

September 2021

Customer Insights on the Productive Use of Energy

EnDev Tanzania Green Economic Recovery Fund (GERF)



60__decibels SNV



Welcome To The 60dB Results

60 Decibels interviewed 277 customers of six companies participating in the EnDev GERF program implemented by SNV in Tanzania – they had lots to share!

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60dB & EnDev Partnership

Under the EnDev Green Economic Recovery Fund (GERF) Results Based Financing (RBF) Programme in Tanzania, EnDev contracted 60 Decibels to undertake phone-based end-customer surveys with participating energy companies in Tanzania.

60 Decibels conducted a focused study on the productive use of energy – current and aspirational.

An introduction to the 60 Decibels and EnDev partnership under the Green Economic Recovery Fund (GERF) Results Based Financing (RBF) Programme implemented by SNV in Tanzania.

Introduction to This Report

- 60 Decibels completed interviews with 277 solar home system customers in Tanzania of 6 companies in March 2021.
- This report is the synthesis of insights, presenting aggregated and summarised insights from the work to highlight key takeaways and trends across the following indicators:
 - Customer profile: occupation, income-level, gender, household size, etc.
 - Prevalence of agricultural activities within household and crops under production
 - Productive use of SHS (and appliances)
 - Ownership and demand of productive use appliances
 - Interest to purchase/willingness to pay for appliances
- Company results were equally weighted to average results.
- Where results differ significantly by occupation, region, and/or gender, we call them out in the commentary.

Participating Companies

We completed interviews with 277 solar home system customers in Tanzania across 6 companies in March 2021.

We used a random selection approach to sampling.

Project breakdown:

- > Method: phone interviews
- > Languages: Swahili
- > Average survey length: 17 minutes
- > Average response rate: 75%

An analysis of productive use of energy products across six companies participating in EnDev GERF programme in Tanzania.



Company A
(n = 41)

Company B
(n = 46)

Company C
(n = 46)

Company D
(n = 53)

Company E
(n = 47)

Company F
(n = 44)

Key Takeaways

Companies participating in the EnDev GEF are doing well at reaching low-income customers, with a small proportion using the SHS for income-generating activities. Most customers engage in agriculture and are interested in a solar water pump.

25%

of customers used their solar product for income generation.

● ● ● ● ● - TOP 20%

21% of customers use their SHS/appliance at their business; 76% of these customers saw an increase in income because of the product. 5% use it for income generation at home. All these customers saw an increase.

72%

of customers live below the poverty line of \$3.20 per person per day.

● ● ● ● ● - TOP 40%

EnDev GEF portfolio companies are reaching a representative customer base and doing well at serving low-income customers. 77% of customers were rural, 12% peri-urban, and 11% urban.

73%

of customers conduct agricultural activities, and almost all grow crops.

82% of crop farmers grow maize and 68% sell most of their crops. 70% of crop farmers use rainwater as their primary source to water their crops.

64%

of customers are interested in purchasing a solar water pump.

Just 1% of customers interviewed own a solar water pump but 20% are most interested to purchase it amongst a group of appliances. These customers would be most interested in growing sesame and cash crops using the solar water pump.

20%

of customers were women.

● ● ● ● ● - BOTTOM 40%

Female and male customers were found to be equally likely to use the solar product at home or business. Female customers are most interested in purchasing a refrigerator, whereas male customers are most interested in purchasing a solar water pump.

Data Summary

Aggregate Performance: 277 customers interviewed in Tanzania in March 2021.

Quintile Assessment compares EnDev GEF companies' aggregate performance with Africa 60dB Energy Benchmark for customers across 61 companies, 16 countries, and 34,000 customers. Full details can be found in Appendix.

