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End-User Finance Study & Payment Systems Research in Displacement Settings

Study Report

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freshon ENERGY SOLUTIONS LTD

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Energy Solutions for Displacement Settings (ESDS) is a component of the Global Programme "Support to UNHCR in the implementation of the Global Compact on Refugees in the Humanitarian-Development-Peace Nexus" (SUN), which is commissioned by BMZ and implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. ESDS supports UNHCR in addressing the lack of a sustainable energy supply in refugee hosting areas through global advisory services and the implementation of technical measures in displacement settings in Uganda, Kenya and Ethiopia.

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List of Abbreviations

AAH	Action Africa Help
ATP	Ability to Pay
BMZ	German Federal Ministry for Economic Cooperation and Development
CIDP	County Integrated Development Plan
COVID 19	Corona Virus Disease 2019
CRRF	Comprehensive Refugee Response Framework
DFID	Department for International Development (United Kingdom)
E4I	Energy 4 Impact
EDP	Energy Fund Program
EnDev	Energizing Development
EPC	Electric Pressure Cookers
EPRA	Energy and Petroleum Regulatory Authority
ESDS	Energy Solutions for Displacement Settings
FAO	United Nations Food and Agricultural Organisation
FSP	Financial Service Provider
GCR	Global Compact on Refugees
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GoK	Government of Kenya
ICT	Information and Communications Technology
ID	Identification Document
IEA	International Energy Agency
IOM	International Organization for Migration
IFC	International Finance Corporation
IRC	International Rescue Committee
JRS	Jesuit Refugee Service
ITC	International Trade Centre
KCB	Kenya Commercial Bank
KES	Kenya Shillings
KISEDP	Kalobeyei Integrated Socio-Economic Development Programme
KYC	Know-Your-Customer
KOSAP	Kenya Off-Grid Solar Access Project
kW	Kilowatts

kWp	Kilowatts peak
LPG	Liquified Petroleum Gas
MEI	Moving Energy Initiative
MFI	Micro Finance Institution
JKL	Juhudi Kilimo
MoE	Ministry of Energy (Kenya)
MS Excel	Microsoft Excel
NGOs	Non-Governmental Organisation
NRC	Norwegian Refugee Council
P2P	Peer-to-Peer
PAYG	Pay-as-you-Go
PV	Photovoltaic
RAS	Refugees Affairs Secretariat
RBF	Results-Based Financing
REKL	Renewvia Energy Kenya Limited
REREC	Rural Electrification and Renewable Energy Corporation
SIDA	Swedish International Development Agency
SIF	Special Initiative on Forced Displacement
SIM	Subscriber Identity Module or Subscriber Identification Module
SNV	Stichting Nederlandse Vrijwilligers (Netherlands Development Organization)
SPSS	Statistical Package for the Social Sciences
SRHC	Support to Refugees and Host Communities in Kenya
TV	Television
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNHCR	United Nations High Commission for Refugees
UNITAR	United Nations Institute for Training and Research
USADF	United States African Development Foundation
USD	United States Dollars
VSLA	Village Savings and Loans Association
WFP	United Nations World Food Programme
WTP	Willingness to Pay

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Executive Summary

Displacement Settings in Turkana County: According to the UNHCR March 2021 report, there are 515,466 refugees and asylum seekers registered in Kenya with approximately 40%, 208,538 located in Turkana County. Turkana County hosts refugees in Kakuma Refugee Camp and Kalobeyei Settlement in Turkana West Sub-County. Despite having about 75% of Kenyan households having access to electricity, counties like Turkana still have electricity access rates as low as 10%. Improving access to sustainable energy for households and social institutions via market-based approaches will first require addressing end-user finance barriers, opportunities to enhance market development of energy products and services within the displacement contexts, and the incorporation of development and humanitarian organizations to remedy market failures. The report firstly addresses quantitative and qualitative social and economic situation of refugee and host community households in displaced settings, providing an assessment of existing end-user finance and payment systems for low-income customers.

Research methodology: The implementation areas included various activities, implemented through various methods including document synthesis, consultative discussions, key informant interviews, and cocreation sessions. Stakeholder mapping was used to understand key actors, their different roles, influence and interests and how these contribute to end user financing scenario. A total of 420 respondents undertook the survey, among them 307 representing households, 111 businesses and 2 social institutions. In addition, 25 key informants were interviewed. The Key Informant Interviews targeted government agencies, donors and humanitarian agencies, Non-government organizations (NGOs), businesses, financial institutions, and, research and academic institutions.

Income and Expenditure: There is entrepreneurial activity as well as an informal economy in the market centers consisting of more than 2,500 informal businesses that offer a range of goods and services such as haircutting, eateries, hardware stores and food items. Few refugees engage in animal husbandry, an activity reserved for the host pastoralist population. South Sudanese refugees in Kalobeyei have a higher median income at 40 USD per month compared with 23 USD per month in Kakuma. Humanitarian assistance is still the main source of income and livelihood for refugees; it is estimated that about a third (33%) of the refugees have no source of income other than humanitarian aid and remittances.

Existing energy products/services: A variety of energy sources were found to be used in the displacement settings. About 85% of the respondents reported to use firewood and/or charcoal stoves. Only 6% have access to energy saving stoves. 48% are connected to solar PV systems while 30% are connected to mini-grid electricity.

Access to financing and financing models: Demand for financial services is high in both the camp and town. Among those who would like to start a business and have not done so, 99% were in the camp and 95% in town and the limitation is inaccessible capital or credit services.

