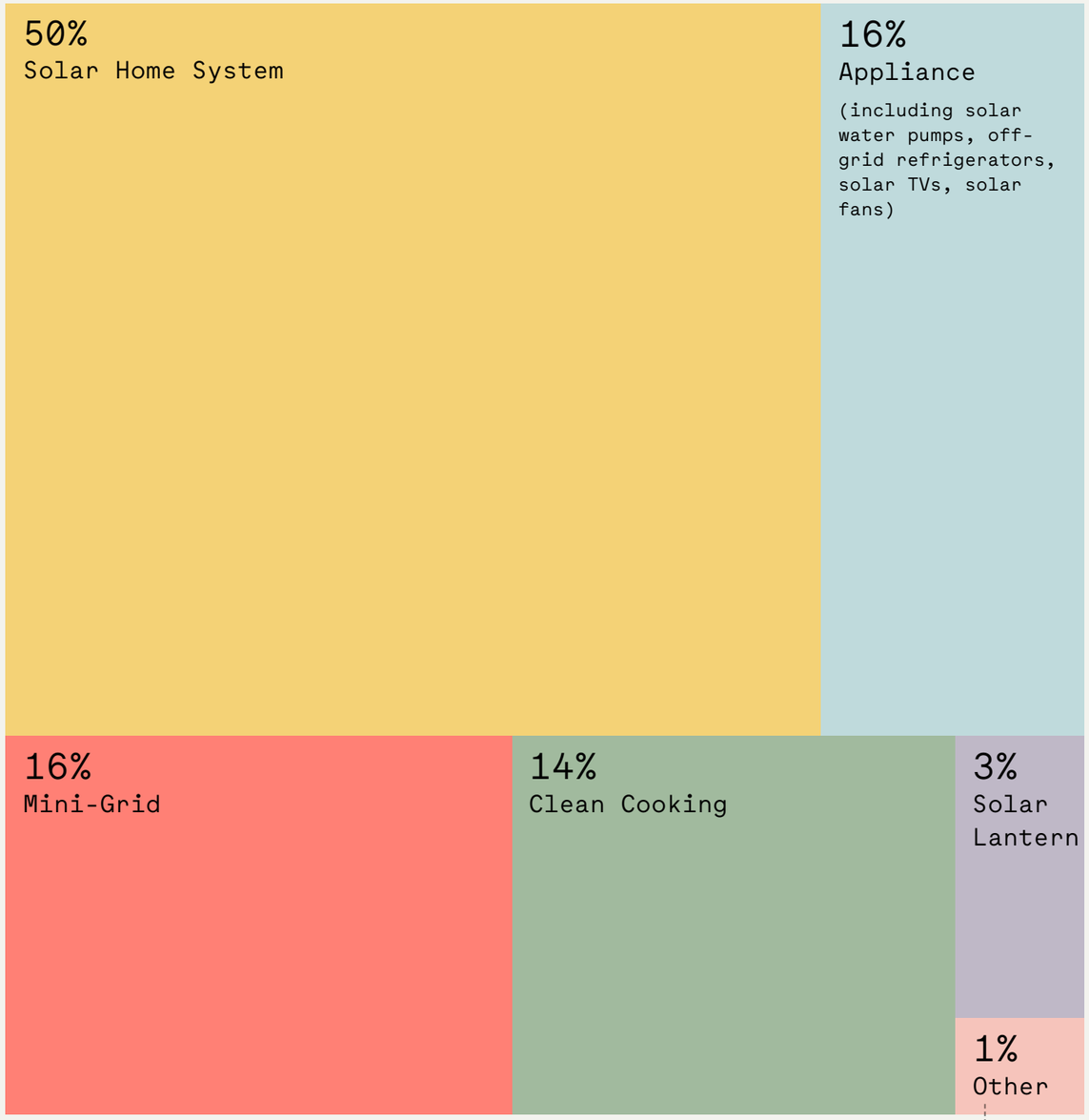
Customers:

We talked to a random sample of the registered customers in organisations' customer contact databases.

Consumers/users:

We know that typically there are other members of a household who also use and benefit from the energy access.

Sub-sectors



[10] The beautiful Caribbean island of Dominica has a population of 72.7k people: https://data.worldbank.org/indicator/SP.POP.TOTL
[11] While we have a wealth of information pre-dating 2020, this report focuses on more recent insights to capture the evolving landscape of off-grid energy. Check out our original Why off-grid energy matters report if you want insight from this earlier data.

Benchmarking (social) performance

Whether you are new to 60 Decibels or one of our old friends, you will likely know that we love benchmarks. Our long-held view is that without benchmarks, the potential of impact measurement and management to support decisions that significantly improve our collective impact is severely constrained.

Specifically, without benchmarks, it is difficult to judge what is or is not good, what does or does not constitute high social performance, or what is possible. This is true for judgements about nearly anything. How would you know someone was tall without having another person to compare them to? Or, for any investors reading this report, how would you know something had provided an excellent financial return if you didn't have a benchmark from which to make that assessment?

The same is true for social performance. An assessment of social impact in isolation might be useful for obtaining a single metric, but it is only when we compare that metric to benchmarks that we can truly say something about performance. In doing so, we can distinguish between poor, average, good, and great performance, as well as better understand opportunities for growth and improvement. Benchmarks can also give us ideas for setting targets for social performance based on what is possible.

A caveat - we are researchers, after all

We may be benchmark geeks, but that doesn't stop us from expressing some caution about their use. Context is, of course, key. In comparing an organisation's performance to a benchmark, it might be tempting to simply conclude under- or over-performance based solely on an organisation's performance vs the benchmark. However, an organisation's wider context, position, sector, or business model should also be factored in. The interplay between different indicators is also often very useful information.

For example, there might be good reasons to perform on the lower side of any given measure (relative to benchmarks). You might be a newly established company competing against established peers. You might be working on getting a foothold in a nascent sector by providing a new technology, which requires raising awareness and consumer trust. Perhaps the country you are operating in has conditions that make things more complex. It is, for instance, harder to get people to switch from status quo cooking or lighting fuels if subsidies exist for those established energy sources.

So social benchmarks, just like any data (financial, operational, or otherwise) should be interpreted with care. We should use them to inform our judgements rather than dictate them. That said, we firmly believe the value of a good benchmark far outweighs the potential downsides (i.e. having nothing to compare the data to) and that when used correctly, they hold the key to transforming our impact measurement and management.[12]

While we provide many benchmarks in this report, you can always find our dynamic, regularly updated sector benchmarks online here.

> Explore our up-to-date sector benchmarks online.
>
> Find out more →

What to expect from the benchmarks in this report

Every project, unique in its year,[13] organisation, country, and product category, contributes equally to the sub-sector benchmarks. And we've only included projects where the statistical significance passes our benchmark checks.[14]

The sub-sector benchmarks, in turn, are weighted evenly to create our overarching Off-Grid Energy Benchmarks. This approach ensures a balanced representation of the diverse experiences and insights across the spectrum of off-grid energy solutions.

You might see some differences between this report and our online benchmarks. Our online benchmarks are dynamic and updated monthly; results older than three years are removed, and new projects are added in. Also, for some of the calculations in this report, it made more sense to look at results on a respondent basis rather than an organisation basis – which is how the benchmarks are calculated. We think you'll see what we mean as you read on.

[12] A question we hear often is how much data you need for a good benchmark. Put simply, the more the better. But even a comparison based on a handful of data points can be useful. The fewer data points you have, or if you only have those from a different geography, the more caution you should apply. But even in such situations the benchmark may help you to think differently about, or ask new questions of, the performance of any individual organisation.

[13] We only include the latest project in our benchmark database if the other dimensions are the same.
[14] A confidence level of >80% and margin of error of <5%. Most project data is around a 90% confidence level and a 5% margin of error.

Metric Glossary

Many of the indicators we refer to throughout this report were developed specifically by 60 Decibels; others are well-established social or customer insights metrics. We explain the data we present as it is introduced, and those we refer to most often are also listed here as a handy place to refer back to.

Income Inclusivity Rate

This metric looks at the degree to which an organisation is reaching lower-income customers relatively. It is calculated by taking the proportion of customers living under extreme, relative, and low-income poverty lines compared with the national rates in the country where the organisation works. We align to the World Bank poverty lines for each country to identify the appropriate lines.

First Access

This indicator helps us understand to what extent organisations, or the sector, are reaching underserved customer bases. This is measured through % of customers saying 'no' to whether they had access to the product category we are interviewing them about before i.e. did they previously own a solar home system, have a mini-grid connection, etc.

Access to Alternatives

How much choice do customers feel they have when they make the decision to purchase, use, or connect to the energy product or service? We look at awareness of and access to alternatives in the market and this gives us an idea of how critical an organisation is for providing access. This is measured as the % of customers saying they could not easily find a good alternative to the product or service they purchased.

Quality of Life

How meaningful or transformative is a company's product or service to the general wellbeing of its customers? Here we look at the depth of impact and this is measured by the % of customers saying their quality of life has 'very much improved' because of access to the company's product or service. We sometimes talk of quality of life improvements more broadly and this includes those saying their quality of life has 'very much improved' or 'slightly improved'. Other options: 'no change', 'got slightly worse', 'got much worse'.

Customer Challenge Rate

This is a critical experience metric that helps us understand whether customers can use their energy product or service fully. We ask if a customer has experienced any challenges using the product or service. We also ask about the nature of challenges that customers experience to provide insights for organisations to take action. We frame the challenges question by customer experience rather than technical fault.

Customer Effort Score (CES)

This is a customer service measure. How easy do customers feel it is to get their issues handled? Customers are asked to rate on a scale of 'strongly agree' (5) to 'strongly disagree' (1) how they feel about the statement "Overall, [organisation] made it easy for me to handle my issue." The Customer Effort Score (CES) is the average rating of all customers who have experienced a challenge.

Issue Resolution

For any customers who have experienced challenges – have their issues been resolved? Is the product or service now working? This is valuable information to help understand how customers experience an organisation's issue resolution policies, and the usage and impact of the product/service.

Net Promoter Score® (NPS)

This is a measure of customer satisfaction and loyalty. How satisfied are customers with an enterprise and its product or service, and how loyal are they to an enterprise? The Net Promoter Score (NPS) is used worldwide as a proxy for gauging this. This indicator is important for understanding customer experience and is measured by asking customers to rate how likely they are to recommend an enterprise's product or service to a friend or family member on a scale of 0 to 10, where 0 is least likely, and 10 is most likely. The NPS is determined by the % of customers rating 9 or 10 out of 10 ('Promoters') minus the % rating 0 to 6 out of 10 ('Detractors'). Those rating 7 or 8 out of 10 are called 'Passives'. So the NPS can be anything from -100 to 100.

Consumer Protection Score

Developed in partnership with GOGLA, the Consumer Protection Score is the average of three themes equally weighted from nine indicators. These themes are: awareness of key contract terms, ability to pay, and ease of use. They are rated on a 0-100% scale, where 100% is highest performing. We explain this one more in the section with the results.

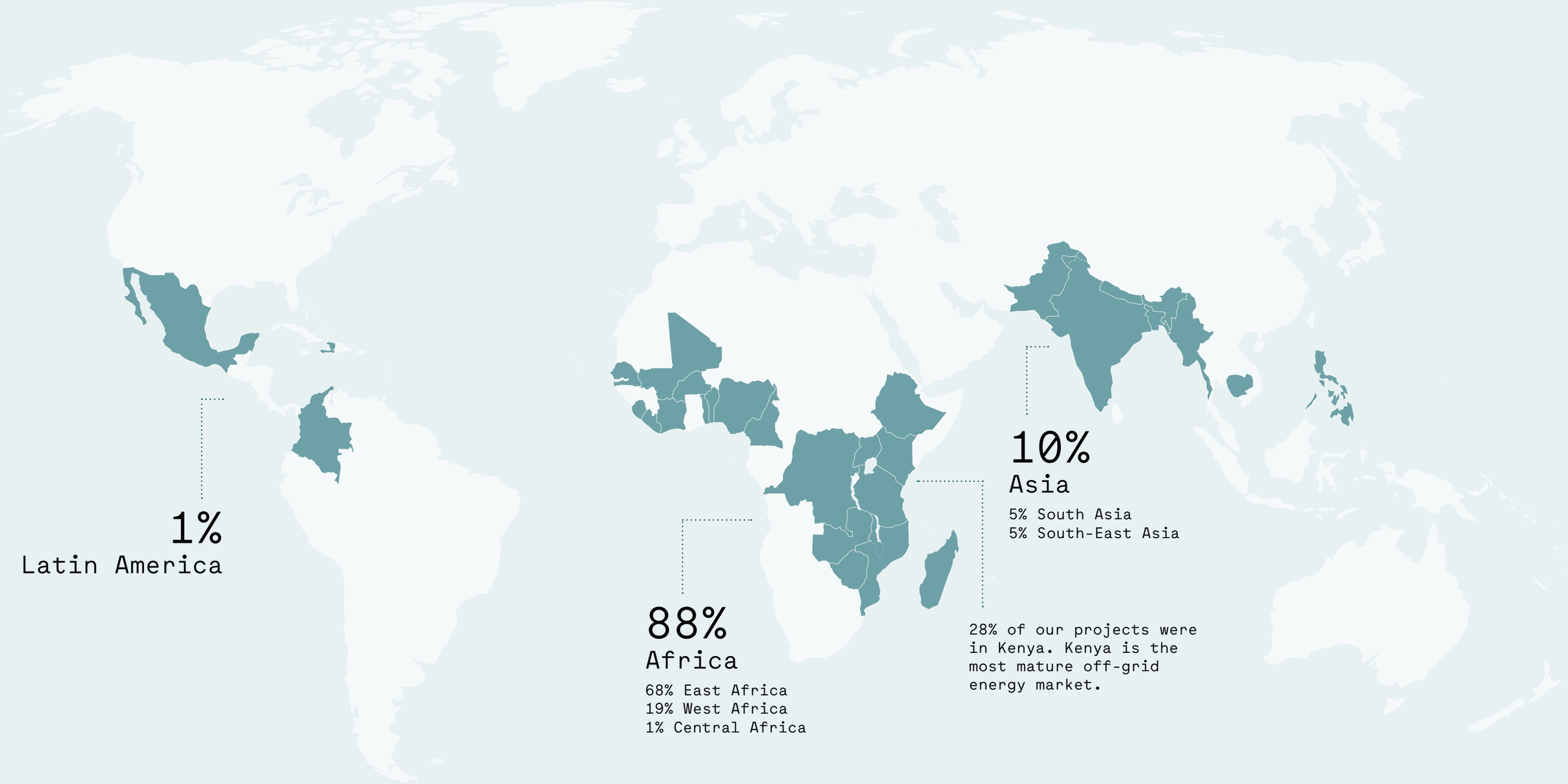
Disability Prevalence Rate

This metric was developed by the Washington Group on Disability Statistics. It asks respondents to self-assess their ability to see, hear, walk or climb steps, remember, concentrate, engage in self-care (washing all over or dressing), and communicate (understand or be understood). If a respondent answers, for at least one of the six dimensions, 'a lot of difficulty' or 'cannot do it all' for themselves or their family members, they or someone in their household is considered a person with a disability. The Disability Prevalence Rate is calculated from the number of households with a disability divided by all households who answered the questions. There are also national and global rates available for some countries, but they're not always measured the same way, so comparisons can be tricky.

Gender Experience Score

We created this score to provide insight into the experiences of men and women customers in their interactions with a company. The score uses five of our 60 Decibels Core Indicators: First Access, Ease of Use (inverse of Customer Challenge Rate), Issue Resolution, Net Promoter Score, and Customer Effort Score. NPS and CES are converted to a 0-100% scale. The calculation is simply the average of the women respondents' responses to the five questions minus the men respondents' responses. The range is -1 to 1. A score of 0 suggests that men and women customers experience an organisation's services similarly. A negative score suggests more positive experiences for men relative to women overall. A positive score suggests more positive experiences for women relative to men overall.

Geographic Spread



1%
Latin America

88%
Africa

68% East Africa
19% West Africa
1% Central Africa

10%
Asia

5% South Asia
5% South-East Asia

28% of our projects were in Kenya. Kenya is the most mature off-grid energy market.

Countries covered:

Bangladesh
Benin
Burkina Faso
Cambodia
Cameroon
Colombia
Cote d'Ivoire
Democratic Republic of the Congo
Ethiopia
Haiti
India
Kenya
Liberia
Madagascar
Malawi
Mali
Mexico
Mozambique
Myanmar (Burma)
Nepal
Nigeria
Pakistan
Philippines
Rwanda
Senegal
Sierra Leone
Tanzania
Togo
Uganda
Zambia
Zimbabwe

Part 2:

Impact

“Now I can send my  children to school and pay for their school fees.”

What is Social Performance?

At its core, consider social performance to be like any other performance criteria you might be familiar with. For financial performance, for example, we're familiar with using a range of measures (e.g. gross margins, costs of goods sold, top-line revenue, EBITDA,[15] etc) to come to a view on the overall performance of any given enterprise over a given time period.

When it comes to social impact, we have yet to properly embrace this same performance mindset.[16] Instead, we've typically looked for shortcuts. These have boiled down to one of two things: repurposing operational measures such as sales (as a measure of how many people are being reached – breadth of impact) and/or using established research to provide a good enough proxy of our own estimated impact (as a measure of depth of impact). Whilst pragmatic, such approaches only scratch the surface of understanding impact and are, at best, estimating but not measuring social performance.

Setting our sights higer

If we don't measure something properly – and instead rely on proxies, assumptions, results others have experienced, or even results we achieved many years ago, maybe in a different country, or with a different product – it makes it almost impossible to optimise performance. This is a very real problem. If we are not optimising, we are constantly leaving potential positive social impact on the table, or worse, not addressing or minimising potential negative impact.

Put in its starkest possible terms, we as a sector are creating less impact than we might, not because of our intentions or lack of resources (though that might be true for some), but because we don't have enough data. Data is needed to distinguish poor impact from good or great impact. We hoped to avoid the 'you can't manage what you don't measure' cliché,[17] but alas, if you're in the market for optimising performance, you really can't avoid it!

What performance criteria to use

A starting step to understanding performance is determining what to measure. The Impact Performance Reporting Norms, a document we're huge fans of, states that what is important to measure – it uses a swanky accounting term called 'relevance' – 'should be defined from the perspective of the stakeholder.' Amen. Yes! We're all about this. This simply means that the person who experiences that social impact should be consulted on what things have or have not changed in their lives as a result of any given intervention (e.g. product/service, employment, or other contractual arrangement); whether this change is positive or negative; and which of those changes are most important to their wellbeing.

This is an approach we adopt at 60 Decibels. We ask stakeholders – in this case, customers of off-grid energy devices – to define in their own words what things, if any, have changed in their lives after using one of those products or services. We do this by asking open-ended ('qualitative') questions about impact and categorising (or 'coding') the responses that we get into common themes. From that, we can determine which metrics of impact matter most (those that come up most frequently) and determine or design standardised 'quantitative' measures of social impact from which to judge, you guessed it…performance!

[15] To save you a Google search if you're not sure: EBITDA is earnings before interest, taxes, depreciation, and amortisation.
[16] By 'we', we mean the world here. Not us. We're quite into performance, as you know. ;-)
[17] Thanks Peter. Peter Drucker was an Austrian American management consultant, educator, and author.

What matters across the sector

Unquestionably, standardisation is the key to creating comparisons of performance. For example, before we invented ways to measure longer distances (i.e. miles and kilometres), judging and explaining differences in journey lengths was extremely difficult. Many early measures focused on body parts such as feet, hands, and span, but applying these to vast distances was unfeasible – can you imagine 100,000 hands?

Some ingenious but flawed measures were used to counter this, such as the distance from which you could hear a dog bark. But what if my dog is bigger (and louder) than yours?[18] Or if there is a forest or something else in between us, which dampens that sound? Comparison becomes much more challenging. So, we need standardisation to make accurate comparisons – between products, companies, sub-sectors, and over time.

Within the sector, there are a number of standard measures of impact. These include whether new populations are being reached (First Access), how easy products/services are to use (inverse of Customer Challenge Rate), and productive use of energy (PUE) – these are our indicators, admittedly. They capture any changes – or lack thereof – in income earned as a result, as well as, more broadly, quality of life, change in usage (of prior sources of energy), and spending on energy access. Additionally, they look into payment burden, household food consumption patterns, and reasons for payment defaults.

What matters across sub-sectors

We use sub-sectors to help explore nuances across the off-grid energy sector. While these sub-sectors have some things in common – and our core indicators are relevant for anyone and everyone – some of the most critical impact measures are very different from one product to another. This means that, in addition to our standard cross-cutting measures, for each sub-sector (or product category), we have collected data on two specific indicators for each, resulting in even more insight from all our analysis of qualitative data collected. There is also diversity not just between but within these sub-sectors as you'll see in some of our ranking charts.

We decide what indicators to measure by starting with the broader questions to give space for end-users to tell us what matters to them. We learn from common themes in their answers, then hone in and ask questions about certain subjects. Some of it is from our experience working in this space for years. Sometimes, we're testing a hypothesis. Sometimes, we ask because it's something that funders have particular interest in. For example, in the early days of off-grid energy, some of the impact focus was on (assumed) money savings for customers. One of the areas that wasn't talked about so much among organisations, but we commonly heard from end-users as being important, was the feelings of safety experienced from having bright, non-polluting, non-flame-based lighting. This is now a specific indicator we ask about – has how safe you feel in your home (or business) changed due to access to this solar lantern or solar home system?

[18] A dog's bark typically ranges from 60 to 110 Decibels.

60 dB

Sector Social Performance

Now we're ready to get stuck in! This is the good part. We'll begin our performance assessment by considering the sector as a whole with some data by sub-sector as we go. Later on, we'll take a closer look at the specific product categories and consider the spread of performance at an individual enterprise level (which, in many ways, is the most important way to think about performance). For now, we start with our macro findings.

“

With convenient access to water, I no longer need to depend on unreliable sources or spend endless hours fetching water from wells.

“

Where I stay there is no electricity and it's amazing that I now have lights 24/7.

“

My family's diet has improved since we can stock essential food items and consume them when still fresh. Also, buying food items in bulk, especially the perishable ones like milk, has significantly reduced our budget for food.