Performance vs. 60dB Benchmark

● ● ● ● ● - TOP 20%
 ● ● ● ● ● - TOP 40%
 ● ● ● ● ● - MIDDLE
 ● ● ● ● ● - BOTTOM 40%
 ● ● ● ● ● - BOTTOM 20%

- Customer Profile & SHS Productive Use
 - Demographics & income profile
 - Productive use of SHS at home & business
- Prevalence of Agricultural Activities within Household
 - Crops under production
 - Subsistence/commercial/mix farming methods
- Ownership and Demand for Productive Use Appliances
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“These appliances from [the company] are so good that I still can’t believe how I used to survive earlier without lights during the night. Now, I’m so comfortable and I’m always the first one to switch on the lights as soon as the sun sets considering that there is no electricity in our village so having these appliances from [the company] has really been useful.” [Male, 53]

Customer Profile: Demographics

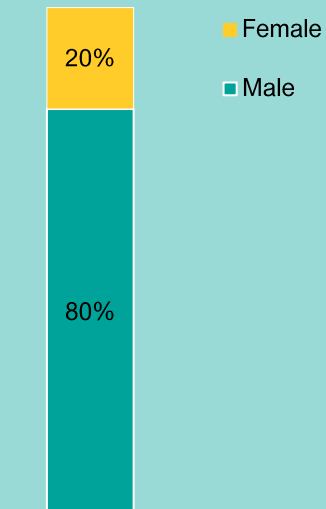
We asked a number of questions to understand the typical customer household that EnDev GERP's portfolio companies are reaching.

The typical customer of the EnDev GERP companies we interviewed is male; aged 40, and lives in a rural household of 6. Almost half of the customers practice agriculture.

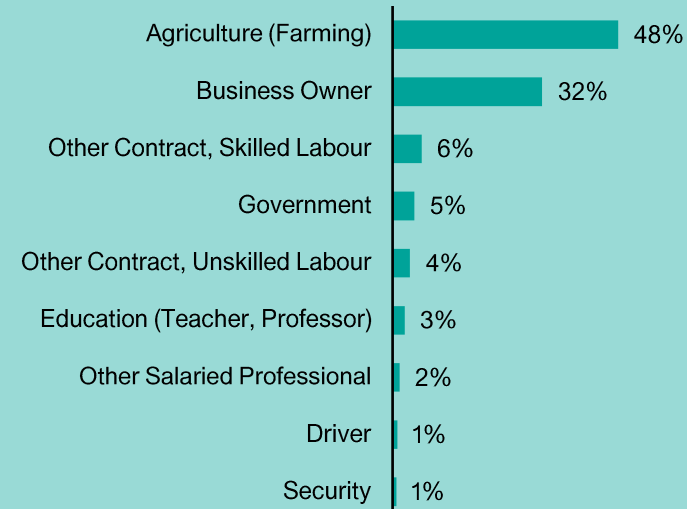
About the Customers We Spoke With

Data relating to customer characteristics (n = 277)

Gender



Primary Occupation



Age

40 Average age

Household Size

6.1 Average size

Location

- Village/Countryside (77%)
- Town (12%)
- City (11%)

Customer Profile: Inclusivity

Using the [Poverty Probability Index®](#), we measured how the income profile of customers compares to the Tanzania average. This gives insight into whether a company is under- or over-penetrating a certain income segment. You can think of it as a way of gauging company 'inclusivity'.

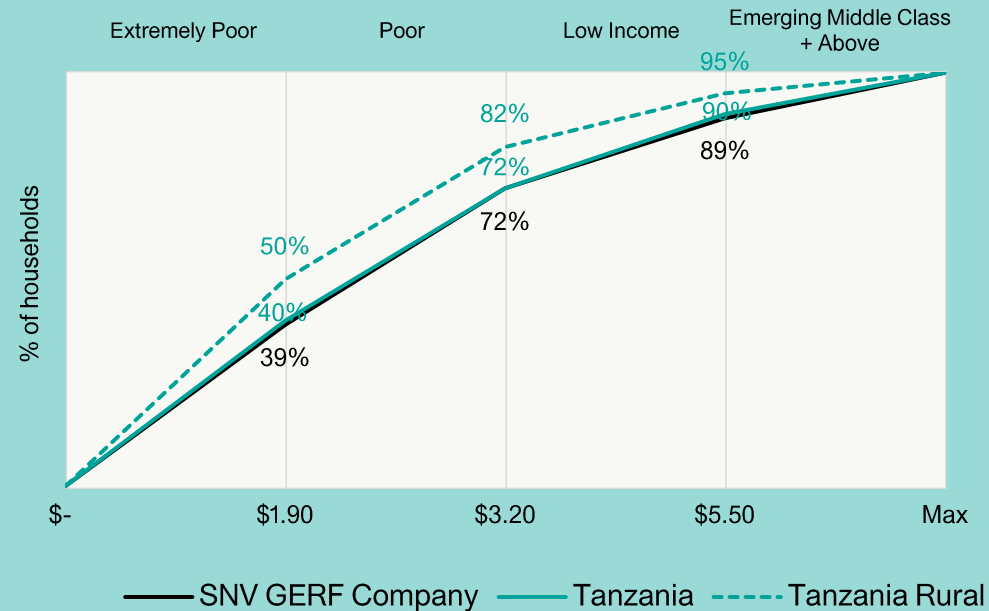
On average, companies are serving a very representative customer base relative to the Tanzania population with an Inclusivity Ratio of 0.99.