Main credit facility is only available from family members and friends and small groups savings. Banks and other financial service providers can bridge this gap by providing credit to start and expand businesses while providing goal-oriented savings accounts. Since collateral is not easy to get, they can use credit history ranking to assess the risks. In addition, business stock can act as collateral. The main financing model for the energy products included cash, fee for service, leasing, and Pay-as-you-Go (PAYG). The most prominent financing system is the Pay-as-you-go model.

Requirements for financing: Access to these financing options for the energy products is dependent on various due diligence process inquiries. While the requirements for financing are relatively similar among host town residents and refugees, it is less likely that the refugees are required to provide proof of residential address, and details of place and date of birth. Even when basic documentation is available, it may be difficult to verify other information required for customer due diligence, such as an individual's date of birth and address

Mobile and internet infrastructure: There is a widespread mobile phone with fairly good network coverage in Kakuma and Kalobeyei refugee camps and host towns with a number of airtime shops and mobile money agents with Safaricom being the leading mobile network service provider. About 85% of the host town residents have a mobile phone while 69% of refugees have a mobile phone. Over 86% of those having a mobile phone in host community use it for mobile banking, money transfer and payments as compared to 31% of those in refugee camps. This use of mobile banking, transfer and payments in town is higher than in the refugee camps and can be attributed to the regulatory restrictions on foreigners use of mobile banking. 19% of camp residents access internet via their mobile phone as compared to 33% of town residents.

Regulatory framework: Since inception of the refugee camps in Kakuma, the Government of Kenya restricted them from moving outside the camps, seeking education and employment, though this has slightly changed over time. The restriction of movement for refugees reduces their livelihood opportunities and results to overreliance on humanitarian aid. This in turn restricts their ability to add value to the hosting economy leading to an increase in informal businesses and trade. The refugees say this restriction leaves them hopeless, kills their dreams, and limits their thinking. There are notable government restrictions against use of mobile phones and mobile banking by refugees, but the host communities have, through informal agreements allowed some of the refugees to register for SIM cards.

Payment systems for energy products: Mobile payments are the most preferred payment modalities for the energy products. However, for the host communities, use of cash payments for the products is significant. For the host community at the same time, use of pre-paid, and credit/debit cards is used, while these options are not used by the refugee communities.

Existing barriers to end user financing and payment systems: A number of barriers were identified that hinder financing and payment of energy system. Barriers are majorly categorized in six areas: economic and financial, market barriers, awareness and information,

ecological and geographical, cultural and behavioral, and, political and government Issues. Under these categories are listed as: (1) High initial investment cost of energy services and systems; (2) Low capacity and willingness to pay for energy products and services; (3) Higher payment delay and/or default in displacement systems; (4) Long procedure in carrying out due diligence; (5) Low number of formal micro-financing schemes for customers to access energy products; (6) Limited familiarity of private sector with activities in displacement settings; (7) Limited number of technical personnel; (8) Low profitability resulting from logistical cost to avail products to the market; (9) Lack of prevailing market information; (10) Low private sector involvement; (11) Logistical challenges for players outside Kakuma and Kalobeyei areas; (12) Weak mobile network in some areas; (13) COVID 19 uncertainties; (14) Insecurity; (15) Overdependence on grants; (16) Language barrier; (17) Resettlement plans and Psycho-social instability newly arriving refugees; (18) Uncertainty on government intention to close the refugee camp and settlement; and, (19) Uncertainty around using refugee Identity Documents.

Facilitators of market-based solutions: The study identified a number of factors and initiatives facilitating adoption of market-based solutions for energy products and services in displacement settings. They included: (1) Kenyan government has provided favorable policies and regulations to market-based approaches; (2) Demand for Clean Energy Services and Products is Growing; (3) High Mobile Phone Penetration; (4) Increased Collaborations among Players in Displacement Settings and Low-Income Communities; (5) Acceptance of Market-based solutions; (6) Increasing availability of financial institutions in the region; and, (7) Growing channel and distribution network in camp and host areas

Ability and willingness to pay: The perceived ability to pay for energy resources was estimated as a ratio between the most cited expenses on energy resources across the board (KES 2,001 – KES 5,000), and the modal income among the locations ranging between below KES 2,000 (unable to afford energy resources), to more than KES 10,000. As a result of the UN or Donor intervention, 5% of the respondents are not willing to pay for the systems, while 8% are more willing to pay. Nonetheless, the majority (87%) of the respondents have not changed their willingness to pay. The highest willingness to pay was registered among respondents in Kalobeyei 2, while the highest un-willingness to pay was registered among respondents in Kakuma 1. There was no change in willingness to pay among respondents in Kalobeyei 1 & 3.

Proposed market-based delivery models in displacement settings: The study proposes two main approaches to improve uptake of market-based models in displacement settings. Approaches include; activating private sector to come up with innovative business models as well as innovative financing mechanisms.

Ways to overcome existing barriers to end user financing and payment systems: The study proposes a number of approaches by humanitarian agencies to undertake in overcoming end user financing and payment system barriers in displacement settings. They include: (1) Grants to de-risk the businesses and provide subsidies to end users; (2) Technology price reduction;

(3) Adoption of peer to peer electricity Framework; (4) Promotion of innovative and user-friendly payment modalities and financing model; (5) Involvement of different partners; (6) Stimulate and facilitate access to credit for suppliers and end-users of off-grid solar systems and clean cooking solutions; (7) Create jobs along the energy access value chain; (8) Boost information within the displacement settings and low-income community; (9) Provide technical demonstration of concept; (10) Improve networking between local players and experts; (11) Enhancing the network connectivity in areas with weak network; (12) Engagement of private sector businesses in service delivery to refugees, otherwise undertaken by humanitarian agencies; (13) Provide psych-social support; and, (14) Enhance socio-economic integration between the local host community and refugees.

