



Business Survey Report November 2020

# Access to Energy for (Micro) Businesses in Kakuma Refugee Camp and Kalobeyei Integrated Settlement

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# Abbreviations

PAYGO	Pay as You Go
TSOF	Three-Stone Open Fire
SHS	Solar Home System

## ACCESS TO ENERGY FOR (MICRO) BUSINESSES IN KAKUMA REFUGEE CAMP AND KALOBEYEI INTEGRATED SETTLEMENT

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### Contact

Energising Development

E [endeve@giz.de](mailto:endeve@giz.de)  
I [www.endeve.info](http://www.endeve.info)

### Photos:

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Dag-Hammarskjöld-Weg 1-5  
65760 Eschborn, Germany  
E [info@giz.de](mailto:info@giz.de)  
I [www.giz.de](http://www.giz.de)

### SNV Netherlands Development Organisation

Parkstraat 83  
2514 JG The Hague  
The Netherlands

E [snvendevkenya@snv.org](mailto:snvendevkenya@snv.org)  
I [www.snv.org](http://www.snv.org)

**Authors:** Karlijn Groen, Susanne  
Hounsell, Merijn Havinga, John Muene  
Njogu (SNV)

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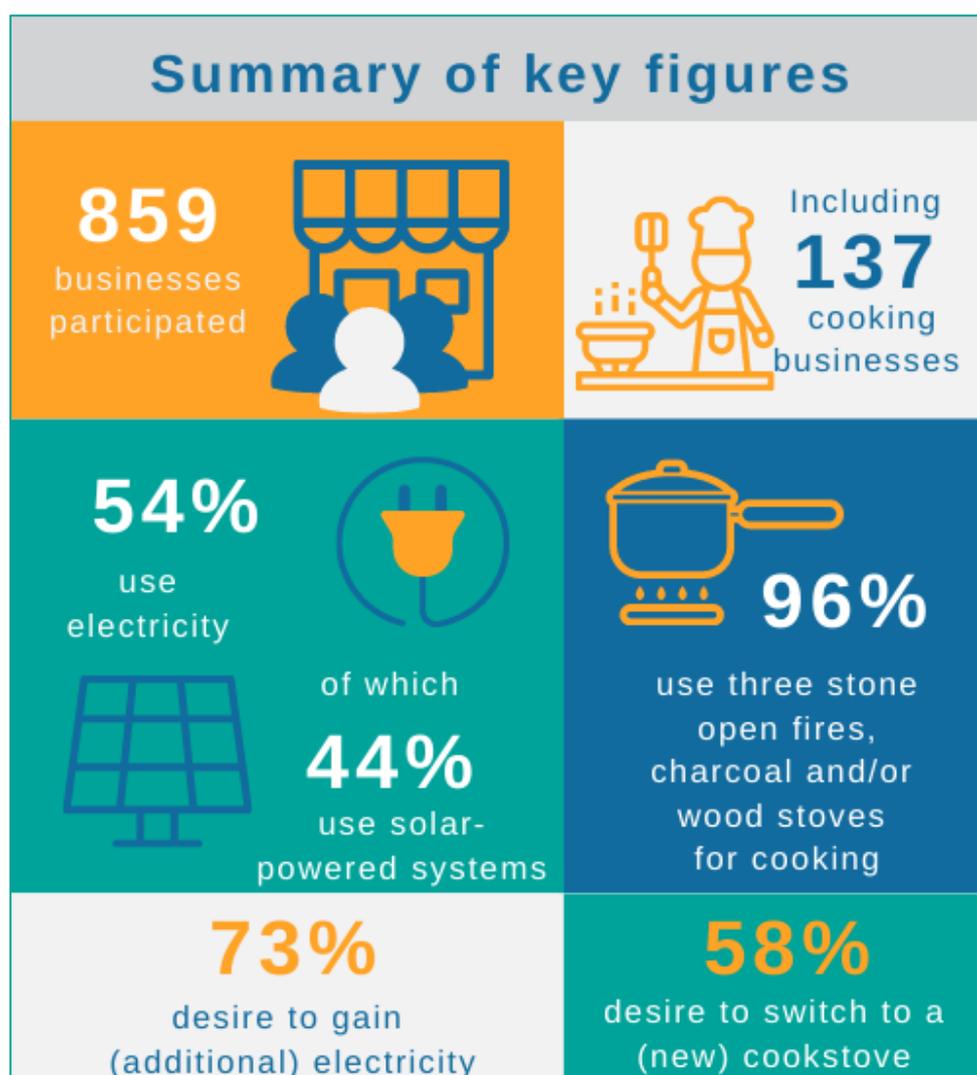
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# Executive Summary

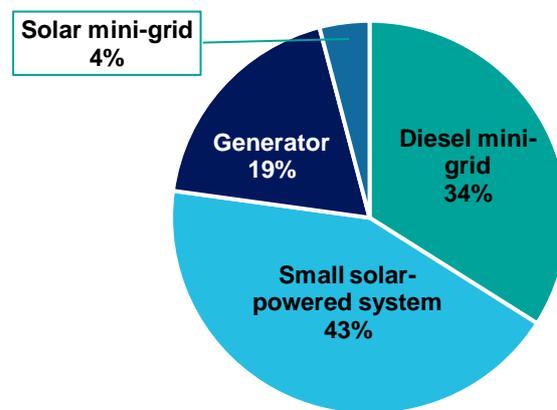
Kakuma refugee camp and Kalobeyei integrated settlement have a vibrant informal economy, consisting of more than 2,500 (micro) businesses that provide a variety of goods and services. Energy access is low in both the camps and the settlement, and often supplied through expensive and unreliable informal diesel mini-grids and standalone generators. Only Kalobeyei settlement has a solar-powered mini-grid that connects one of its three villages (Village 1). This lack of sustainable and reliable energy supply restricts the businesses operating in Kakuma refugee camp and in the other two villages in Kalobeyei settlement from expanding their activities and increasing their earnings.

This report presents findings and recommendations based on a survey of 859 businesses in Kakuma refugee camp and Kalobeyei settlement ('the camps') in January 2020. The survey was designed to gain more insight into energy usage of businesses operating in the camps, and to inform product offerings and marketing approaches for off-grid solar and cookstoves products. The survey covered an estimated 35% of businesses operating in the camps. The business types included *dukas*/kiosks, (small) restaurants, grocery stores, and other small businesses that provide services such as tailoring, phone charging, shoe repair, and mobile money services, and products such as clothes, fruits and vegetables, and electronics.

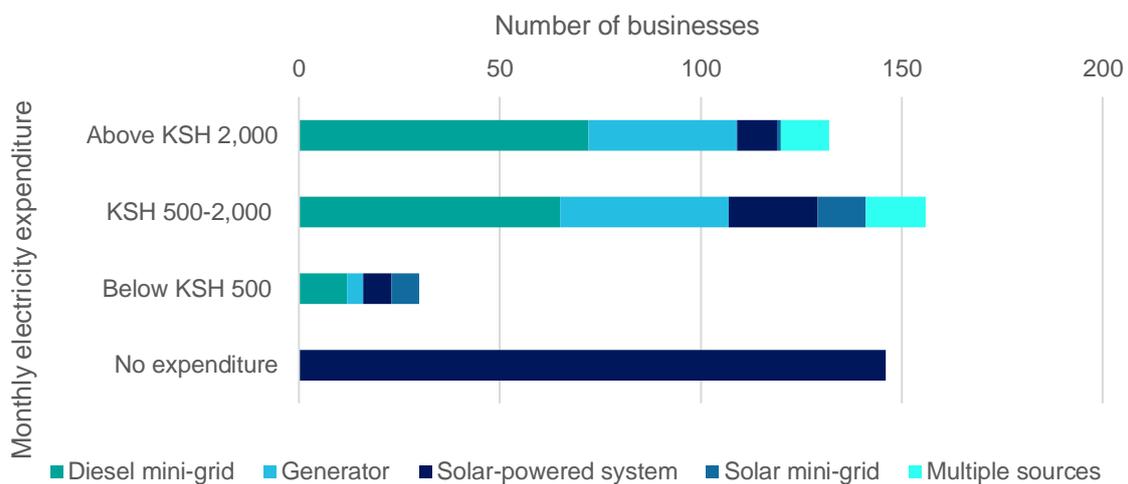


## Electricity

- The survey found that the majority of businesses in Kakuma use electricity, primarily powered by diesel for more power-intensive operations and solar for small appliances only.
  - The survey found that 54% of respondents in the camps use electricity for their businesses, primarily for lighting but also for phone charging, cooling, and playing TV shows/movies.
  - Diesel-powered energy sources dominate the energy supply for businesses: 53% rely on a diesel mini-grid or an individual generator, often to power larger appliances such as refrigerators and audio systems; 43% use a small solar-powered system<sup>1</sup> for lighting and/or phone charging; and 9% use more than one source of electricity, typically a solar-powered system for lighting, and other sources of electricity for larger appliances.



### Distribution of power sources used by businesses with electricity access.



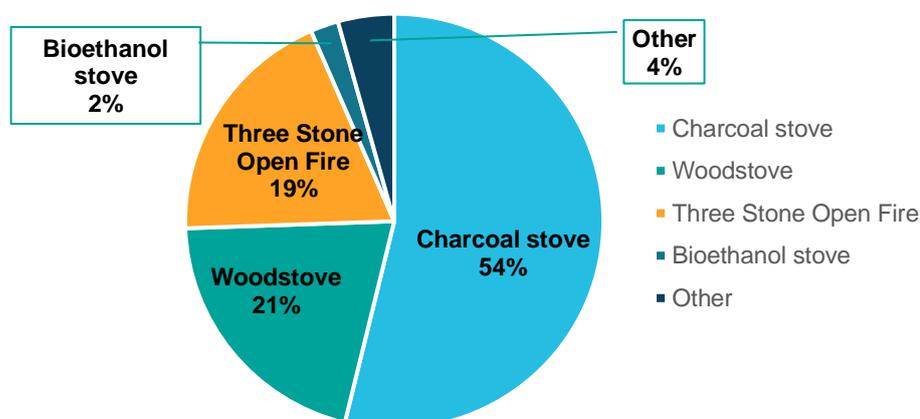
### Monthly electricity expenditure per power source(s) used.

<sup>1</sup> Small solar-powered systems include solar home systems and component-based solar systems <300 Watt.

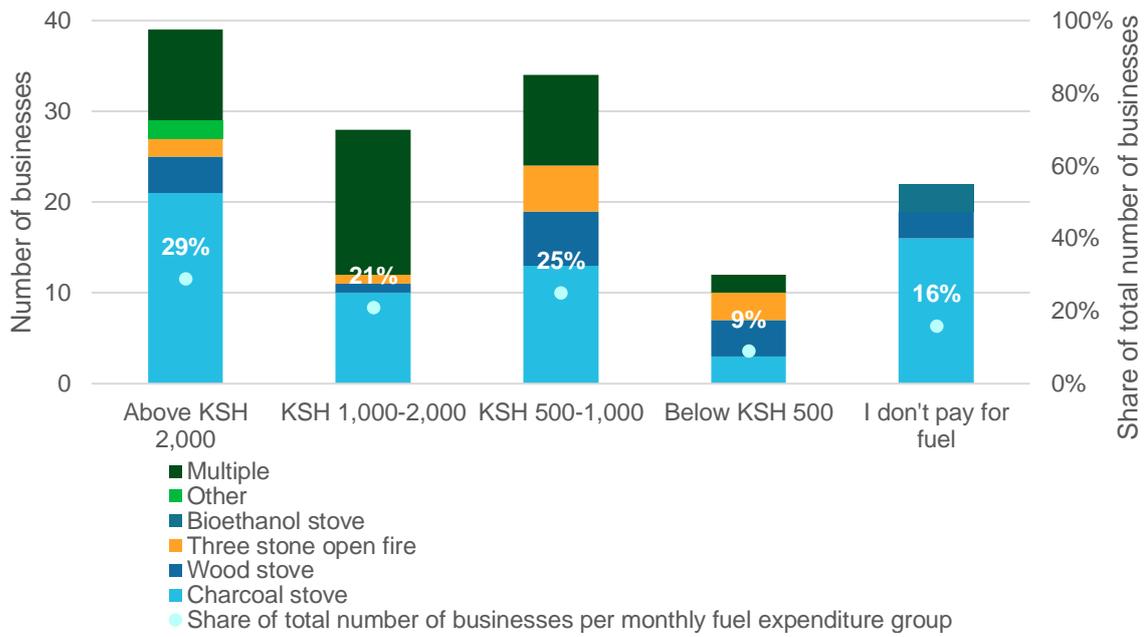
- **Businesses that use diesel-powered systems incur high monthly costs, indicating both a willingness and an ability to pay for electricity.**
  - Respondents indicated that their electricity expenditures either fall within the KSH500 to KSH2,000 range (47%) or are more than KSH2,000 (47%) due to the high monthly fixed usage fees that diesel mini-grid operators charge in the camps, combined with the power intensity of large appliances. Most owners of solar-powered systems (79%) have paid off their systems and do not incur any costs.
- **Businesses want to use larger appliances and small solar-based devices for their operations.**
  - Of the businesses that currently use electricity, 64% expressed interest in using additional (larger) appliances such as refrigerators (31%), TVs (20%), audio systems (14%), and fans (13%). Both the initial purchase price and operating costs are preventing businesses from investing in additional appliances.
  - Of the businesses that have no electricity access, 85% expressed interest in using electricity for their operations—in particular for lighting (45%)—as it would enable them to have longer opening hours and provide extra services such as phone charging and cooled produce. High electricity prices and a lack of information on available solutions were cited as the main barriers to using electricity. Flexible payment options, access to loans, and product demonstrations were mentioned as ways to overcome these barriers.

## Cooking

- **A reliance on firewood and charcoal is near-universal; an interest in alternative fuels exists, but the cost and availability of stoves and fuel are limiting factors.**
  - The survey found that 96% of businesses involved in cooking reported to predominantly use (basic) wood and charcoal stoves, and Three-Stone Open Fires (TSOFs). Half of the businesses reported spending more than KSH1,000 per month on cooking fuel. A majority (58%) of the businesses expressed a desire to switch to other stove types such as improved charcoal stoves, bioethanol stoves, or Liquefied Petroleum Gas (LPGs). The main reasons for switching were improved health, stove capacity, and stove quality. The high initial costs of these stoves and the lack of availability were identified as key barriers to purchasing (new) stoves.



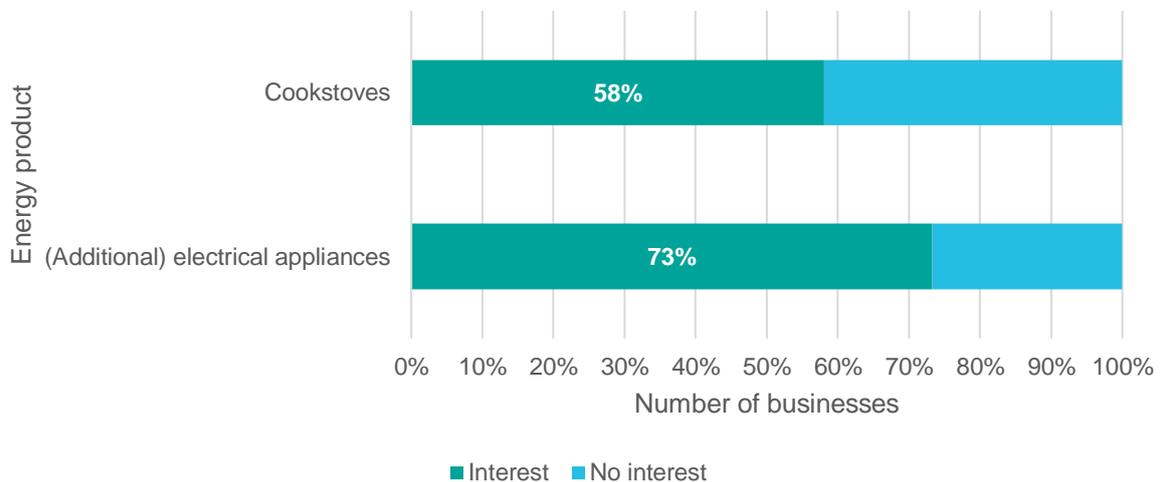
**Distribution of cookstove types used by businesses.**



### Monthly fuel expenditure of businesses per cookstove type.

#### Market Opportunity

A market opportunity exists for suppliers of both solar products and clean cookstoves to sell their products to businesses operating in the camps—provided that barriers are appropriately addressed. Overall, 73% of businesses expressed an interest in obtaining (or expanding) electricity access, and 58% of cooking businesses expressed an interest in switching to a new cookstove. Existing access to mobile money and other financial services among businesses (68%) can play an enabling role.