72% of EnDev GERP companies' customers we interviewed live below the poverty line of \$3.20 per person per day, which is in line with the Tanzania national rate of 72%. This is higher than the 60dB benchmark of 53% for Energy companies in Africa.

Compared to the Tanzania national average, EnDev GERP companies are doing well at serving low income customers.

Income Distribution of EnDev GERP Participating Companies Relative to Tanzania Average

% living below \$xx per person / per day (2011 PPP) (n = 277)



Inclusivity Ratio

Degree that companies are reaching low-income customers in Tanzania

0.99

● ● ● ● ● - TOP 40%

We calculate the degree to which companies are serving low-income customers compared to the general population. 1 = parity with national population ; > 1 = over-serving; < 1 = under-serving. See Appendix for calculation.

Productive Use

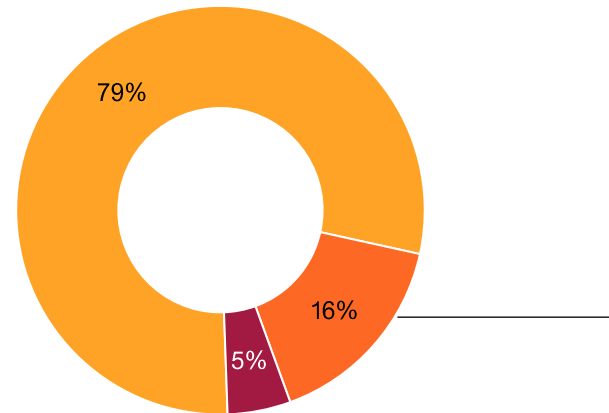
5% of home-use only customers use the solar product for income generating activities. 45% of these are using the product for charging their neighbours' phones at a fee.

Of the customers using the solar home system in their business, 54% use it at their fishing business and 44% use it at their restaurant or general shop.

The majority of customers use the solar product at home. 25% use for income generating activities either in their business or at home.

Productive Use

Q: Do you use the [company] solar home system and/or appliances at home, at your place of business, or both? (n = 277)



■ At home only ■ At place of business / at work only ■ Both

Among the customers we spoke to:

25% use their solar product for income-generating activities
(n = 277)

5% of home-use only customers use their solar product for income-generating activities
(n = 219)

53% say the business they use their solar product is in the main source of income for the household
(n = 57)

Change in Income

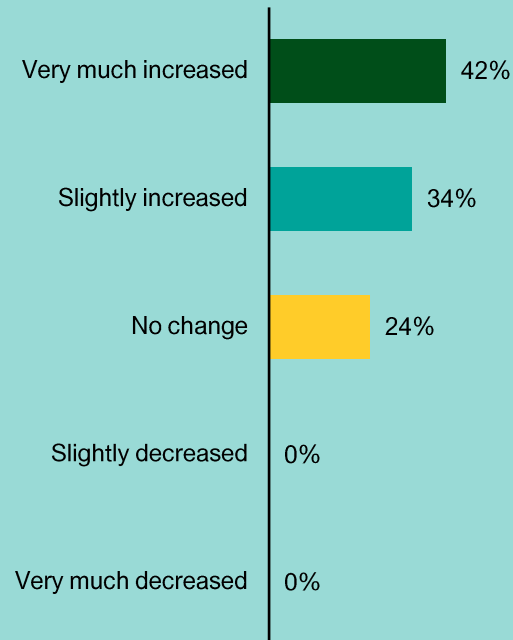
All customers who use the product at home for income generation report increased income.