1 INTRODUCTION

1.1 Project context

The Energy Solutions for Displacement Settings (ESDS) project complements the activities implemented as part of the Support to Refugees and Host Communities in Kenya (SRHC) project funded under the German Federal Ministry for Economic Cooperation and Development (BMZ)'s Special Initiative on Forced Displacement (SIF). The project recognises the great challenge that humanitarian agencies face in ensuring the provision of reliable and sustainable energy access in displacement settings. Essentially, households and social institutions often have limited access to energy and are not able to cover essential needs. Moreover, the electricity infrastructure in refugee and host communities is minimal at best and usually generated through expensive and environmentally harmful fossil fuels. Lack of sustainable energy sources results in heavy pressure on and degradation of natural resources surrounding displacement settings that can result in social tension and even conflicts. More sustainable and cost-effective energy solutions should be pursued.

SRHC has closely collaborated with GIZ/EnDev (Energizing Development) with respect to the installation of the mini-grids in Kalobeyei Settlement and Kalobeyei town through private sector and secured the coordination and community involvement. As part of the Energy Solutions for Displacement Settings (ESDS) project being implemented in Turkana County, Turkana West Sub- County, the focus is on two intervention areas:

i. Policy, capacity development and coordination support to Turkana County Government and UNHCR

ii. High-tier electricity supply to host communities, refugees and institutions, e.g. UNHCR infrastructure.

The contribution of the two intervention areas is aligned to the Comprehensive Refugee Response Framework (CRRF) (UNHCR 2016, Hansen 2018), and the Kalobeyei Integrated Socio-Economic Development Programme (KISEDP) (UNHCR 2018) supported by the German Development Cooperation to deliver a vision of shared responsibility that informed the Global Compact on Refugees (GCR) (UNHCR 2018, Colombo 2019).

1.2 Displacement settings in Turkana County

According to the UNHCR March 2021 report, there are 515,466 refugees and asylum seekers registered in Kenya with approximately 40%, 208,538 located in Turkana County. Turkana County hosts refugees in Kakuma Refugee Camp and Kalobeyei Settlement in Turkana West Sub-County Figure 1.

The Kakuma camp which opened in Kenya in 1992 to shelter people who fled conflict in Sudan, now includes refugees from South Sudan, Somalia and more than a dozen other countries. Facing work and property restrictions, they depend on aid and some firewood rations. Many also receive remittances from relatives abroad. The camp lies in the western

part of Turkana, among Kenya's poorest counties, where four out of five residents live in poverty. The host community and locals within the displacement settings recognize that their economy heavily depends on displaced people and the humanitarian groups. Kakuma Refugee Camp is in the outskirts of Kakuma town and is divided into four areas i.e. Kakuma 1 to 4, where about 5 percent of the combined 150,000 residents have access to electricity.

Turkana County also is home to Kalobeyei Settlement, which opened in 2016 as "*the world's first settlement specifically designed to allow refugees and members of the host community to live and work alongside one another*". Kalobeyei Integrated Settlement was conceived by UNHCR, Turkana County Government and National Government as part of the KISEDP as an integral part of the Turkana County Integrated Development Plan (CIDP II) and is comprised of 3 villages, Village 1, 2 and 3. According to the UNHCR March 2021 report, the population in Kalobeyei settlement and Kalobeyei town was 41,388 and host community was 16,378 respectively. Energy access is a challenge in the camps and is often supplied through expensive and unreliable informal diesel mini-grids and standalone generators. A hybrid solar mini grid is in place but only connects one of the three villages in Kalobeyei settlement.

Lack of sustainable and reliable energy supply constrains many business opportunities and hence any attempt in the camp and settlement to expand their income-generating activities. In addition, owners of cooking businesses are at risk due to inefficient and unhealthy cooking practices. This therefore highlights the requirements and the need for end-user financing.

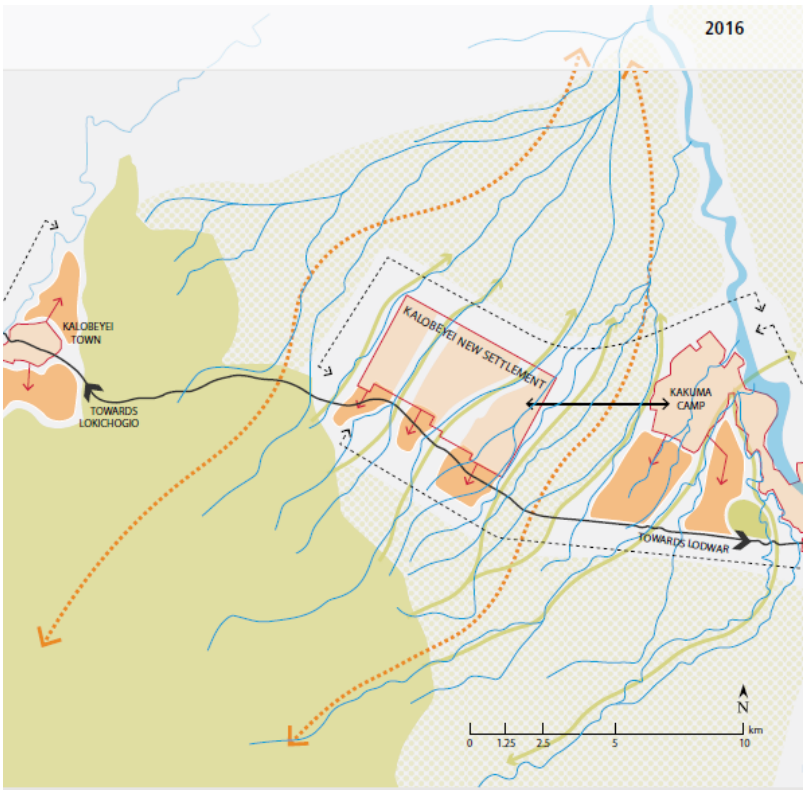


Figure 1: Kakuma camp and Kalobeyei settlement (2016)