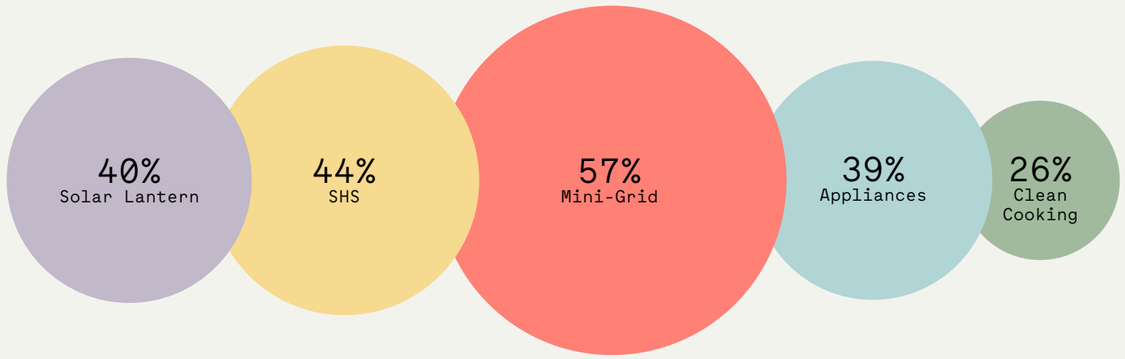
Impact at a Glance

Solar Lantern Solar Home System Mini-Grid Appliances Clean Cooking

Poverty Reach by Sub-Sector

More on page 24

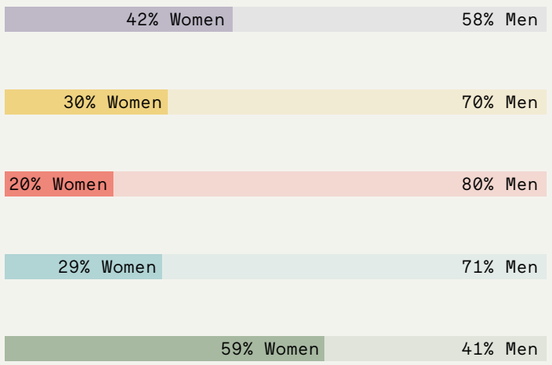
% living below relative poverty line



Customer Gender

More on page 23

Gender of customers interviewed



Disability Prevalence Rate

More on page 26

5.1% Disability Reach

Over-indebtedness Rate

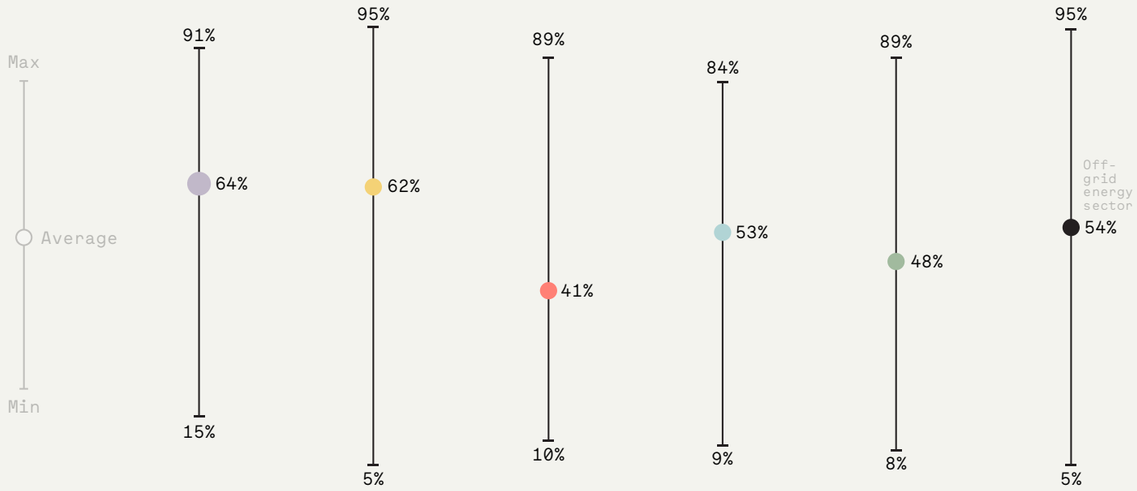
More on page 42

5.0% of customers are over-indebted

Materiality of Impact

More on page 18

Quality of life, % ‘very much improved’



Additional Outcomes

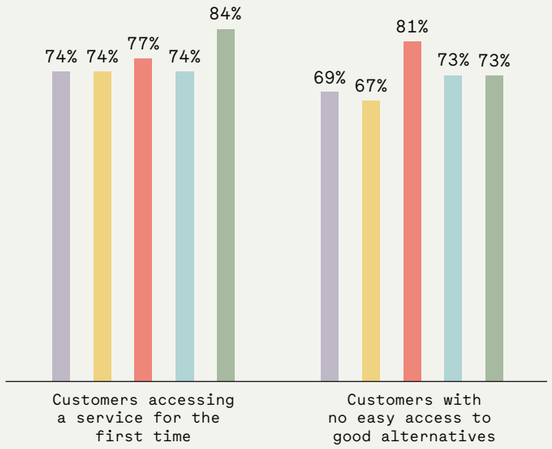
91% reduced usage of prior sources

68% of customers have reduced spending on energy

89% feel safer because of their new energy access

First Access and No Access to Alternatives

More on page 20



Impacts on Quality of Life

When it comes to energy access, it's clear that off-grid energy remains as impactful as ever. More than half (54%) of customers we talked to said that their lives, and the lives of their families, improved significantly thanks to access to an energy product or service. This remains consistent with the 55% who reported similar life-changing improvements in our 2020 report. Whether it's a simple solar lantern, a mini-grid connection able to power multiple devices, or a solar water pump to irrigate more land, these innovations make a meaningful impact in the lives of those who use them. 93% of customers are experiencing improved quality of life overall.

While we will present a lot of the overall or average results per theme, we'll also share some of the differences. The range of results shows just what an impact – positive or negative – an organisation can have. Check out that range in the chart here.

Once again, the small but mighty solar lantern stands out as a pound-for-pound champion. Despite sometimes costing as little as $5, 64% of lantern users report a significant change to their wellbeing; solar home systems came a very marginal second (at 62%).

An almost identical 54% of men and 55% of women tell us of significant improvements to their wellbeing. While access may vary between the genders – 68% of registered energy customers are men (see more in our Gender section) – but once actually in the hands of end-users, improvements to overall quality of life appear to be equal.

Perhaps unsurprisingly, impact is more pronounced in rural areas. 61% of rural users report significant improvements compared to 56% in peri-urban areas and 50% in urban areas. This is almost certainly caused by lower levels of prior energy access in such areas. In terms of age, the highest impact is observed in the youngest age group (18-35 years old). This observation could suggest that younger users are better equipped (or interested) to connect to the modern world through (charging their) mobile phones and watching TV.

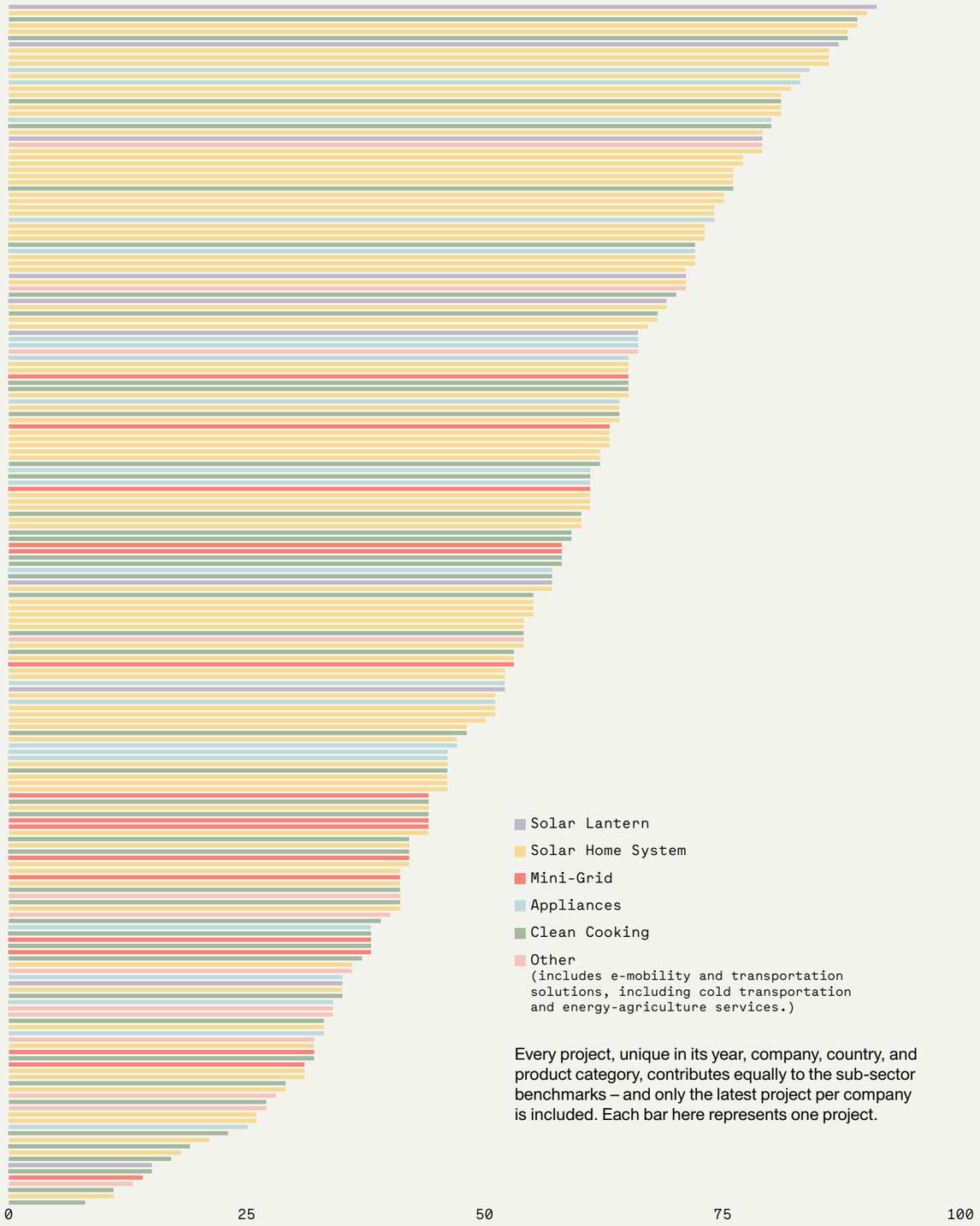
Similarly, reaching underserved populations and areas yields impressive results. For customers with no alternatives, 93% see an improved quality of life with their new access, compared to 87% where choices exist.

Quality of life is affected by economics. Isn't everything? It correlates with changes in spending and/or increases in any earnings from off-grid products. Those who saw a significant decrease in spending on energy were more likely to experience significantly improved quality of life, as were productive use customers – those using their energy device to earn an income – who saw a related increase in their income. Overall, there is little difference in reported quality of life improvements between productive and non-productive energy users. This speaks to the intrinsic value of energy access.

There's also a correlation between a decline in quality of life and over-indebtedness – of those whose quality of life worsened (2%), 38% found the associated payments to be a heavy burden.

What did customers tell us made a difference to them? Check out the sub-sector sections for more insight. You'll also find some product category-specific impacts, like health, safety, knowledge and awareness, in these sections. There are some areas of impact we don't have specific indicators on but saw bubbling up in conversations with customers – the positive impact of lighting on education, self-

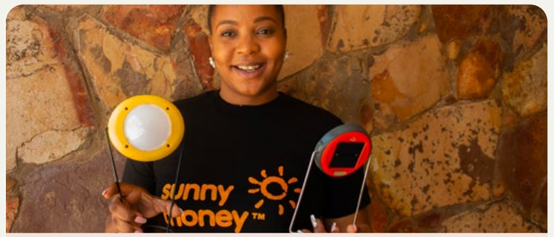
Quality of Life: Organisation Ranking



Every project, unique in its year, company, country, and product category, contributes equally to the sub-sector benchmarks – and only the latest project per company is included. Each bar here represents one project.

esteem/confidence in business, pride and respect for having modern energy access, and broadly, happiness.

These insights provide a compelling narrative of the transformative power of energy access. While challenges persist, the data speaks to the substantial benefits it brings to people's lives. By addressing the challenges, expanding access, and ensuring affordability – including not over-indebting people – we can make a meaningful difference in the lives of countless individuals and, crucially, leave no one behind in our quest for a brighter and more energy-efficient future.



TOP PERFORMER

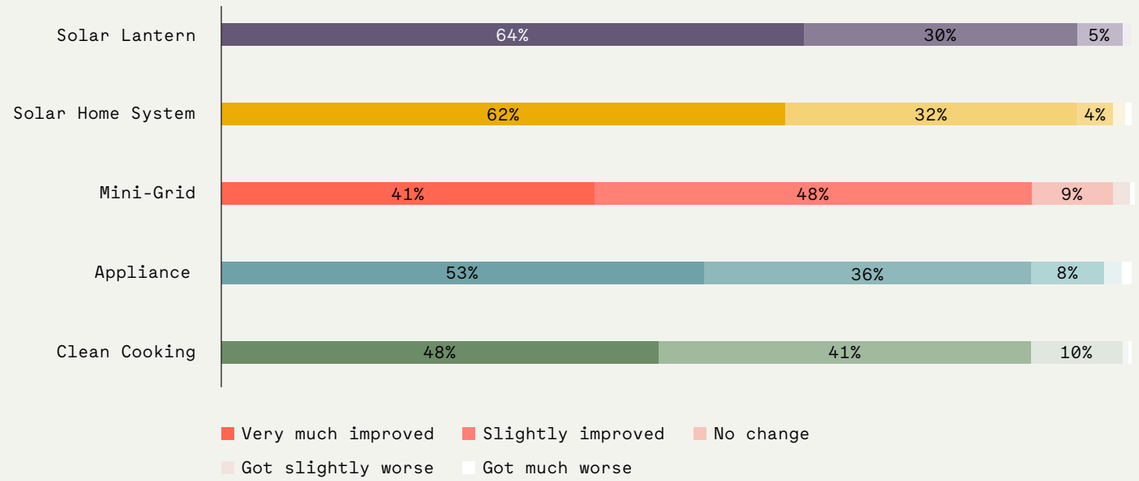
SunnyMoney (SolarAid) in Zambia is highest performing for Quality of Life

If you're looking to maximise your impact, some of these things will likely help:

1. **Make it easy for your customers to use your products;** try to anticipate, reduce, and address challenges your customers (may) face. More in the challenge section on the impact this has.
2. **Reach new customers who didn't have access before.** We know that can be tricky expensive and increase costs, but it's the best way to contribute to positive impact.
3. **Explore new areas where people don't have access or choice:** reach underserved populations.
4. **Go to off-grid areas:** the marginal impacts are much greater.
5. **Care about both your home-based customers and your productive-use customers**. We know many funders are focusing on the productive use of energy, and that can be important for economic impact, but consider that customers experience a similar level of self-reported impact if they use their energy product for family use or for generating an income.
6. **Please don't make your customers over-indebted.** Financing is great, but taking on more than you can afford isn't good for businesses or customers. More on this in our Consumer Protection section.

Quality of Life

Quality of Life by Sub-Sector



Going Up the Energy Staircase

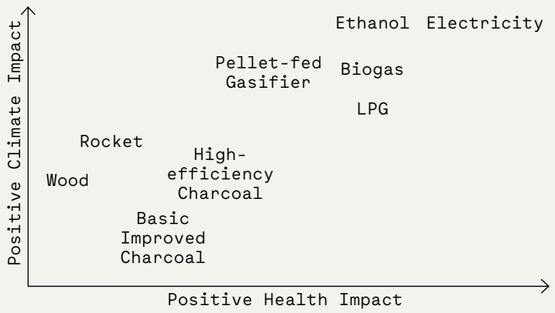
Anyone reading this is likely familiar with the ‘energy ladder’ or, as we like to think of it, the ‘energy staircase’. Rather than a linear progression moving from one rung to another and leaving previous sources behind, families often build (or stack) a portfolio of energy products and services, combining them to meet their evolving needs. This staircase represents the transition from traditional energy sources – or fuel – to more modern and efficient ones, which are less polluting and have less negative impact on health. In this transition, the aim is for these sources to increasingly meet a household’s energy needs.

We ask customers what they were using before to meet the need they purchased their new energy product for. So, for example, for cookstoves, we ask, “what fuel were you using to cook before you got this new cookstove?” For solar lanterns, solar home systems (SHS), and mini-grid connections – “what were you using for lighting and/or energy before you purchased/connected to this new service?” We use the energy staircase framework – see the graphic – to determine if a customer’s purchase of their new energy product compared to their prior source constitutes a move up the energy ladder.

We ask: What were you using? What are you now using? Has that usage changed? How?

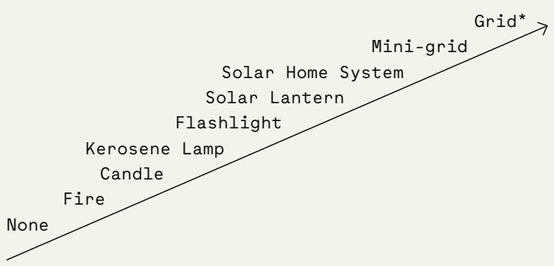
50% of customers who have embraced off-grid energy products have climbed a step or more on the energy staircase since their purchase. Among these, those adopting solar lighting solutions are more likely to have moved up; two-thirds of solar lantern users move up the staircase to experience improved energy access. 1 in 10 SHS customers owned a solar lantern before demonstrating the opportunity to move up the staircase with solar devices. Lanterns represent a great gateway product for climbing out of energy poverty.[19] By comparison, cookstove users lag slightly behind, with a third moving to cleaner fuels – a larger group have moved to more efficient technologies using the same fuel. The simplicity we’re presenting here underrepresents a nuance that is key. You’ll see more on this when we talk about changes in usage.

Cooking Fuels



* Climate impact depends on many factors, including level of displacement and renewability of fuel.

Energy Sources



* Renewable & reliable grid

Geographical location plays a significant role in this transition. Those residing in rural areas are far more likely to climb up the energy staircase (67%) than their peri-urban (39%) or urban peers (28%). Gender dynamics also come into play, as women are less likely to climb the energy staircase, with 49% moving up compared to 56% of men.

Moving up the staircase is important for leaving polluting power sources behind, as well as enhanced energy access. This is particularly important for certain power devices. Most customers were cooking or lighting their homes before their purchases, but a third of customers did not cool before they got their off-grid refrigerator or watch TV before they bought their solar TV.

Among those that move up, just shy of two-thirds (63%) say they no longer use old sources and a further 27% use them much less than before. Unsurprisingly, this looks different across the product categories with greater stacking in the cookstove space – 22% no longer use their prior fuel sources for cooking after purchasing their new, improved cookstove, but 71% have reduced usage of their previous source so, it’s still positive news.[20]

92% of those who stop or reduce their use of prior energy sources report that this is because the new (and eco-friendly) product is meeting their needs. 8% say it’s because of finances: they are using the other sources less because they do not have the funds to do so after purchasing their new energy product. This is good news for the majority, which suggests that for as long as their solar home system works or the power is connected through the mini-grid, they will not revert (back) to more polluting sources. This is helpful as we think about the future potential for carbon emissions reductions.

Whilst a relatively rare occurrence compared with stepping up the staircase, a not insignificant 4% of the customers we interviewed had ceased to use their product or service. Primary reasons included product challenges or financial difficulties that sometimes resulted in non-payment and repossession.

Specific reasons varied by product type: solar lantern users talked of product failure and battery issues, mini-grid customers faced disconnections or moved, and appliance users, such as TV owners, pointed to technological problems or cost-cutting needs. TVs were often seen as a luxury, so they are the first to go when finances are tight. Interestingly, dissatisfaction with TV content was also a factor, indicating that reasons for discontinuation extend beyond product functionality to include service quality and content availability – often not something in the hands of the organisations selling the TVs.

Solar water pump users mentioned mechanical failures and financial constraints, while solar home system customers highlighted warranty and service issues, underscoring the importance of customer support and product reliability. Cookstove discontinuation was often due to fuel availability, or rather, lack thereof, and durability concerns, highlighting the complex interplay between product design, operational costs, and user needs.

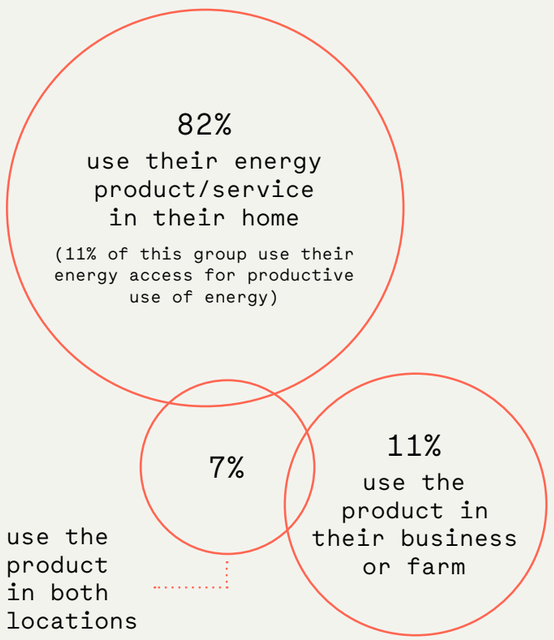
[19] Some families buy multiple solar lanterns to meet their needs rather than moving ‘up’ to a SHS.

[20] Overall, 46% of energy customers no longer use old sources, and a further 23% use them much less.

Economic Impact

The influence of modern energy products and services on customers' spending habits is a key part of the sector's impact. 50% of customers who've moved up the energy ladder, and 63% of those who didn't, have found themselves spending less on energy compared to their previous sources (and this includes the cost of the product or service itself). At the same time, nearly a quarter (22%) of customers report spending more per week on energy now. This increase in spending is often accompanied by a higher level of energy service, i.e. brighter, longer-lasting, more reliable, and/or improved energy access. So, not yet cause for alarm, but it can have implications – see our section on over-indebtedness.

Where are customers using their energy?



For cookstoves, the benefits of saving are especially pronounced. 4 in 5 clean cooking customers have witnessed reductions in their spending on cooking fuel – and it's a significant effect for half. This outcome can largely be attributed to the efficiency of improved cookstoves, which typically reduce the fuel consumption required.

Alongside reduced expenditure, many of these products have positive economic outcomes through their facilitation of productive activities that generate income. While the sector often categorises certain equipment or appliances as specific Productive Use of Energy (PUE) tools, we look at PUE from a customer behaviour perspective rather than a specific product perspective.[21] So, we simply ask customers, where are you using your energy product (home, business, farm) and are you using it for income-generating activities? Virtually all off-grid products have some impact here (with one notable exception, see below). Take, for example, the solar lantern, which may not typically be categorised as PUE equipment. Still, 16% of users employ it for income-generating activities.

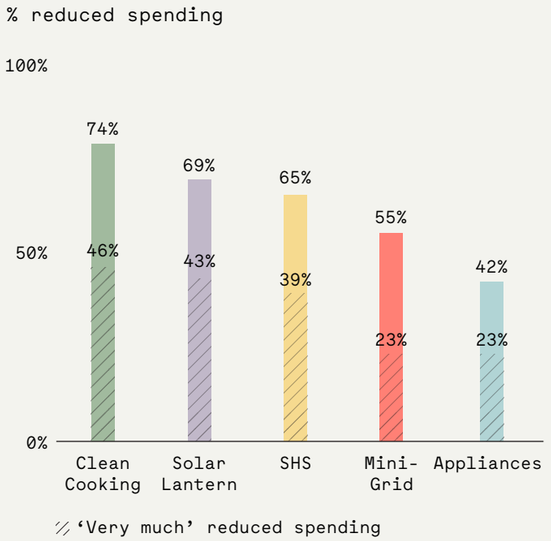
Overall, 17% of energy customers use their energy product/service to generate an income. There's some big variation here (and you can find the details in our sub-sector sections); topping the productive usage charts are solar water pumps (89%) – mostly used to irrigate land used for growing produce for sale, and off-grid refrigerators (88%) – often used in bars, restaurants, kiosks, and shops to cool drinks and food. At the bottom of our list are solar TVs, which are scarcely ever used to generate income (2%).