### Business interest in purchasing (additional) energy product(s).

## Recommendations

The findings inform several recommendations for suppliers regarding how to tap into the demand for clean energy access and products from businesses operating in the camps.

- Conduct supply chain analysis on available solar-powered devices, and support market entry of additional products.
- Determine the business case for solar-powered energy solutions for businesses to inform product offering and price ranges.
- Raise awareness on alternative usages of electricity for business purposes to those businesses with only basic electricity access.
- Raise awareness among businesses without electricity access on available basic solar-powered appliances with flexible payment options.

### Key recommendations - Electricity.

The high usage of diesel to power large appliances among businesses provides an opportunity for clean energy suppliers to offer more affordable and clean alternatives, and to tap into the existing willingness and ability of businesses to pay for such alternatives.

The local availability of solar-powered appliances needs to be assessed, and if gaps exist, market entry of these appliances needs to be promoted. The **business case** for solar-powered appliances needs to demonstrate the return on investment for businesses, and inform how these products could be marketed as cost-saving, reliable alternatives.

The large number of businesses that make only basic usage of electricity for lighting shows that **more awareness of alternative uses of electricity for business purposes** is required. However, solar suppliers should also raise awareness among businesses without electricity access for **basic energy products** such as basic solar lighting and phone charging devices.

**Flexible payment methods** should be deployed alongside product offerings to address the high-cost barrier that businesses currently face. Affordable payment schemes are particularly important to those businesses without electricity access.

- Identify opportunities and develop supply chains for stoves and alternative fuel supply.
- Promote market entry of higher-tier stove and alternative fuel suppliers.
- Include refugee (and host) communities in supply chain development.
- Address high upfront payment barriers through deployment of flexible payment models.

### Key recommendations - Cooking.

To meet the demand for improved stoves among cooking businesses that expressed a desire to switch to alternative approaches, an analysis on available stoves and alternative fuels needs to be conducted to identify **opportunities for supply chain development**. The host community should be integrated into the supply chain of alternative fuels, given the economic importance of firewood supply for the community.

Current monthly fuel costs provide a starting point for determining a business's ability to pay for alternative cookstoves. To address the high upfront payment barrier, suppliers should deploy alongside their product offerings **flexible payment models** such as leasing ('tool and fuel') or PAYGO ('pay-as-you-cook') models.

# 1. Introduction

Kakuma refugee camp in Northern Kenya hosts approximately 2,500 (micro) businesses, operating with varying levels of stable, affordable, and clean energy access. SNV, through the Energising Development (EnDev)-funded Market-based Energy Access Programme, conducted a survey to understand the energy access situation of these businesses.

The findings of the survey serve to better inform product offerings and marketing approaches for off-grid solar and clean cookstove companies engaged in the camps. In addition, the results provide insight on energy access of businesses, and opportunities around the productive use of energy in refugee settings for the wider humanitarian sector.

This report presents the findings of the survey, as well as the conclusions drawn from the findings and subsequent recommendations given. Section 2 provides context to the survey, Section 3 describes the survey methodology, Section 4 presents the findings, and Section 5 summarizes key recommendations.

Despite Kalobeyei integrated settlement not being considered a refugee camp (see **Box 2**), throughout this report 'Kakuma camp' or 'the camps' refers to Kakuma refugee camp and Kalobeyei settlement, unless explicitly mentioned separately. 'Business' refers primarily to a microbusiness, meaning it is run by one person and/or employs no more than five people.

The Market-Based Energy Access (MBEA) project aims to promote market-based access to clean cooking and solar-powered solutions in Kakuma refugee camp, Kalobeyei integrated settlement, and the host community. The pilot phase ran until September 2019, resulting in the sale of 6,873 solar products and 2,005 improved cookstoves. The project also trained 120 Last Mile Entrepreneurs (LMEs). An overview of the experiences and lessons learned from the MBEA project pilot phase can be found [here](#).

The ongoing scaleup project [MBEA II](#) continues to promote solar products and improved stoves for households, and has expanded its focus to encompass solar-powered productive use technologies and improved stoves for businesses and social institutions. This is achieved through support to suppliers and distributors of energy access products and services, including the provision of technical assistance and activity-based financial facilitation to enter the market and to increase sales in the camps and host community.

## **Box 1. The Market-Based Energy Access project.**

## 2. Background

This section provides background to the camps and general information on energy access for refugee-run businesses.

### 2.1. Kakuma Refugee Camp and Kalobeyei Settlement

Kakuma refugee camp is located on the outskirts of Kakuma town in Turkana County, Kenya. The camp was established in 1992 following an influx of Sudanese refugees, and hosts more than 197,000<sup>2</sup> registered refugees and asylum-seekers across 22 nationalities. This includes about 40,000 refugees living in Kalobeyei integrated settlement, which was established in 2014 as an alternative to a traditional refugee camp, to promote self-reliance among refugees and to improve integration with the host community. Although the host community has been encouraged to move to Kalobeyei, the majority of people residing in Kalobeyei settlement are still refugees.<sup>3</sup>

**Kakuma refugee camp** is adjacent to Kakuma town and divided into four sub-camps, each with residential and market areas. The camp is characterised by a high population density of 12,000 to 13,000 persons per km<sup>2</sup>, with Kakuma 1 being the oldest and most densely populated sub-camp. The building structures are typically made from mud, brick, or iron sheets with iron roofs. The population of the camp fluctuates, depending on the security situation of neighbouring countries. The businesses in the camp are divided into 10 major markets: four in Kakuma 1 (approximately 45% of businesses); two in Kakuma 2 (approximately 13%); three in Kakuma 3 (approximately 36%); and one in Kakuma 4 (approximately 6%). Over the years, Kakuma town and Kakuma camp have become socioeconomically interdependent, as the refugees and the host community engage in business interactions with each other.

**Kalobeyei integrated settlement** is located 25km northwest of the camp and is divided into three villages. These villages can host up to 45,000 people, but the population currently stands at 39,500. In Kalobeyei, the markets are spread across these villages. Established in 2014, the settlement's purpose is to better integrate refugees into the host community, and to foster greater self-reliance among refugees, with a different approach to support mechanisms. The Kalobeyei Integrated Social and Economic Development Plan (KISED P), led by local authorities, guides the settlement development.

#### Box 2. Set up of Kakuma refugee camp and Kalobeyei integrated settlement.

### 2.2. Businesses and Energy Access

Despite limitations for refugees to engage in formal employment, Kakuma refugee camp provides a vibrant informal economy with more than 2,500 businesses established.<sup>4</sup> These businesses, mostly microbusinesses, provide livelihoods for refugees and their families living in the camps. Most businesses are *dukas* (small stores) or kiosks that sell a range of goods such as food, cosmetics, and mobile phones. Other types of businesses include clothing shops, fresh food stores, electronic stores, barbershops, and hotels and restaurants.

<sup>2</sup> As of September 2020. UNHCR, 2020. Kakuma and Kalobeyei Population Statistics. Retrieved from <https://data2.unhcr.org/en/documents/download/79453>

<sup>3</sup> University of Oxford 2018. The Kalobeyei Model: Towards Self-Reliance for Refugees? Retrieved from <https://www.rsc.ox.ac.uk/publications/the-kalobeyei-model-towards-self-reliance-for-refugees>.

<sup>4</sup> UNHCR, 2019. Retrieved from [https://www.unhcr.org/ke/wp-content/uploads/sites/2/2019/06/Briefing-Kit\\_May-2019-approved.pdf](https://www.unhcr.org/ke/wp-content/uploads/sites/2/2019/06/Briefing-Kit_May-2019-approved.pdf).

The businesses cater to both refugees and the Turkana host community, creating socioeconomic interdependence. Refugees in the camps earn an average monthly income of KSH5,600.<sup>5</sup> Business activities account for 27% of average incomes<sup>6</sup> (or KSH1,500 per month). Other sources of income include Bambua Chakula e-vouchers (issued by World Food Programme and used to purchase food), donations, remittances, and profits from reselling rations. Almost half of household spending (46%) goes towards consumer goods—primarily staple foods—and is catered for by small shops.<sup>7</sup> Fuel and electricity account for the largest non-food expenditure (34%) for households in the camps.<sup>8</sup>

Despite an active local economy, there is a lack of sustainable and reliable energy in Kakuma refugee camp, restricting businesses from expanding their operations to increase their earnings, and putting food businesses at risk due to inefficient and unhealthy cooking practices and high fuel costs.

## Electricity Access

Businesses throughout Kakuma refugee camp traditionally either have no electricity access or rely on standalone diesel generators or informal diesel-powered mini-grids. Solar-powered lighting solutions are in use across a growing number of businesses but are usually limited to basic services such as lighting or phone charging. Informal diesel mini-grids connect approximately 1,700 households and businesses in Kakuma refugee camp. Private operators provide power at high tariffs for a few hours per day.<sup>9</sup> Electricity is unmetered, and customers are charged a fixed monthly fee of KSH500, plus a fixed fee depending on the type(s) of appliance(s) used. For example, mini-grid operators charge a monthly rate of KSH3,000 for a TV, and KSH5,000 for a refrigerator.<sup>10</sup> Substandard in-house wiring and unsafe overhead power lines are an issue.

In Kalobeyei settlement, a solar PV mini-grid system (60 kWp) with a backup diesel generator was installed by GIZ and Renewvia under the EnDev programme, and currently connects 342 households, 127 businesses, and 12 institutions.<sup>11</sup> In Kalobeyei villages 2 and 3, residents are connected to small diesel mini-grids that are run by private operators, which is similar to the setup in Kakuma refugee camp. Plans are in development to expand the solar mini-grid to connect these villages as well.

Off-grid solar lighting solutions such as Solar Home Systems (SHSs) and solar lanterns are increasingly being used in the camps by households and businesses. However, SHSs currently provide only basic lighting and phone charging services.

## Cooking Approaches

Clean cooking remains a key challenge in both Kakuma refugee camp and Kalobeyei settlement. The United Nations High Commissioner for Refugees (UNHCR), through the local NGO Lokado, provides 10kg of free firewood to every person in the camps every two months. This ration, however, covers only 30 to 50% of household fuel needs. Additional fuel is purchased in the market or (illegally) collected around the camps—posing safety risks to women and girls who are typically tasked with collecting firewood. Refugees spend 17% of

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<sup>5</sup> Ibid. \*KSH5600. 114 KSH = 1 EUR.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> UNHCR, Kimetrica, WFP 2016. Retrieved from

[https://kimetrica.com/files/uploads/files/pdf/Refugee\\_HH\\_Vulnerability\\_Study\\_Kakuma\\_Refugee\\_Camp\\_Final\\_Report\\_2016\\_05\\_06.pdf](https://kimetrica.com/files/uploads/files/pdf/Refugee_HH_Vulnerability_Study_Kakuma_Refugee_Camp_Final_Report_2016_05_06.pdf).

<sup>9</sup> Smart Communities Coalition, 2019. Retrieved from <https://www.energy4impact.org/file/2087/download?token=BsWZzcRf>.

<sup>10</sup> Ibid.

<sup>11</sup> UNHCR, 2020. Retrieved from <https://www.unhcr.org/ke/wp-content/uploads/sites/2/2020/03/Kakuma-and-Kalobeyei-Update-29-February-2020.pdf>

their income on additional fuel,<sup>12</sup> and firewood supply is an important source of income for the host community.

Primary cooking methods used in the camps—TSOFs and basic wood and charcoal stoves—are typically considered expensive and inefficient, and are deemed to have adverse effects on health and the environment. Projects exist to introduce higher-tier cookstoves in the camps, but uptake remains a challenge due to various factors, including high stove and fuel costs, the lack of alternative fuels (e.g. unstable bioethanol supply), and an unwillingness to cook with non-traditional fuels.<sup>13</sup>



**A woman from Kakuma camp prepares a meal.**

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<sup>12</sup> Moving Energy Initiative, 2018. Retrieved from <https://www.chathamhouse.org/sites/default/files/publications/research/2018-01-30-meeting-refugees-energy-needs-burkina-faso-kenya-mei-corbyn-vianello-final.pdf>.

<sup>13</sup> Ibid.

## 3. Survey Design & Structure

This section outlines the survey approach, the survey structure, and the demographics of survey respondents.

### 3.1 Survey Objective and Design

Private sector energy suppliers are increasingly recognising the market opportunity in Kakuma due to its high population density and market activity, evidenced in the private sector engagement and sales results of the [MBEA project](#). However, language barriers, a lack of market knowledge on energy use, needs, and income, and a tradition of aid-based access to goods and services can deter suppliers of larger solar systems and higher-tier cookstoves from expanding to Kakuma and from catering to businesses.

To better understand the characteristics and energy needs of businesses operating in the camps, a survey was carried out in Kakuma refugee camp and Kalobeyei settlement. The survey collected information regarding business characteristics, their access to energy and preferred energy access solutions, and financial inclusion of refugee entrepreneurs. The survey questionnaire focused on gathering background information on businesses and identifying their energy access levels and needs. All businesses were asked about their electricity access, but questions about cooking approaches applied only to businesses involved in food preparation and sales (e.g., restaurants). The survey captured business type, monthly earnings, number of employees, use of financial services, and energy access. If the business used electricity, more details were requested about the type of electricity, activities and/or appliances requiring electricity, and monthly expenditures. Those not using electricity were asked about the barriers preventing them from using electricity. In addition, the businesses involved in food preparation and sales were asked about their cooking practices, and their demand (if any) for other types of cookstoves. (For the full questionnaire, see Annex II: Survey ).

### 3.2 Characteristics of Respondents

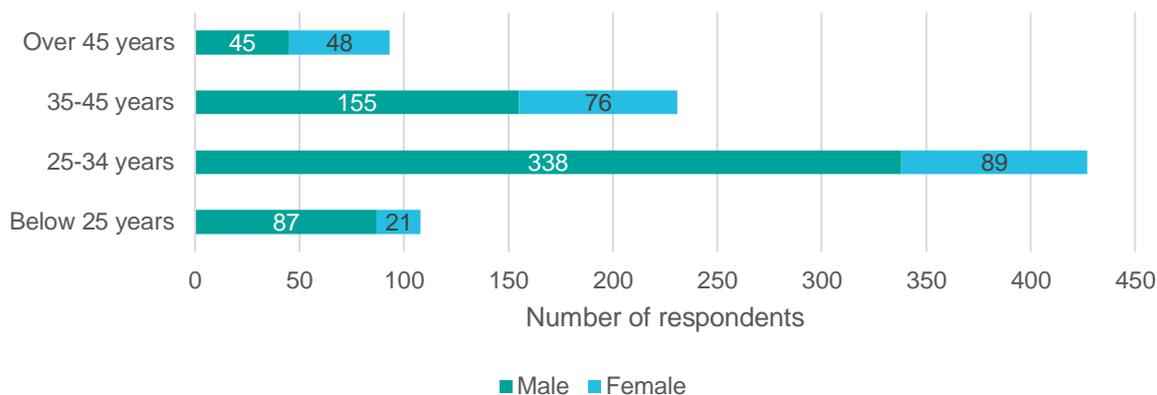
The survey was conducted for a total of 859 refugee-run businesses in the camps. With an estimated 2,500 businesses,<sup>14</sup> the survey therefore covered around 35% of all businesses in the camps. The majority of respondents (73%) were men, and more than half (62%) were younger than 35 years old. The largest group of respondents (200) were Somali, but other nationalities included Congolese, Burundian, Kenyan,<sup>15</sup> Sudanese, South Sudanese, and Ethiopian. Table 1, Figure 1, and Figure 2 provide further demographic data of the survey respondents.