1.3 Energy access situation in Turkana County

Despite 75% of Kenyan households having access to electricity, counties like Turkana still have electricity access rates as low as 10%. Turkana County in partnership with GIZ/EnDeV and private sector are implementing nine mini-grids to boost clean electricity supply in the county. With Turkana country hosting almost 40% of the total refugees present in Kenya in addition to the host community, the "Energy Solutions for Displaced Settings (ESDS)" project is being implemented to complement other efforts. The project seeks to improve access to sustainable energy for households and social institutions via market-based approaches. Currently, there are two successfully installed and operating mini-grids systems in Kalobeyei Settlement (60kWp) and Kalobeyei host town (20kWp). The project was funded by the United Kingdom Department for International Development (DFID) through a Results Based Financing (RBF) facility managed by GIZ/EnDev. Since then, part of village 1 and 2 have been connected – with over 500 customers. There are now plans to expand these connections to a wider larger customer base in Village 1 and 2 and 3 of the Settlement through the ESDS project.

1.4 Objectives of the study

Improving access to sustainable energy for households and social institutions via market-based approaches will first require addressing end-user finance barriers, opportunities to enhance market development of energy products and services within the displacement contexts, and the incorporation of development and humanitarian organizations to remedy market failures.

The overall objective of this report is therefore to provide a detailed examination and propose ways of addressing issues regarding:

i. market development of energy products and services within the displacement context,

ii. barriers to end-user financing, and

iii. better the incorporation of development and humanitarian organizations to remedy market failures.

The report firstly addresses quantitative and qualitative social and economic situation of refugee and host community households in displaced settings, providing an assessment of existing end-user finance and payment systems for low-income customers. It then provides an analysis of existing obstacles to end-user financing and develop market-based concepts for end-user finance and payment systems for sustainable energy products for refugee and host community households in displaced settings. Further, the report proposes market-based concepts for end user finance and payment systems for refugee and host community household for sustainable energy products that can be enhanced through the involvement of

UNHCR/ESDS. Finally, context specific recommendations are provided on how the concepts can be implemented by different partners for ESDS.

2 STUDY METHODOLOGY

2.1 Approach

The study involved development of tools that guided data collection and analysis. Data collection tools like questionnaires to guide collection of quantitative and qualitative data were prepared based on the metrics defined. Other analysis tools like KOBO, SPSS, MS Excel among others were used as necessary. Sampling techniques of all that were engaged in the study were done considering recommended precision to obtain data that was more representative. Quantitative data was cross referenced with qualitative data collected in order to provide a clearer interpretation on social economic condition.

Ethical considerations of the data collection process were taken into account with participants being informed of measures that would be taken to ensure that their data remains anonymous and the data collectors/enumerators being sensitized on the same.

The implementation areas included various activities, implemented through various methods including document synthesis, consultative discussions, key informant interviews, and cocreation sessions. Figure 2 provides the approaches categorised along four steps: participants selection, collection of data, data analysis, and conceptualisation of the market-based system.

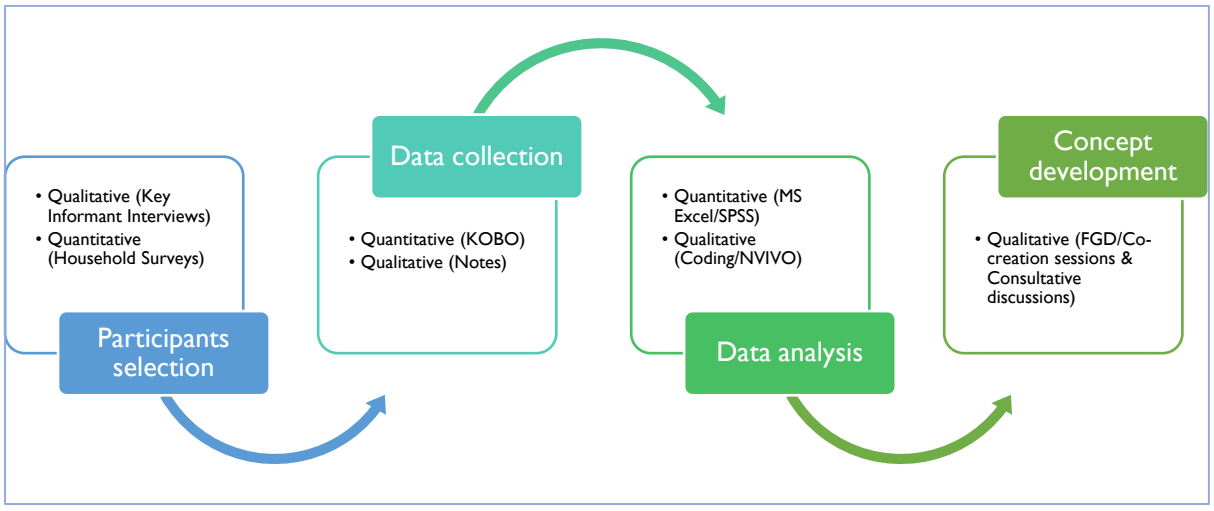


Figure 2: Methodological approaches

2.2 Stakeholder mapping

Stakeholder mapping was used to understand key actors, their different roles, influence and interests and how these contribute to end user financing scenario. Detailed information of stakeholders mapping conducted during the study is provided in Table 3 in the next chapter. Quantitative end user survey