We asked additional questions of the 20% of customers who use their product for income-generating activities, to see if they had noticed any changes in their household income.

All customers who reported using the solar product at home for income generation reported an increase in their income due to the company's product. 76% of business users saw increased income as a result of having the solar product.

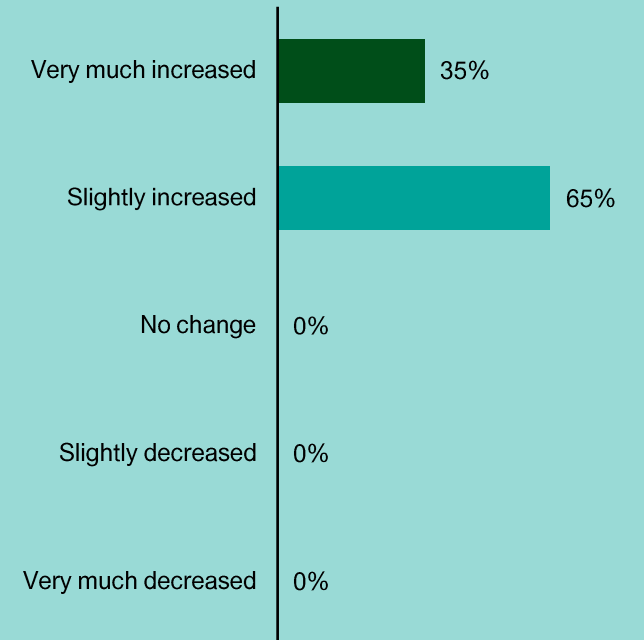
Change in Income: Business Users

Q: Since you have had the [company] solar home system and/or appliances have you seen any change in your income, related to the [product/service]? Has it: (n = 57)



Change in Income: Home Users

Q: Since you have had the [company] solar home system and/or appliances have you seen any change in your income, related to the [product/service]? Has it: (n = 11)



- 
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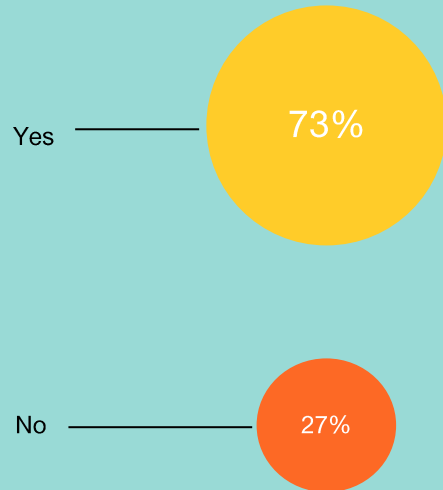
“If I could get the egg incubator, I would use it for business, as most of the people in my village still engage in the old ways of livestock keeping. Having this machine would help boost my income generation as I could get more and more chicken to sell compared to my fellow village men.” [Male, 31]

Engagement with Agricultural Activities

The majority of customers engage in agricultural activities and almost all grow crops. The majority of crop farmers sell most of the crops they grow.

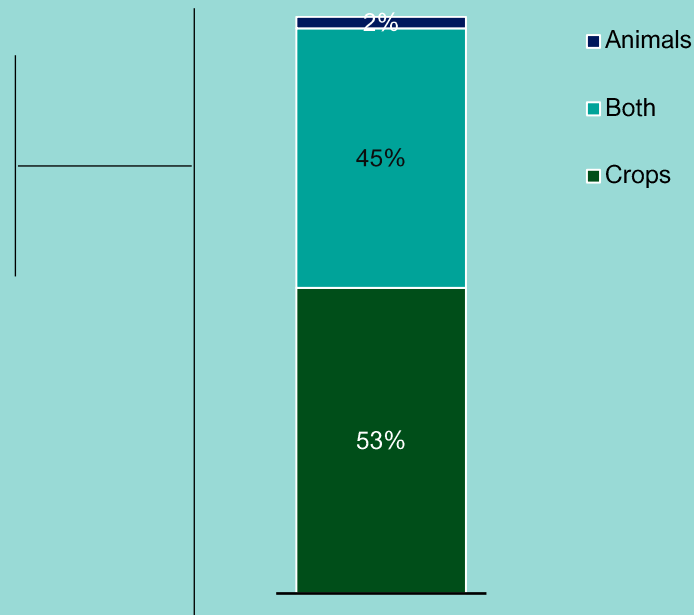
Engagement

Q: Does your household conduct any agricultural activities? (n = 277)