<b>Age group</b>	<b>&lt;35</b>	<b>&gt;35</b>
	535	324
<b>Gender</b>	<b>Female</b>	<b>Male</b>
	234	625
<b>Monthly business income*</b>	<b>&lt;KSH5,000</b>	<b>&gt;KSH5,000</b>
<i>*not all businesses disclosed</i>	484	320
<b>Number of employees</b>	<b>1</b>	<b>&gt;1</b>
	549	310

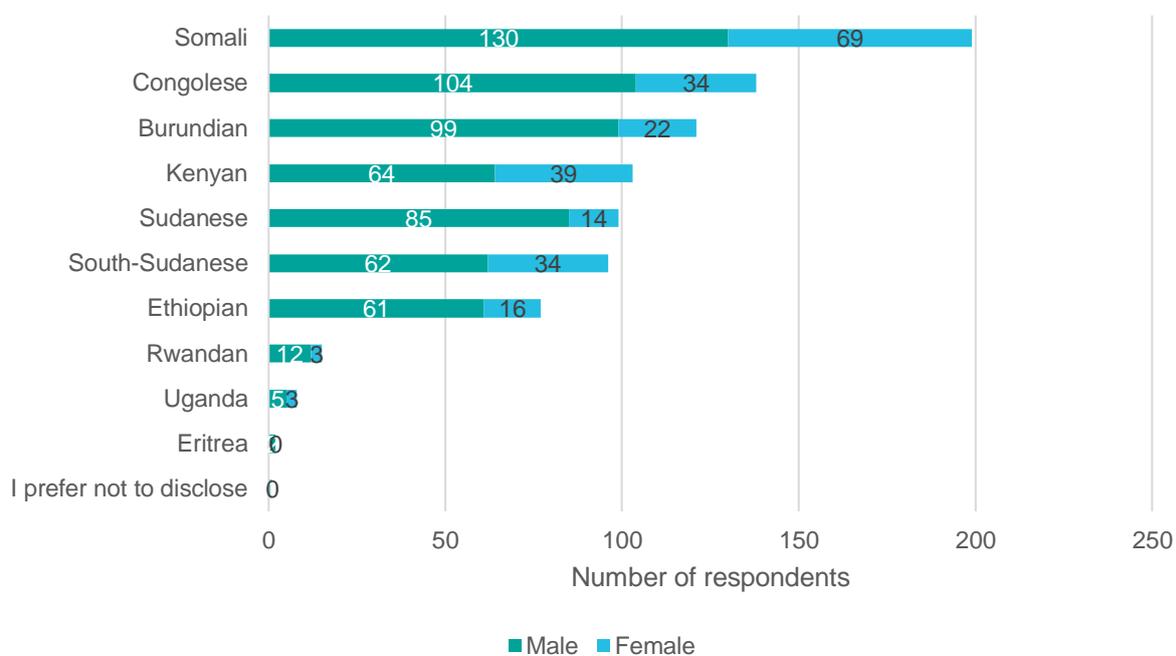
**Table 1. Characteristics of respondents.**

<sup>14</sup> UNHCR, 2019. Retrieved from [https://www.unhcr.org/ke/wp-content/uploads/sites/2/2019/06/Briefing-Kit\\_May-2019-approved.pdf](https://www.unhcr.org/ke/wp-content/uploads/sites/2/2019/06/Briefing-Kit_May-2019-approved.pdf).

<sup>15</sup> The Kenyan respondents are not refugees but do run a business in the camp.



**Figure 1. Ages of survey respondents.**

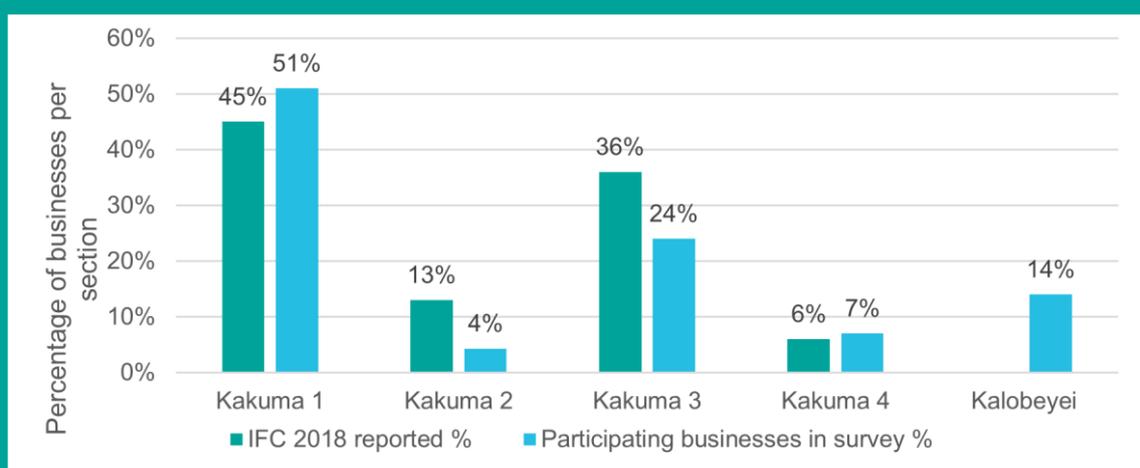


**Figure 2. Nationalities of survey respondents.**

## Locations and Business Types

The survey was conducted in Kakuma sub-camps 1 through 4, and Kalobeyei villages 1 through 3. Most of the businesses were located in Kakuma 1 (51%) and Kakuma 3 (24%). Fourteen percent of respondents were based in Kalobeyei, and 4% and 7% were located in Kakuma 2 and 4, respectively.

The survey aimed to build on the study conducted by IFC in 2016 (and published in 2018) on market activity in the camps. The distribution of business per camp/settlement location in the survey is similar to the overall distribution of businesses per section as reported by IFC. See Figure 3 for a comparison of the distribution of businesses in Kakuma refugee camp as reported by IFC, and the distribution of the survey respondents (NB: IFC did not specifically report on the number of businesses in Kalobeyei). The figure shows that Kakuma 1 is slightly over-represented in the sample, while Kakuma 2 and 3 are under-represented compared to the IFC survey.



**Figure 3. Comparison of distribution of businesses in Kakuma refugee camp.**

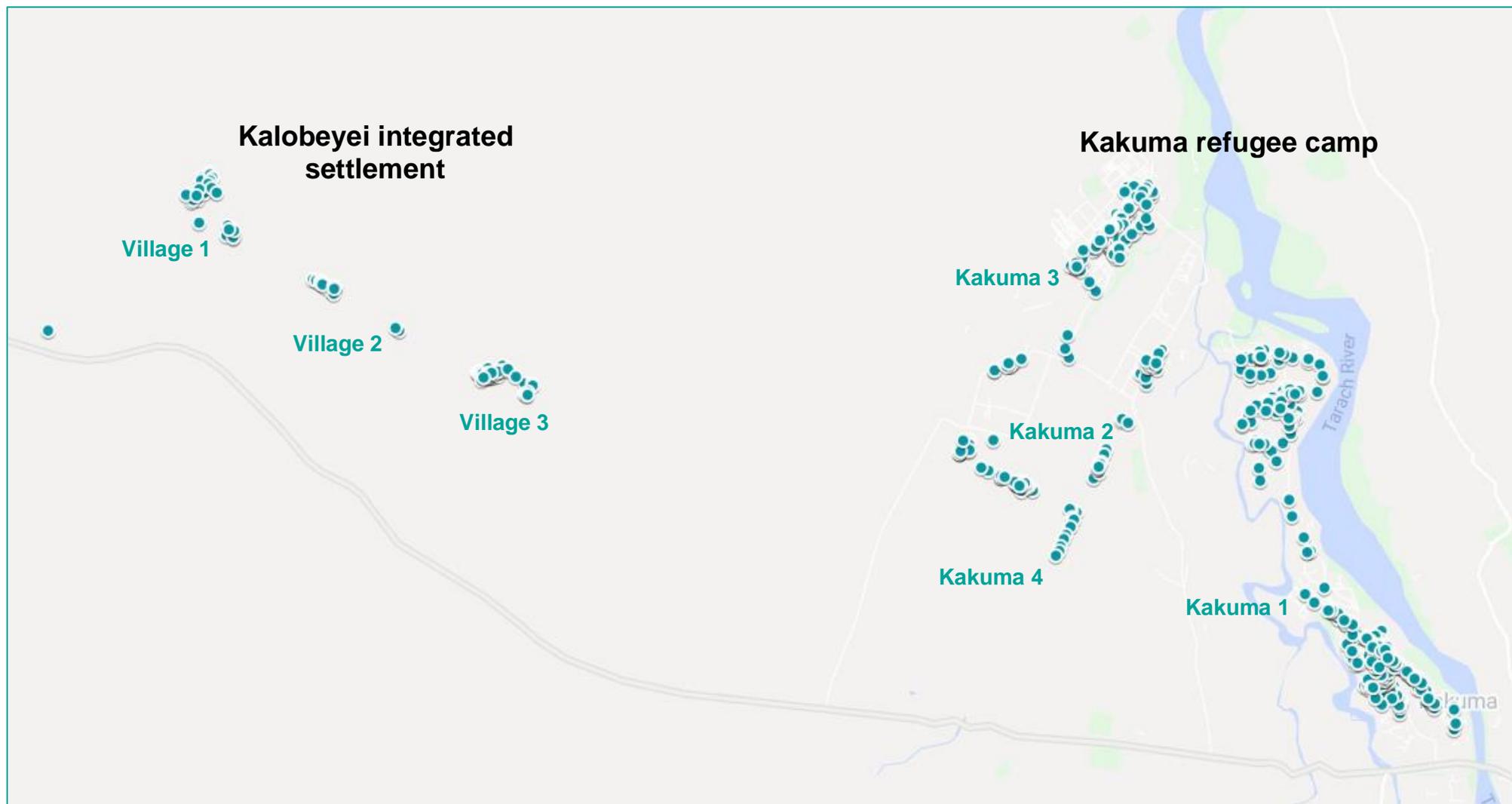
### Box 3. Comparing the survey characteristics to the IFC marketplace study figures.

The majority of businesses participating in the survey included *dukas*/kiosks and restaurants (the latter of which included cafés, hotels, and individual businesses selling food). In all, 137 restaurant owners were asked about their cooking practices and expenses.<sup>16</sup> Other types of businesses included tailors, phone charging shops, and barbershops. Figure 4 shows the locations of the top three business types in the camps (*dukas*, restaurants, and tailors), as well as the other businesses that participated in the survey. For a list of the top 10 business types and their locations in the camps, see Table 2 in Annex I: Additional .

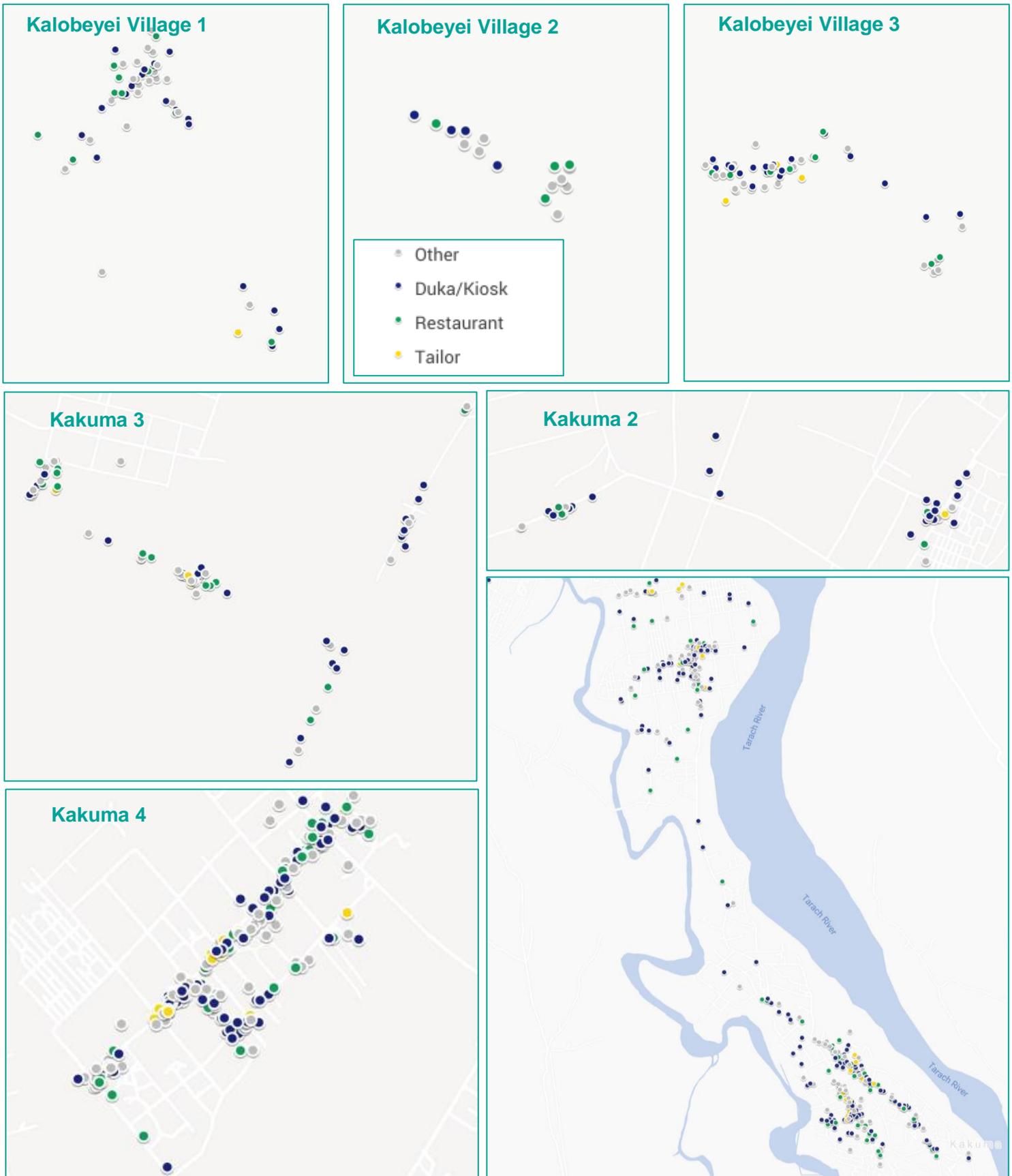
Microbusinesses dominate the business landscape, and gender imbalance exists in their ownership structures. Most businesses (64%) are run and staffed by only one person, while 34% of businesses employ between one and five people. Only 2% employ more than five people. Figure 10 shows the distribution of the number of employees per most common business type. The most common business types and the split by gender are also represented in Figure 6. The results suggest a gender gap, as 27% of the business owners in the sample were women, while 73% were men.