For 23% of productive users, the energy product is used for a new business or income-generating activity and has unlocked new opportunities for income earning.

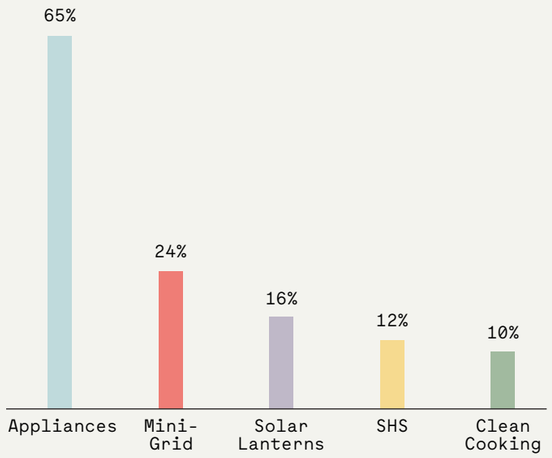
When examining gender differences, men are marginally more likely to utilise energy products for productive use (17% vs 14% for women). These productive activities aren't just happening in bars, markets, and farms; 11% of home users use the product for income-generating activities. These activities include tailoring and charging neighbour's phones. We've heard it suggested that income generation in the home may be more the domain of women, but we see no difference in productive use within the home by men and women customers.

81% of customers engaged in productive use experience an increase in their income due to their energy access. This increase is particularly significant for 37% of these customers, highlighting the economic impact and livelihood improvements associated with the productive use of energy. The impact is most significant for appliance users, with the greatest proportion seeing increased income through productive use (89%). And it's also greater for women than men. This suggests some potentially untapped opportunities. We like this article with ideas for making PUE more accessible to lower-income customers from our friends at Acumen.

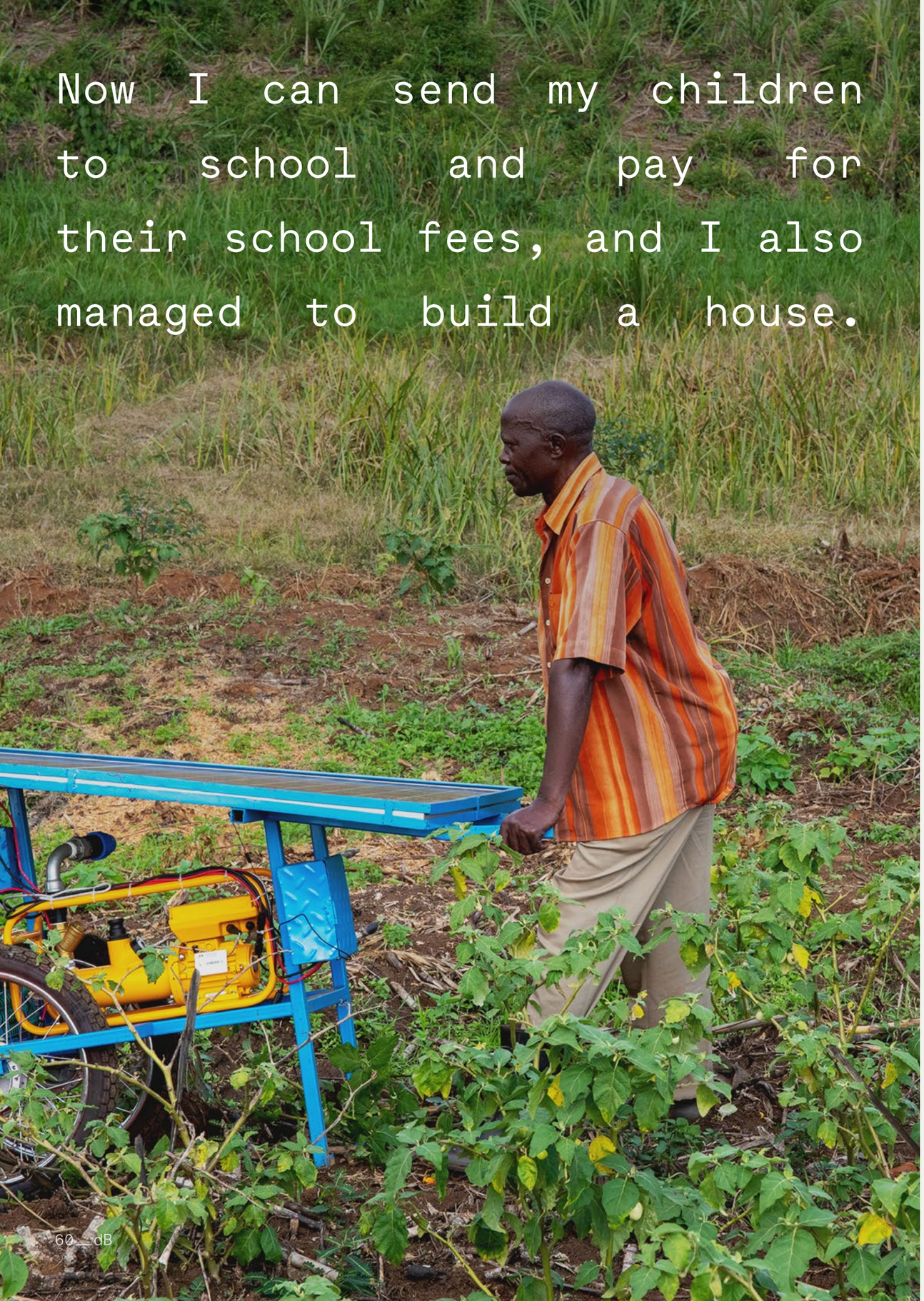
Change in Spending by Sub-sector



Productive Use by Sub-Sector



[21] Indeed, not all 'PUE devices' are used to generate an income ('productively'). .



How Inclusive is Energy Access?

Alongside the depth of impact, one of the most important elements of impact performance is who that impact occurs for. All things being equal, someone who is more marginalised is more likely to experience greater impact for any given product or service than someone already better off or well served.

That means that when we think about leaving no one behind with respect to energy access, we want to understand if there are any groups of vulnerable or marginalised people who might be systematically left out.[22] This includes whether we might inadvertently be expanding the gap between haves and have-nots in our ambitions to scale access.[23]

[22] At the time of writing this report, we have not delivered work to understand the impact of energy access for refugees and displaced people specifically though we recognise that this is an important, often vulnerable and marginalised, group to consider.
[23] We recognise the role different entities may need to play here: private sector, government, third sector.

Gender Inclusivity

Across the organisations in this report, the ratio of men and women customers is exactly 2:1.[24] That said, for various energy access products and services, there are multiple users in each household, meaning that actual access, usage, and impact may in fact be more even – in some cases, greater.

There is some variation across product types, which, perhaps unsurprisingly, often fall along gender norms. For example, 59% of customers in the clean cooking sector are women. Women are also more likely to be customers of lower-spec and cheaper products, with 42% of solar lantern customers being women. In other sectors like solar home systems, appliances, and mini-grids, there is lower representation of women ranging from 20% to 30%; often where larger, more expensive products may require co-decision making and/or the man of the household to sign up to the financing contract. More on that in the Consumer Protection section.

TOP PERFORMER

Mobility for Africa in Zimbabwe tops the women reach chart!

60 Decibels Gender Experience Score NEW

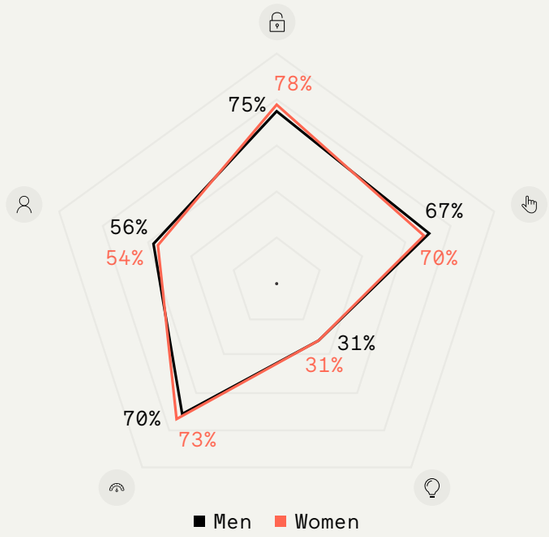
To measure the experiences of men and women customers, we designed a new metric: the Gender Experience Score. This score is calculated using five of our 60 Decibels Core Indicators, and it ranges from -1 to 1. A score of 0 suggests that men and women customers have similar overall experiences with energy services. The Gender Experience Score Benchmark stands at 0.02, indicating very similar experiences overall for both genders. This is good news overall, suggesting that companies are interacting with customers' in a similar way regardless of gender.

0.02 Gender Experience Score

Key insights from the Gender Experience Score:

1. Women are slightly more likely to be **first-time users** (78% compared to 75% of men).
2. Men are slightly more likely to **experience challenges** using the energy product or service (33% of men; 30% of women).
3. Likely related to the above two points, women tend to be **more satisfied** with their energy services – the Net Promoter Score (NPS) is 45 for women compared to 39 for men.
4. **Issue resolution** rates are similar, with 31% of both men and women having their issues resolved.
5. **Customer Effort Scores (CES)** are similar for both genders – 3.18 on average for women and 3.24 for men.

Gender Experience Score



	Male	Female
First Access % of customers accessing [product category] for the first time	75%	78%
Ease of Use % customers experiencing no challenges	67%	70%
Issue Resolution % customers whose challenges have been resolved (of those who experienced challenges)	31%	31%
Net Promoter Score © Customer satisfaction and loyalty	39	45
Customer Effort Score Customer service rating	3.24	3.18

[24] In terms of the data in this report, we have matched this wider customer base: i.e. 68% of customers are men, 67% of our respondents are men. This is one of the checks we do – first we randomly select, and then we check that our sample is representative of the customer base for all the info we have available.

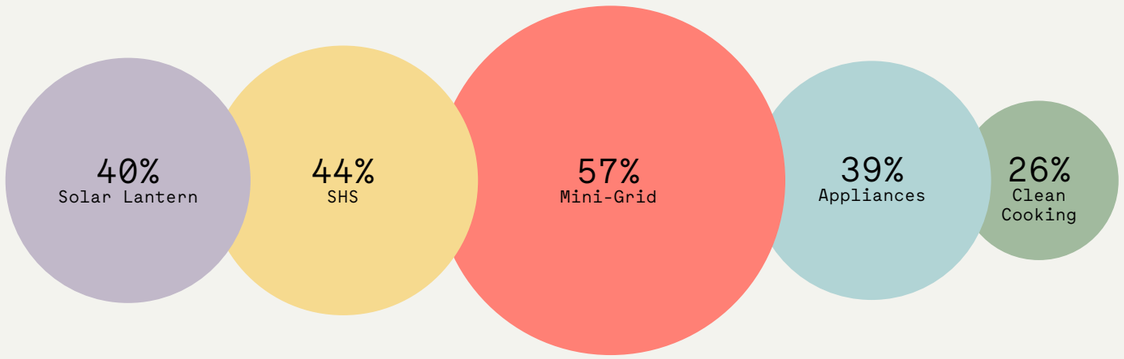
Income Inclusivity

Whilst there are considerable variations by sub-sector and individual organisation performance, in general, off-grid energy is a relatively income-inclusive sector compared to others. Since our last report, the reach to customers beneath global poverty thresholds has increased overall from 37% in 2020 to 41% in 2024. This is not a direct comparison as there are new organisations in different countries we've worked with in that time.[25] 27% of our 79,000+ respondents live in low income countries, 69% in lower-middle income countries, and 1% in middle income countries.[26]

This trend is reflected across different energy products, with mini-grid developers serving the highest proportion of those living in poverty. Poverty Reach is 57%, up from 51% in our 2020 report, making mini-grids the most inclusive sub-sector of all. Somewhat surprisingly, the proportion of solar lantern customers beneath the poverty line has decreased from 49% to 40%. It may be that solar lanterns are appealing to a wider group of people as complementary or backup to electricity grid access. Solar lantern customers are more likely to be connected to the grid (43%) than SHS users (23%), who may be more likely to use their home system as their main source of energy. It may also be that batteries are harder to find/more expensive, or that kerosene subsidies have been disappearing, so more people are demanding renewable energy sources as a solution, and/or a desire to have these clever lanterns for their portability.

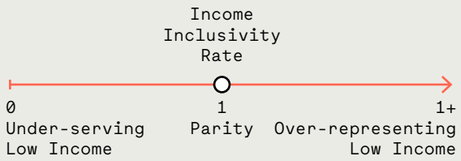
This is one place where geographic context is super important. We created our Income Inclusivity Rate for just this reason – to look at poverty reach within the context of relevant national poverty rates. Mini-grids are doing best here, too: the sub-sector has an Income Inclusivity Rate of 0.96, meaning their customers' likelihood of living in poverty is almost even with the national poverty rate in the countries where the mini-grids are situated. A rate of 1 would mean full representation from an income perspective. Solar lanterns are a close second at 0.90, with SHS following closely behind at 0.87. Echoing poverty reach, appliances come next at 0.76, with clean cooking coming up last at 0.62.[27]

Poverty Reach by Sub-Sector

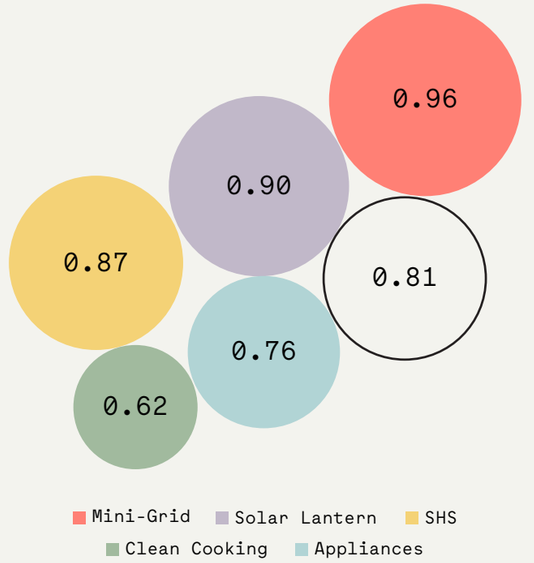


Income Inclusivity Rate

Developed to estimate the degree to which an organisation's customer base is representative of the national population in terms of income level. It is calculated by taking the proportion of customers living under extreme, relative, and low-income poverty lines compared with the national rates in the country where the organisation works.



Income Inclusivity Rate by Sub-Sector



[25] This may also reflect an increase in global poverty related to the COVID pandemic pushing greater numbers into poverty.
[26] We use the World Bank country classifications: https://blogs.worldbank.org/opendata/new-world-bank-group-country-classifications-income-level-fy24

[27] You might notice that the poverty reach of solar lanterns is lower than SHS but the Income Inclusivity Rate is higher. This shows how context plays a role in terms of the countries the products are available in.

Users living in poverty tend to report higher impact across a range of product-specific outcomes, including improvements in safety, security, knowledge and awareness, family connectedness, productivity, land under cultivation, and time spent on cooking and leisure activities. This suggests that reaching more marginalised customers is important with respect to equity – and that it is also likely to generate a greater marginal depth of impact for each customer. Indeed, energy customers echo national poverty rates, with a much higher proportion of rural energy customers living in poverty (50%) than urban energy customers (16%).

However, issues arise, as indicated by higher challenge rates and over-indebtedness among those in poverty. The Consumer Protection Score shows a slight disadvantage for those in poverty, with a 2% lower score compared to those not in poverty. Find more on this in our Consumer Protection section.

One of the most compelling insights from our data is that locally-owned organisations reach a 5% higher proportion of customers who are living in poverty, on average, compared to organisations owned by people from outside the country of operation.

Organisations appear able to serve different types of customers at different stages of their own growth. Organisations in their early (or validation) stage serve an average of 41% of customers living in poverty. This falls marginally to 40% amongst the scale-ups in our sample, but encouragingly rises to 47% for the most mature companies. This may suggest that rather than companies reducing their attention on the poorest as they scale, they are actually better able to reach them – potentially through offering a wider range of products at different price points to meet customers where they are at.

Financing and Pay-as-you-go (PAYGo)

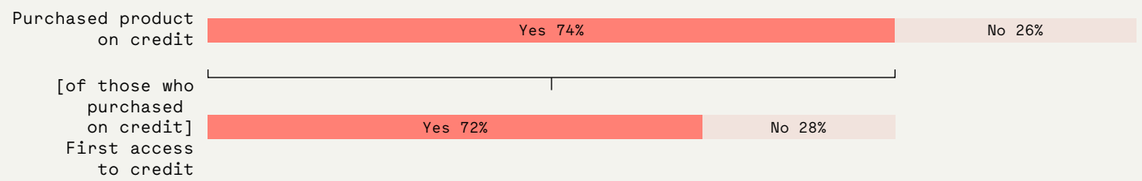
74% of the customers we spoke to bought their energy products using some form of payment plan or loan. Financing plays an important role in making these products and services more accessible by increasing their affordability. However, this also raises concerns about the possibility of customers taking on too much debt and how well they are protected in these situations. We'll dive deeper into these issues later in our report.

When we look closer, we see that how people finance their products varies depending on the type of energy product.

For example, mini-grids, which provide a service much like a utility company, don't usually involve buying a product on credit.[28] In contrast, a huge 92% of solar home systems are purchased with financing, showing a high reliance on loans – or PAYGo – for these products. 48% of clean cookstoves are bought with loans, this is an opportunity to expand upon to increase uptake. Solar lanterns are also less often bought on credit. Though customers may want financing for lanterns, many organisations are hesitant – or unable – to offer a loan for a product where margins are already low(er).

[28] Though increasingly, mini-grid developers are offering product financing for devices and appliances connected to their power as a way of increasing energy consumption of customers - and supporting them to gain greater access.

Customer Financing



> "The price is good because it gives someone time to pay slowly if they do not have enough money. It doesn't ransom someone a lot of money when it comes to paying.

Disability Inclusivity

Since 2018, we've been working to widen our analysis of inclusivity beyond more familiar themes (gender, income, age, location, etc). We adopted the Washington Group on Disability Statistics questions, what we now call the Disability Profile module, at 60 Decibels.[29] To gauge inclusiveness, we compare these results against the country's disability prevalence rate, when available. This is similar to comparing income levels against the national poverty rate.

As part of our ongoing commitment to inclusivity, we're proud to introduce the 60 Decibels Energy Disability Benchmark. This benchmark currently stands at 5.1%, relative to the global disability rate of 16%, according to the World Health Organization.[30] Early insights from our data reveal that difficulties with seeing and mobility are the most commonly reported disabilities within households. Hearing and self-care follow closely, with remembering or concentrating, and communication as additional challenges reported.

For a smaller subset of 12 energy companies, funded by the TEA platform, we also investigated whether disability affected access and usage of energy products and services. 73% of users with disabilities reported no significant challenges to using their product. However, for 21% of those with disabilities, their disability impacted their usage of the energy product primarily due to physical strain. Consequently, most suggestions for improvements made by users with disabilities focused on product design improvements and the need for new products.[31] Our friends at Efficiency for Access have some ideas for what we can all do in their report How Can Energy Access Programmes Address the Needs of People with Disabilities?

We're continuing to look at how we ensure that when we listen to end-users, that we're able to hear all experiences as we support organisations and funders in making energy products and services accessible to all. If you'd like to explore additional insights around disability and its impact on energy access and impact, get in touch.

5.1%

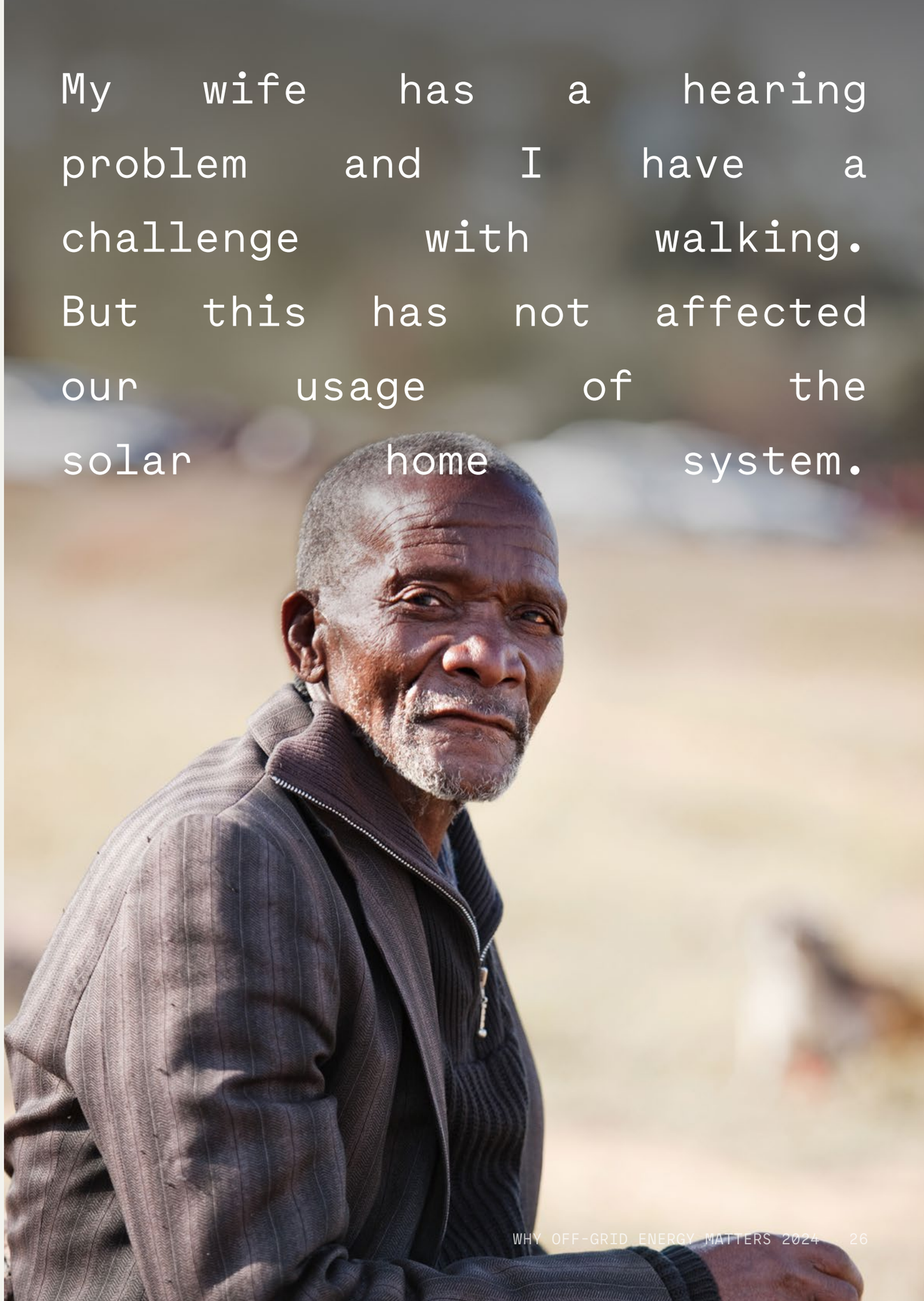
60 Decibels Energy Disability Benchmark

Global disability rate: 16% (WHO)

Interested in exploring insights around disability and its impact on energy access and impact?