The sampling frame considered the following:

i. Sampling Precision: 95/5 confidence/ precision

ii. Target population: This was based on the estimated overall number of households, businesses and social institutions within Kakuma and Kalobeyei areas.

iii. Stratified sampling: Desegregation was done according to households, businesses and social institutions as well as by location i.e. Kakuma and Kalobeyei settlements, and host communities. This was achieved by taking into account the population and housing density data derived from the UNHCR March 2021 report and the 2019 Kenya National Census data.

iv. Sample Size: has been calculated using the Yamane (1967) Formula below:

$$n = N/(1 + N(e)^2)$$

Where:

n	signifies the sample size
N	signifies the population under study
e	e signifies the margin error (taken as 0.05)

Table 1 provides information of interviewees disintegrated by area. A total of 420 respondents undertook the survey, among them 307 representing households, 111 businesses and 2 social institutions.

Table 1: Based on this the proposed sample size is 420 (including oversampling of about 17%)

	Households	Businesses	Social Institutions
Kalobeyei 1 Settlements	27	12	0
Kalobeyei 2 Settlements	21	8	0
Kalobeyei 3 Settlements	11	9	0
Kalobeyei Host Town	49	13	0
Kakuma Host Town	80	23	2
Kakuma 1 Camp	44	21	0
Kakuma 2 Camp	15	5	0
Kakuma 3 Camp	30	9	0
Kakuma 4 Camp	30	11	0
Total Sample Size	**307**	**111**	**2**

Survey participants were randomly selected while taking care to ensure that representation was achieved.

2.3 Qualitative key informant interviews

Qualitative data was collected through key informant interviews while quantitative data collected using survey questionnaires. All the interviewees were drawn from the stakeholder mapping shown in Table 2. A total of 25 key informants were interviewed. The Key Informant Interviews targeted government agencies, donors and humanitarian agencies, Non-

government organizations (NGOs), businesses, financial institutions, and, research and academic institutions as provided in Table 2. Through the KII the team endeavored to capture perspectives of various stakeholders in regards to end user financing and payment systems in displacement settings and low-income areas.

Table 2: Key informants

Stakeholder Category	Stratification	Informant organization
Government agents	County government National government Government authorities	1. Ministry of Energy (MoE) - Energy Centres 2. Ministry of Energy (MoE) - KOSAP 3. Rural Electrification and Renewable Energy Corporation (REREC) 4. Energy and Petroleum Regulatory Authority (EPRA) 5. Refugees Affairs Secretariat (RAS)
Donors and humanitarian agencies	UN Non-UN	6. Norweagean Refugee Council (NRC) 7. Sida 8. UNHCR 9. World Food Programme (WFP) 10. UNITAR 11. GIZ
Non-government organizations (NGOs)	International National	12. SNV 13. Energy 4 Impact (E4I) 14. Action Africa Help (AAH) 15. Jesuit Refugee Service (JRS)
Businesses	Kakuma Kaloboyei	16. Pawame 17. Okapi Green 18. Yelele Limited 19. Usafi Green Energy 20. Renewvia Kenya Limited 21. SunKing 22. Mkopa 23. BBOX
Financial institutions	Financing End User General financial support	24. International Finance Corporation (IFC) 25. Equity Bank

2.4 Data collection

Quantitative data collection was done using KOBO Collect, through the end-user surveys (households, business and institutions). A 7-day field visit was conducted for survey data collection exercise done by 4 local enumerators. A blended approach to conducting the KII was employed. Qualitative data was done using notes, mainly for the key informant interviews. With this approach both physical and virtual interviews were used.

Ethical considerations of the data collection process were taken into account with participants being informed of measures that would be taken to ensure that their data remains anonymous and the data collectors being sensitized on the same.

2.5 Data analysis

The quantitative data was analysed using MS Excel and/or SPSS. The information gathered through key informant interview transcribed notes was coded to generate insights. Quantitative data was cross referenced with qualitative data collected in order to provide a clearer interpretation of the end-user contexts.

3 DESCRIPTION OF SETTING AND CONTEXT

3.1 End user financing in Kakuma and Kalobeyei Settlements

The key challenges facing Africa's power sector are inadequate generation capacity, limited electrification, low power consumption, unreliable services, high costs, and a financing gap of approximately $23 billion a year. Renewable, sustainable sources of energy are best positioned to respond to the access needs of Africa's large rural population which can only be reached in the medium term by off-grid technologies. Moreover, they can provide the necessary scale to avoid reliance on costly small-scale national power systems, which are heavily reliant on expensive oil-based generation. Nonetheless, given the huge financing gap and the high costs of clean energy solutions, a portfolio of financing sources will have to be considered and sustained to meet current and future demand. In this respect, financial institutions camps (*Case Example Equity Bank in Kakuma*) and other non-governmental institutions (*Case Example IFC Kakuma Kalobeyei Challenge Fund*) have started paying keen attention on the ways that they can finance end-users and business owners, so that with access to finance, they can not only run their businesses, but be in a position to access and provide clean energy in these.