<sup>16</sup> After data clean up, 14 more businesses were classified as 'restaurants;' however, their cooking approaches and demands were not captured in the survey.

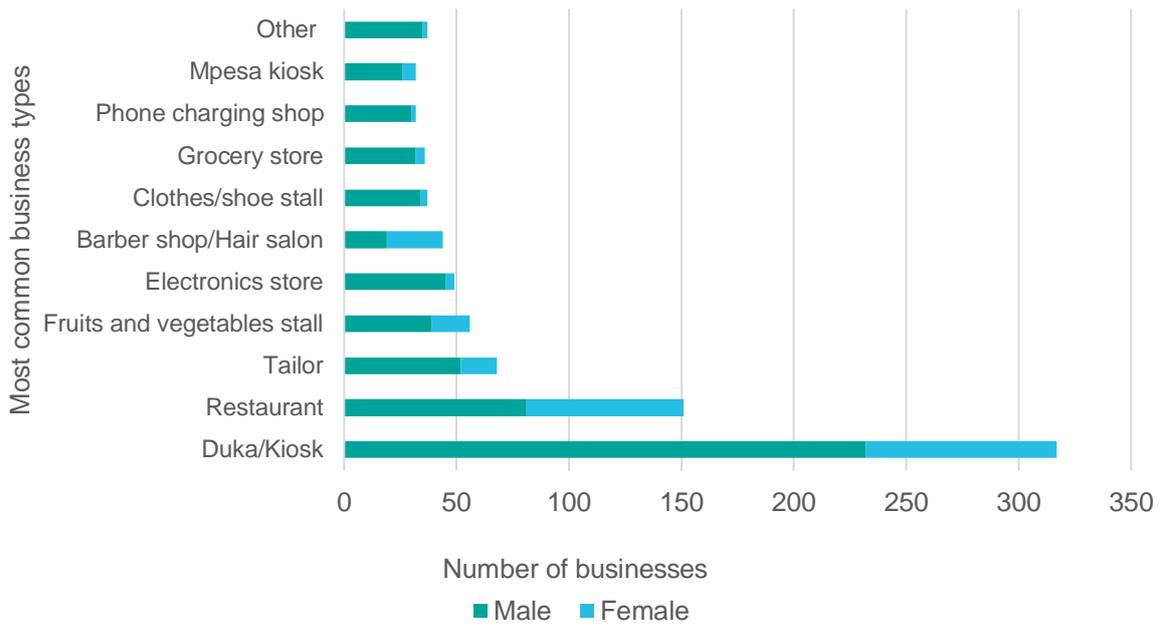
Figure 4. Locations of businesses in Kakuma refugee camp and Kalobeyei settlement.



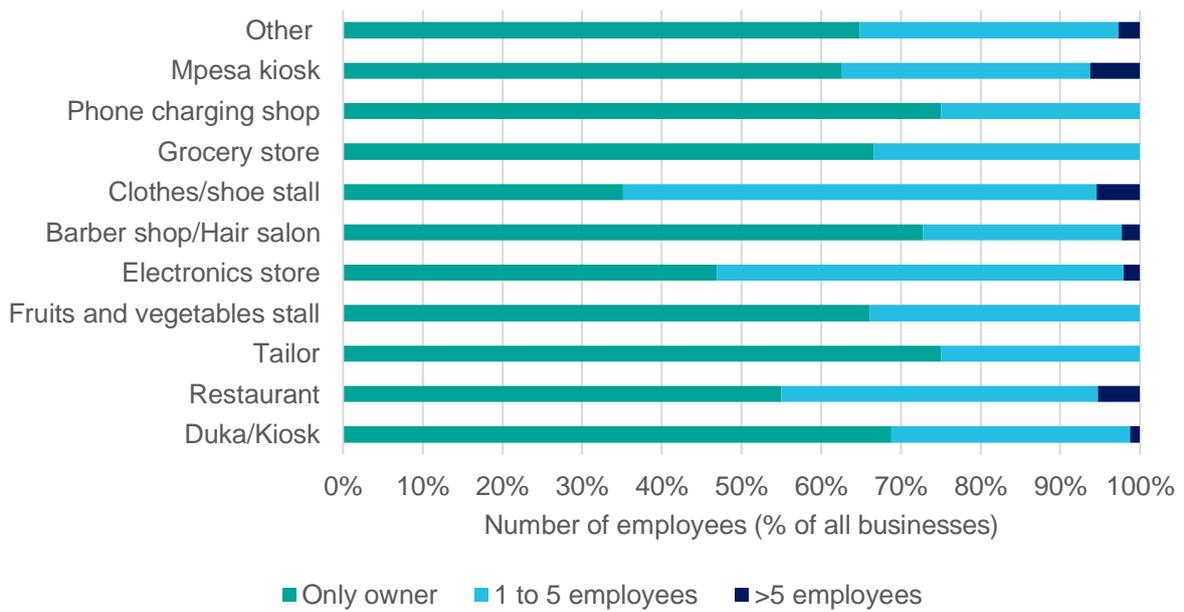
Locations of businesses per camp/settlement unit and business type.<sup>17</sup>



<sup>17</sup> 'Other' includes fruit and vegetable stalls, electronics stores, barbershops/hair salons, clothing/shoe stalls, grocery stores, phone charging shops, and M-PESA kiosks.



**Figure 5. Most common business types and gender of business owners.**



**Figure 6. Most common business types and distribution by number of employees.**

## 4. Results

This chapter presents the key findings of the survey in relation to businesses' electricity use, cooking practices, and access to financial services.

### 4.1 Electricity

This section presents findings on the usage, expenditure, and needs of businesses with existing electricity access, and the challenges and access needs of those businesses not using electricity.

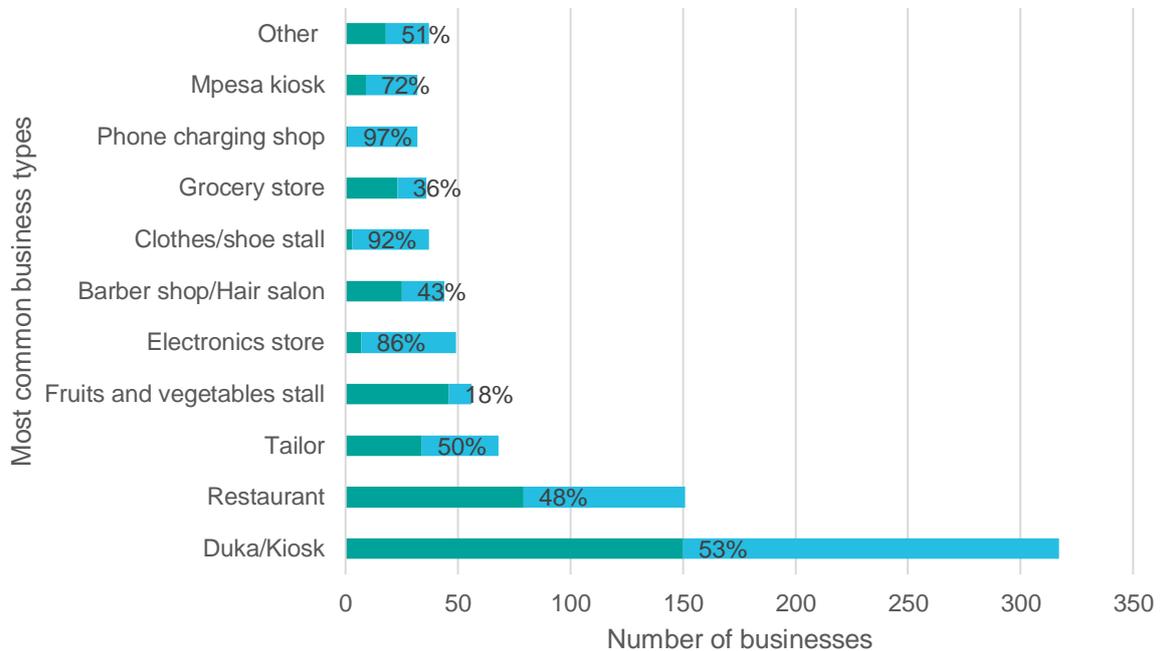
- Slightly more than half (54%) of the businesses have electricity access in some form. Among these businesses, 55% use electricity for lighting and/or phone charging. The remainder use electricity for additional activities such as cooling and playing TV shows.
- Electricity supply for businesses is primarily based on fossil fuels (53%), and while solar power is expanding, it is primarily used for small devices, as 65% of solar system owners reported to power only lighting and/or phone charging.
- Of the businesses with electricity access, 64% expressed an interest in purchasing one or more appliances, primarily refrigerators (31%), TVs (20%), phone charging stations (14%), and audio systems (14%).
- The main barriers identified by the businesses preventing them from purchasing additional appliances included the inability to purchase them in the first place (55%), and the ability to service the associated electricity bills (27%).
- Businesses that use diesel mini-grids and generators to power their business operations have the highest monthly electricity costs: 46% pay more than KSh500 per month, and 47% pay more than KSh2,000 per month. Electricity bills are highest for refrigerators, TVs, and fans.
- Businesses without electricity access stated that the key barriers to entry were affordability, a lack of connection to suppliers, and a lack of information on available products; 85% of these businesses would like to use electricity to expand their opening hours and their service offerings.

#### Box 4. Key points - Electricity.

### Access to Electricity

More than half of the businesses (54%) stated that they use electricity. As presented in Figure 7, phone charging shops, barbershops/hair salons, electronic stores, and M-PESA kiosks are

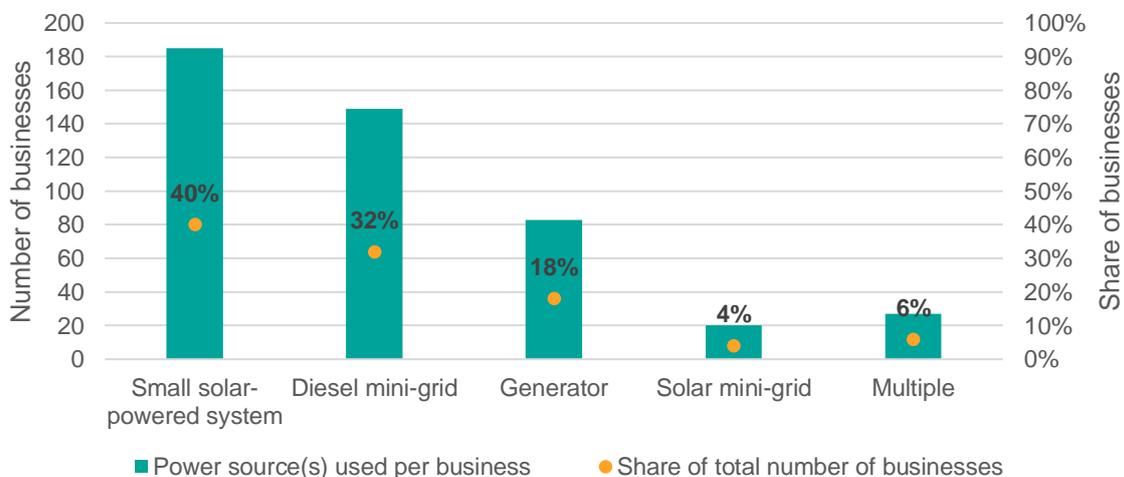
typically equipped with electricity access due to the nature of their businesses. However, only half of *dukas*/kiosks and restaurants typically have electricity access (53% and 46%, respectively). The majority of tailors and clothing/shoe shops (76%) did not have electricity access.



**Figure 7 Electricity access per business type.**

## Electricity Supply

Electricity supply to businesses in the camps is split between solar-powered systems and diesel (either generators or mini-grids). Businesses rely on small solar-powered systems (40%), diesel (32%) and solar (4%) mini-grids (with backup diesel generators), individual generators (18%), or multiple systems (e.g. solar-powered systems in combination with either a diesel mini-grid or a generator (6%) (see Figure 8). Solar-powered systems typically refer to



**Figure 8. Power source(s) used per business with electricity access.**

SHSs or component-based solar systems <300Watt. Figure 9 shows the electricity supply mix per source of power.

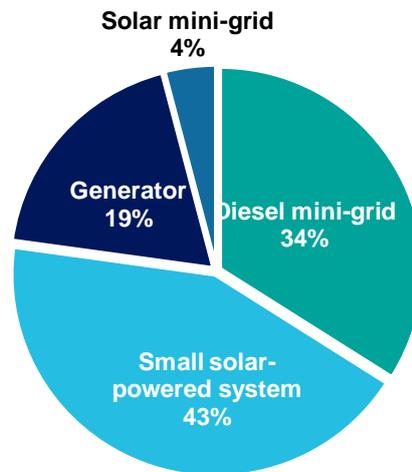


Figure 9. Electricity supply mix.

## Usage

Businesses primarily use electricity for lighting (83%) and/or phone charging (31%), with 55% stating that this is their only current use for electricity. Businesses also use electricity for cooling (e.g., fresh produce and soda) (22%), playing TV shows/movies (16%), and/or barber services (6%). Regarding sources used to power various activities, 65% of solar-powered system owners only use these systems for lighting and/or phone charging. Barbershops almost exclusively use solar-powered systems to power their devices. Cooling is more power-intensive and therefore almost solely powered by diesel mini-grids or generators (see Figure 10).