Get in touch →

[29] Though increasingly, mini-grid developers are offering product financing for devices and appliances connected to their power as a way of increasing energy consumption of customers - and supporting them to gain greater access.
[30] These numbers may not be comparable as one of the challenges in the disability measurement space is that there are no standardised and agreed ways that all countries measure and report the disability status of their populations. So here's an example of a benchmark to review with caution.
[31] You can read more in our Disability Insights report.



Inclusivity by Age, Location, and Education Level

The analysis of off-grid energy product demographics reveals a broad age range of customers, from as young as 18 to as old as 100, with an average age of 41. We segmented our data into three age groups: youth/young adults (18–35 years old), middle-aged adults (36–55 years old), and elderly/older adults (55+ years old), providing insights into preferences and impacts across different energy sub-sectors.

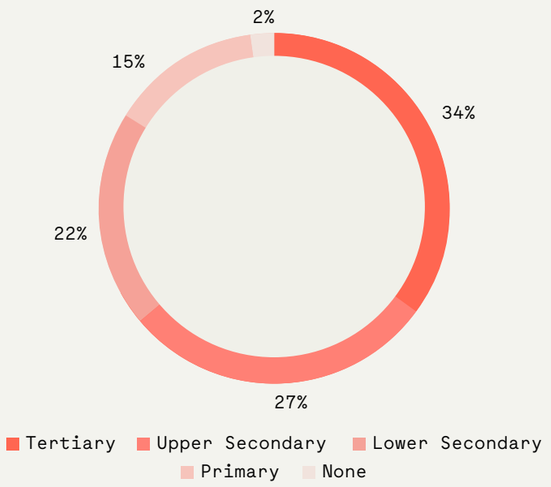
Each product category has different age distributions, but middle-aged adults make up the biggest group of customers for all.

Geographically, 53% of customers live in rural areas, 29% in peri-urban, and 18% in urban settings, with older customers predominantly in rural locations (68%). Among these, two-thirds (67%) live off-grid, with clean cooking customers having the highest grid connectivity at 76%. This shows potential for expanding electricity-based clean cooking solutions. The scale of the cooking problem is much larger than the off-grid population, so these numbers may also demonstrate that the current community being reached is likely not wholly representative of those cooking on traditional, polluting fuels. The off-grid solar customer base could be a way to reach new cookstove users.

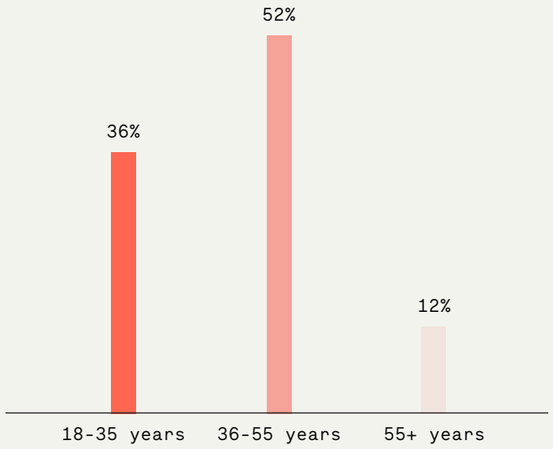
Solar lanterns and mini-grids have the deepest rural penetration at 83% and 81%, respectively, indicating their significant role in reaching last-mile customers. 83% of the global population without electricity live in rural areas.[32] So, in terms of location inclusivity, for some sectors we're further off the mark than others regarding representation of off-grid populations. That said, 'on-grid' populations often do not have sufficient, adequate, reliable, good quality access to electricity, so as we see from the impact, there are benefits to be had for all groups.

Educationally, 61% of customer households have someone with upper secondary schooling or above living there. The level of education correlates with the type of energy product used, likely indicating a link to income levels. Appliances lead with 51% of users having tertiary education, followed closely by clean cooking solutions (49%). This suggests a relationship between product choice, income level, and possibly other factors like gender and accessibility.

Education Level



Age Group



> Even my neighbours and friends are envying me, some even respect us more as we seem to have progressed socially and financially because of the solar lantern. Here in rural areas lighting energy is very scarce, people cannot even afford to buy candles for lighting.

[32] https://unstats.un.org/sdgs/report/2019/goal-07

Review of Progress: Recommendations from 2020 vs 2024

Fans of our Why Off-Grid Energy Matters 2020 report[33] may remember that we set out a range of challenges and recommendations for the sector to act on. It seems only right that we check in on the progress made in these areas.

01

Continue to invest in product affordability

41% of energy customers are living in poverty (up marginally from 37%). There's a big range across the sub-sectors – from 57% of mini-grid customers living in poverty to 26% of cookstove customers which tells us something about reach and affordability. The sector is reaching a similar proportion of previously unserved populations – 76% are accessing the product category they purchased for the first time now (compared to 77% in our 2020 report). This suggests that solutions are reaching wider and deeper particularly in more mature markets 4 years on, and customers feel able to uptake this modern energy provision. This is reinforced by 70% of customers telling us they cannot easily find a good alternative to their purchased energy product or service (consistent with 70% in 2020). On the upside, this shows companies are reaching areas that were underserved. On the downside, this highlights a persistent challenge: despite all the growth in the sector, there is still something of a lack of choice and competition in the market for consumers.

When we are talking about affordability, access to finance plays a critical role. Who is gaining access may further be shaped by income variability, especially considering the seasonality of income for many potential customers, particularly lower-income and rural customers. This variability, coupled with low financial resilience, can impact people's ability and willingness to access financing offers from energy companies, such as pay-as-you-go (PAYGo). Additionally, individuals in informal settlements and marginalised groups often lack the documentation required to participate in market mechanisms or are excluded from social security registers.

The data underscores the positive impact of off-grid energy solutions in reaching new users who had previously lacked access to essential energy products and services. While affordability has improved, challenges persist, particularly in terms of limited alternatives and income variability. These findings emphasise the importance of continued efforts to make energy access more accessible and inclusive, ensuring that a broader spectrum of society can benefit from these transformative technologies.

02

Keep an eye on over-indebtedness

A small but significant 5% of customers find the payments for their energy product or service to be a significant financial burden. This is broadly similar to the 4% in 2020, so it remains an area of concern. The percentage of customers who regularly reduce their household food consumption to meet payment obligations – a sure sign of financial struggle – looks similar from 5% in 2020 to 3% now. However, 10% sometimes have to make such sacrifices, and 12% do so but rarely, indicating that financial strain remains a challenge for many customers. We know organisations offering financing solutions are continuing to look at this as over-indebted customers tend to present a credit risk to investors too.

> "Paying for this product is a heavy burden. In fact, there was a time we survived without decent meals for three days just trying to gather money to pay for my weekly instalments.

[33] We've got loads more data in this report. 2020 included 35,000 interviews with customers of 39 organisations, across 17 countries.

03

Deepen focus on gender

There has been no change, on average, in the representation of women in organisations' customer databases since 2020. 67% of the registered customers of energy products and services are men. We know that this is shaped by society, by cultural norms, and sometimes by financial laws governing access for women. We also know that there are typically other users in the home outside of the customer who experience the benefits of the energy product. We do have some methods to listen to a higher proportion of womens' voices via stratified sampling[34] to intra-household surveys[35] – get in touch for more info.

Just like all the data you'll see in this report, when we present a benchmark or an average, this often represents a wide range of performance. This is where we can learn from the strategies organisations with a more balanced gender mix are employing.

04

Address customer challenges

We see a Customer Challenge Rate of 32% compared to 34% in 2020. We don't so often talk about high/low, good/bad without context (that's what our benchmarks are great for). But, we will here – this challenge rate is high. It represents a third of customers with issues. We flagged this in 2020 as a key issue the sector needs to address for impact – if you can't use your product to full effect, you can't realise the full benefits. It's important for cost-effectiveness – if you cannot use your product, then it likely won't provide the cost-savings it could. It's important for income generation – if you can't rely on your product, or worse, you do and then it breaks, then it could impact your income. It's important for satisfaction – affecting word of mouth, referrals, and scale. Continued focus on this is critical.

05

Invest in the viability of mini-grids, supported by stronger partnerships

While this isn't our core area of expertise, we do know there are a lot of customers saying that mini-grid costs are high. And a lot saying they are impactful – a clear indication they need further attention in order to get it right.

> "If I turn it on, 10 minutes later it turns off. I can't light my house. I still use a flashlight.

[34] This is when you split a sample into strata (groups) and equally select a number to interview. Example, say 32% of your customer base are women, we split the full customer base into men and women and equally sample 50% from each strata (gender, in this case), where there is sufficient data. This means you hear more womens' voices, but they may not be more representative of women in the household as this group are registered customers and may have more decision-making power in the home.
[35] This is where we will interview the registered customer, and then ask for the contact details of – or to speak to – another member of the household – typically the spouse or partner and typically a user or consumer of the energy access too. This way we hear different experiences of the product within the household.

Part 3:

Insights

“We have got so many modern

facilities in our

village.”

Customer Experience

Whilst our main goal is to help organisations understand their social performance, speaking directly with customers about a product or service is also a fantastic opportunity to enquire about their wider customer experience. Sometimes this experience may have a direct effect on social impact (e.g. if there is a maintenance issue which has stopped a product from working) and sometimes it is useful simply for a company's reputation in the eyes of their customers (e.g. a niggling user experience that might be fixed to improve satisfaction and future uptake).

> The fan is a great help to me and my family. Since I bought the fan my entire family no longer sleep under heat again.

> [The solar water pump is] practical for us growers who don't have a lot of means, and it means we spend less money.

Insights at a Glance

Solar Lantern Solar Home System Mini-Grid Appliances Clean Cooking

Customer Satisfaction

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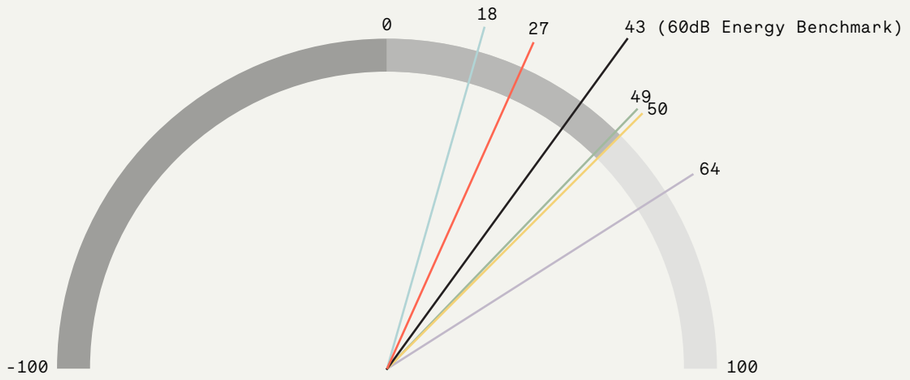
Net Promoter Score



Customer Service Rating

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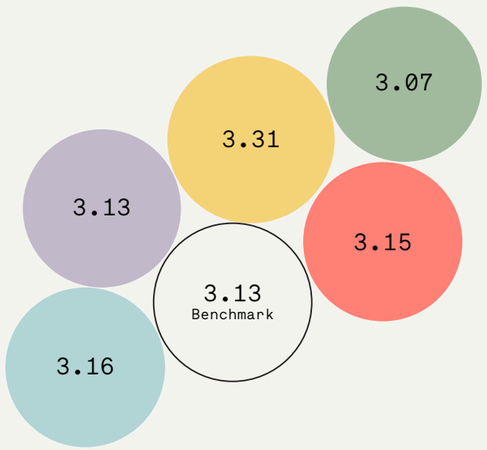
Customer Effort Score



The CES captures after-sales care and customer service. Customers who have experienced a challenge are asked the extent to which they agree that “the company made it easy for me to handle my issue” and offered five options: disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and agree. These responses are turned into numbers from 1 to 5 and the CES is the average score.

Productive Use

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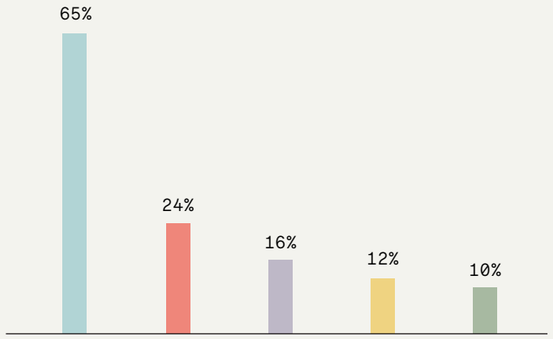

Consumer Protection Score

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68%

60 Decibels Consumer Protection Score

Challenge Rate & Issue Resolution

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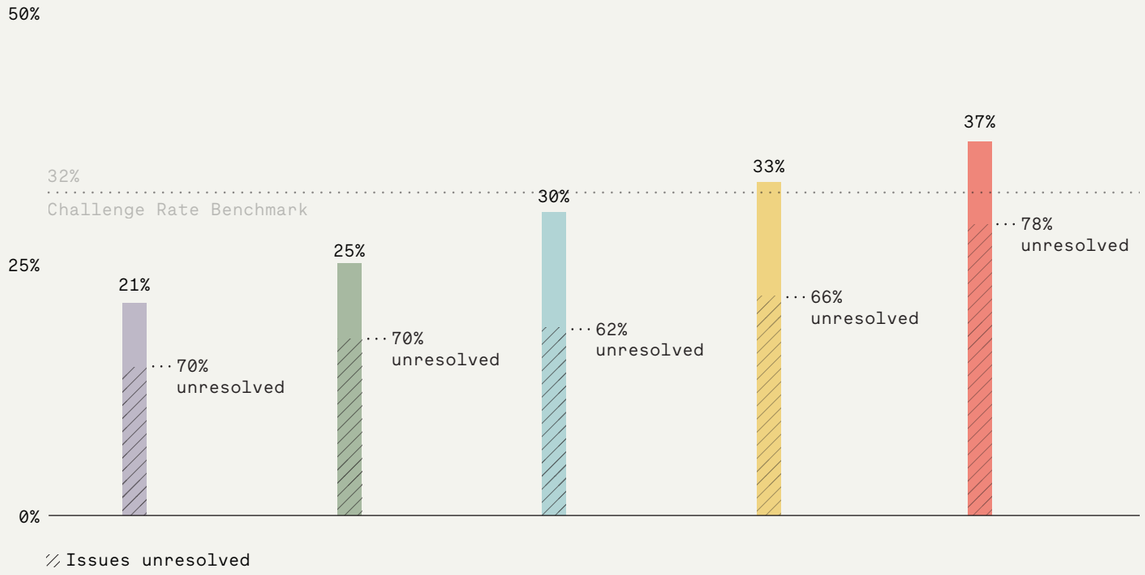


Satisfaction: the Net Promoter Score®

The world of energy is dynamic, and customer experience plays a crucial role in shaping its landscape. Let's dive into the numbers and uncover what drives satisfaction in the Energy world.

Starting with the Net Promoter Score (NPS), the industry stands at an average of 43, which is pretty consistent to the 45 in 2020. You can check out the full range on page 35. Within this score, we find 57% Promoters, 29% Passives, and 14% Detractors.

When we break it down by sub-sector, some interesting trends emerge. Solar lanterns remain the crowd favourite with an NPS of 64, holding their position as leaders from 2020. Solar home systems score a solid 50, while clean cooking follows closely with 49, both maintaining their consistency from the previous year. Mini-grids hold steady at 27, and appliances have seen a decline, dropping from 38 in 2020 to a current score of 18. The latter sub-sector is still emerging, which is partly what is shaping the rating.

TOP PERFORMER

Sistema.bio is the sector leader for customer satisfaction for their work in India!

Now, let's explore some intriguing factors influencing satisfaction. First and foremost, it's noteworthy that women tend to express higher satisfaction, with an NPS of 45 vs 39 for men. This could signify a range of things: that women are genuinely more satisfied, have lower expectations, use the products and services differently, and/or simply feel more inclined to express their satisfaction.

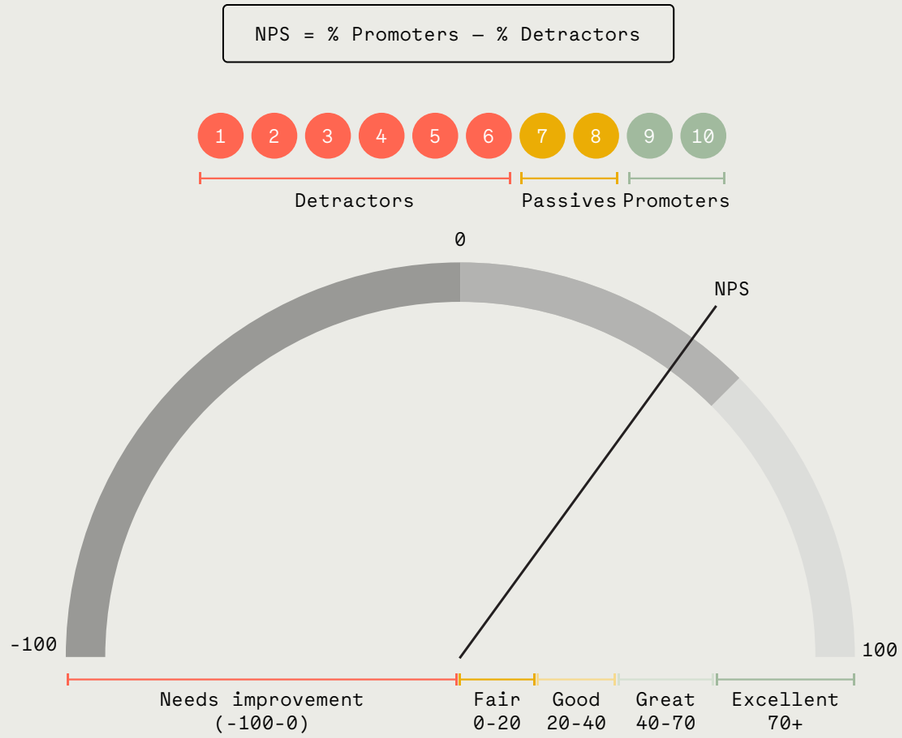
We also see a strong inverse relationship between challenges and satisfaction. For those customers who face no challenges, the NPS is a very healthy 56, while the NPS for those with challenges drops to 10. Looking deeper, for customers with resolved challenges, satisfaction is a healthier 40. However, the NPS for those with unresolved issues is only 1. This underscores the importance of addressing and resolving customer challenges promptly to maintain high satisfaction levels.

Location also plays a role in customer contentment. NPS is highest in rural areas at 44, followed by peri-urban at 43, and urban areas lagging at 35. The urban-rural divide prompts us to question whether urban customers, perhaps due to more access, choice, alternatives, or higher expectations, find themselves less satisfied. We wondered if customers who use their energy products as back-ups or complementary to unreliable grid access rated differently, but the NPS for on- and off-grid customers is very similar. Consider also that we know that the impact of these energy products and services is more significant in rural settings – where poverty rates are higher (see the Impact section), contributing to higher satisfaction levels.

Net Promoter Score® (NPS)

The Net Promoter Score is used globally as a proxy for customer satisfaction and loyalty.

It is measured through asking customers to rate their likelihood to recommend a company's product or 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').

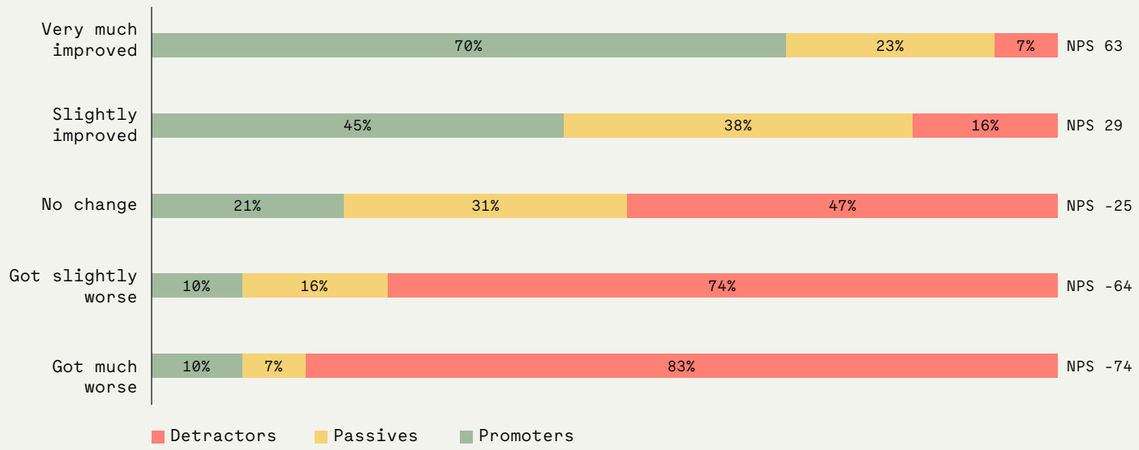


More broadly, satisfaction and quality of life are closely tied, as one would expect. For customers who see a significant improvement in their quality of life due to these energy products, the NPS is 63. For those with a slightly improved quality of life, the NPS is 29. In contrast, those who see no change, a slight worsening, or a significant worsening in their lives because of the energy solution are steadily less happy, with NPS of -25, -65, and -74, respectively. NPS really is a useful temperature gauge for lots of things.

When improvements in safety, security, health, productivity, knowledge, family connectedness, comfort, and convenience are evident, satisfaction soars. Essentially, the greater the benefits customers derive from their purchases, the higher their satisfaction. More on these indicators in our sub-sector sections.

Productive users – those who use these energy solutions for income generation – tend to be less satisfied, with an NPS of 35. In contrast, home/residential users express higher satisfaction, with an NPS of 45. This difference may stem from the higher expectations and the significant impact that these products and services have on income for productive users. For them, the stakes are higher, as any issues could result in financial losses. Indeed, income changes correlate with satisfaction. Customers who experience 'very much increased' income as a result of productive use have the highest NPS at 66. Those with 'slightly increased' income are at 34. However, when income is unchanged, satisfaction drops to 12, and further to 6 for 'slightly decreased' income. These customers tend to be more of a credit risk to organisations.

Satisfaction (NPS) by Quality of Life



Financing plays a role – both good and bad. Customers who purchase on credit express higher satisfaction, with an NPS of 49 compared to 36 for those who did not use credit. This could be due to various factors, including the provision of better service, affordability, preferences for smaller instalments, increased trust due to longer relationships, unlocking access for people who couldn't afford otherwise, or a combination of all these factors.

On the flip side, over-indebtedness plays a role in satisfaction, too. The more customers struggle with payments for their energy product, the less satisfied they are. NPS for those who don't find payments a problem is 58. NPS for those who find payments somewhat of a burden: 42. Crucially, for customers who find their payments 'a heavy burden' – the NPS drops to 21. A quarter (24%) of this group are Detractors and potentially talk negatively about the organisation's service to their networks. This emphasises one of the reasons for not overburdening customers with debt. Credit risk for organisations and investors being another reason.