Equity Bank End User Financing Model in Kakuma

Equity Bank is one of the initial banks to have a branch in Kakuma town. It has an agreement with the Central Bank of Kenya and UNHCR to give bank access to refugees, and it has approximately 20,000 camp customers and 40,000 host-community customers representing a modest penetration of the market. There is a demand for banking services in the camp, but unsurprisingly most refugees have trouble meeting credit criteria due to lack of credit history or lack of collateral. Credit guarantees to de-risk lending to local customers would be one area for donor and public intervention. Equity Bank has a clean-energy loan product called EcoMoto. Users of Equitel mobile money are automatically enabled for EcoMoto after six months of SIM card use. It appears as part of the normal Equitel service menu and allows users to purchase financed energy products.

Case Example 1: Equity Bank in Kakuma

IFC funded IFC Kakuma Kalobeyei Challenge Fund

The IFC set-up the Kakuma Kalobeyei Challenge Fund with the aim of overcoming the information gap, improving the regulatory environment for refugees and host communities in Turkana County, and increasing access to finance and services. The fund will accept applications on a rolling basis from commercial companies, social enterprises, and local and refugee entrepreneurs wishing to implement viable and sustainable business projects in the Kakuma/Kalobeyei area. In addition to funding, technical assistance and advisory services is being offered with the aim of facilitating long-term sustainable business service provision for the area. Energy access is a fundamental focus of the fund, alongside other key areas such as water, sanitation and hygiene, and livestock value chains.

Case Example 2: IFC Kakuma Kalobeyei Challenge Fund

These represent some of the initiatives that have recently been set up to work on enabling the residents of Kakuma and Kalobeyei to access finance and payment systems for the low-income customers for sustainable energy products in these settlements. Essentially, the private sector can therefore play a role in supporting refugees' self-reliance and supporting host communities. This can be done through options such as being a service provider, jobs creator, and growth facilitator. Host countries are increasingly exploring partnerships with the private sector to address the needs

of camp-based and urban refugees. Common interventions include skills training for improving employability; value chain development and special economic zones for job creation; and substitution of imported goods; vouchers and cash transfers to support local economies. However, most private sector companies do not see refugees as their target group and hence have not expanded their core business to refugees hosting areas. This is one of the major challenges that is facing private sector engagement in financial partnership and assistance of the residents of these two camps.

Figure 3 shows an aerial photo of about 2000 permanent shelters in Kalobeyei village 1 settlement.

Figure 3 Aerial photo of 2000 permanent shelters in Kalobeyei Village 1 (UNHCR 2018)

3.2 Market-based concepts for end user finance and payment systems

Kakuma camp and Kalobeyei settlement have economic potential (*Case example Kakuma Business potential*) even though they are still heavily reliant on aid. This report provides a better understanding of Kakuma and Kalobeyei as potential markets by examining and proposing ways of addressing issues regarding (1) market development of energy products and services within the displacement context, (2) barriers to end-user financing, and, (3) better the incorporation of development and humanitarian organizations to remedy market failures. The three types of players that might benefit from its finance and payment systems could be: commercial firms (banks, microfinance institutions, telecommunications companies, and small and medium enterprises from other sectors); social enterprises (companies that look to attain and maximize financial, social, and environmental impacts); and local entrepreneurs (from the refugee and host communities). Empirical data that has been collected by organizations working around the camps over time on revenues, consumption patterns, consumer preferences, and financial transactions in the refugee camps and neighboring towns show that there is a lack of market information that is necessary for the identified private sector players to start or scale up their operations in the Kakuma and Kalobeyei areas.

Business potential in Kakuma

Visitors to Kakuma are often struck by the buzz of business activity in the area. The camp's informal economy is thriving, with more than 2,000 businesses, including 14 wholesalers.5 Businesses tend to meet daily needs for Kakuma's residents, providing

food, cosmetics, mobile phones, and other sundries. There are four major markets in subcamp one, two in subcamp two, three in subcamp three, and one in subcamp four. Kakuma town has 232 shops along the main road and adjacent alleys. Most business owners run "dukas" (small general stores), which account for 31 percent of businesses in the town and 33 percent in the camp. Across both areas of Kakuma, 39 percent of duka shops are owned by Kenyans and located in the town, while 24 percent are owned by Somalis in the camp. A duka typically provides limited job opportunities – 70 percent of owners do not employ any other people. Other businesses that feature prominently in both areas are grocery stores, food stalls, restaurants, cafés, and M-Pesa kiosks.

There is substantial demand for communications and mobile services. Mobile phone penetration is high both in the camp (69 percent) and town (85 percent), making it a potentially attractive market for mobile banking. The mobile handset market in Kakuma camp and town is estimated at KES 49 million ($480,000) annually, assuming a three-year lifetime. About 59 percent of the market is from the town and 41 percent is from the camp. Mobile money is more widely used in the town than in the camp. About 86 percent of respondents in the town use their phone/SIM for mobile banking or money transfers, while only 31 percent do so in the camp. Banks and mobile network providers offer mobile-money services in both areas, but there is a significant opportunity to increase penetration in the camp. Growth in this segment would depend on improving refugees' currently low financial literacy and access to Alien ID cards, which are necessary to register with M-Pesa. (Kakuma as a Market place, 2018).