Type of Agricultural Activity

Q: Do you grow crops and/or keep animals? (n = 204)



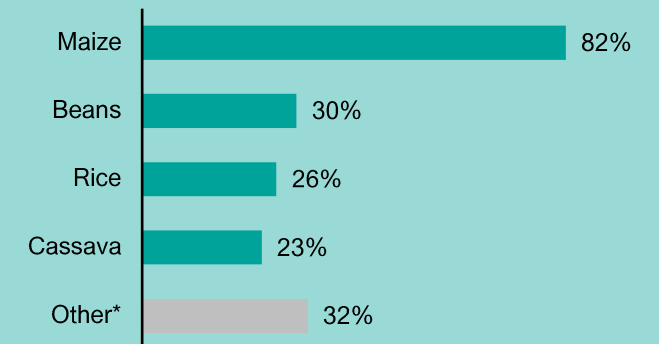
Selling of Crops

Q: Do you sell most of the crops you grow? (n = 201)



Main Crops

Q: What are the three main crops you grow? (n = 200)



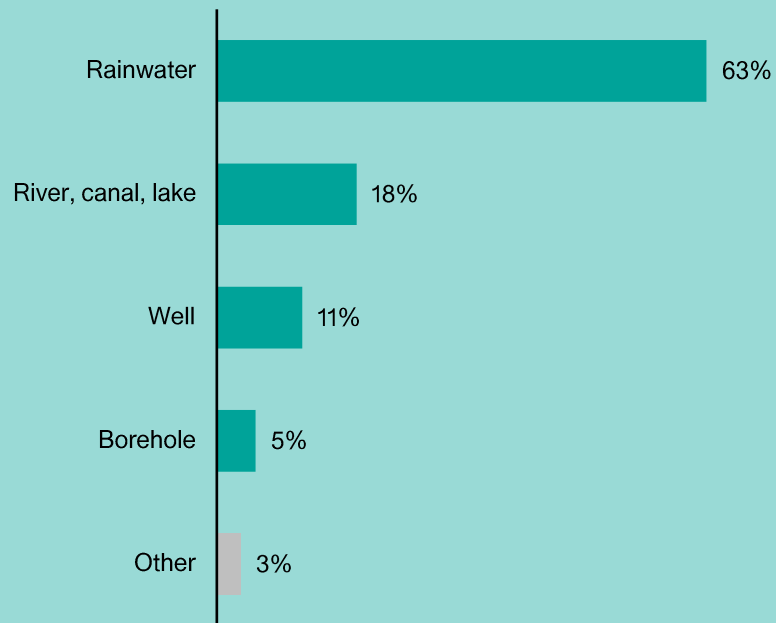
* Other crops include sunflower, groundnuts, peas

Farming Methods

Most crop farmers use rainwater to irrigate their crops.
Access to water is a problem for 44%.