First-time users of energy products tend to be more satisfied (NPS: 49) compared to those who previously owned such products (39). This highlights the excitement and positive impact these products bring to new users' lives.

> "When purchasing, they allow you to pay in instalments when you do not have the full amount. [The cookstove is] made of good quality, it does not wear or tear easily.

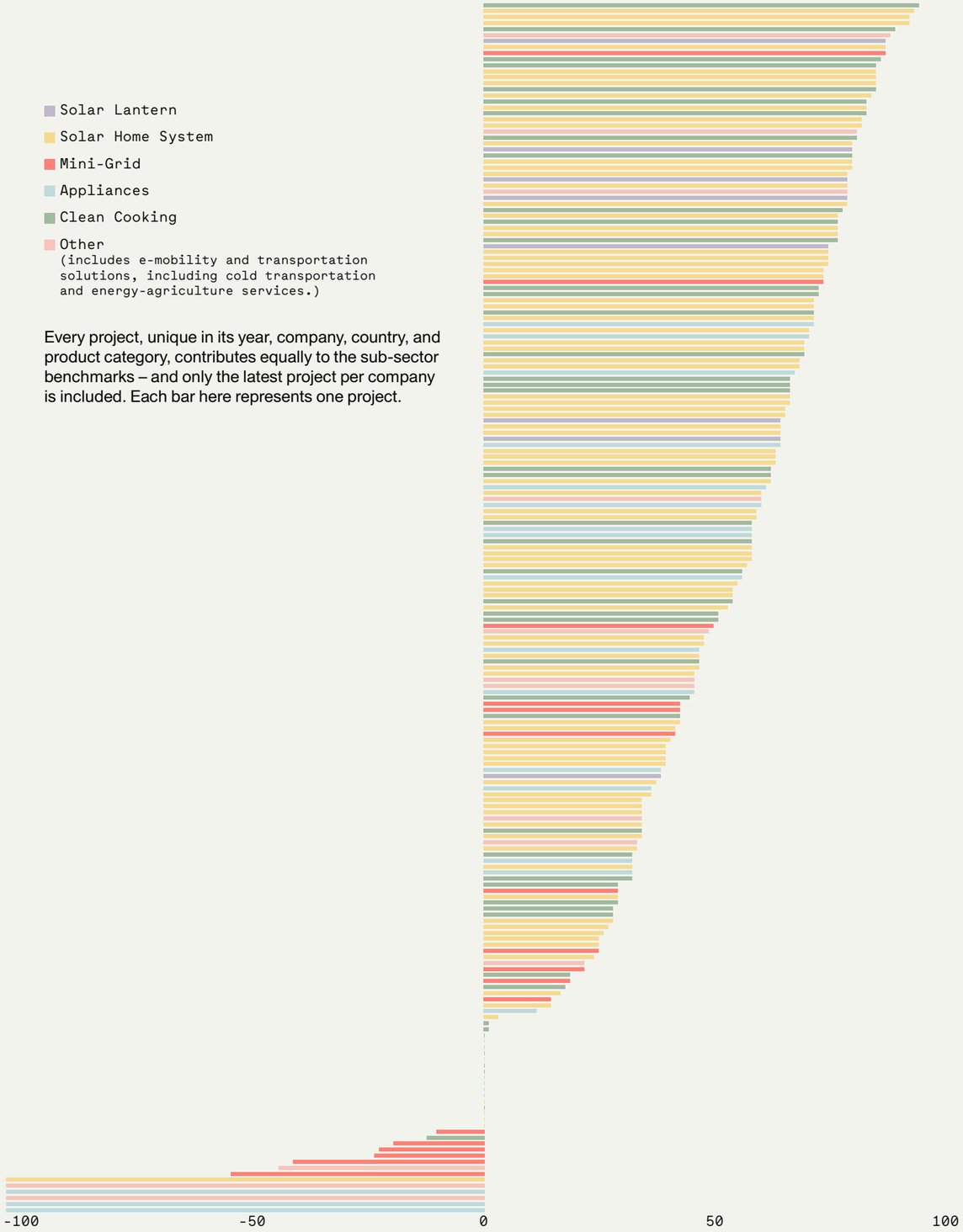
Interestingly, satisfaction is lower in the presence of competition. The NPS for customers with access to alternatives is 28, while the NPS for those without access to alternatives is a higher 46. This raises questions about whether increased competition leads to higher customer expectations and likely requires organisations to step up their game when it comes to offerings, pricing, and after-sales care. As the sector grows and competition increases, organisations will need to prioritise reducing and resolving customer issues to maintain high customer satisfaction. Companies must do this, in any case, to maximise impact and reduce credit risk (increase the probability of payments).

It is clear that customer satisfaction is influenced by a multitude of factors across the sector. These range from the absence of challenges to significant impact on quality of life and earned income for productive users. Addressing challenges promptly, ensuring affordability, delivering products and services that meet customers' needs, and reaching new customers all contribute to higher satisfaction levels. As we continue to explore this dynamic industry, understanding and responding to these factors will be key to fostering enduring customer relationships and achieving success.

Starting points for maximising customer satisfaction:

1. **Make your product easy to use.** If it's not, provide support and address issues quickly with minimal stress for your customers.
2. **Offer financing if you can.** It makes products more affordable and helps to build trust.
3. **But make sure customers can afford it** and are not going to become over-indebted.
4. **Provide exceptional services for productive users** who may rely on the income to make payments.
5. **Deliver products/services that significantly impact quality of life** – meet customers' needs, demands, and desires. Listening to them is the only way to find out what these are.
6. **Reach new customers** who didn't have access before.

Customer Satisfaction: Organisation Ranking



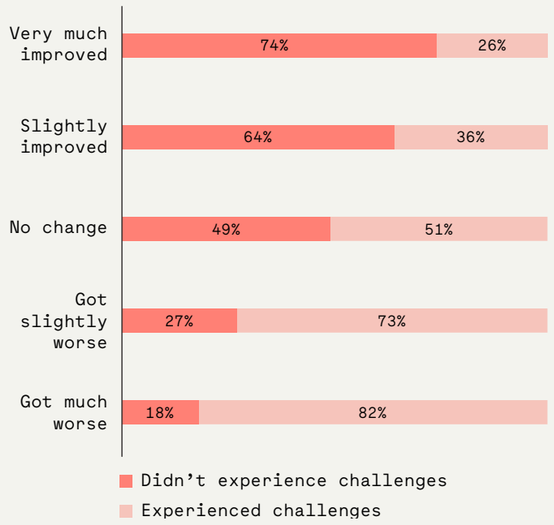
Every project, unique in its year, company, country, and product category, contributes equally to the sub-sector benchmarks – and only the latest project per company is included. Each bar here represents one project.

Ease of Use

By now you've probably picked up on a theme… One surefire way to maximise the impact of energy products, is to ensure that customers do not face challenges using them. A remarkable 94% of customers without challenges report improved quality of life, compared to 86% facing issues.

Understanding and addressing customer challenges is paramount – to impact, satisfaction, and growth. The Customer Challenge Rate dives into the heart of customer experiences, and tells us that 32% of customers face challenges with their energy products or services, a figure consistent with our 2020 report of 34%. This highlights a persistent issue: that a third of customers grapple with challenges, which stop them from using their energy access to their full potential.

Quality of Life by Challenges



These challenges span four themes, each with unique implications:

1. **Technical fault:** when a product malfunctions.
2. **Mismatched expectations:** when customers anticipate different outcomes.
3. **Misuse:** when customers use products incorrectly, often due to a lack of awareness or training.
4. **External factors:** when factors beyond anyone's control, like theft or environmental issues, disrupt product usage.

The implications of this challenge rate are multifaceted. Firstly, it directly affects the intended impact of energy solutions. For example, customers who could benefit from improved safety, security, health, or agricultural productivity might not realise these benefits due to issues with functionality.

Moreover, a concerning correlation emerges between challenge rates and over-indebtedness. Higher challenge rates coincide with heavier debt burdens, indicating an important interplay between financial strain and product-related issues. Customer satisfaction is intricately linked; if you're a Detractor, there's a 62% chance you have experienced a challenge. If you're a Promoter, there's a 78% chance you haven't.

First-time customers are more likely to face challenges, emphasising the need for targeted support during initial product usage. Companies stand to gain from ensuring that early adopters, especially in emerging markets, have a seamless experience, as their recommendations to their peers and networks can significantly impact sales and growth.

Interestingly, challenge rates are higher among customers who have alternative options. This may be because customers with choices available to them have higher expectations and are less willing to accept the product as is. This could even suggest that challenge rates related to mismatched expectations are under-reported, as those with fewer choices and first access might be simply happier to have a product rather than none.

Sub-sector analysis reveals varying challenge rates. Mini-grids top the list at 37%. In contrast, solar lanterns, simpler in design, celebrate the lowest challenge rate at 21%. Unfortunately this still amounts to 1 in 5 customers having an issue. While product usage type (productive users vs non-productive users) only slightly affects challenge rates, it significantly influences Net Promoter Scores. Companies would be wise to pay heed to these nuances. You can find insights on the common challenges customers mention in the sub-sector sections.

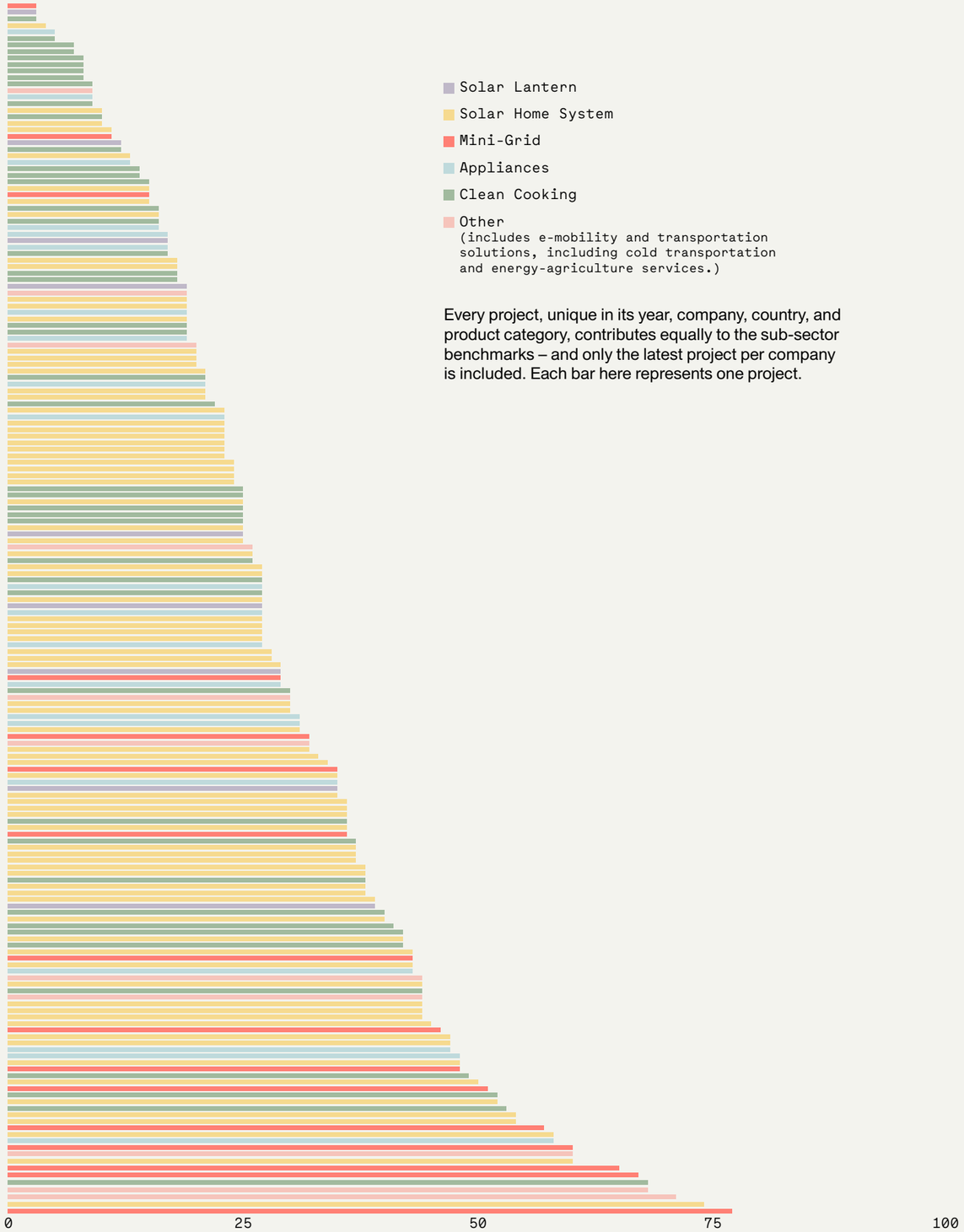
Gender-wise, men report a slightly higher challenge rate at 33% compared to 30% for women. Location, age, poverty, and education levels do not significantly shape challenge rates, so arguments around literacy (education), technology literacy (age), and last-mile challenges (location) affecting the rate of problems customers face do not seem to hold true.

TOP PERFORMER

Mwangaza Light in Kenya are top performing for Ease of Use.

> "The bikes are new so it's not easy to get a spare part. Getting spare parts is big challenge.

Customer Challenge Rate: Organisation Ranking



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- Solar Lantern
- Solar Home System
- Mini-Grid
- Appliances
- Clean Cooking
- Other
  (includes e-mobility and transportation solutions, including cold transportation and energy-agriculture services.)

Every project, unique in its year, company, country, and product category, contributes equally to the sub-sector benchmarks – and only the latest project per company is included. Each bar here represents one project.

Issue Resolution

Moving on to issue resolution, a worrisome 71% of customers facing challenges have not seen them resolved. This remains unchanged from 2020 data, with nearly a quarter (22%) of all those 79,000+ customers we've interviewed having unresolved issues.[36]

Appliances, despite having the highest resolution rate at 38%, still leave 62% of issues unresolved. Nevertheless, doing better than sub-sector counterparts here is commendable, given the nascent nature of such technologies. This may be the reason for appliances' success with resolution rates – there's an acknowledgement of the continued need for customer interaction to refine and improve the technology. It highlights that trust and reputation play a crucial role in emerging markets where the impact of one company's actions can be substantial.

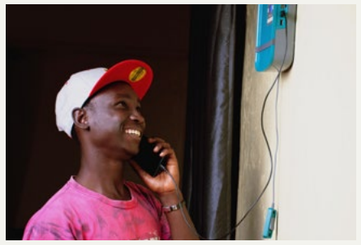
To the other sub-sectors – the SHS issue resolution rate is at 34%, solar lanterns at 30%, and mini-grids lagging at 22%.

Issues are more likely to be resolved if a customer has purchased on credit: 33% vs 25% issue resolution. This is likely because the customer is better connected to the organisation, may be more likely to know where to go if facing issues, and is more motivated to do so. It may also be because the enterprises themselves are more motivated to fix issues for customers still making payments – there is more bargaining power for the customer; they can refuse to pay until the issue is fixed. Indeed, we know this is often one reason for loan defaults: faulty products.

While issue resolution is similar for customers who use their product or service for income generation or not, this highlights the urgency for companies to streamline issue resolution, as it can directly impact customers' financial stability and the productive use of energy solutions. So, if companies want to encourage more productive use – and we know many investors would like to see this – then issue resolution policies and procedures ducks need to be in a row.

Even non-productive users face risks if their issues remain unresolved, as a higher chance of over-indebtedness emerges. 73% of over-indebted customers with challenges have not had their issues resolved, compared to 64% of those who don't experience their payments as a problem.

The good news for last-mile distributors and funders is that issue resolution is not shaped by location, so those serving rural communities are meeting their peers' performance, on the whole.



Common challenges and top-level solution suggestions:

1. **Technical fault** → this can be addressed through design and by interacting with manufacturers for product adjustments.
2. **Mismatched expectations** → normally best addressed through a review and improvement of honest and accurate marketing and sales materials, including how sales staff or agents talk about the product to potential customers.
3. **Misuse** → try providing or improving training materials or considering or improving installation services or guidance. You could consider having your call centre make welcome calls to new customers and their families who will likely be users too and perhaps weren't present at installation.
4. **External factors** → are there ways to enhance the design of products to reduce theft and maximise effectiveness in different weather conditions?

> "The pump broke down since March and the company has not sent me any help despite frequently reminding them. I use the pump for my business and it beats the point of having it if I can not use it for this long! I feel very let down by the company and they should do better.

[36] This includes all customers we've interviewed, including those who experienced no challenges. So, 22% of all customers have an unresolved issue.

Customer Service

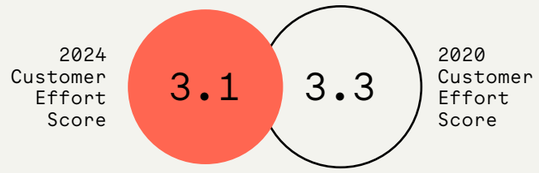
The Customer Effort Score (CES) highlights how easy customers find it to have their issue handled. The overall CES of 3.1 out of 5 for the sector indicates room for improvement. While the sector Benchmark appears reasonably consistent (to 2020 at 3.3). The average hides that people are having quite different experiences – both within companies and between companies. Customers who've experienced a challenge are asked: Overall, [organisation] made it easy for me to handle my issue. Do you:

- 5 – strongly agree – **16%**
- 4 – somewhat agree – **30%**
- 3 – neither agree or disagree – **22%**
- 2 – somewhat disagree – **21%**
- 1 – strongly disagree – **10%**

The clever people at the Harvard Business Review wrote this cool article a while back saying that the CES is more important than the NPS. "All customers really want is a simple, quick solution to their problem." Take a read here.

The energy sector faces persistently high challenge rates and unresolved issues for their customers. Addressing these challenges is vital for achieving intended impacts, reducing credit risk, supporting income generation, and enhancing customer satisfaction. Companies need to provide tailored support to new users, improve issue resolution, and focus on improving customer experiences across the board for the sector to realise its full potential.

Customer Effort Score



What is the Customer Effort Score?

How easy is it for customers to handle their challenges? Customers are asked to rate on a scale of 'strongly agree' (5) to 'strongly disagree' (1) how they feel about the statement "Overall, [company] made it easy for me to handle my issue." The Customer Effort Score (CES) is the average rating of all customers (who have experienced a challenge).

TOP PERFORMER

Smiling Through Light for their customer service in Sierra Leone.

Consumer Protection Score NEW

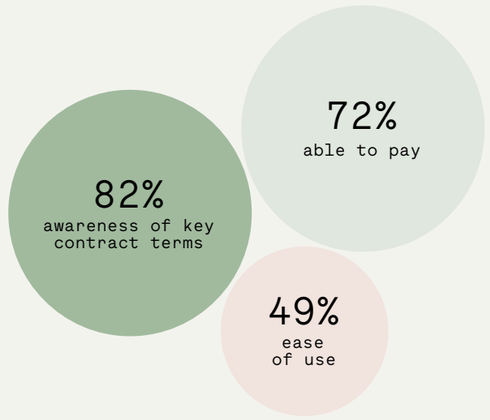
In the financing world of the off-grid solar sector, Consumer Protection is a necessity, and GOGLA has taken the lead in shaping its future for the off-grid solar industry. With the objective of safeguarding both the positive impacts and the rights of consumers, GOGLA spearheaded the development of the Consumer Protection Code for the off-grid solar industry. The driving force behind this initiative is the belief that industry-wide efforts are essential to mitigate sector-specific risks and propel market growth.

The GOGLA Consumer Protection Code is a comprehensive framework that encompasses principles, indicators, and an assessment framework. Its primary purpose is to provide guidance to off-grid solar enterprises, establishing responsible standards for their interactions with customers.

In 2021, GOGLA and 60 Decibels joined forces to create the Consumer Protection Insights Survey Tool & Approach. We translated the Consumer Protection Principles (CPP) into survey questions tailored to end-users. This tool was designed to collect direct feedback from consumers, ensuring their voices were integral to evaluating the sector's performance against the CPP. This collaboration between GOGLA, its members, and 60 Decibels marked a pivotal step towards incorporating consumer voice into Consumer Protection.

Our new 60 Decibels Consumer Protection Score includes four of the CPP dimensions:

The overall Consumer Protection Score Benchmark, based on nine questions, stands at 68%. Key findings reveal significant strengths and areas for improvement within three themes:



The Consumer Protection Score showed minimal variations across age groups, with younger customers reporting slightly higher ease of use rates. Education level had a minor impact, with a slight increase in scores as education level rose.

Notably, gender did not significantly influence the Consumer Protection Score, indicating similar consumer experiences across genders. However, women reported fewer challenges in ease of use compared to men, as shared above. Poverty did play a role in some areas with a lower 68% of customers living in poverty feeling that payments for the energy service were not a problem compared to 75% for those above the poverty line. This also links to defaults, with a slightly higher proportion of those living in poverty never having fallen behind on making payments compared to their higher-income peers.

How is the Consumer Protection Score Calculated?

The **Consumer Protection Score** is the average of three themes equally weighted from 9 questions/indicators. Themes: **awareness of key contract terms, ability to pay, ease of use.**

These percentages reflect a scale from 0 to 100%, where 100% represents the highest level of performance. The assessment is evenly weighted across the themes.

68% 60 Decibels Consumer Protection Score Benchmark

Consumer Protection Score Indicators

82% awareness of key contract terms

- 91% said they knew how long the contract or sales agreement was for at time of purchase
- 72% said the agent/sales staff shared any circumstances that may result in a change of price of payment plan length
- 83% said they know what would happen if they made no, or late, payments
- 82% said that the company checked to confirm they understood key terms of the payment plan

72% able to pay

- 72% say product/service payments are 'not a problem'
- 75% 'never' have to reduce their household's food consumption to make payments
- 70% say they have not fallen beyond on making payments

49% ease of use

- 68% say they have not experienced any challenge using their product/service
- 29% of those with challenges who have had their issue resolved

Diving into specific indicators, 82% of respondents were aware of key contract terms. Here we looked at awareness of contract length at the time of purchase, if organisation sales staff shared circumstances that may result in a change of price of payment plan length, if customers knew what would happen if they made no, or late, payments, and if the enterprise checked to confirm they understood key terms of the payment plan.

For ability to pay, 72% stated that product or service payments posed no problem. Gender-wise, women were slightly more likely to say that payments were not problematic. This could be attributed to various factors, such as financial security and better financial management among women. Food consumption reduction (‘regularly’) to meet payment obligations – a major sign of financial strife – decreased from 5% in 2020 to 3% in 2023. However, 10% of respondents ‘sometimes’ had to reduce their household’s food consumption for payment purposes. In terms of falling behind on payments, 70% say they have not fallen behind on making payments before.[37] Men are slightly less likely to say this than women. Older customers were the least likely to report payment issues, consistent with their greater comfort regarding payments.

TOP PERFORMERS

Top Performers for Ability to Pay: **Easy Solar** in Liberia, **d.light** in Tanzania.