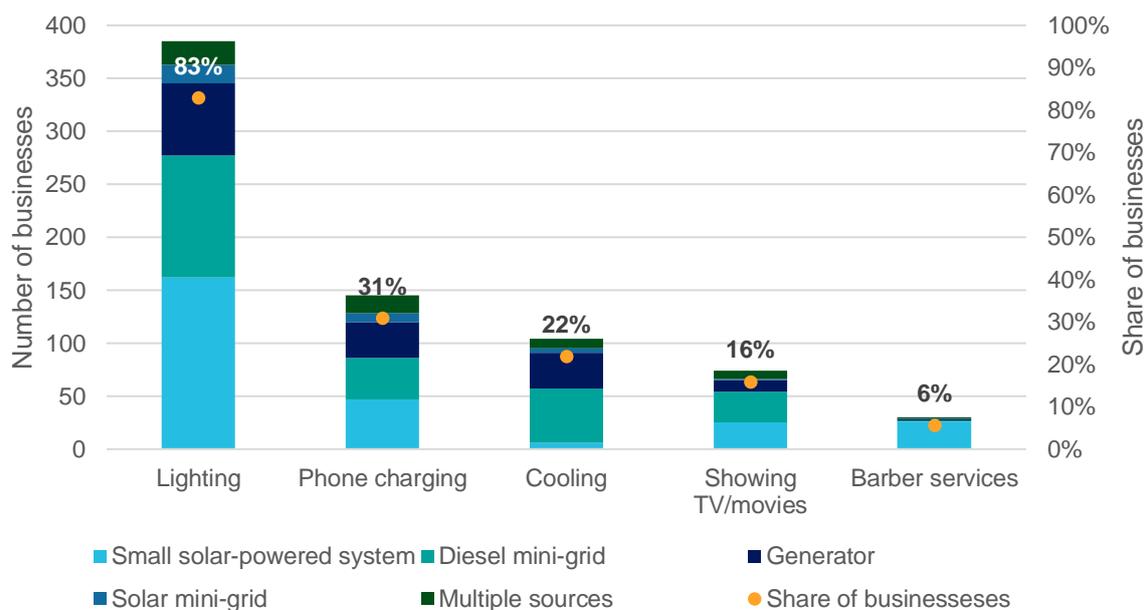
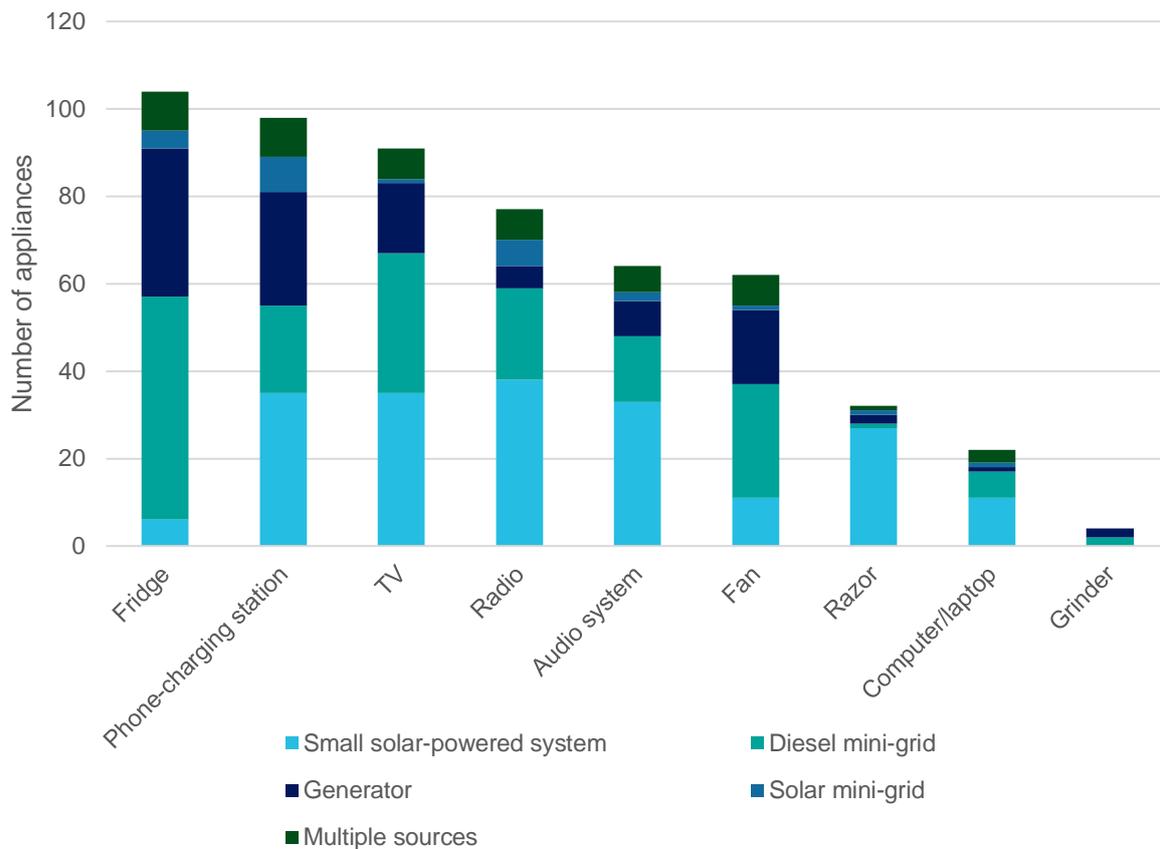


Figure 10. Usage of electricity per business with electricity access.



**Figure 11. Appliances used by businesses by type of electricity source.**

Appliances owned by businesses primarily include refrigerators, phone charging stations, TVs, audio systems, radios, and fans<sup>18</sup> (Figure 11). A small number of businesses also own computers, razors (barbershops), and grinders (food preparation businesses). As earlier noted, refrigerators are primarily powered by diesel mini-grids or generators. Audio systems, radios, and TVs include a number of solar-powered devices but are still predominantly powered by diesel generators.

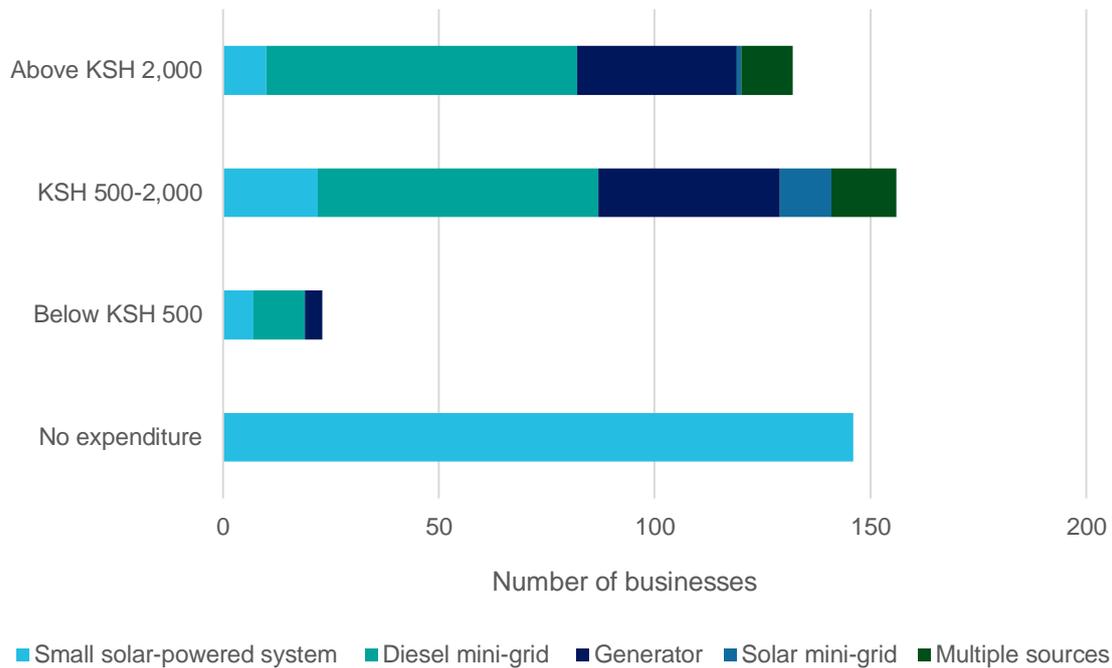
## Income and Electricity Expenditure

Six businesses use component-based solar systems to power only refrigerators. Looking closer at the systems, the sizes of the panels used included two panels of 150 watts each, three panels of 270 watts each, five panels of 165 watts each, and one panel of 300 watts. All but one indicated to have no electricity costs, as they had paid off their solar systems. A refrigerator assessment will be conducted as a follow-up to this survey, which will look closer at the types of refrigerators used, how and where they were obtained, the power source(s), costs, and usage.

### Box 5. A closer look at refrigerators powered by solar systems.

<sup>18</sup> Light bulbs were not included in the list of appliances in the survey.

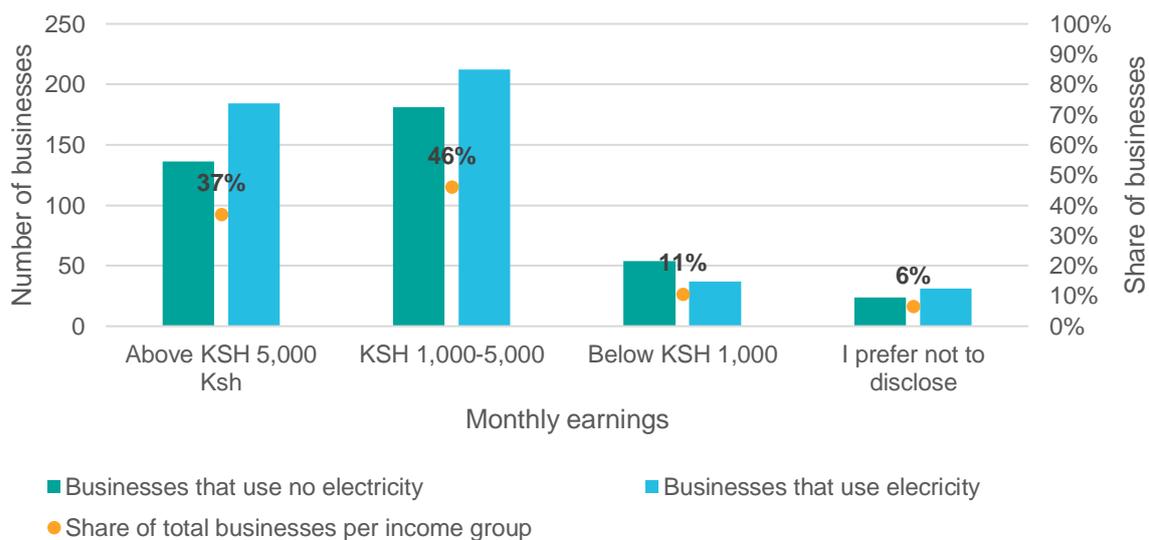
Businesses with electricity access generally have higher average monthly earnings than businesses without electricity access (Figure 13). Almost half of all businesses earn between



**Figure 12. Monthly expenditure on electricity by type of electricity supply.**

KSH1,000 and KSH5,000 per month. According to the aforementioned IFC report, the average monthly income for the businesses is approximately KSH1,500.<sup>19</sup> The businesses that do not use electricity report lower earnings on average.

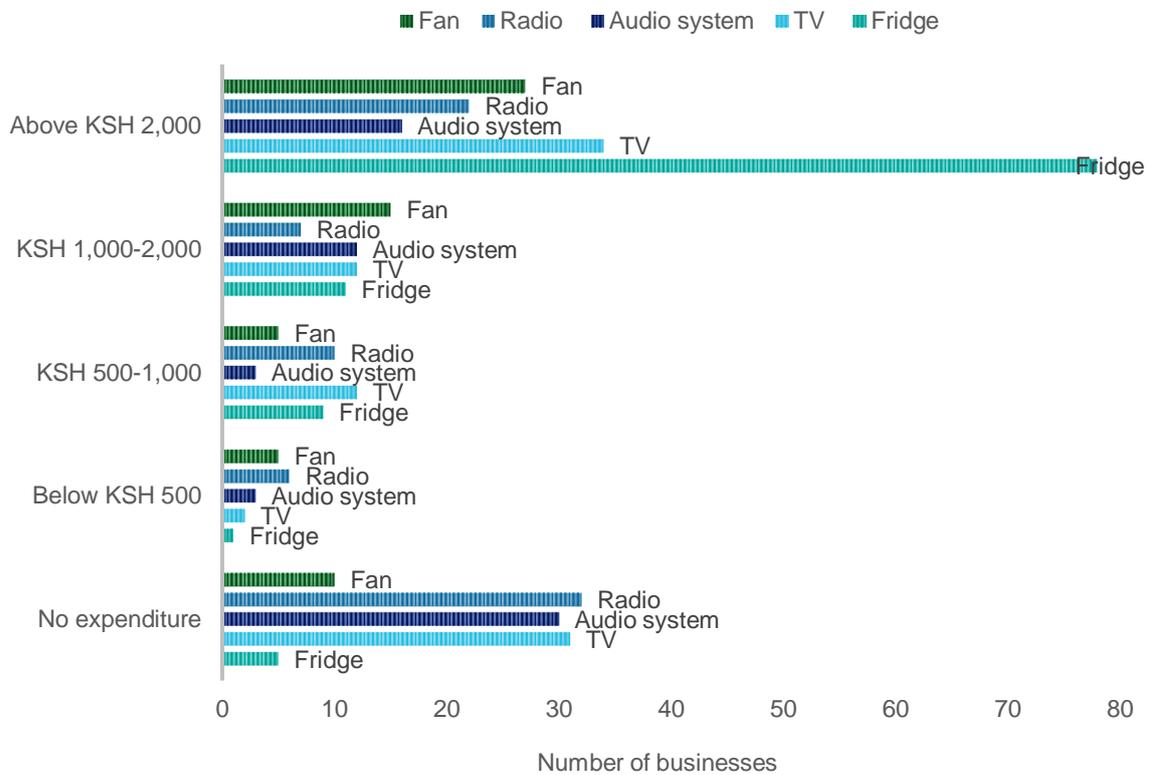
Electricity expenditures are highest for businesses that use diesel generators or are connected to a mini-grid, while those with solar-powered systems have largely paid off their systems



**Figure 13. Monthly business earnings of businesses.**

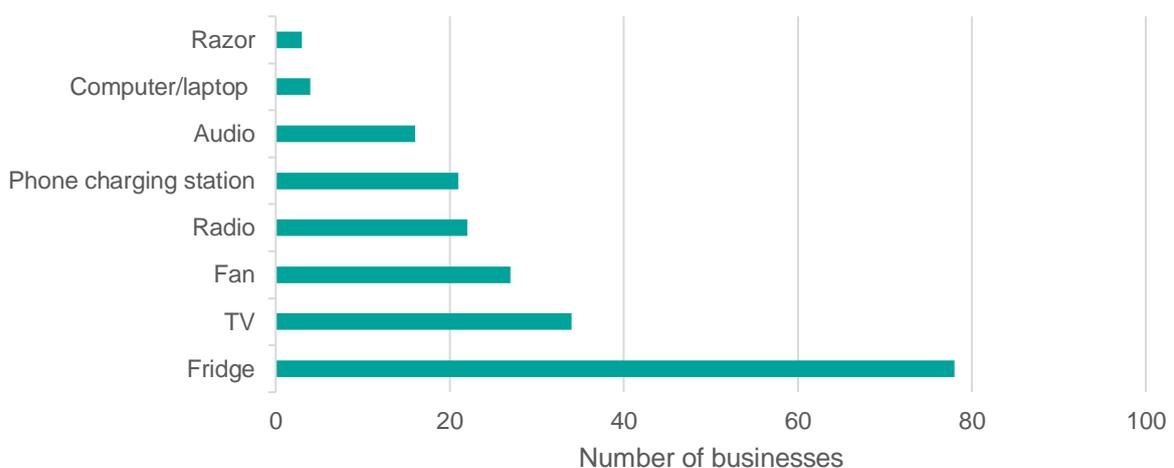
<sup>19</sup> IFC, 2018. Retrieved from <http://documents.worldbank.org/curated/en/482761525339883916/Kakuma-as-a-marketplace-a-consumer-and-market-study-of-a-refugee-camp-and-town-in-northwest-Kenya>.

(Figure 12). Of the businesses with electricity access, 31% have 'no expenditure' due to having solar-powered systems, while others (28%) spend more than KSH2,000 per month on electricity. The majority (92%) of those spending more than KSH2,000 on electricity primarily use diesel mini-grids or generators, some in combination with solar-powered systems. However, 50% of businesses spending more than KSH2,000 per month also use more than one appliance, including refrigerators, TVs, and fans (Figure 15). The high monthly costs are due to the fixed monthly charges for the use of diesel mini-grids and appliances, as diesel



**Figure 14. Most used appliances by monthly expenditure for electricity.**

mini-grid operators charge a connection fee and additional fees per appliance used. Figure 14 presents the most used appliances per expenditure group.