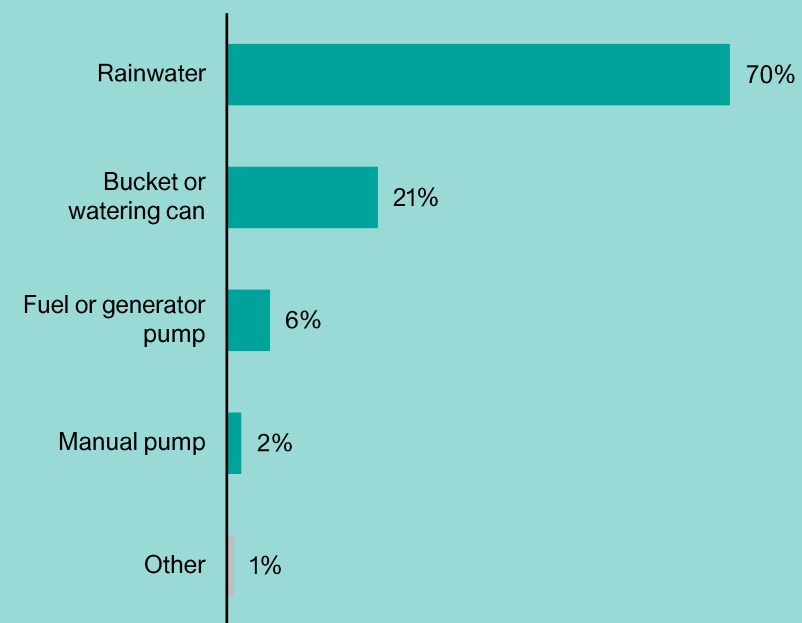
Primary Source of Water

Q: What is your primary source of water? (n = 201)



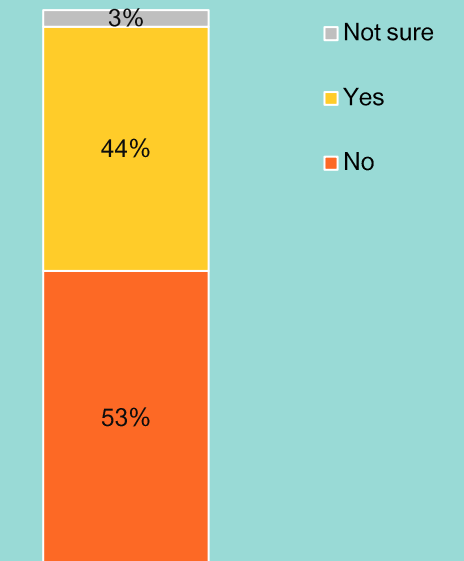
Methods of Irrigation

Q: What method are you using to water these crops? (n = 201)



Availability & Quantity of Water

Q: Is water availability and quantity - having enough water - a problem in the area you live? (n = 201)



- 
- **Customer Profile & SHS Productive Use**
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“I think that none of us here in the village would need appliances such as refrigerators and egg incubators as they are not highly in demand and the fact that most of the villagers only keep livestock like chicken just for domestic consumption. More complex appliances such as radios, television, solar water pumps would be helpful to us.” [Male, 32]

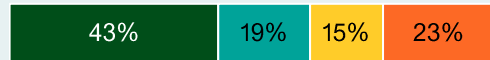
Asset Ownership & Interest

TVs are the appliance most commonly owned and, alongside solar water pumps, are of most interest to customers.

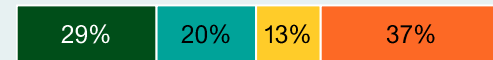
Appliance or Device Ownership & Demand

Q: Do you own a(n)...? (n = 277); Q: Are you interested to purchase [one/another]? Are you: (n = 277)