[37] This matches to the sector collection rate of 69% (GOGLA, MFR PAYGo Perform Monitor 2023).

I didn’t understand the payment method at the beginning of my subscription. I didn’t receive a notification telling me I had to pay.

Over-indebtedness

The off-grid energy sector has much to celebrate regarding the positive impact of its products and services on consumers' lives. However, it's important to recognise that not all impacts are positive. Any sector that offers financing as widely as this one should be mindful that some customers may purchase products and services whose prices are beyond their means.

Currently, a small but significant 5% of customers report feeling over-indebted, marking a slight increase from 4% in 2020. This indicates that the burden of financial commitments remains a persistent issue. Over-indebtedness varies by sub-sector, with appliance customers experiencing the highest burden at 10%, followed by mini-grid users at 8%. The rate is lower among users of solar lanterns and clean cooking solutions, at 4% and 3%, respectively.

The data we have – and much evidence elsewhere – suggests that women are slightly more adept at managing their finances, with 75% reporting no issues with payments, compared to 71% of men. This could be attributed to factors such as higher income levels among women customers, their more cautious approach to financial commitments, or systemic barriers restricting lower-income women from accessing these products.

Productive users of energy products are more likely to find payments burdensome. 9% of productive users find the payments a heavy burden compared to 5% of home users. Whether a customer lives in poverty or not plays only a small part with 6% of those living in poverty being over-indebted by their energy payments compared to 5% of those who live above the poverty line. This financial strain sometimes leads to drastic measures, such as reducing household food consumption to afford payments, although this has decreased from 5% to 3% since 2020.

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Loan Defaults NEW

We asked the 30% of customers who said they had fallen behind on payments at some point to share the reason(s). This varied across products, but common reasons included financial difficulties including loss of income and increased living costs, prioritising other expenses, and personal emergencies. Urban and younger customers talked of other expenditures being more important and unexpected events as reasons for non-payment more frequently than their rural and older counterparts, suggesting possible differences in financial management skills and priorities.

The sector has made strides in Consumer Protection, but challenges remain, as evidenced by 18% of respondents being unaware of key contract terms, 28% finding it difficult to make payments, and 51% not finding the products easy to use. Initiatives like the Consumer Protection Code aim to address these issues by encouraging actors to understand their impact on their customers and ensuring consumer feedback shapes the sector's future, thereby enhancing positive experiences for all customers.

Scale: Performance Through Growth

This year, we were keen to look at any connections between growth and customer feedback again – we asked the organisations of 313 of the projects we delivered to self-report their stage of growth across the following categories:

1. **Validate/prepare:** focus is on refining value proposition to gain product-market fit and building team, systems, and processes to prepare for growth.
2. **Growth/scale:** have product-market fit, focus is on scaling operations to reach large numbers of customers.
3. **Mature:** rapid growth has slowed, focus is on optimisation of existing business.

Our findings show a general pattern where companies initially do well, then face challenges as they scale and need to update their systems. Once they establish efficient operations, their performance improves again. This trend holds true for customer satisfaction, challenge rates, quality of life impact, poverty reach, and Consumer Protection Scores.

For Consumer Protection, this pattern may be that as a company starts to scale, management of a portfolio becomes more complex. At scale, the ability to have specialised roles in larger companies, and we're sure lots of learning on what does and doesn't work, may help get things back on track. The focus here may also be shaped by greater attention and higher expectations from later-stage investors regarding credit risk.

There are a few areas where this dip then improvement pattern does not hold true, and things get a little less effective with scaling. Issue resolution gets worse – this may be because the sheer scale of operations makes addressing customer issues increasingly difficult. As does the Customer Effort Score (CES) – the indicator of customer service satisfaction – perhaps for similar reasons. The last area is access to alternatives, which is also inverted, suggesting that mature companies are operating in more competitive markets – or not reaching furthest into the last mile where fewer customers are already served.

This is an opportunity for investors to better incentivise commitment to quality as an organisation scales – and to ensure customer experience and satisfaction indicators are included in the measures of 'success'.

Performance by Organisation Stage of Growth

Validate/Prepare

Net Promoter Score:	53	Customer Effort Score:	3.1
First Access:	72%	Quality of Life:[38]	57%
No Access to Alternatives:	68%	Over-indebtedness:	4%
Challenge Rate:	29%	Consumer Protection Score:	67%
Issue Resolution:	33%	Poverty Reach:	41%

Scale/Growth

Net Promoter Score:	35	Customer Effort Score:	3.3
First Access:	78%	Quality of Life:	53%
No Access to Alternatives:	70%	Over-indebtedness:	6%
Challenge Rate:	36%	Consumer Protection Score:	66%
Issue Resolution:	31%	Poverty Reach:	40%

Mature

Net Promoter Score:	59	Customer Effort Score:	3.2
First Access:	78%	Quality of Life:	62%
No Access to Alternatives:	65%	Over-indebtedness:	5%
Challenge Rate:	24%	Consumer Protection Score:	71%
Issue Resolution:	30%	Poverty Reach:	47%

[38] Quality of life ‘very much improved’

Regional Differences

You'll have seen on our map that a large proportion of these insights represent customer impact and experience in Africa. We know that many would find insights by region useful – we heard you. Please note that the country profiles within the continents (regions) represent diversity in terms of national poverty rates, market maturity, and more.

Looking at customer profile, enterprises in Africa are reaching a higher proportion of women customers (34%) than those in Asia (19%). Organisations in Asia are reaching a higher proportion of rural customers at 78% compared to 54% in Africa. This is likely part of the reason we see a higher First Access rate on the Asian continent – 83% vs 76% in Africa. Access to Alternative rates looks similar but grid access of customers is unsurprisingly lower in Africa (75% off-grid) than Asia (21% off-grid). Poverty Reach looks similar.

In terms of financing, offering this for energy products is a far more common business model of energy organisations in Africa, with 78% of customers here having purchased on credit compared to a much lower 4% in Asia. Relatedly, it was more likely to be Africans' first access to credit (76%) than their Asian peers (54%). The regional Consumer Protection Score is similar, as is the proportion of loan defaults – according to customers themselves. Customers in Africa are slightly more likely to be over-indebted than those in Asia.

When looking at usage, productive use of energy is higher in Asia (46%) than Africa (16%). But quality of life is higher in Africa (93% improved, 57% significant) than Asia (83% improved, 31% significant). Safety was more significant of an impact in Africa (65% very much improved thanks to the energy product) compared to Asia (39%). We saw the same for security (68% in Africa vs 42% in Asia very much improved). Spending changes in Africa are more dramatic for cooking (61% to 11% very much decreased) but similar for energy access spending. This all speaks to the most common forms of energy, lighting, and cooking fuels used prior to modern energy access.

Interestingly, NPS is exactly the same across the two continents. And this is despite the Customer Challenge Rate being higher in Africa (33%) than in Asia (23%). That said, companies in Africa are resolving their customers' issues at a greater rate (31% vs 26% in Asia).

Market Maturity: Performance Across Countries

Our team listened to customers living in mature markets and nascent markets. The majority of solar home system projects were in more mature markets, and all mini-grid and appliance projects in nascent markets – this is because of the different definitions for each sub-sector.[39]

First access for customers is similar for those in nascent and more mature markets, showing that companies are serving a similar proportion of underserved (versus already reached) customers in each market type. It also offers some demonstration of how many unserved populations there still are even within 'mature' markets.

Mature market customers are less likely to be living in poverty (39%) compared to their nascent market peers (44%). This echoes the adoption curve[40] where early adopters are more likely to be higher income, better educated, more risk-taking than later adopters.

Customer challenge rates are similar in mature and nascent markets too, suggesting there doesn't appear to be any benefits for companies serving mature markets where customers may be more familiar with the technology – probably because the new user rate is very similar.

Customer satisfaction is higher in mature markets at 50 compared to 34 in nascent markets. This is particularly interesting because it is not being shaped by a customer challenge rate. It appears to be being shaped by quality of life impacts – where mature markets see 58% of customers see significant impact on their quality of life compared to 48% in nascent markets. We're not sure what may be shaping this. If you have any ideas, we'd love to hear them!

> "I bought the lights that come with the radio and they have really helped with security in my compound. It is easier for my workers to keep watch because these lights are bright and they cover a large area.

[39] SHS/solar lantern market: https://documents1.worldbank.org/curated/en/099235110062231022/pdf/P175150063801e0860928f00e7131b132de.pdf (see page 79) | Cooking market: https://cleancooking.org/wp-content/uploads/2022/05/CCA-2022-Clean-Cooking-Industry-Snapshot.pdf (see page 46) | Mini-grids: https://minigrids.org/about/, https://www.undp.org/energy/our-flagship-initiatives/africa-minigrids-program, https://energypedia.info/wiki/Mini_Grids | Appliances: https://www.clasp.ngo/research/all/the-state-of-the-global-off-grid-appliance-market/

[40] The diffusion of innovation theory, developed by E. M. Rogers (1962) describes the pattern of how new ideas, practices, or products spread through a population. We have the innovators, early adopters, early market, late market, laggards. You can find a really old article on this from us here at NextBillion if you want to read more.

The Inclusive Energy Opportunity

The off-grid energy sector is often described as a male-dominated and expat-led industry. Some reports have laid out the unique challenges and opportunities faced by locally-owned as well as women-led businesses.

A few resources mentioning locally-owned and women-led organisations:

How local companies accelerate universal energy access (GOGLA)

Increasing venture capital to women-led businesses (The GIIN)

Gender lens investing initiative (The GIIN)

Silicon Valley has deep pockets for African startups – if you're not African (The Guardian)

Strategic investments in off-grid energy access (Energy4Impact)

To date, there has been some attention on the additional hurdles these enterprises face. These are primarily due to limited access to resources and investment capital, as well as operations in niche business environments, often with unproven business models, and in an uncertain regulatory environment. Language barriers, connections, and lack of teams specialised in fundraising can limit the ability of local teams to communicate and demonstrate business ambition.

However, it's clear that while under-represented in investment, – an estimated 1% of off-grid solar industry investments in 2022 went to women-led companies and 5% to locally-owned companies[41] – companies owned and led by locals and/or women have an important role to play in sustainable energy access for all. What was yet to be explored, until now, relates to the opposite end of the spectrum: the impact these organisations have in comparison to peers.

With funding from UKAid through the Transforming Energy Access (TEA) platform, Good Energies, and the DOEN Foundation, we launched the 60 Decibels Inclusive Energy Opportunity in 2023. We didn't want our insights on the impact of energy access to only include the 'usual suspects' of companies sitting in investors' portfolios – and also often doing some great work, too! We wanted to discover and provide insights for newer, locally-owned, women-led, and/or nascent market organisations.

We knew it would round out our knowledge of the sector and better represent what is happening on the ground – highlighting some of the great work that these perhaps lesser-known enterprises are doing.

This had the added benefit of increasing inclusivity in the sector by providing technical assistance and opportunities to companies who typically don't have this access. We're hoping the work also brings new companies into the spotlight for investors looking for pipeline with credible, third-party impact insights, which are a key part of many due diligence and investment discussions and decisions.

[41] Off-grid solar industry investment in 2022 of grants, debt, equity, reported by investors or companies, self-reported categories. From GOGLA.

We received 460+ applications from businesses around the world, that met one or more of the following criteria:

1. **Locally-owned:** 51% or more of a company's stock, partnership interests, or other ownership interests are owned and controlled by persons from the market(s) in which they operate
2. **Women-led:** 51% or more of company's Board and/or Leadership are women
3. **Early-stage:** no significant funding and <250,000 customers.
4. **Nascent market:** we used lists from the relevant sub-sector industry bodies (see footnote 38).
5. **Nascent technology:** an interest in e-mobility, agri-energy appliances/processes, electric or LPG cookstoves.

The funding enabled us to deliver 33 projects across 19 countries, with 100% of projects being early-stage, 70% locally-owned, 67% operating in nascent markets, and 48% led by women. These were drawn from all of our sub-sectors.

> “
>
> Women understand the needs and challenges in their homes, families, and communities, which inspires them to create business solutions that are tailored to those specific contexts.

The Impact of Women-Led and/or Locally-Owned Organisations NEW

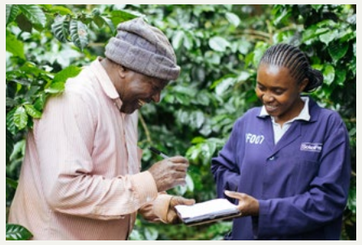
The data from these projects reveals some pretty startling insights.

In spite of the current underinvestment, locally-owned companies tend to be amongst the highest performing for indicators of impact. An impressive 66% of customers of locally-owned companies report a ‘very much improved’ quality of life as a direct result of the products or services received, compared to 53% of customers of companies not locally-owned. They also achieved comparatively high customer satisfaction, were able to disproportionately reach more women customers and customers living in poverty, and had lower customer challenge rates.

Similarly, women-led companies demonstrate higher impact, lower rates of customer over-indebtedness, lower challenge rates, and are reaching a higher proportion of women customers than their counterparts. 9 of the top 10 companies in our Consumer Protection Score Benchmark are women-owned.

These findings shouldn’t diminish the incredible work of businesses owned by more typically-represented leadership. But they do highlight the arguably untapped potential of women-led and/or locally-owned businesses in understanding and meeting the needs of their communities.

This first-of-its-kind initiative will hopefully encourage investors, policymakers, and other stakeholders to place even greater attention on investing in locally-owned and women-led organisations. As our results have shown, they can be confident that, as a group, these organisations have a track record of outsized impact.



> “We are part of the community.
>
> Oorja Solutions

> “We have a team who are close to the problems we are trying to address.
>
> Grean World

Perspectives from women-led and locally-owned companies themselves

Locally-owned and/or women-led companies, such as Agriput Solar in Zimbabwe, Grean World in Ethiopia, and Oorja Solutions in India, attribute the impact to their deep understanding of local needs and their community-centric business models.

Locally-owned Agriput Solar emphasises the integral role of women, who make up 95% of their community agents, in understanding and addressing the specific needs of homes, families, and communities. This approach results in tailored business solutions that directly address local challenges, leading to high success rates and positive impacts on livelihoods. The emphasis on women empowering other women further strengthens customer relationships, loyalty, and satisfaction, contributing to the company’s effectiveness.

Women-led and locally-owned Grean World, on the other hand, credits the success to a unique marketing model that employs village-level entrepreneurs (VLEs) who act as a bridge between the company and the customers. As part of the community, these VLEs leverage their knowledge of social values, norms, and needs to provide end-user training, installation, after-sales services, and more. By embedding themselves within the communities they are serving and focusing on solving real problems, such as energy and education, Grean World establishes authenticity and builds trust. This is fundamental to impact.

Locally-owned Oorja Solutions say they exist to address an acute pain point of the customer – which they understand well. They have used human-centred design to put the customer – the smallholder farmer – at the centre of every stage of the development of their services. The community is involved in identifying the problems they face, developing solutions, and customising them based on different needs. They hire their customer-facing teams directly from the communities they work in.

These and many other companies showcase how locally-owned and/or women-led initiatives are uniquely positioned to understand and meet the specific needs of their communities. They employ models that are deeply rooted in local contexts and prioritise relationships built on trust, respect, and mutual support. In doing so, they achieve greater customer satisfaction and loyalty, lower challenge rates, and can significantly improve their customers’ quality of life. Their success underscores the importance of leveraging local knowledge and networks, especially the pivotal role of women in driving social and economic change through entrepreneurship.

Part 4:

The Sub-Sectors

“My family is full of happiness

thanks to

the electricity.”

Here we delve into relative strengths, areas for improvement, as well as what is unique about each product category. We hope this provides some ideas for action across the board and encourages you to take a read of all the sections to gain the most insights.

> It used to take me almost 3 hours daily to draw enough water for my family considering it is big. This was a task I honestly dreaded and the worst part is that I had to do this daily! I am so happy the pump took over this chore and now we just get water in our home thanks to the pump.

> This is the first time experience of using electricity in my life.

> Cooking is so much better. The fire comes on very well. The coal that I use is less, and it is very elegant.

SUB-SECTOR:

Solar Lantern

Solar lanterns have long been seen as a ‘gateway product’ for customers first stepping onto the energy staircase. They remain especially popular in rural areas, with more than 5 in every 6 users living in villages or the countryside. They also enjoy a reasonably equitable (though not even) split in customers by gender, with a 42% woman customer base – second only to cooking.

The impact on quality of life remains profound. Solar lanterns are the highest ranked product category for significant quality of life effects, with 94% reporting improvements overall and 64% saying their quality of life had improved significantly because of the light. The principal benefits identified by customers include lower energy costs, extended evening activities, and enhanced educational opportunities. This indicates that solar lanterns remain more than just light sources; they’re tools for socioeconomic development.

92% of solar lantern customers say their sense of safety has improved – significantly for 74% – because of the solar lantern. A similar number (93%) say they feel more secure about the assets in their home since having the lantern – 70% see significant improvement here. This is likely shaped by prior usage patterns – solar lantern users commonly used torches or flashlights before the purchase (around a third). After that, candles, kerosene lanterns, and grid electricity were all at similar levels (around 12-15%).

Overall, 68% see reduced spending on their lighting expenses through changes in their usage patterns; 1 in 5 (21%) say they use their previous methods to light their homes much less than before, and nearly two-thirds (64%) no longer use them at all – 97% of these groups say this reduced usage is because the solar lantern meets their needs. For 3%, it is because there are financial constraints related to payment for the lantern.

There are other benefits, too – 57% of lantern customers see improvements in both their, and their family’s, health with half seeing a meaningful improvement.

While productive use of lanterns isn’t as high as other product categories (16%), the impact for this group is. Over a third see their income increase significantly when using their solar light for income-generating activities (63% see an increase). These customers use the lantern for microenterprise lighting, agricultural extension (chickens and broilers in particular), and as a home-based business enabler.

Solar lanterns received high praise from their NPS Promoters for their brightness, cost-effectiveness, and durability. However, not all experiences have been positive. A small percentage of users have encountered issues, such as technical problems, unmet expectations, or financial difficulties, leading to discontinuation of use for 11% of users.

Solar lantern companies are the top performers in terms of Ease of Use – this may, in part, be because solar lanterns are simpler products in general. The three most common challenges that customers report are charging problems, durability issues, and short battery life.

While 61% of solar lantern customers are accessing financing to purchase their product, the over-indebtedness rate sits at 4%. Reasons for loan defaults were because of income instability or inconsistency, and financial prioritisation – customers say they had to prioritise other things such as food and school fees, and many say they just forgot to pay.

Solar lanterns continue to play an important role in energy use and the transition to modern fuels – the marginal impact is greater than any other product category.

> “Our life is better now. Our health is no longer exposed to paraffin smoke.

Solar Lantern
A portable lamp or light powered through a photovoltaic (PV) panel – sometimes called ‘pico-PV’.

Solar Lanterns: Key Data

15 Projects (2020-2023)
9 Organisations
3,030+ Customers

TOP PERFORMER = this product category performed highest in this indicator

Reach

TOP PERFORMER

Education Level

71% educated to upper secondary or above

First Access

74% accessing a solar lantern for the first time

Productive Use

16% using the solar lantern for income-generating activities

63% have seen their income increase as a result

Energy Spending

68% see reduced energy spending

Quality of Life

TOP PERFORMER

64% quality of life improved significantly[41]

Top reasons for improvements:
Lower energy costs, extended evening activities, increased educational opportunities

Top reasons for lives getting worse:
Increased expenses, unreliable equipment, limited functionality

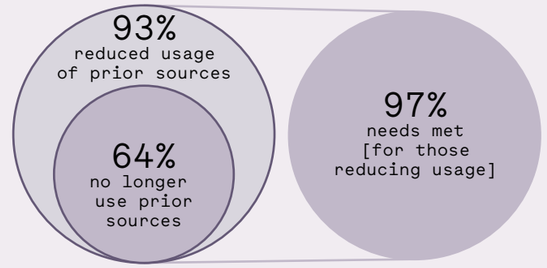
Over-indebtedness

4% say payments for the solar lantern are a heavy burden

Energy Staircase

67%↑ moved up the energy ladder

Prior Sources



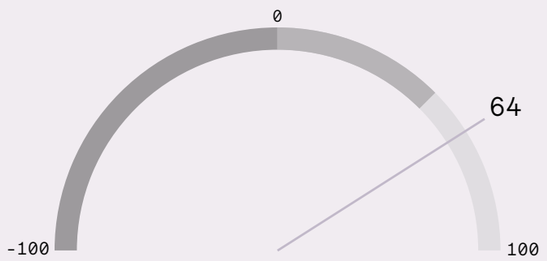
Value for Money

TOP PERFORMER

80% good/very good value for money

NPS[42]

TOP PERFORMER



Customer Challenge Rate

TOP PERFORMER

21% experiencing challenges using the solar lantern

Common challenges:
Reliability issues, inadequate customer service, high costs

30% Issue Resolution [of those with challenges]

3.1 Customer Effort Score [of those with challenges]

Consumer Protection Score

69% Consumer Protection Score

Top things Promoters liked:
Bright and consistent lighting, cost-effective investment, durability and build quality

Top things Detractors wanted to see:
Improved customer service, enhanced product reliability, innovative features

[41] Here, we have not included common reasons for those who saw no change, but there is a group who said this.
[42] Here, we have not included common responses from Passives (those rating 7-8) mainly because they represent what you see in the Promoters and Detractors categories.

SUB-SECTOR:

Solar Home System

Just like lanterns, solar home systems (SHS) are transforming lives. 94% of users report improved quality of life through improved lighting, extended device usage, and increased productivity. Compared with lanterns, SHS are a little less inclusive, with 57% of users living in rural areas and 30% of customers being women. 3 in 5 SHS users are moving up the energy ladder, demonstrating a departure from traditional energy sources towards solar energy. Like solar lantern customers, SHS customers used torches and flashlights before their SHS purchase, with solar lanterns, candles, kerosene lanterns, and grid electricity being used too.

The impact of a SHS on expenditures and income is notable. 65% of customers see reduced spending on energy, indicating a shift towards more efficient and cost-effective energy solutions. While 26% are paying more for energy access than before, they are receiving a higher level of energy access.

Productive use of energy (PUE) stands at 12%, with these solar home systems powering local businesses, mobile charging stations, and agricultural activities. This showcases the versatile functionality of these systems beyond just lighting. An important 82% of PUE customers report a considerable increase in income, underlining the economic empowerment solar home systems bring to communities – when adopted for this usage. SHS PUE customers earn an income by using the energy for local businesses, mobile charging stations, and agricultural-related activities – particularly chickens/broilers.

Safety, security, and health improvements stand out among SHS benefits. More than 90% of users feel safer and more secure thanks to reliable lighting. This shift is particularly important in rural settings, where previous reliance on unsafe, dim, polluting light sources like kerosene lamps posed significant fire and health risks; 64% of SHS customers talk of better health outcomes.

The majority (3 in 5) see no change in their time spent on domestic chores because of the SHS – it's not a major impact, quite often because SHS allows task-shifting, i.e. more flexibility in when the tasks are done, but the tasks remain the same. However, a third do see reduced time spent on these household chores, suggesting benefits can be gained through automating and/or lighting.