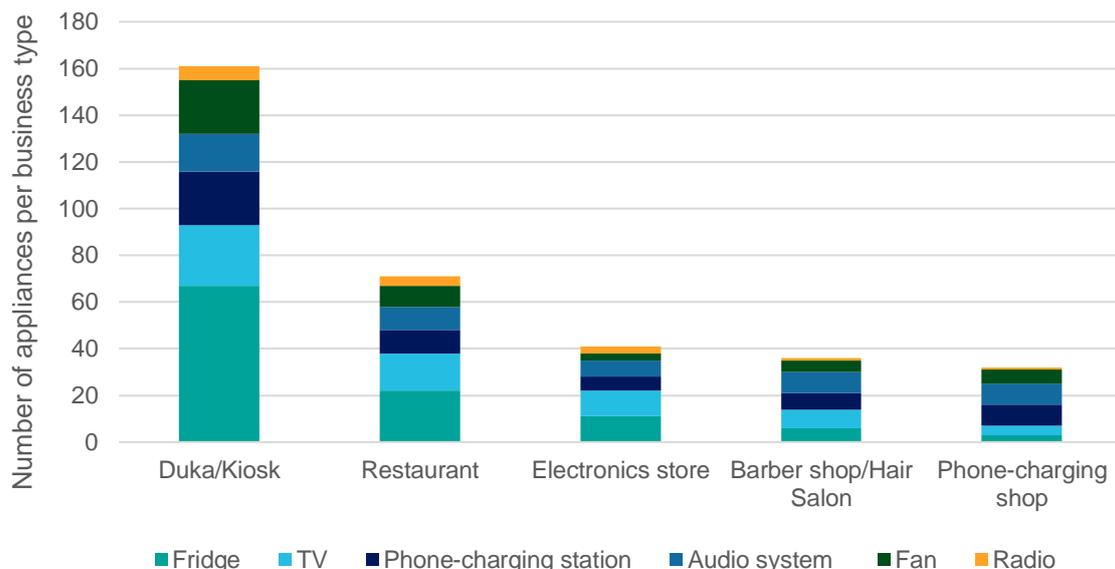


**Figure 15. Most used appliances by businesses spending more than KSH 2,000/month on electricity.**

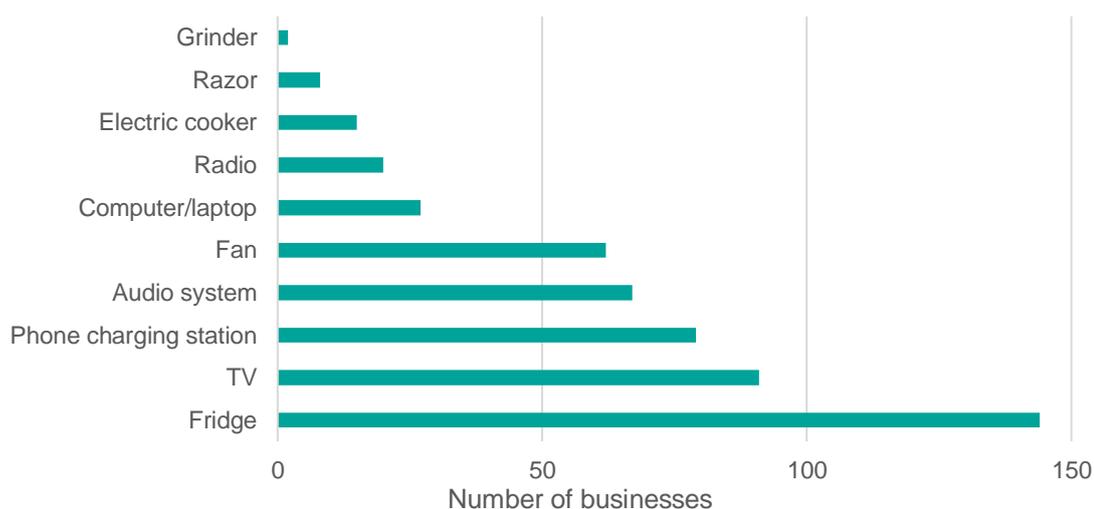
## Demand for electric appliances

Almost two-thirds of businesses with electricity access indicated an interest in purchasing refrigerators, TVs, phone charging stations, audio systems, and fans (Figure 17). *Dukas/kiosks*, restaurants, barbershops, electronic stores, and phone charging shops showed the most willingness to purchase additional electric devices (Figure 16).<sup>20</sup>

Despite an interest in additional appliances, the main barriers identified by the respondents as preventing them from purchasing appliances included affordability to purchase them in the first place (55%), and affordability to service the associated electricity bills (27%).



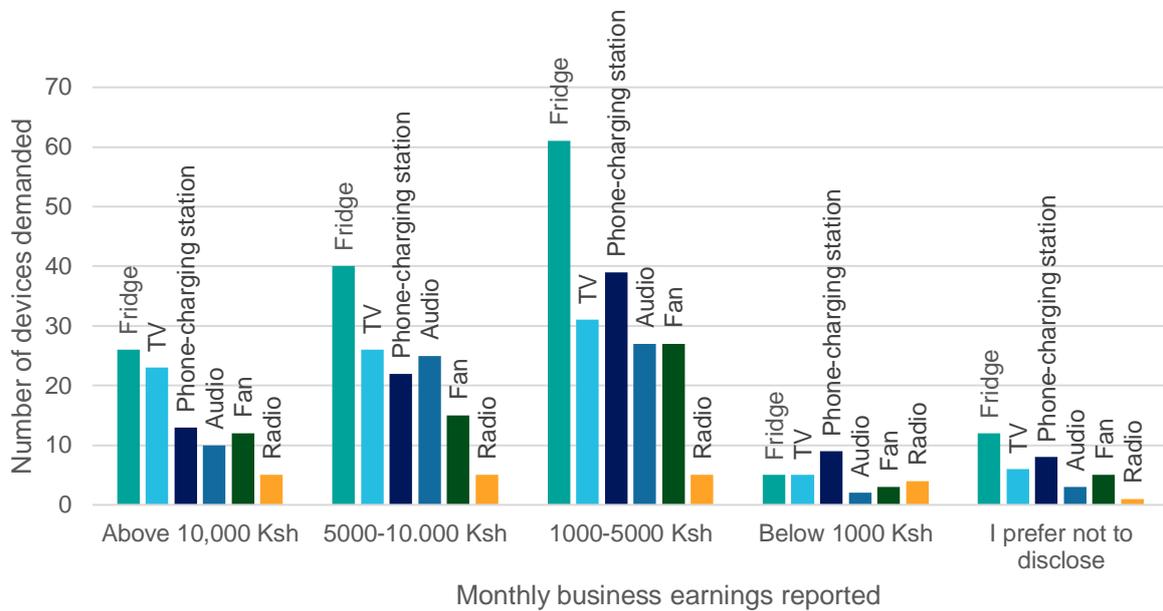
**Figure 16. Demand for appliances by business type of businesses with electricity access.**



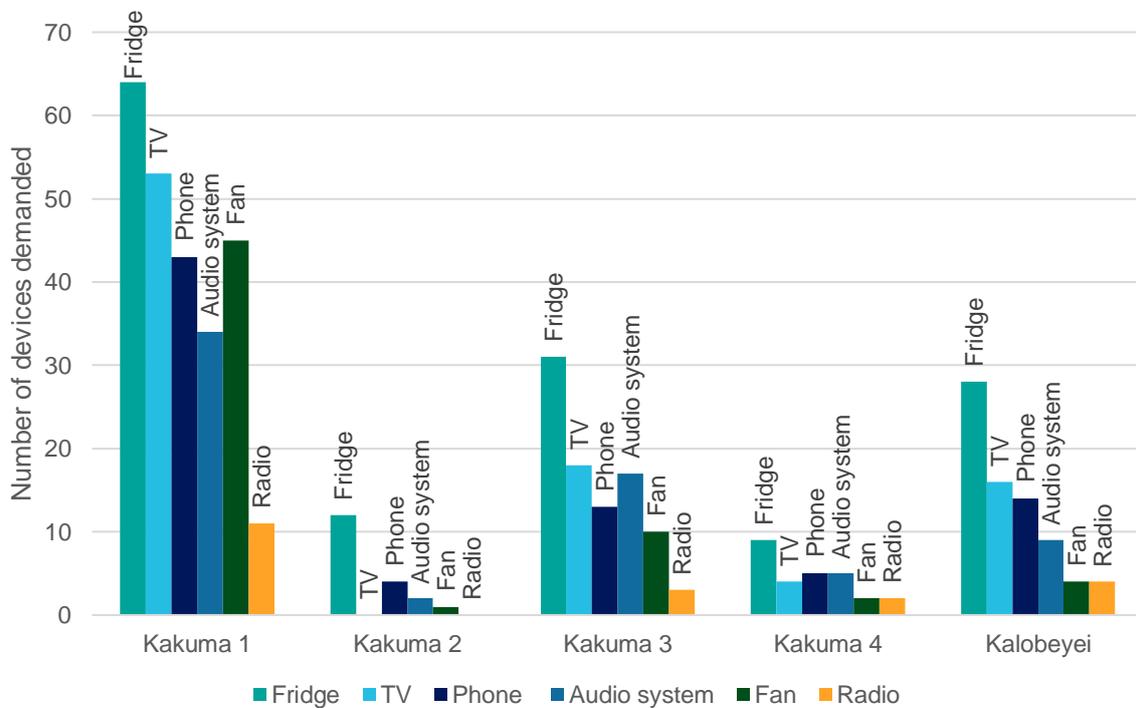
**Figure 17. Business demand for appliances of businesses with electricity access.**

<sup>20</sup> See **Error! Reference source not found.** in Annex I: Additional for an overview of demand for (additional) electrical appliances per business type. Tailors, M-PESA kiosks, and *dukas* expressed the most demand, while clothing/shoe shops and fruit/vegetables stalls expressed the least demand to obtain (additional) electrical appliances.

Figure 18 groups the demand per monthly business earnings group. This provides an indication to suppliers on businesses' ability to pay, and which potential price ranges and monthly payback amounts they could use to effectively sell their products to businesses in the camps. Figure 19 shows the locations of businesses with electricity access that are interested in specific devices that can inform suppliers on where to market their appliances.



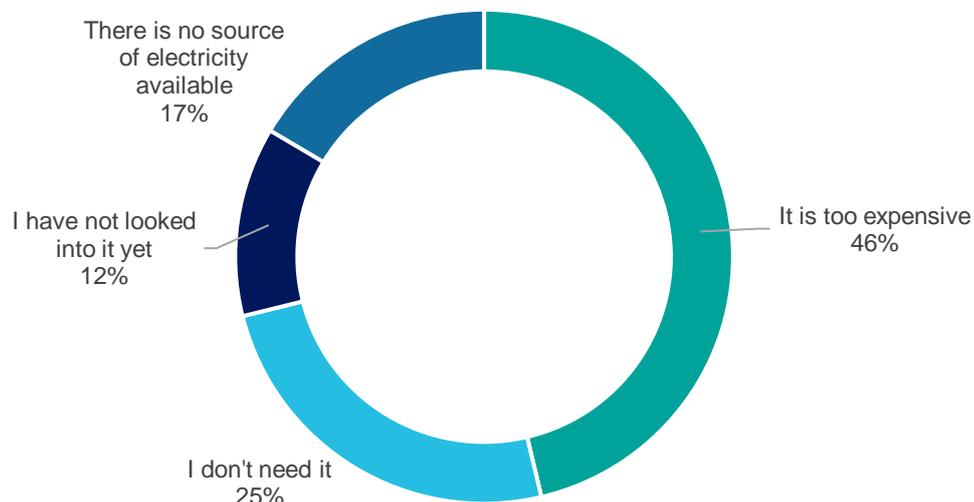
**Figure 18. Demand for appliances by earnings group of businesses with electricity access.**



**Figure 19. Demand for appliances by location of businesses with electricity access.**

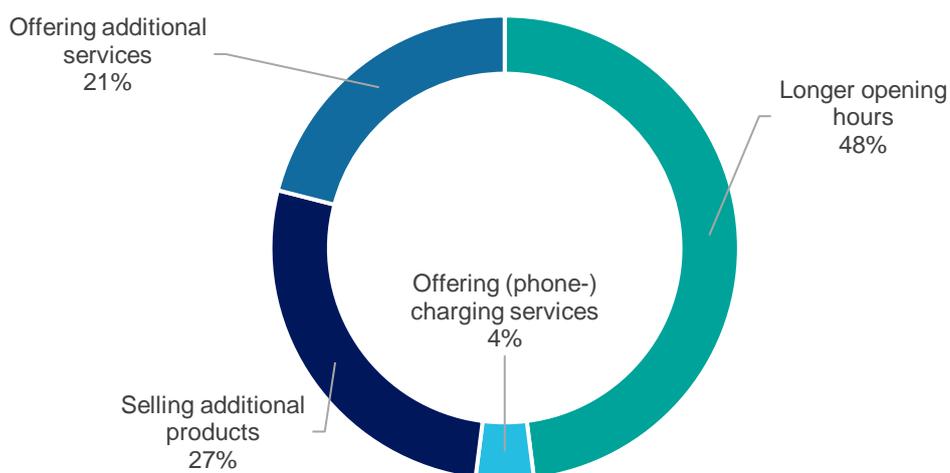
## Barriers to Electricity Access

Almost half (46%) of the businesses in the camps do not use electricity. Most of these businesses are kiosks, food vendors, tailors, and clothing stalls. The main reason noted for not using electricity was the cost. Respondents also cited a lack of interest and priority, as well as a lack of access to power sources (Figure 20).



**Figure 20. Reasons for not using electricity mentioned by those businesses without electricity access.**

However, the majority of businesses without electricity access (85%) stated a willingness to use electricity, as electricity access would help them increase their business earnings due to maintaining longer opening hours. Of the businesses interested in obtaining electricity access, 46% would like to have lighting. Businesses could also offer additional products such as phone charging and cold drinks through cooling (Figure 21). Businesses suggested payment plans, financing options, and better product information as ways to gain electricity access.



**Figure 21. Expected business impact of electricity access mentioned by those businesses without electricity access.**

Considering the interest in using (additional) electricity by both the businesses that use electricity and those that lack electricity access, 73% of businesses expressed a desire to use (additional) electric appliances.

Women survey respondents primarily own a kiosk, restaurant, grocery store, fresh food store, or tailor shop. Most earn between KSH 1,000 and KSH 5,000 per month (which is similar to their male counterparts for these types of businesses). Sixty percent have access to financial services (97% through M-PESA), but only 36% use electricity for their business operations, compared to 61% of male business owners who use electricity. The main barrier identified by women for not using electricity was affordability. Most female business owners with no electricity access would like to have lighting to allow for longer opening hours.

**Box 6. A closer look at women-owned businesses in Kakuma refugee camp.**



**A street view in Kalobeyei refugee camp.**

## 4.2 Cooking

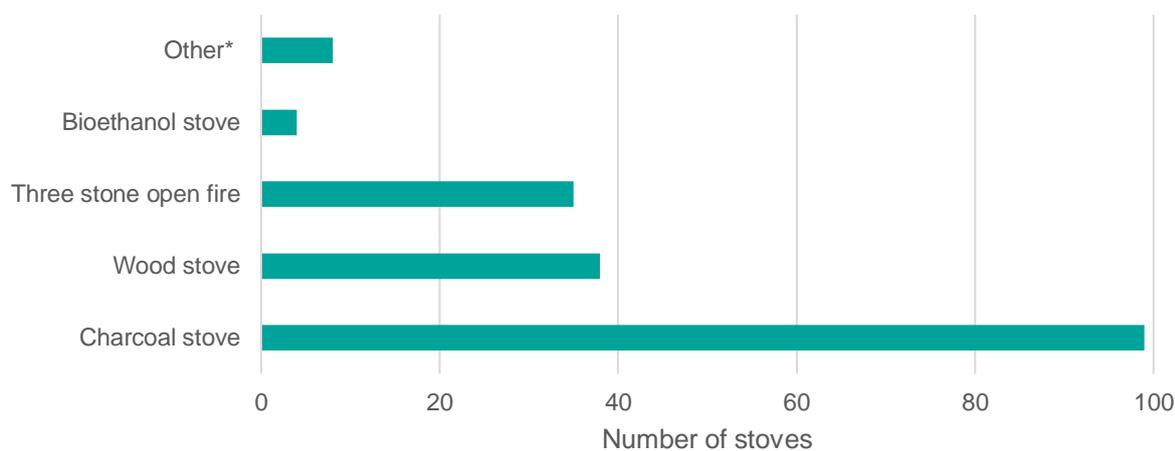
- Nearly all businesses (96%) involved in food preparation use a charcoal stove, a wood stove, TSOF, or some combination of the three.
- The most popular stove type is a charcoal stove, as 72% of businesses reported to use one.
- The purchase price of the stoves is on average less than KSH1000, but more than 50% of businesses spend more than KSH1000 on fuel every month.
- In total, 58% of businesses would like to switch to an (improved) charcoal, LPG, or bioethanol stove.
- High purchasing costs are preventing these businesses from switching to new stoves.