Television: 55% own



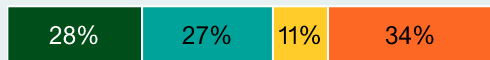
Speaker, Mic, & Speaker Set: 41% own



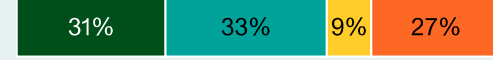
Phone Charging Stations: 31% own



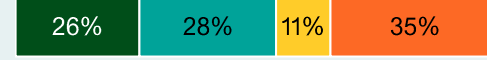
Iron: 26% own



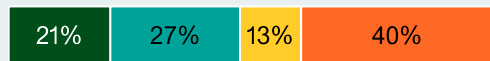
Refrigerator: 11% own



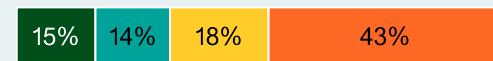
Sewing Machine: 11% own



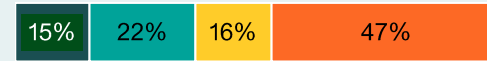
Fan: 9% own



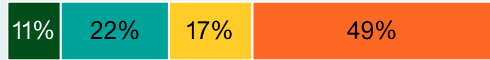
Hair Clipper: 5% own



Rice Cooker: 4% own



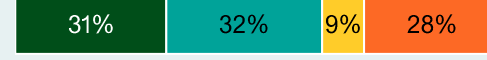
Electric Pressure Cooker: 2% own



Egg Incubator: 2% own



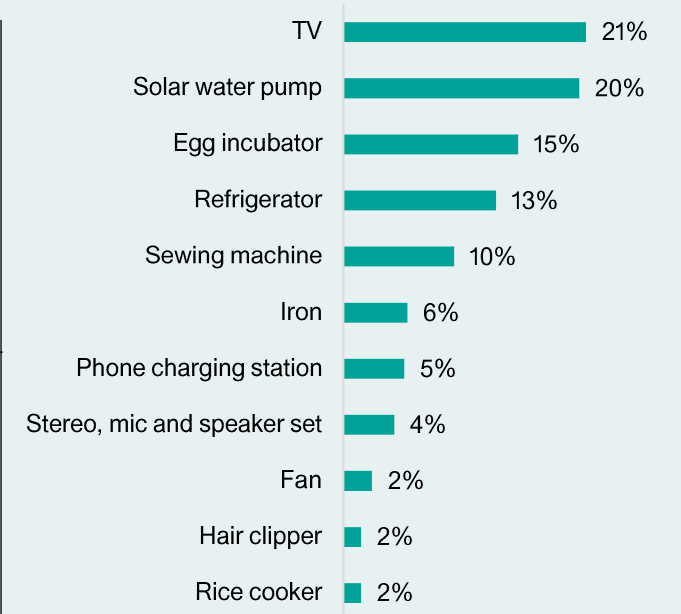
Solar Water Pump: 1% own



Very interested Slightly interested Neutral Not interested

Interest in Appliance or Device Ownership

Q: Which of these appliances are you most interested in? (n = 277)



Almost all customers who chose the appliances above as their top interest also indicated very or slight interest in it in the question prior.

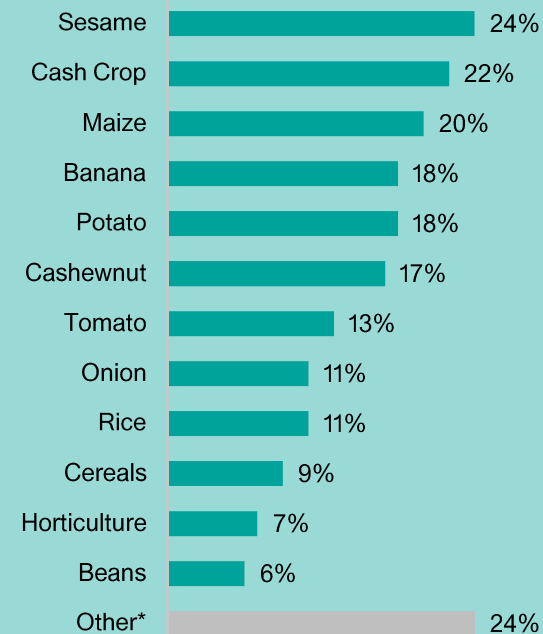
Crop Cultivation using Solar Water Pumps

Cultivating sesame and cash crops are of high interest for customers who are most interested in purchasing a solar water pump.

We asked additional questions of the 20% of customers who were most interested in purchasing a solar water pump. We asked them what crops they'd be most interested in cultivating using the pump.

Main Crops

Q: What crops would you be interested to use the solar water pump for? (n = 55, multiple responses allowed)



* Other crops include sunflower, watermelon, cabbage.