While these statistics indicate various opportunities to invest in new or existing businesses in Kakuma, the path to private sector success will be complex. Kakuma's productive potential lies in its people, but many of them lack the education they need to put their skills and talents to use, whether as business owners, employers, or employees. More than 50 percent of refugees have no schooling in comparison with 33 percent of those in the town. The rate of high school education or vocational training for refugees is 19 percent and 3 percent respectively, compared with 30 percent and 7 percent in the town. This has an adverse link to employment status, business ownership, income, and savings. More people are unemployed in the camp (27 percent) than in the town (14 percent), and the average monthly income in the camp is about one-third of that in the town (KES 5,597 compared with KES 15,863)

Beyond education, other more practical problems keep people from reaching their full potential. The camps and neighbouring towns have limited access to markets due to poor road connections and the lack of a commercial airport. Many refugees and host community members do not have the funds to set up a business, nor do they know how to access them. Financial literacy is low, and access to finance is limited. About 73 percent of respondents in the Kakuma camp and 45 percent in Kakuma town for example, have no information on financial matters. This is correlated with low levels of savings, with 58 percent of those in the town and only 21 percent of those in the camp having saved in the last 12 months.

Case Example 3: Business potential experienced in Kakuma

Attracting new private sector players to the area, expanding the operations of existing firms, and supporting local entrepreneurs have the potential to expand job opportunities for refugees and the host community, improve services, provide more choice, reduce prices, and contribute to self-reliance. The increased role of the private sector would also enhance the socioeconomic integration of refugees with their host communities, while contributing to the development of the hosting region, in the spirit of the global agenda of the Comprehensive Refugee Response Framework and, more widely, of "leaving no-one behind."

There are hurdles that need to be overcome while developing the market-based concepts for end-user finance and payments. This will ensure that as interventions are put in place to serve the residents of these camps to enable them access clean energy, there are means available to sustain the continued utilization of these services. This will be achieved by economic and socio-empowerment and safeguarding the residents' ability to create businesses and sustain them.

3.3 Income and expenditure

Kakuma camp and Kalobeyei settlement in Turkana West sub-county hosts over 211,862 registered refugees and asylum seekers as of June 2021 (UNHCR and GoK 2021).The businesses in

the Kakuma camp are divided into 10 markets; 4 in Kakuma 1, 3 in Kakuma 3, 2 in Kakuma 2 and 1 in Kakuma 4. There is entrepreneurial activity as well as an informal economy in the market centers consisting of more than 2,500 informal businesses that offer a range of goods and services such as haircutting, eateries, hardware stores and food items. These informal markets see both men and women actively involved and they play a critical role in food security and social integration between refugees and the host community (UNCHR 2019).

Few refugees engage in animal husbandry, an activity reserved for the host pastoralist population. South Sudanese refugees in Kalobeyei have a higher median income at 40 USD per month compared with 23 USD per month in Kakuma. Humanitarian assistance is still the main source of income and livelihood for refugees; it is estimated that about a third (33%) of the refugees have no source of income other than humanitarian aid and remittances. One in every ten refugees owns a business or is self-employed (Betts, Omata et al. 2018).

During the field surveys, the findings echoed the above statistics. About 32% of the population reported that they don't have any occupation at the moment and only depend on humanitarian aid and donations from well-wishers. Among the 68% that had at least one occupation, 37% reported that they were in entrepreneurship operations, small shops, restaurants and services in the host and refugee settlements. 18% of the population reported to be involved in casual employment and only 9% reported to be in fulltime employment on a monthly salary as per Figure 4.

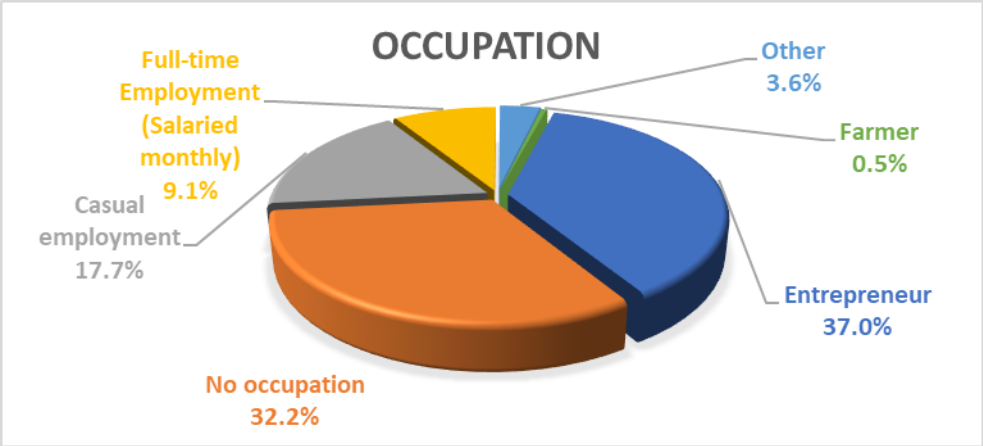


Figure 4 Occupation in displacement settings

The average monthly earnings for the refugees in the camps is approximately KES 5,600 of which 27% (KES 1,500) comes from business activities and the other comes from donations, Bamba Chakula by WFP, remittances and sale of rations. About 34% of this income is spent on energy for the households while almost half (46%) of the income is spent on consumer goods (Endev 2020).

When asked about their earning patterns in the displacement settlements, about 56% reported that they earn on a monthly basis, consisting of those receiving humanitarian aid, full time employees and some casual labourers. About 22% of the respondents earned on a weekly and only 20% on a daily basis as shown in Figure 5.