### Box 7. Key points - Cooking.

### Business Stove Use

In general, basic cooking approaches prevail among the 138 businesses that are involved in food preparation and sales. The TSOF and the locally produced Maendeleo (wood) stove, which is distributed for free by the UNHCR to new refugees arriving in the camps, are the dominant methods used for cooking. Basic charcoal stoves are also increasingly used. Industrially manufactured stoves are present in the camps and sold in Kakuma town, but uptake remains limited and the use of TSOFs and basic wood and charcoal stoves prevails.

Among the businesses involved in food preparation, 96% reported to cook with a charcoal or wood stove, or a TSOF. The charcoal stove is most popular among the businesses (see Figure 22); 72% of businesses use (at least) a charcoal stove. For comparison, 27% of respondents use (at least) wood stoves, and 25% use (at least) TSOFs. Thirteen percent rely on wood stoves only, and 8% rely on TSOFs only.



\*other includes LPG stove, pellet stove and self-moulded stoves.

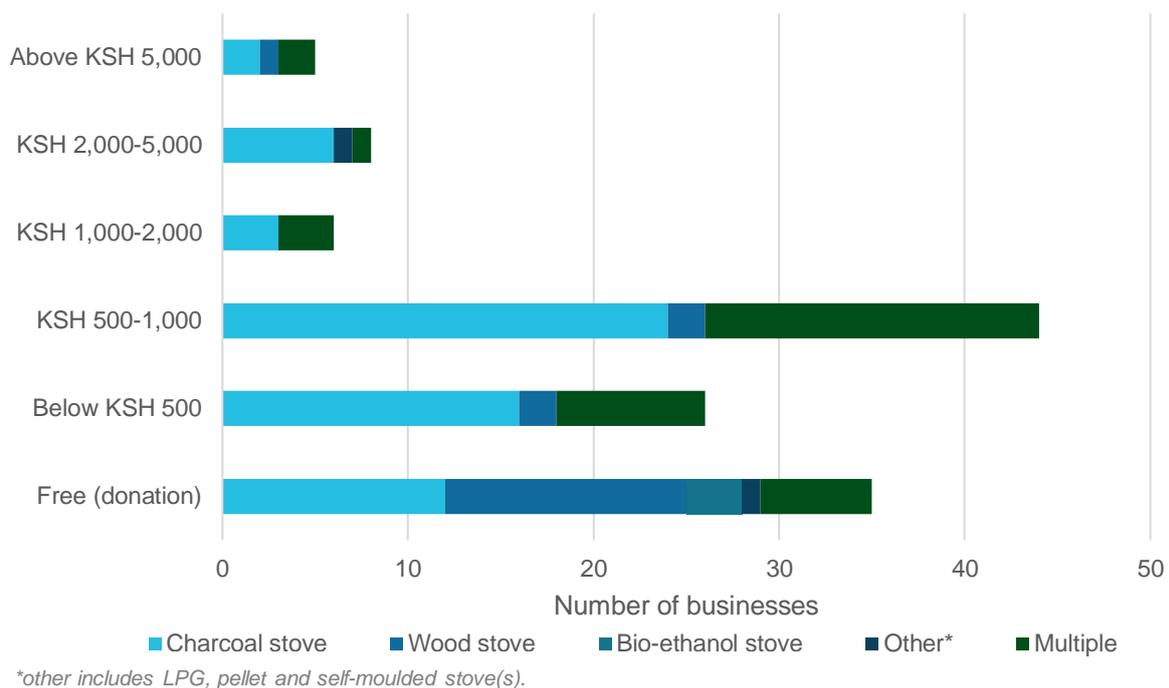
Figure 22. Types of stoves in use by businesses.

Businesses practice stacking, meaning that they switch between stoves and fuels depending on meal type, fuel prices, and available cash: 28% of the businesses said that they use two or

even three different types of stoves. The most common combination is a charcoal stove with a TSOF, in some cases complemented by a wood stove.

## Stove Costs

Eighty-six percent of the respondents have either received (a) free stove(s) or purchased (a) stove(s) for up to KSH1,000 (see Figure 23). Only 14% of the respondents indicated that their stove(s) cost more than KSH1,000. Of the businesses using multiple stoves, 85% use a charcoal stove as well as a TSOF and/or a wood stove. UNHCR provides the Mandeleo stove, a wood stove, for free to new arrivals which can explain the free wood stoves indicated in Figure 23. The survey did not clarify how businesses received free charcoal stoves, but an explanation can be that other charitable initiatives in the camps provided the stoves.



**Figure 23. Purchase prices per stove type(s).**

## Fuel Expenditure

The survey shows that 50% of cooking businesses spend more than KSH1,000 on fuel each month (see Figure 24), which is more than the purchase price of most stoves. Those paying more than KSH1000 per month predominantly have a charcoal stove or use multiple stoves, as outlined above. On average, 1kg charcoal costs between KSH20 and KSH25 in Kakuma refugee camp. Similarly, 1kg of firewood costs between KSH15 and KSH20. A monthly fuel expenditure of KSH1000 would therefore account for 40 to 50kg of charcoal or 50 to 67kg of firewood per month. For comparison, 68% of restaurants earn less than KSH10,000 per month from their business.

A number of respondents (16%) said that they do not pay for fuel. This can be partially explained by the distribution of free firewood by UNHCR, which accounts for 10kg per person every two months – recipients of free firewood allocations may divert this from household to business uses. It is unknown how people receive free charcoal for their businesses. However,

illegal firewood collection is an issue in the area, according to research done by the Moving Energy Initiative.<sup>21</sup>

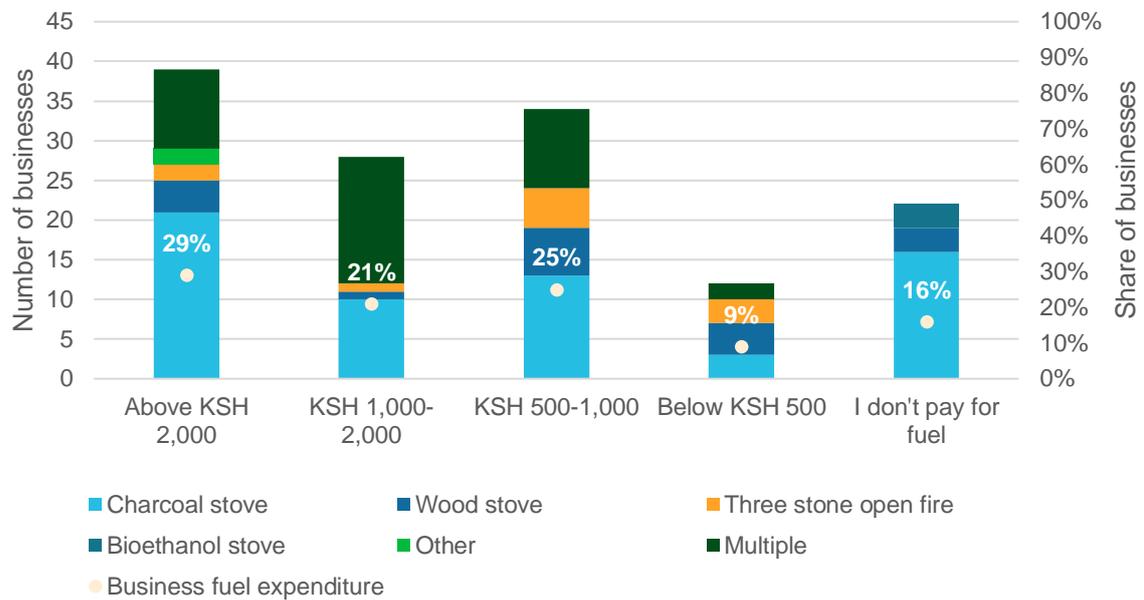


Figure 24. Monthly fuel expenditure of businesses per technology type.

## Stove Demand

More than half of the businesses (58%) have considered switching to a different stove. Those that have not considered it are content with the stove that they currently use or find other

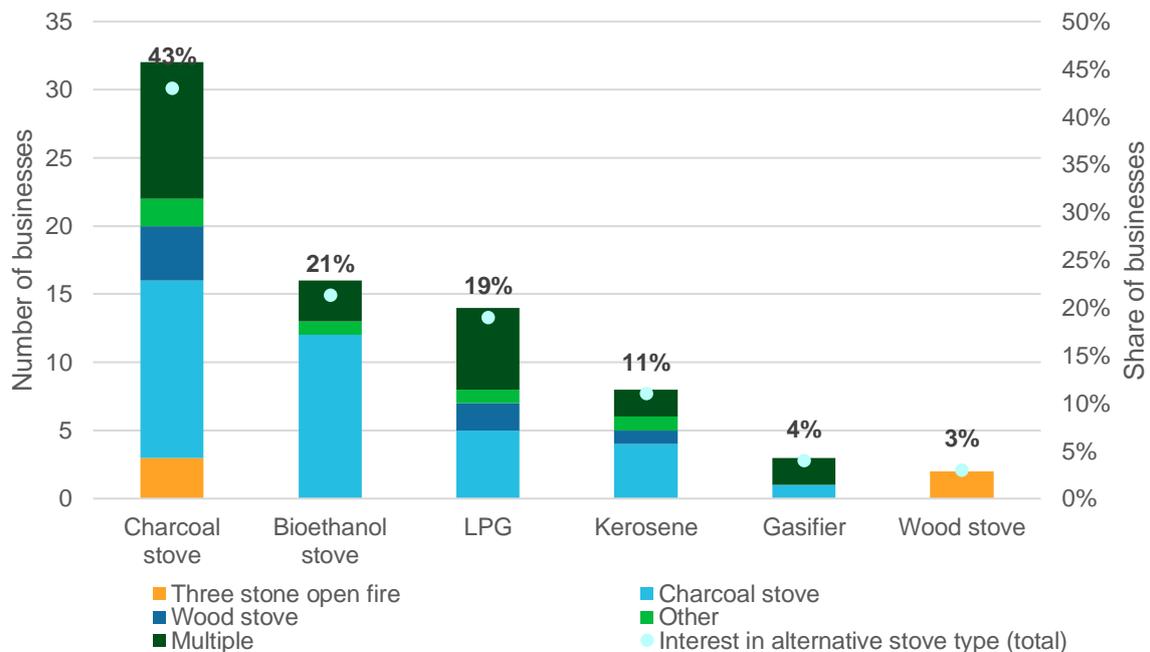
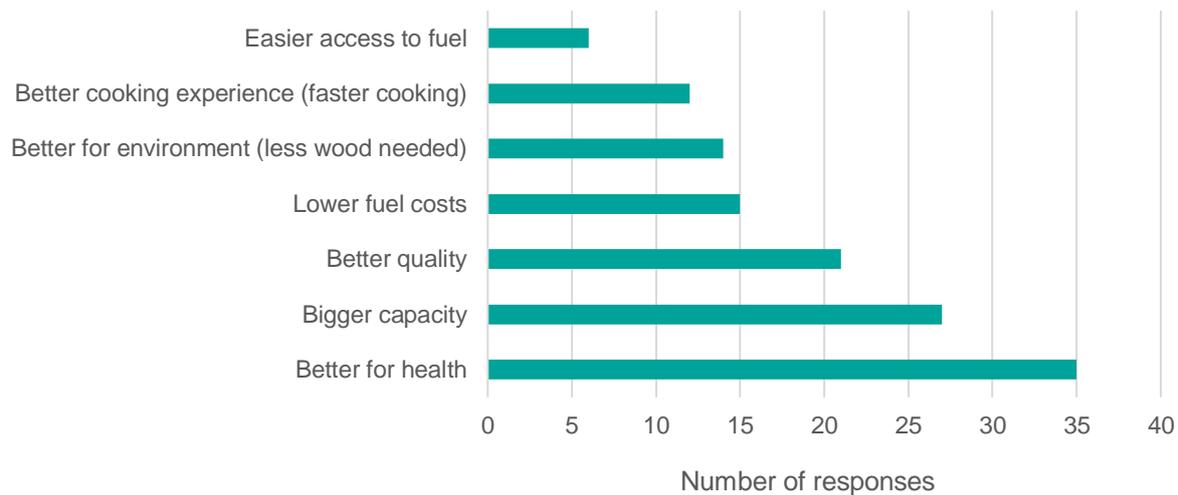


Figure 25. Interest in stove-switching by type of stove currently in use.

<sup>21</sup> Moving Energy Initiative, 2018. Retrieved from <https://www.chathamhouse.org/sites/default/files/publications/research/2018-01-30-meeting-refugees-energy-needs-burkina-faso-kenya-mei-corbyn-vianello-final.pdf>.

stoves to be too expensive. Businesses that would like to switch are interested in charcoal (43%), LPG (19%), bioethanol (21%), and kerosene (11%) stoves (see Figure 25).

Many (72%) of the businesses that currently use (at least) a basic charcoal stove would like to switch to an improved charcoal stove with more capacity. Other reasons for switching to a particular type of stove include health benefits and higher stove quality (see Figure 26; businesses were able to select multiple reasons). Lower fuel costs, environmental aspects, cooking experience, and easier access to fuel were also noted but to a lesser extent.



**Figure 26. Reasons for stove-switching.**

## Barriers

Businesses considering other types of stoves cited stove affordability (76%) and stove availability (17%) as the main barriers preventing them from acquiring new stoves. Fuel costs were a barrier for only 6% of the businesses. Payment in instalments and financing support to lower the costs were cited as key requirements to purchasing new stoves. Improved awareness of different technologies (e.g., demonstrations of different technologies) would also be beneficial, according to the businesses.

### 4.3 Access to Financial Services

- Access to financial services plays an enabling role for larger systems; 72% of businesses with electricity access also have access to financial services such as mobile money.
- The usage of mobile money services such as M-PESA is relatively high among businesses (64%).

#### Box 8. Key points - Access to financial services.

Access to financial services and mobile money can enable businesses to use alternative payment options offered by energy and stove suppliers, and therefore increase access to their products.<sup>22</sup> Of the 859 businesses that participated in the survey, 584 respondents (68%) declared to have access to financial services (Figure 27). M-PESA is the primary payment tool, used by 64% of the respondents and 94% of those with access to financial services. A number of businesses (22%) also use Equity Bank's mobile money service Equitel either in addition to M-PESA or as a primary service.

Access to financial services plays an enabling role for electricity access but is not a pre-requisite; 72% of businesses with electricity access also have access to financial services, but the share of businesses that have not electricity access while having access to financial services is similarly high at 64%. It should be noted that 45% of businesses that have electricity access but no access to financial services use a small solar system which is typically sold on cash-basis.