“If I can get solar water pump it would be very helpful for me in my farming activities and help expand my farming activity to gain more income.”[Male, 50]

“My request is to get a solar water pump on credit because it would help me in my farming activities instead of depending on rainwater which is not sustainable.” [Female, 40]

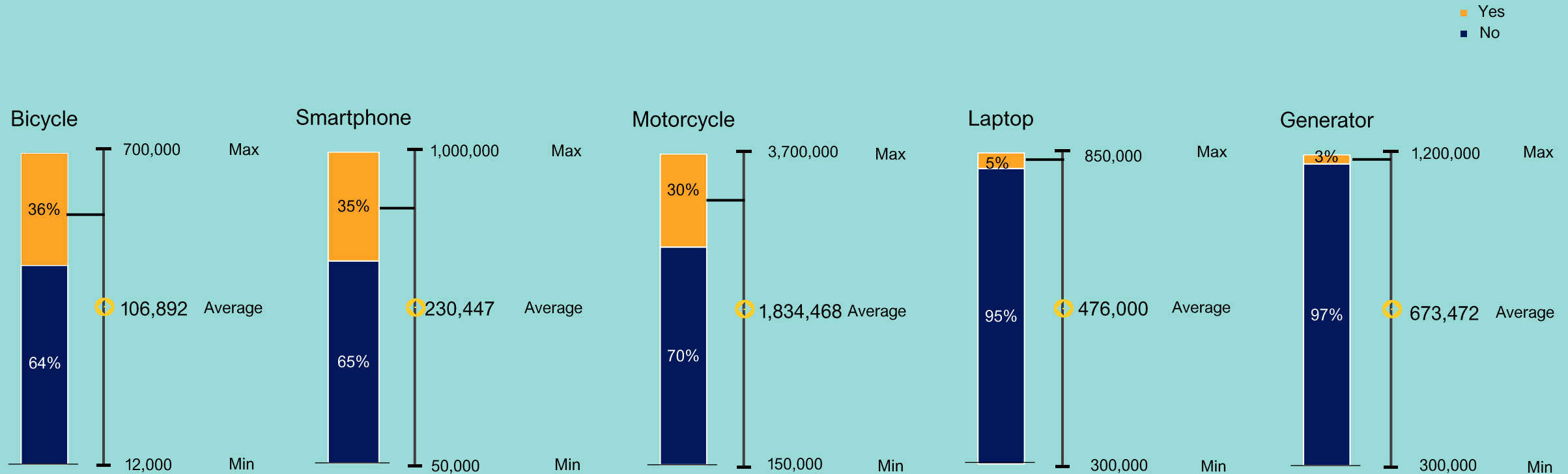
“Owning a solar water pump would really help transform my life, as I will change from consuming the crops to finally selling what I produce. I would also be capable of farming a larger area since I'm assured of water availability.” [Male, 40]

Asset Ownership & Payment

Bicycles are the most owned item whereas a laptop is the least.

Asset or Device Ownership & Payment

Q: Do you own any of the following? A...?; Q: Do you remember how much you paid for it (in TSh), approximately? (n = 277)



Appendix

Calculations & Definitions

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

Metric	Calculation
Inclusivity Ratio	<p>The Inclusivity Ratio is a metric developed by 60 Decibels to estimate the degree to which an enterprise is reaching less well-off customers. It is calculated by taking the average of Company % / National %, at the \$1.90, \$3.20 & \$5.50 lines for low-middle income countries, or at the \$3.20, \$5.50 and \$11 lines for middle income countries. The formula is:</p> $\sum_{x=1}^3 \frac{([\textit{Company}] \textit{Poverty Line } \$x)}{(\textit{Country Poverty Line } \$x)} / 3$

The 60dB Energy Benchmark

The 60dB Energy Benchmark is made up of the average performance of the energy company projects conducted since 2016. This includes 100+ off-grid energy companies across 270+ Lean Data projects.

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

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

Companies we've worked with

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

About 60 Decibels

60 Decibels makes it easy to listen to the people who matter most. 60 Decibels is an impact measurement company that helps organizations around the world better understand their customers, suppliers, and beneficiaries. Its proprietary approach, Lean Data, brings customer-centricity, speed and responsiveness to impact measurement.

60 Decibels has a network of 800+ trained Lean Data researchers in 55+ countries who speak directly to customers to understand their lived experience. By combining voice, SMS, and other technologies to collect data remotely with proprietary survey tools, 60 Decibels helps clients listen more effectively and benchmark their social performance against their peers.

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

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My neighbours have been praising how my house looks
during the night as the light bulbs
are so bright.

I give thanks
to the company
for bringing us

> a good product
and
> their services are
good.

We get

> good light,
and
> my children can also
study at night.

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