Customer experience is mixed, with high praise for the reliability and cost savings SHS offer, yet a third face challenges like battery issues and seek better reliability and customer service. Similarly, consumers raise issues, such as insufficient power output and system reliability, affecting their satisfaction levels.

> "My life is no longer hard like it used to be. I no longer spend money to buy candles for light since I simply rely on solar.

Customers no longer use their SHS for three major reasons: warranty and service issues, challenges using the product, or financial issues, including inability to pay and repossession of the product. As we shared in our Consumer Protection section, more must be done to improve performance here.

Solar Home System
A stand-alone system normally with multiple lights and capacity for additional services – with larger panels than solar lanterns.

Solar Home System: Key Data

239 Projects (2020-2023)
75 Organisations
38,630+ Customers

TOP PERFORMER = this product category performed highest in this indicator

Reach

44% poverty reach

30% women reach

57% rural reach

Education Level

58% educated to upper secondary or above

First Access

74% accessing a SHS for the first time

Productive Use

12% using the SHS for income-generating activities

TOP PERFORMER

82% have seen their income increase as a result

Energy Spending

65% see reduced energy spending

Quality of Life

62% quality of life improved significantly

Top reasons for improvements:
Improved lighting, extended device usage, increased productivity

Top reasons for lives getting worse:
Insufficient power output, system reliability issues, inadequate technical support

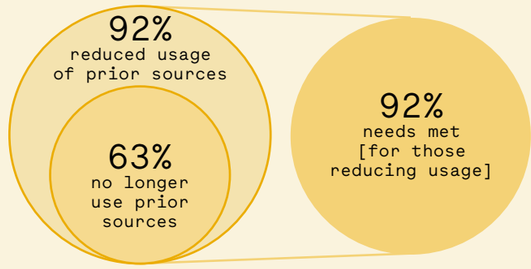
Over-indebtedness

5% say payments for the SHS are a heavy burden

Energy Staircase

61%↑ moved up the energy ladder

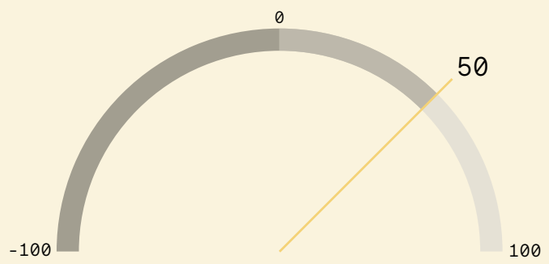
Prior Sources



Value for Money

70% good/very good value for money

NPS



Customer Challenge Rate

33% experiencing challenges using the SHS

Common challenges:
System reliability concerns, battery life issues, insufficient power output

34% Issue Resolution [of those with challenges]

TOP PERFORMER

3.3 Customer Effort Score [of those with challenges]

Consumer Protection Score

69% Consumer Protection Score

Top things Promoters liked:
Reliability and power stability, energy cost savings, minimal maintenance

Top things Detractors wanted to see:
Improved reliability, enhanced customer service, product performance

SUB-SECTOR:

Mini-Grid

Mini-grids stand out as the most inclusive business model from an income and location perspective. Their ability to reach consumers living in poverty is unmatched. Even more impressively, this number has increased since our last report to 57% (up from 51% in 2020). 4 in 5 customers are based in rural areas, leading the product category field and reflecting the targeted approach of mini-grid developers to serve off-grid communities, in keeping with effective deployment strategies.[44] This performance is driven by the structure of mini-grids, which require significant proportions of local communities to adopt, with high upfront installation costs leading to a focus on 'anchor' clients to ensure consumption. This can often mean more marginalised community members gain access secondarily.

89% report an improvement in quality of life, with customers noting the reliable power supply, their access to modern appliances, and increased business productivity as key factors behind this improvement.

[44] In general, mini-grid developers aren't looking to compete with national grid electricity, but to serve areas without it.

24% of mini-grid customers use their connection productively – often for small businesses like stalls, kiosks, shops, charge station operations, and cold storage facilities. This underscores the entrepreneurial spirit among mini-grid users, driving income increases for 84% of those engaging in PUE activities.

Safety and security are important benefits too – with 87% of mini-grid customers saying their sense of safety has improved (significantly for 51%) because of the connection, and 85% feeling more secure about the assets in their home – half feel this difference significantly.

However, the sector faces significant hurdles in consumer satisfaction and financial sustainability, reflected in a Net Promoter Score of 27 and a Customer Challenge Rate of 37%. Issues around reliability, customer service, and the high cost of energy underscore the need for improvement, with 78% of issues being unresolved from a customer perspective.

55% of customers are seeing a reduction in spending, yet 31% are facing higher bills for energy access. Though with two-thirds of mini-grid customers moving up the energy ladder, they also have more of their needs met for that higher cost. That said, mini-grids have an 8% over-indebtedness rate and a Consumer Protection Score that trails other sub-sectors. We know the factors look a little different for utility models, but this highlights a need for attention on protecting consumers.

> "I have a resto-bar in our village and I use the mini grid connection to generate income.

Mini-Grid
A generation and distribution service powering multiple customers through connections.

Mini-Grid: Key Data

74 Projects (2020-2023)
31 Organisations
15,230+ Customers

TOP PERFORMER = this product category performed highest in this indicator

Reach

TOP PERFORMER

Education Level

64% educated to upper secondary or above

First Access

77% accessing a mini-grid connection for the first time

Productive Use

24% using the mini-grid connection for income-generating activities

84% have seen their income increase as a result

Energy Spending

55% see reduced energy spending

Quality of Life

41% quality of life improved significantly

Top reasons for improvements:
Reliable power supply, access to modern appliances, increased business productivity

Top reasons for lives getting worse:
Increased energy cost, frequent power outages, inadequate customer service

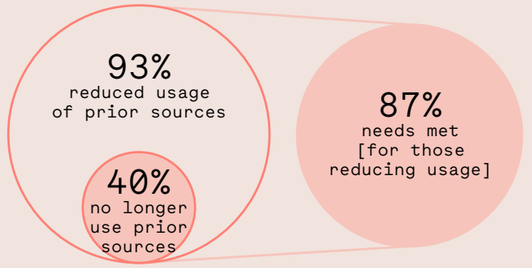
Over-indebtedness

8% say payments for the mini-grid connection are a heavy burden

Energy Staircase

66%↑ moved up the energy ladder

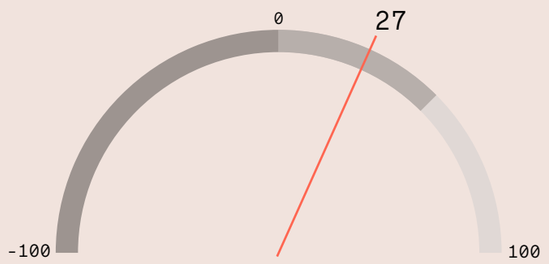
Prior Sources



Value for Money

51% good/very good value for money

NPS



Customer Challenge Rate

37% experiencing challenges using the energy services

Common challenges:
Reliability issues, inadequate customer service, high costs

22% Issue Resolution [of those with challenges]

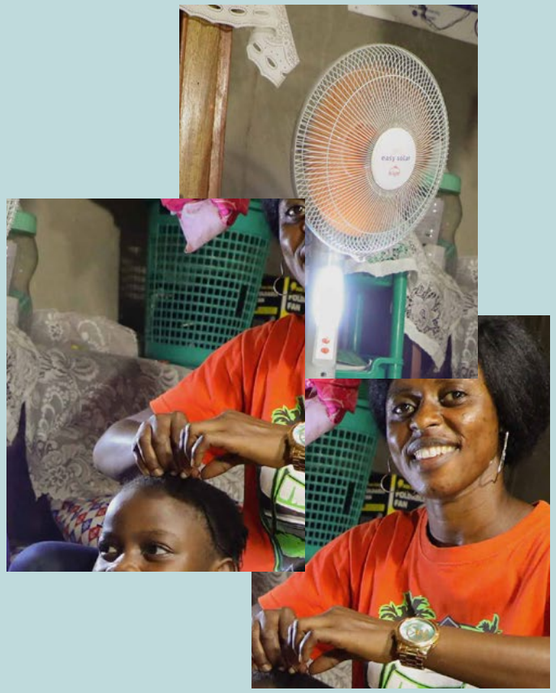
3.2 Customer Effort Score [of those with challenges]

Consumer Protection Score

32% Consumer Protection Score

Top things Promoters liked:
Reliability of service, customer service, cost savings

Top things Detractors wanted to see:
Reliability improvement, pricing reduction, customer service enhancement



SUB-SECTOR:

Appliances

Let’s take a closer look at a range of appliances powered by renewable off-grid energy, including solar water pumps, refrigerators, TVs, and fans. We know they represent very different products, uses, and outcomes.

“

I feel comfortable at night. When my fan is on I don’t feel the heat and mosquitoes too.

Solar Fans

Solar fans might not immediately jump out as impact game-changers, but you might be surprised. A remarkable 97% of users report quality of life improvements, focusing on heat relief, better sleep quality, and increased overall comfort. 92% of solar fan users say the comfort of their family has improved because of the fan – significantly for 44%. Users say the fans reduce mosquito activity and noise. Dreamy.

Fans enjoy an extremely high Net Promoter Score of 63, driven by their durability, powerful airflow, and energy efficiency. This is impressive, given a challenge rate of 25%, mostly caused by mechanical issues.

Solar Water Pumps

Solar water pumps (SWPs) are typically used for agricultural irrigation.[45] 86% of users experience increased productivity, and 60% expand their cultivated areas. Unsurprisingly, 89% of customers use SWP for productive uses – rather than subsistence farming or residential use – leading to an income increase for 88% of these users.

The environmental benefits of this device, from a carbon perspective, are highlighted as 55% of SWP customers were using fuel pumps before. 95% of them have stopped or reduced their usage of these sources since accessing the solar-powered version.

The solar water pump NPS of 26 is fair but not great, with an overall challenge rate of 27%. Some users praise the energy efficiency, ease of use, and reliability of SWPs, yet others call for improvements in after-sales service and product reliability. 12% of customers no longer use their SWPs due to mechanical failure, financial constraints, or finding alternative sources. For those who have defaulted on their loan payments, they talk of increased living costs, unexpected medical expenses, and/or agricultural drought impact. Relying on agriculture as a key source of income can invite variability into funds available, which is something we know many SWP companies have had to work through.

One of the common benefits customers talk about is enhanced water security; 23% of SWP users are able to significantly increase the amount of land they have under cultivation through enhanced irrigation. However, there’s only a finite amount of water in our global ecosystem, including from local rivers, streams, and wells. As and when SWPs become more commonplace, water resource management will likely need more attention so that individuals are not benefiting at the expense of broader community members’ access to water.

Appliance
An electrical device such as a refrigerator or a television that can be powered by a standalone solar home system or mini-grid connection.

“

My kids were always crying about going to the well. Now life has become easier.

[45] You can find more insights on our work on solar water pumps over on our blog here.

Off-Grid Refrigerators

An American refrigerator uses three and a half times[46] more yearly electricity than the average person on the African continent. Among the customers we've talked to, off-grid refrigerators are used both domestically and for productive use.[47] The overall impact of these devices was slightly lower than other product categories, yet still significant – with a quality of life improvement reported by 81% of refrigerator users. 88% of users say they use their refrigerators for some kind of productive use, often associated with bars, restaurants, and kiosks.

42% of customers are spending less time on activities such as market visits, with fridges providing the opportunity to buy in larger quantities, keeping food fresh for longer, and creating the ability to cook in bulk and store for rainy days.

Surprisingly, 46% of off-grid refrigerator customers live in poverty, challenging the assumption that such advanced technologies are solely within the reach of the relatively better off.

What were these customers using for cooling before their purchase? For 36%, the answer is nothing – this was their first time having access to this kind of product. Half used an existing fridge – more often than not, a grid-powered fridge. A small 2% used a friend or neighbour's fridge.

There is a belief that a benefit of refrigeration is the chance to improve family diet – because having a refrigerator in the home enables behaviours such as cooking in bulk, keeping produce fresh for longer, and being able to consume fresh produce (meat, eggs, dairy). In our interviews, we didn't find that this had a major effect; 51% saw no change in their diet because of the refrigerator. This is largely due to the fact that off-grid refrigerators are predominantly used for income generation rather than domestic use, and the use for business was often used for chilling drinks to offer to customers. There are some differences though – off-grid refrigerators affect diet more strongly in rural areas – 33% see a significant improvement, which may be because people living in urban areas have easier and more regular access to (chilled) produce from shops in the area.

All this said, satisfaction with fridges is troublingly low. A NPS of -1 reflects critical feedback on customer service, pricing, and reliability. Frequent repairs and inconsistent cooling are among the top challenges faced by users.

As the sector evolves, focusing on responsive customer service, competitive pricing, and improved reliability will help ensure off-grid refrigerators meet users' needs and expectations even more effectively.

[46] https://www.lemonde.fr/en/economy/article/2023/06/20/an-american-refrigerator-uses-three-and-a-half-times-an-average-african-s-total-yearly-electricity-consumption_6034419_19.html
[47] You can find more insights on our work on off-grid refrigerators over on our blog here.

Solar TVs

When it comes to impact, solar TVs split opinion. Are they a non-essential luxury which diverts from time and expenditure on other more important activities and products? Or are they an important source of information and entertainment for those who otherwise live challenging lives?

We'll use our data to try to answer these questions.[48] And our data tells us that people love TVs – they feel more connected to the outside world and their internal world (family), they have a chance to learn about current affairs, and de-stress together. Customers talk of improved access to information and entertainment alongside family bonding. 95% of customers say their knowledge and awareness has improved because of the solar TV – and it's significant for 73%. A similar 94% see improvements in how their family connects with each other because of the solar TV – again, this is transformative for more than three-quarters.

> "The TV helps me to watch programmes on current affairs. I am updated with what is happening in the country and the world.

Interestingly, women and those living in rural areas place greater value on the informational aspect of TVs, suggesting a slightly gendered and/or regionally specific role in bridging information gaps for groups of customers who may typically be less well-connected. The family bonding benefit is felt slightly more keenly for men than women (94% vs 91%). Benefits in knowledge and awareness are correlated with age; the most significant impacts are experienced by younger customers (80% significant).

This is perhaps most significant because 33% of customers didn't watch TV before purchasing; prior methods here were limited. Just over a third had an existing TV – not necessarily a solar-powered one – and a quarter went to their friend's or neighbour's house to watch TV together.

TVs have one of the highest challenge rates, yet despite this, they still enjoy a good NPS of 43.

This data alone won't decisively end the TV debate. Ultimately, we believe it is for consumers to decide what they see (social) value in.

We'll also keep tracking issues of over-indebtedness – 44% of solar TV users say payments are a burden (somewhat or heavy). And we do know that one of the three most common reasons for customers stopping using their TV was as a cost-cutting measure – so TVs may still be seen as a luxury item in some homes. Technological issues come in at number two, and content dissatisfaction third – this may not be about the product itself but about what channels/network customers can access.

[48] You can find more insights on our work on solar TVs here.

Appliances: Key Data

72 Projects (2020-2023)
26 Organisations
9560+ Customers

TOP PERFORMER = this product category performed highest in this indicator

Reach

39% poverty reach

29% women reach

54% rural reach

Education Level

80% educated to upper secondary or above

First Access

74% accessing the appliance for the first time

Productive Use

TOP PERFORMER

65% using the appliance for income-generating activities

89% have seen their income increase as a result

Over-indebtedness

10% say payments for the appiance are a healvy burden

Energy Spending

42% see reduced energy spending

Quality of Life

53% quality of life improved significantly

Top reasons for improvements:

SWP: economic benefits, agricultural productivity, enhanced water security

Refrigerator: cost-savings, increased independence, food preservation

TV: informed citizenship, entertainment variety, family bonding

Fan: heat relief, better sleep quality, improved comfort

Top reasons for lives getting worse:

SWP: financial burden, agricultural impact from product issues, time consumption

Refrigerator: spoiled food, frequent repairs

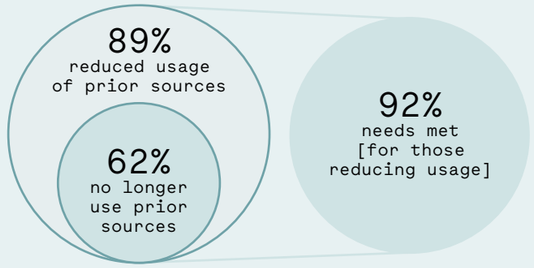
TV: stress

Fan: None!

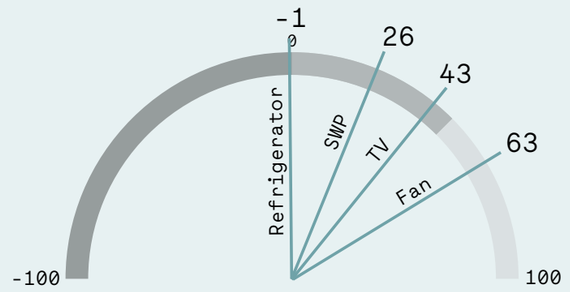
Value for Money

74% good/very good value for money

Prior Sources



NPS



Top things Promoters liked:

SWP: energy efficiency, ease of installation/use, high reliability

Refrigerator: consistent temperature, energy efficiency, value for money

TV: energy efficiency, durable build, value for money

Fan: durability, powerful airflow, energy efficiency

Top things Detractors wanted to see:

SWP: after-sales service, improved reliability, enhanced efficiency

Refrigerator: responsive customer service, competitive pricing, improved reliability

TV: improved customer service, extended warranty, competitive pricing

Fan: better customer service, easier maintenance procedures, competitive pricing

Customer Challenge Rate

30% experiencing challenges using the appliance

Common Challenges:

SWP: technical malfunctions, limited technical support, water yield inconsistency

Refrigerator: frequent repairs, insufficient cooling, inconsistent temperature

TV: physical malfunctions, connectivity issues, firmware/software glitches

Fan: mechanical failure, durability concerns, inadequate airflow

TOP PERFORMER

38% Issue Resolution [of those with challenges]

3.2 Customer Effort Score [of those with challenges]

Consumer Protection Score

69% Consumer Protection Score

SUB-SECTOR:

Clean Cooking

Just like the other sub-sectors, there is much diversity within our cooking data. These insights encompass wood stoves, charcoal stoves, electric pressure cookers,[49] fuel distribution (LPG), and more.

Overall, one of the most tangible – and perhaps priceless – impacts of clean cooking is time savings. 4 out of 5 clean cookstove users say that their cooking time has reduced with their new stove. This reduction is most pronounced among older customers, who likely spend more time preparing meals for larger households. A similar but slightly higher 95% of users report enjoying increased leisure time due to these time-savings.

However, a surprising challenge for cookstoves is that they are not as inclusive as they have the potential to be – particularly as the need for clean cooking spans far wider than the off-grid population. A quarter of clean cookstove users live in poverty. Given that the poorest users are most likely to rely on traditional and polluting fuels for cooking, this poses an important question about how to drive greater affordability, access, and adoption at the base of the pyramid.

89% of customers report an improvement in their quality of life, attributing this to factors such as economic opportunities, fuel savings, and time efficiency. However, a quarter of users still face issues like maintenance difficulty and poor durability (down from 27% in our 2020 report). Additionally, the shift towards improved cookstoves represents a significant step up the cooking fuel version of the energy staircase for 34% of users. The energy staircase looks slightly different for cooking and focuses on moving from polluting to transition to clean fuels. The most common cooking fuel among customers we talked to was charcoal, then wood, LPG, and biogas, with other fuels coming in later.

For cooking, there is more stacking occurring post-purchase than for our other product categories. This isn't too surprising; households may use different devices for particular dishes to have more flexibility in the event of specific fuel unavailability or price fluctuation, as well as for taste preferences. Indeed, many of us have multiple different cooking devices for different needs (or wants) – microwaves, ovens, kettles, toasters, hobs… This is key for a sector with a particular focus on carbon financing. From our research, we find it is unrealistic to assume that improved cookstove customers are stopping all use of their other cookstoves or cooking practices. However, benefits are still experienced with reduced use of prior sources. 22% say they no longer use prior sources (the lowest result across the sub-sectors), with a further 48% using them much less than before. This is still pretty positive news – but it does mean that 78% of cookstove customers are stove stacking.

Related to this reduction in fuel usage, 74% of cookstove customers report spending less on cooking fuel (40% are spending significantly less).

The cookstoves bring other benefits in the form of a feeling of improved safety; 78% of cooking customers say their sense of safety has improved (significantly for 46%) because of the design of the cookstove – reducing fire or burn related fears, and fuel source – including reducing the need to fetch firewood. Importantly, 62% of clean cooking customers see improvements in their and their family's health because of the cleaner cookstove (35% very much improved). These cookstoves typically reduce indoor air pollution and smoke inhalation for family members sitting close to the stove.

Clean Cooking
More fuel efficient and/or lower emission (cleaner) cookstoves, as well as alternative fuel-based cooking appliances.

> "It's safe for me to use, it's very reliable, I do not have to fetch firewood, and it does not emit any smoke.

[49] You can find more insights on our work on electric pressure cookers over on our blog here.

Clean Cooking: Key Data

67 Projects (2020-2023)
43 Organisations
11,230+ Customers

TOP PERFORMER = this product category performed highest in this indicator

Reach

TOP PERFORMER

Education Level

77% educated to upper secondary or above

First Access

TOP PERFORMER

84% accessing the cooking service for the first time

Productive Use

10% using the cooking service for income-generating activities

65% have seen their income increase as a result

Energy Spending

74% see reduced energy spending

Quality of Life

48% quality of life improved significantly

Top reasons for improvements:
Fuel savings, time efficiency

Top reasons for lives getting worse:
Higher fuel consumption, frequent maintenance, indoor air pollution

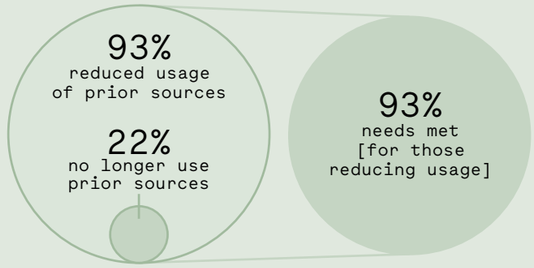
Value for Money

70% good/very good value for money

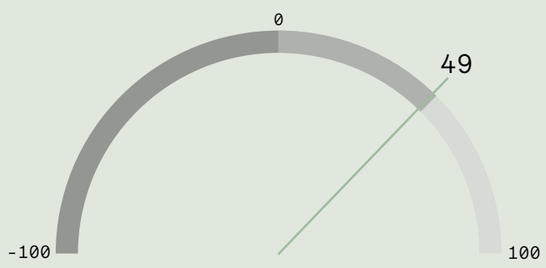
Cooking Fuel Transition

34%↑ moved to cleaner fuels

Prior Sources



NPS



Customer Challenge Rate

25% experiencing challenges using the cooking service

Common challenges:
Maintenance difficulty, poor durability, inadequate design

30% Issue Resolution [of those with challenges]

3.1 Customer Effort Score [of those with challenges]

Top things Promoters liked:
Energy efficiency, cooking speed, ease of use

Top things Detractors wanted to see:
Improved efficiency, better customer service, price reduction

BONUS SUB-SECTOR:

(E-) Mobility

Some early insights.