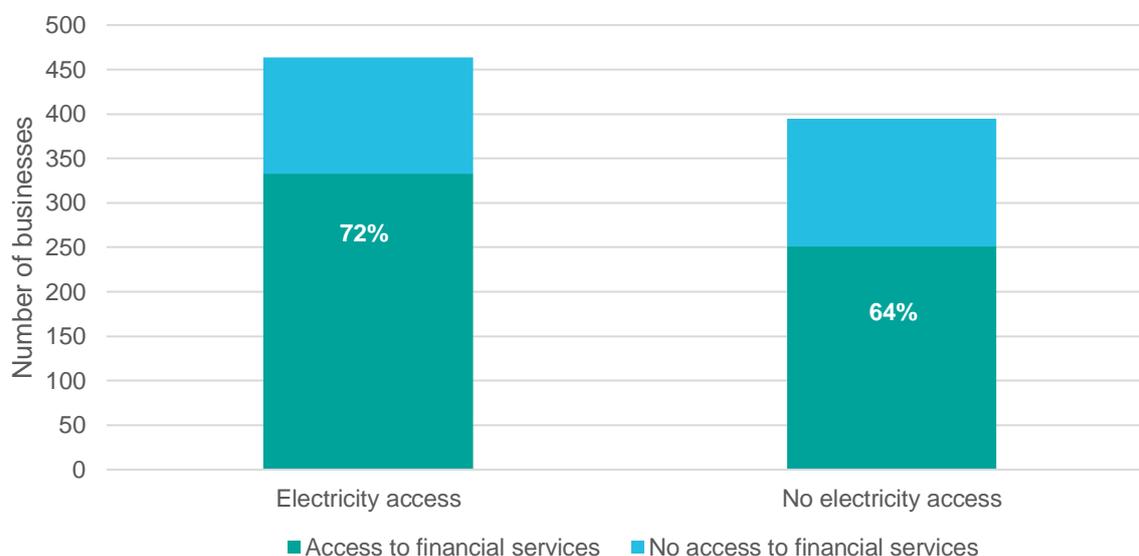
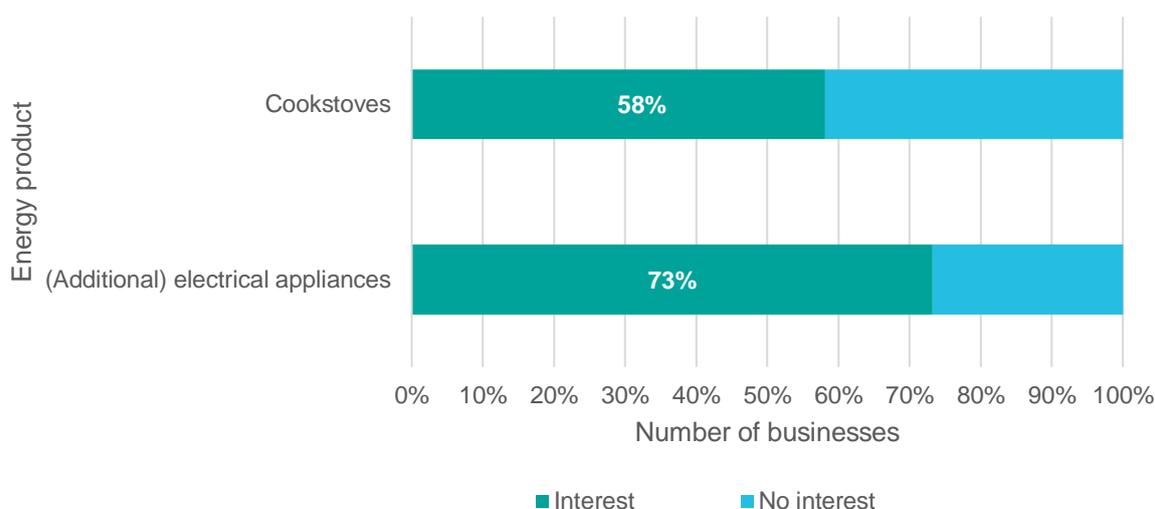


Figure 27. Access to financial services and to electricity per business.

<sup>22</sup> In addition to bank accounts, financial services include mobile payment services, which enable the user to send and receive money using a sim card. In Kenya, the main mobile money service provider is Safaricom's M-PESA.

## 5. Key Findings and Recommendations

The survey results show that businesses operating in both Kakuma refugee camp and Kalobeyei settlement have unmet energy and cooking needs, while improved access could enable businesses to increase their productivity. Indeed, 73% of respondents were interested in obtaining access to (additional) electricity products and services (Figure 28), while slightly more than half of the respondents with food processing activities would consider switching to alternative stove products. The current electricity and fuel expenditures indicate an ability and



a willingness of businesses to pay for electricity and improved stoves. However, tailormade **Figure 28. Businesses' interest in purchasing (additional) energy product(s).**

solutions and payment options are required, combined with effective marketing of the products in the camps.

Several trends and findings from this survey can inform electricity and stove product offerings and marketing approaches for off-grid solar and clean cookstoves suppliers.

### 5.1 Electricity

**Finding 1: Costs are a challenge, but power supply switching is an option, as a willingness and an ability to pay exists among those already accessing electricity.**

Fifty-four percent of businesses in the camps use electricity, primarily for lighting but also for cooling and phone charging. Although the use of solar-powered systems by businesses is increasing, it is limited to lighting and powering small appliances. Half of businesses (53%) still rely on informal diesel mini-grids and generators to power the majority of their activities and/or appliances, especially larger appliances such as refrigerators.

The dependency of businesses on fossil fuel power sources leads to high monthly costs and unreliable, and at times unsafe, power supply (especially when connected to one of the informal mini-grids in the camps). However, the high monthly electricity expenditures of diesel

mini-grid users (whereby 48% pay more than KSH2000per month) also demonstrate a willingness and an ability to pay.

Businesses using electricity are interested in purchasing additional appliances such as TVs, refrigerators, audio systems, and fans, but identified costs as the main barrier to purchasing these devices.

**Finding 2: Affordability and a lack of financing options are key barriers for businesses not yet accessing electricity.**

Forty-six percent of businesses do not use electricity. A majority (94%) would like to use electricity, as it would enable them to have longer opening hours and expand their product and service offerings. Affordability is the main barrier to electricity access, while access to some form of financial services exists for around two-thirds of business owners.

**Recommendations:**

- **Conduct supply chain analyses on available solar-powered devices, and support market entry of alternative solar-powered devices for businesses.**

The availability of suitable alternative solar-powered appliances in the Kakuma or broader Kenyan market needs to be assessed in order to identify potential gaps. Subsequently, efforts need to focus on making these appliances available in the Kakuma market.

- **Determine the business case for alternative solar-powered energy solutions for businesses in order to inform product offering and price.**

To take advantage of the demand and ability to pay by businesses currently using diesel-powered sources, the business case for solar-powered solutions need to be clarified to determine if and how these products can be marketed as cost-saving, reliable alternatives.

Given the high uptake of mobile money systems among businesses in the camp (68%), distributors should explore flexible payment options (such as PAYGO) for their products within the range of the businesses' ability to pay.

- **Create awareness regarding alternative solar-powered products beyond lighting.**

Of the businesses with electricity access, 55% use electricity for lighting and/or phone charging. Sixty-five percent of solar system owners use electricity for lighting and/or powering small appliances. An opportunity exists to create more awareness on alternative uses for electricity for business purposes, and the availability of these products in the market.

- **Promote basic systems to businesses without electricity access.**

Businesses without electricity access can be brought onto the 'electricity ladder' through basic solar lighting or phone charging devices with PAYGO or alternative payment models.

The demand for electricity access (94% of business without electricity access) confirms the opportunity for suppliers of basic solar-powered products who can address the affordability issue by offering their products to businesses with PAYGO or alternative instalment payment models.

## 5.2 Cookstoves

### **Finding 1: Reliance on firewood and charcoal is near-universal.**

The majority of cooking businesses (96%) use (basic) charcoal stoves, wood stoves, and/or TSOFs for cooking. Firewood and charcoal are therefore the most commonly used fuels, and 50% of the businesses spend more than KSH1,000 per month on fuel.

### **Finding 2: Interest in alternative fuels exists, but cost and availability of stoves and fuel are limiting factors.**

Of the cooking businesses, 58% have an interest in purchasing new stoves, primarily bioethanol, LPG, and charcoal stoves. High upfront costs and a lack of availability in the market prevent businesses from switching to new stoves.

### **Recommendations:**

#### **1 Supply chain analysis needs to be conducted to identify gaps in the current stove and alternative fuel supply.**

To understand the current stove market and the challenges and opportunities related to introducing higher-tier stoves and alternative fuels, a supply chain analysis needs to be conducted.

- **Efforts need to be focussed on promoting market entry of suppliers.**

This will broaden the range of cookstoves and fuels available in the camps. The key to a successful introduction of alternative fuels is to include current firewood and charcoal traders in production processes to avoid resistance from the host community, for which firewood is an important source of income.

- **Marketing efforts need to highlight the benefits of switching stoves.**

To enable businesses in Kakuma to switch to new cookstoves, suppliers can market alternative stoves and/or fuels by highlighting the benefits in terms of health, cooking time, and capacity.

- **Suppliers of cookstoves should address the ‘high upfront payment’ barrier.**

This barrier can be addressed by deploying alternative payment models such as a leasing model (‘tool and fuel’) or PAYGO (‘pay-as-you-cook’). The monthly fuel expenditure data provides a pricing range for suppliers to offer improved stoves and to design appropriate payment options (e.g., paying off stoves through fuel payments).

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# Annex I: Additional Figures

Business type	Kakuma 1	Kakuma 2	Kakuma 3	Kakuma 4	Kalobeyei settlement	Total
<i>Duka/Kiosk</i>	153	18	84	20	42	<b>317</b>
Restaurant	78	4	28	16	25	<b>151</b>
Tailor	29	1	10	3	6	<b>49</b>
Fruit and vegetable stall	14	2	10	4	7	<b>37</b>
Electronics store	16	1	8	3	4	<b>32</b>
Barbershop/Hair salon	39	1	11	3	14	<b>68</b>
Clothing/shoe stall	35	1	12	3	5	<b>56</b>
Grocery store	25	2	11	1	5	<b>44</b>
Phone charging shop	17	1	11	2	5	<b>36</b>
M-PESA kiosk	17	0	6	4	5	<b>32</b>
Other*	15	1	14	3	4	<b>37</b>
<b>Total</b>	<b>438</b>	<b>32</b>	<b>205</b>	<b>62</b>	<b>122</b>	<b>859</b>

**Table 2. Surveyed business types and location.**

# Annex II: Survey Questionnaire

Background	
1. Name	
2. Phone number	
3. Geolocation	
4. Age	Below 25 years 25-34 years 35-45 years Over 45 years
5. Location	Kakuma 1 Kakuma 2 Kakuma 3 Kakuma 4 Kalobeyei
6. Nationality	South-Sudanese Somali Sudanese Congolese Burundian Rwandan Ethiopian Kenyan I prefer not to disclose
7. Gender	Male Female
8. What type of business do you have?	Duka/Kiosk Fruit/vegetable stall Restaurant Grocery store Tailor M-PESA Kiosk Farmer Electronics store Phone-charging shop Barbershop/Hair salon Other_____
9. How much do you earn with your business on average per month?	Below 1000 KSH 1000-5000 KSH 5000-10.000 KSH Above 10.000 KSH I prefer not to disclose
10. How many people are you employing with your business?	Only myself 1 to 5 5 to 10 >10
11. Do you have access to financial services?	M-PESA Equitybank (equitytel) SACCO/Cooperative None of these
Electricity	
12. Do you use electricity for your business?	Yes

	No
<i>Only answer if you responded Yes to Q12</i>	
13. What source of electricity do you use?	Diesel mini-grid Small solar-powered system Generator Solar mini-grid
<i>Only answer if you responded Yes to Q12</i>	
14. How much do you spend on electricity per month (for your business)?	Below 500 KSH 500-1000 KSH 1000-2000 KSH Above 2000 KSH I have finished payment for Solar Home System
<i>Only answer if you responded Yes to Q12</i>	
15. What activity do you power with electricity?	Lighting Phone charging Showing movies/football matches Barbershop Cooling (fresh produce, soda) Irrigation pump Cooking (kettle/electric cooker)
<i>Only answer if you responded Yes to Q12</i>	
16. What electric appliances do you use for your business	TV Radio Fan Electric Cooker Razor Refrigerator Phone charging station Audio/loudspeaker Computer/laptop Grinder None
<i>Only answer if you responded Yes to Q12</i>	
17. What other appliances would you like to purchase for your business?	TV Radio Fan Electric Cooker Razor Refrigerator Phone-charging station Audio/loudspeaker Computer/laptop Grinder None
<i>Only answer if you responded Yes to Q12</i>	
18. What has prevented you from purchasing these appliances?	Too expensive Too expensive to use (electricity cost) Not available in the market I don't need them for my business
<i>Only answer if you responded No to Q12</i>	
19. Why don't you use electricity for your business?	I have not looked into it yet I don't need it It is too expensive There is no source of electricity available

<b>Only answer if you responded No to Q12</b>	
<b>20. Which application powered by electricity could help increase your income from business?</b>	Lighting Phone charging Cinema/Football matches Razor (barbershop) Cooling (fresh produce, soda) Water pumping (farming) None
<b>Only answer if you responded No to Q12</b>	
<b>21. In what way could access to electricity increase your income from business?</b>	Longer opening hours Offering (phone) charging services Selling additional products Offering additional services
<b>Only answer if you responded No to Q12</b>	
<b>22. What could help you to get access to electrical appliances?</b>	Product demonstration by supplier Payment in instalments Access to loans A brochure with information
<b>23. What could help you to get access to electricity?</b>	Product demonstration by supplier Payment in instalments Access to loans A brochure with information
<b>24. Are you interested to get connected to a distributor of suitable products?</b>	Yes No
<b>25. Are you interested to get connected to a credit provider?</b>	Yes No
<b>26. Do you give permission for SNV/EnDev to share your contact information with relevant businesses (distributors, financial service providers, etc.)?</b>	Yes No
<b>Cooking</b>	
<b>27. What kind of food do you serve?</b>	–
<b>28. How many people visit your restaurant daily?</b>	<10 10 to 20 20 to 50 >50
<b>29. What technology do you use for cooking?</b>	Three-Stone Fire Charcoal stove Wood stove Bioethanol LPG Pellet stove (gasifier) Kerosene stove
<b>30. What is your monthly expenditure on cooking fuel?</b>	<500 KSH 500-1000 KSH 1000-2000 KSH >2000 KSH I don't pay for fuel
<b>31. What was the purchase price for the stove that you are mainly using?</b>	<500 KSH 500-1000 KSH 1000-2000 KSH 2000-5000 KSH >5000 KSH Free (donation)

32. Have you considered switching to a different cooking technology?	Yes No
<i>Only answer if you responded No to Q32</i>	
33. Why haven't you considered purchasing a different cookstove?	My current cookstove is working well The other cookstoves are too expensive I have always used the cookstove I am now using I don't understand how the other cookstoves work
<i>Only answer if you responded No to Q32</i>	
34. Which of the below support would help you purchase a different cookstove?	Demonstration of different technologies Payment in instalments Lower cost for stove Better availability of fuel None of the above
<i>Only answer if you responded Yes to Q32</i>	
35. What kind of cookstove would you like to use?	Three-Stone Fire Charcoal stove Wood stove Bioethanol LPG Pellet stove (gasifier) Kerosene stove
<i>Only answer if you responded Yes to Q32</i>	
36. Why would you purchase this cookstove?	Bigger capacity Lower fuel cost Better for health (less smoke) Better cooking experience (faster cooking) Better for environment (less wood needed) Easier access to fuel Better quality
<i>Only answer if you responded Yes to Q32</i>	
37. What is the main reason for not having purchased the stove yet?	Too expensive Too high fuel cost Not available in the market

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**EnDev**

Deutsche Gesellschaft für  
Internationale Zusammenarbeit (GIZ) GmbH  
Registered offices Bonn and Eschborn, Germany

Dag-Hammarskjöld-Weg 1-5  
5760 Eschborn, Germany  
E [endeve@giz.de](mailto:endeve@giz.de)  
I [www.endeve.info](http://www.endeve.info)