Given we've worked with just four pioneering projects to date – OX Delivers, Mobility for Africa, Roam, and Ampersand – we're cautious not to draw too many overarching conclusions about the impact of e-mobility. These initiatives, alongside other energy service organisations we've worked with, such as SokoFresh, Bodawerk, and KeepITCool, are exploring the potential of e-mobility and transportation solutions more broadly, including cold transportation and energy-agriculture services.

Our early headline is that e-mobility is an extremely inclusive sub-sector and supports income generation. 92% of customers live in poverty, with women making up 38% of e-mobility users. Two-thirds of customers live in rural locations. The use of e-mobility solutions for productive purposes is nearly universal among customers, with 98% using them for income generation, reflecting the sector's potential for economic empowerment. Delivery businesses, market sales, and personal transport services are among the top uses, with a high proportion of women notably engaged in delivery services.

This focus on income generation is mirrored in the significant time savings reported by 77% of e-mobility users.

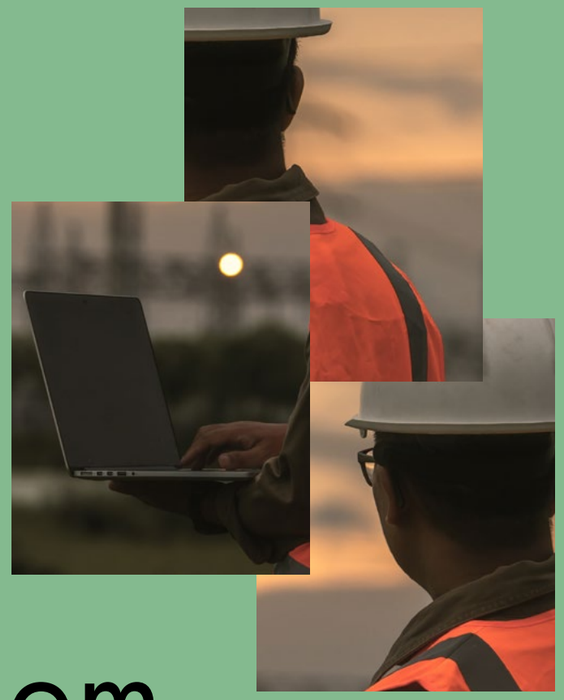
Similarly, the convenience offered by these new transport solutions is overwhelmingly recognised, especially among rural users and women, who report the greatest improvements in how they now travel. Compared to what they used before, 89% e-mobility customers find the new solutions more convenient than prior methods (50% significantly improved).

Users talk of the benefits of increased savings, reduced travel time, and accessibility improvement.

However, the sector faces a high 37% challenge rate indicating areas for improvement, particularly in battery range, customer support, and software functionality.

(E-)Mobility
The use of vehicles that are partially or fully powered by electricity; cars, motorcycles, trucks, bikes, and more.

> "It made my business more convenient as I could travel with speed and access long distance markets, therefore I was able to earn more money in my business using [the e-mobility solution].



BONUS SUB-SECTOR:

Ecosystem Service Providers

This is an important group.

Not all companies that are essential to the off-grid market work directly with customers. Smart metering, financing, manufacturing, and platform services play a crucial role in the wider energy ecosystem.

Here, we gathered feedback from these enterprises' business clients, instead of the ultimate end-users we've been talking about throughout this report.

A notable 70% of clients reported a substantial improvement in their ability to operate and evolve their businesses, as well as enhance the services offered to customers, due to the support from these service providers.

The importance of these services for company growth was deemed very important by 72% of respondents, reflecting their critical role in the sector's development.

Despite a challenge rate of 47% and an unresolved issue rate of 37%, the NPS stands at 55, indicating positive client sentiment.

> **Ecosystem Service Providers**
> Organisations providing services to other organisations i.e. Business to Business (B2B) rather than Business to Customer (B2C).

60__dB

[The company] provides a critical service. When the system doesn't work our customers either don't have power, or we can't bill them for energy use.

Part 5:

“The light has come to chase away the darkness.”

Awards

We first debuted our Energy Index in our 2020 report as a way to benchmark social performance by asking standardised questions across all of our off-grid energy projects. The Index sits at the core of our energy work, and as a natural next step, we want to recognise and celebrate all those achieving a top score for their social performance.

So, without further ado, we are so excited to announce our **60 Decibels Top Energy Impact Awards!**

Across our data, we have 140 entries for 2020-23. Our awards span six categories – one for each product category (or sub-sector) and one for Consumer Protection.

We hope this recognition provides validation of impact and functions as a door opener to discussions with funders and investors.

> To hear that the numbers not only reflect all the impact of our team's work but recognise our work amongst our peers feels like a real win!
>
> Victor Lesniewski,
> CEO & Co-Founder, Khethworks

Our Award criteria is based on the Energy Index, which looks at three key dimensions:

1. **Impact –** how transformative or meaningful are the energy products or services for families? We use our Quality of Life indicator here – looking at the % of company customers who said their new energy access had 'very much improved' their and their families' lives.
2. **Customer experience –** how do customers feel about their interactions with the organisation and the broader service they provide? We used four of our indicators here: Ease of use (Customer Challenge Rate inverted), Issue Resolution, Customer Effort Score (CES), Net Promoter Score (NPS)
3. **Access –** how successful are companies at reaching previously unserved populations? Here we use three of our indicators: First Access, No Access to Alternatives, and the Income Inclusivity Rate (IIR).

THE AWARD WINNERS

Solar Lantern Award:
SunnyMoney (SolarAid) in Zambia

Solar Home System Award:
VITALITE in Malawi

Mini-Grid Award:
KUDURA Power East Africa in Kenya

Appliance Award:
Oorja Solutions in India

Clean Cooking Award:
Rafode Renewable Energy in Kenya

Consumer Protection Award:
Ashdam Solar in Nigeria

We'd also like to give a special mention to companies coming second and third in the Index for their sub-sectors.

`Solar Home System:`
SUKi Africa in Nigeria
RECAPO Solar Systems in Malawi

`Solar Lantern:`
SunnyMoney (SolarAid) in Malawi
Agriput Solar in Zimbabwe.

`Mini-Grid:`
Powerhive in Kenya
PowerGen in Sierra Leone

`Appliance:`
SunCulture in Kenya (SWP)
Khethworks in India (SWP)

`Clean Cooking:`
Grean World in Ethiopia
Sistema.bio in Kenya

`Consumer Protection:`
VITALITE in Malawi
ElleSolaire in Senegal.

Calculating the Index

Here's a closer look at how we calculate Index Scores.

`Index Score = Average of Impact + Customer Experience + Access Scores`

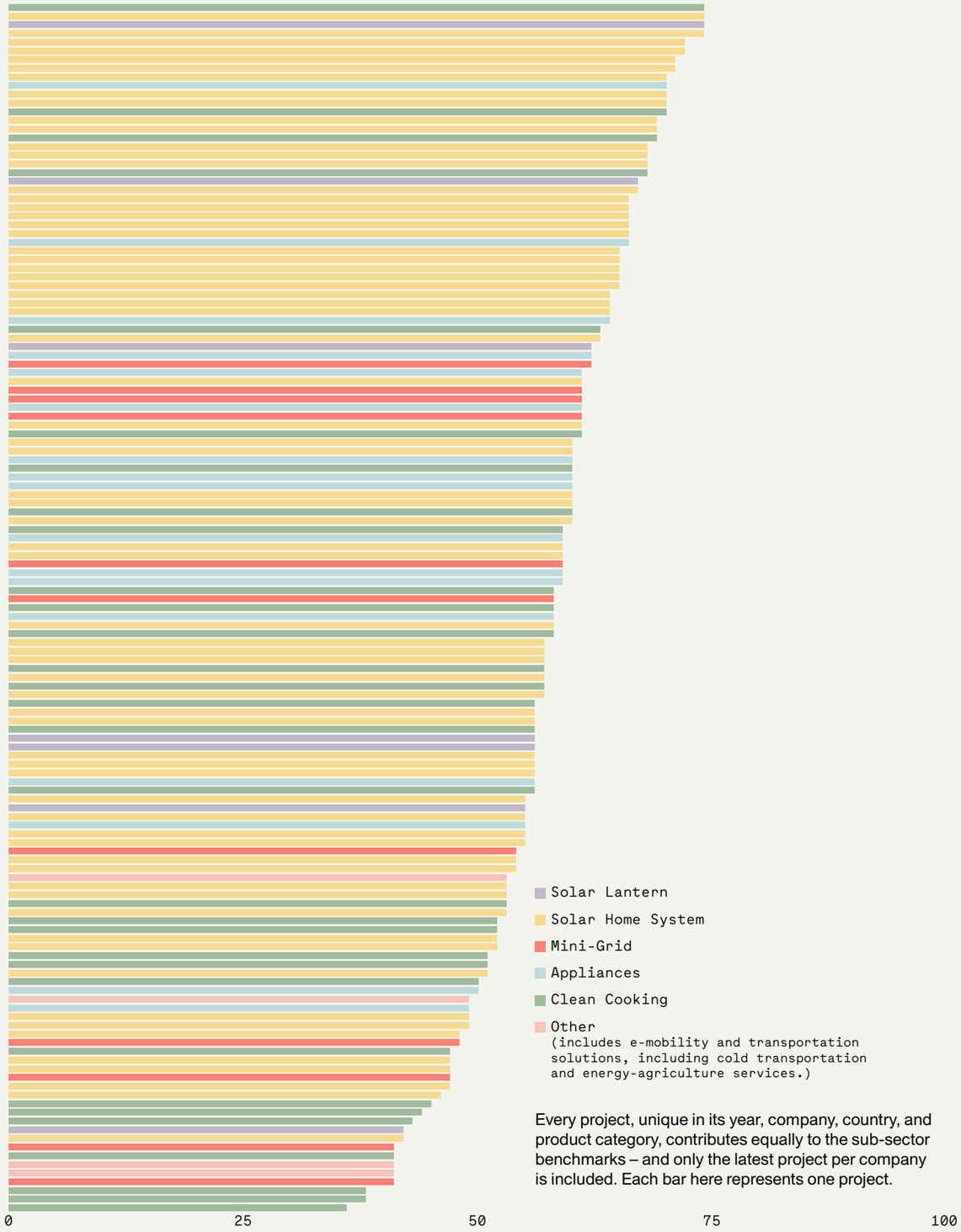
And each of the area scores are calculated by averaging the results of the indicators within that theme. We only include projects where we had at least 5 of 8 of the indicator results. For projects with any missing values, we input the sub-sector average as a neutral proxy.

For the three indicators in the Index that are not on a 0-100% scale (CES, NPS, IIR) we normalise the results by converting them to a 0-100% scale. The result is a % score for each indicator in the Index, averaged to give an overall Index score, where the higher the number, the better.

Then to the fun part, we rank the Index Scores to find the top performers. The maximum Index Score for 2024 was 74% and the lowest was 36% – so, quite a range.

For the Consumer Protection Award, we used the Consumer Protection Score. Check out how we calculated that on page 40.

Energy Impact Index: Organisation Ranking



Every project, unique in its year, company, country, and product category, contributes equally to the sub-sector benchmarks – and only the latest project per company is included. Each bar here represents one project.

Part 6:

“I now

have

light

which gives

me

a sense of

security.”

Wrap Up

Summarising the views of thousands of off-grid energy users in a few paragraphs was never going to be easy. That said, there are a number of things that stand out to us if the off-grid energy sector is going to successfully leave no one behind. Attention to these things is crucial.

Areas for improvement

Perhaps one of the lowest-hanging fruits for the sector is to improve the experience of existing customers.

Specifically, organisations must help end-users get the very best out of their energy access products. Reducing and addressing challenges will likely help drive greater and more effective adoption of off-grid products. Of course, some challenges will always be inevitable. In addition to having fewer challenges occur, improving the speed and effectiveness of issue resolution is also important. The sector's Customer Effort Score remains at an OK 3.1 out of 5. Addressing this will ensure that more customers can get on with their days – and enjoy that new bright light or improved cookstove.

The sector must also keep an eye on the issue of indebtedness. It's true that a relatively small number of customers, 1 in 20, report that they find it a heavy burden to make payments for their energy access. This still represents a meaningful proportion of the millions of off-grid energy users worldwide. And from the perspective of companies and investors, this is a material credit risk. Clearly, it's in everyone's interests to keep working to decrease this payment burden.

Opportunities for outsized impact performance

Whilst solar lanterns may not be especially glamorous, or even provide for all the energy needs of a 'modern' household,[50] they remain heavy hitters when it comes to impact. In terms of cost, safety, and environmental impact, they continue to outperform many alternatives. Margins on lanterns have tended to be lower, driving some investors to move away from them. This is a very real example of potential impact and financial trade-offs, and a burning question for the sector is how to ensure organisations working to scale the adoption of lanterns can access the funding they need to continue making a real difference.

While perhaps unsurprising, the following remains true: one of the sector's greatest opportunities to drive further impact is in rural penetration. Impact is greater and satisfaction is higher for the sector's rural customers. Existing energy access is lower in rural areas and customers are three times more likely to be living in poverty than their urban peers. We're excited about the focus of last-mile distributors here.

New insights

We introduced some new insights on Consumer Protection. And we're heartened to see the commitments and actions taken to keep improving consumer experiences and upholding consumer rights. Think of the sector-wide Consumer Protection Score of 68% as getting a C at school. It's not bad, but it could be better. It means that a third of customers have a sub-optimal experience.

There are some new impact all-stars on the block. We launched our Inclusive Energy Opportunity to spotlight women-led and/or locally-owned organisations, historically underrepresented and underfunded in the sector. The results were positive. Those with the money in the sector have an opportunity to drive impact through increasing capital flows in this direction. And we hope we can extend and expand this opportunity in future years – get in touch if you're excited about this too.

Opportunities to learn more

Finally, to wrap up the last loose ends. We advocate for – and are ready to deliver – more and regular research. Impact is not static or uniform; it differs by organisation, product, country, and changes over time.[51] Here's our request: please don't use our benchmarks and assume that's the impact you or your portfolio, grantees, or members are having. You've seen the range in this report – it's worth finding out where you fall on it. Impact measurement is for understanding and improving, not just for reporting.

While we're on the topic, you might have wondered about a missing group or two in all these insights. What's happening for customers who had access but exited the payment train (they defaulted)? Many of whom had their energy products repossessed. Have they found new solutions to their lighting or cooking needs? Or have they been left in a place behind where they started?

The second group: people who aren't customers and never have been. What do we know about this group? What needs and wants do they have? Will the current suite of products and services meet those needs? What's stopping them from turning up in the 60 Decibels random sample of customers to interview? Is it affordability, awareness, access, or something else?

We need more research here to understand how to include these two groups and hope to turn to such topics in a future report.

—

See you soon!

Thanks for sticking with us to the end! Please get in touch and let us know what you think about this report. What resonated, what was surprising, what was validating, and what was missing?

And importantly, we ask that you share this report with everyone: your colleagues, your friends, your grandma. Start conversations, brainstorm strategies, and take action.

Finally, thanks for all the work you are doing. We can't wait to see you for the next edition – you can help shape what we see in it. We'll see you there!

:-)

[50] Head over to the Rockefeller Foundation to check out some info on the Modern Energy Minimum: https://www.rockefellerfoundation.org/insights/grantee-impact-story/the-modern-energy-minimum/

[51] You can read some insights on our work looking at the impact of appliances over time on our blog here.

Appendix: Participating Energy Organisations

Since 2016, we've worked with the following organisations across the sector, listening to a random sample of their customers to complete one or multiple impact studies.

Acacia Innovations | Kenya
Africa GreenTec | Mali
Agriput Enterprises | Zimbabwe
Agsol | Kenya
Altech | DRC
Ampersand | Rwanda
ARC Power | Rwanda
ARED | Rwanda
Aress | Benin
Arnergy | Nigeria
Ashdam Solar | Nigeria
ATEC Biodigesters | Cambodia
Azuri | Kenya
Azuri | Zambia
Baobab+ | Cote d'Ivoire
Baobab+ | Kenya
Baobab+ | Madagascar
Bboxx | DRC
Bboxx | Kenya
Bboxx | Rwanda
Bboxx | Togo
Bboxx PEG | Cote d'Ivoire
Bboxx PEG | Senegal
Bidhaa Sasa | Kenya
BioLite | India
BioLite | Kenya
BioLite | Rwanda
BioMassters | Rwanda
Bodawerk | Uganda
Bonergie | Senegal
BURN Manufacturing | Kenya
BURN Manufacturing | Mozambique
BURN Manufacturing | Tanzania
Circle Gas | Kenya
Circle Gas | Tanzania
Community Carbon | Mozambique
Consistent Energy | Nigeria
d.light | Haiti
d.light | Kenya
d.light | Nigeria
d.light | Tanzania
d.light | Uganda
Deevabits | Kenya
Devergy | Tanzania
Digitech | Mozambique
Dynamiss | Mozambique
Easy Solar | Liberia
Easy Solar | Sierra Leone
EcoPower | Liberia
Ecosys - Energias Renovaveis | Mozambique
Ecozen | India
ElleSolaire | Senegal
Emel Solar | Nigeria
Emerging Cooking Solutions (Supamoto) | Mozambique
Emerging Cooking Solutions (Supamoto) | Zambia
EMICOM | Mali
ENERGIA | Nepal
Energy+ | Mali
ENGIE Energy Acces | Mozambique
ENGIE Energy Access | Nigeria
ENGIE Equatorial Limited | Uganda
ENGIE Fenix | Cote d'Ivoire
ENGIE Fenix | Nigeria
ENGIE Fenix | Uganda
ENGIE Fenix | Zambia
ENGIE Mobisol | Kenya
ENGIE Mobisol | Rwanda
ENGIE Mobisol | Tanzania
ENGIE PowerCorner | Tanzania
ENVenture | Uganda
Epsilon Energia Solar | Mozambique
Equatorial Power | DRC
FINCA PLUS - Brightlife | Uganda
FINCOOP SACCO | Malawi
Fosera | Madagascar
Frontier Markets | India
Futurepump | Kenya
Futurepump | Uganda
Grean World | Ethiopia
Green Energy Biofuels | Ghana
Green Energy Biofuels | Nigeria
Green Impact Technologies | Malawi
Green Scene Energy | Ethiopia
Greenway Grameen | India
GVE.Group | Nigeria
Harness Energy | Pakistan
HelloSolar | Ethiopia
HERi | Madagascar
Hotpoint | Kenya
Husk Power Systems | India
Husk Power Systems | Tanzania
Ibriz | Senegal
Ilumexico | Mexico
Infra Capital | Myanmar (Burma)
InfraCo Asia | Philippines
International Lifeline Fund | Uganda
Jaza Energy | Tanzania
Jumeme | Tanzania
Kazang Solar | Zambia
KeepITCool (Raino Tech4Impact) | Kenya
Khethworks | India
KIS | Uganda
KOKO Networks | Kenya
Koolboks | Nigeria
KopaGas | Tanzania
KUDURA Power | Kenya
Kuja na Kushoka | Tanzania
Lendable | Kenya
LIB Solar | Liberia
Lumos | Cote d'Ivoire
Lumos | Nigeria
M-KOPA | Kenya
M-KOPA | Nigeria
M-KOPA | Uganda
Mandulis Energy | Uganda
Mango Energy/Sun Power | Myanmar (Burma)
Mega Global Green | Myanmar (Burma)
Mena Wood | Tanzania
Mlinda Charitable | India
Mobile Power | Sierra Leone
Mobility for Africa | Zimbabwe
Modify Electromechanical Systems & Solutions | Ethiopia
MOON | Togo
Motosafi | Kenya
MozCarbon | Mozambique
Munyax Eco | Rwanda
Mwangaza Light | Kenya
Mwezi | Kenya
NAL Offgrid | Kenya
Nenu Engineering | Nigeria
NESELTEC | Rwanda
Nizam Energy | Pakistan
NRSP | Pakistan
Nyalore Impact | Kenya
OffGridBox | Rwanda
OMC | India
Ongeza | Tanzania
Oolu Solar | Burkina Faso
Oolu Solar | Nigeria
Oolu Solar | Senegal
Oorja Solutions | India
Orb Energy | Kenya
Otago | Cambodia
OX Delivers | Rwanda
PACOS Trust & Tonibung | Malaysia
Pact | Myanmar (Burma)
Pamoja | Mozambique
Parami Energy | Myanmar (Burma)
Pawame | Kenya
PEACE Microfinance | Ethiopia
PEG | Ghana
Pilipinas Shell Foundation Inc (PSFI) | Philippines
Pollinate Group | India
Pollinate Group | Nepal
PowerGen | Kenya
PowerGen | Sierra Leone
PowerGen | Tanzania
Powerhive | Kenya
Powerstove | Nigeria
Pran-RFL (Vision) | Bangladesh
Pro Engineering | Myanmar (Burma)
Promethean | India
Qotto | Benin
Qotto | Burkina Faso
Rafode Renewable Energy | Kenya
RDG Collective | Zambia
RECAPO Solar Systems | Malawi
REDAVIA | Global
Renewvia | Kenya
Roam | Kenya
Rubitec | Nigeria
RUH | Kenya
Rural Spark | Nigeria
SCODE | Kenya
SELCO | India
Simusolar | Tanzania
Sistema.bio | India
Sistema.bio | Kenya
Smiling Through Light | Sierra Leone
SOGEPAL | Mozambique
SokoFresh | Kenya
Solar Panda | Kenya
Solar Sister | Tanzania
SolarNow | Kenya
SolarNow | Uganda
SolarWorks! | Mozambique
Soluna | Colombia
SP Eco Fuel | India
Space Engineering | Tanzania
SparkMeter | Global
Standard Microgrid | Zambia
SUKi Africa | Nigeria
Sun King | Kenya
Sun King | Mozambique
Sun King | Nigeria
Sun King | Tanzania
Sun King | Togo
Sun King | Uganda
Sun King | Zambia
SUNami Solar | Kenya
Suncolombia | Colombia
SunCulture | Kenya
SunCulture | Uganda
SunnyMoney/SolarAid | Malawi
SunnyMoney/SolarAid | Zambia
SureChill | Kenya
Tara Urja | India
Techno-Hill | Myanmar (Burma)
TEMA Traders | Tanzania
Trend Solar | Tanzania
Ultratec | Kenya
Umeme | Uganda
Unlocking Communities | Haiti
upOwa | Cameroon
Uranus Solar | Mozambique
Usafi Green Energy Limited | Kenya
Ventura Logistic Services | Nigeria
VITALITE | Malawi
VITALITE | Zambia
Walton | Bangladesh
WANA Energy Solutions | Uganda
WidEnergy | Zambia
Winock Solar | Nigeria
Winsol | Ethiopia
Yazu | Mozambique
Yellow Solar | Malawi
Zambuko Trust | Zimbabwe
Zhidao| China
ZOLA Electric | Tanzania
Zonful Enterprises | Zimbabwe
Zuwa | Malawi

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Reach out to Kat at energy@60decibels.com