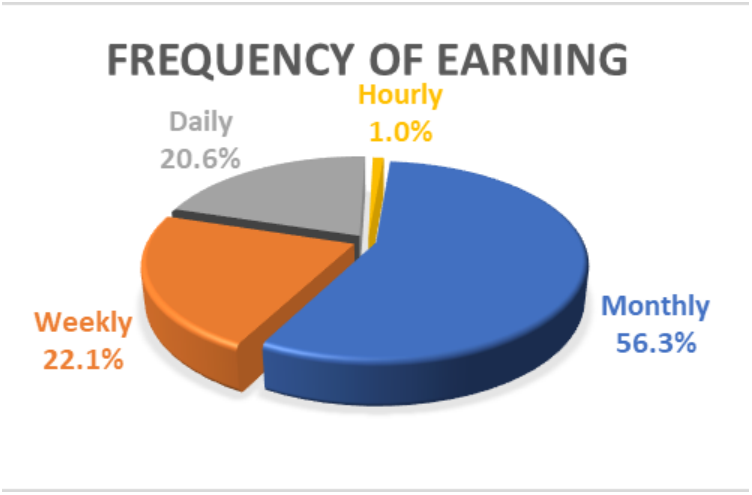


Figure 5 Frequency of earning in displacement settings

About 22.6% of the respondents earn less than KES 2,000 per month. 15.6% earn between KES 2,000 and KES 3,999. About 27% reported to earn between KES 4,000 and KES 5,999 per month. 19% earn between KES 6,000 and KES 7,999. Only 6.3% earn between KES 8,000 and KES 9,999 with another 9.5% reporting to earn KES 10,000 and above. Figure 6 shows a breakdown of average monthly income in displacement settings.

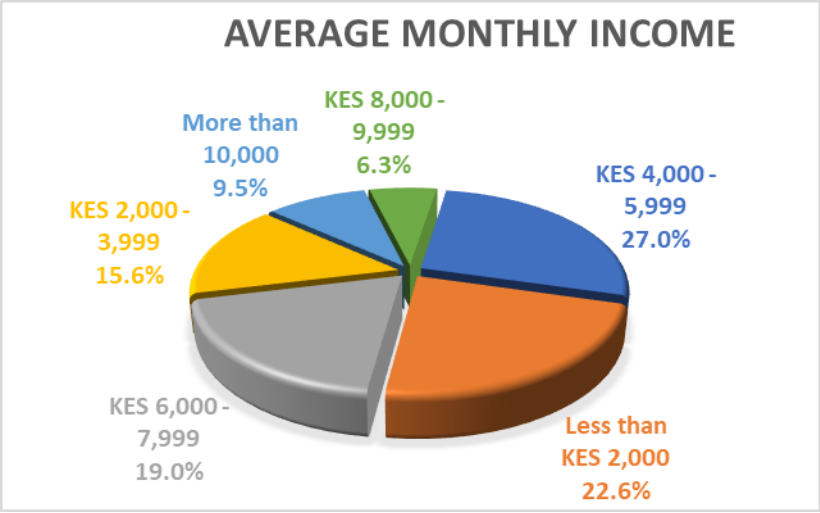


Figure 6 Average monthly income in displacement settings

A closer look at the monthly income and the corresponding energy expenditure in the settlements shows that there is a budgetary strain due to high percentage of household income going to paying for energy services. Analysis showed that 40.6% spend below KES 2,000 per month. About 47.7% spend between KES 2,000 and KES 5,000. Another 10.3% spend between KES 5,001 and KES 10,000. Only 1.5% spend above KES 10,000 as shown in Figure 7.

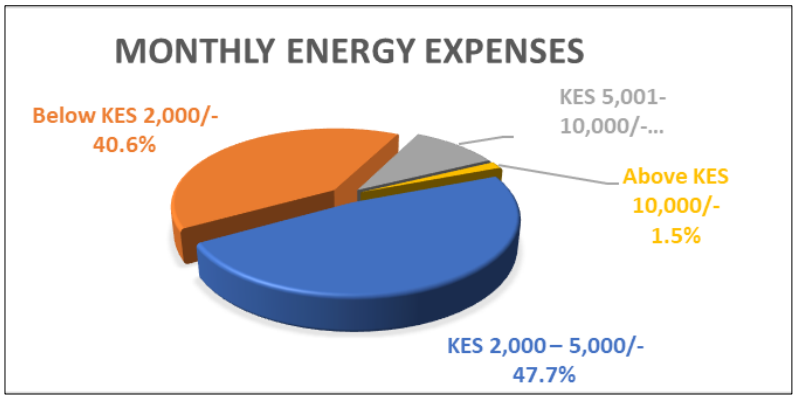


Figure 7 Monthly Energy Expenditure

3.4 Characteristics of existing energy products/services

About 96% of businesses in Kakuma and Kalobeyei rely on firewood and charcoal to meet their daily cooking energy needs with the rest using other sources like LPG and bioethanol. Regarding electricity access, 54% of businesses have access with the energy mix of 34% connected to diesel mini-grid, 4% connected to solar mini-grid, 43% use small solar PV systems while 19% use diesel generators (Endev 2020).

A 60kWp solar PV mini-grid that was installed in Kalobeyei 1 settlement by Renewvia with support from GIZ-EnDev programme connects 19 institutions, 129 businesses and 343 households. In Kakuma refugee camps and Kalobeyei villages 2 and village 3, the residents use small privately operated diesel powered mini-grids. Solar home systems provide lighting and charging in households and small businesses. Another 20kWp mini-grid in Kalobeyei town connects 6 institutions, 28 businesses and 98 households (UNCHR 2020).

A variety of energy sources were found to be used in the displacement settings. About 85% of the respondents reported to use firewood and/or charcoal stoves. Only 6% have access to energy saving stoves. Whereas 48% are connected to solar PV systems, 30% are connected to mini-grid electricity as shown in Figure 8.

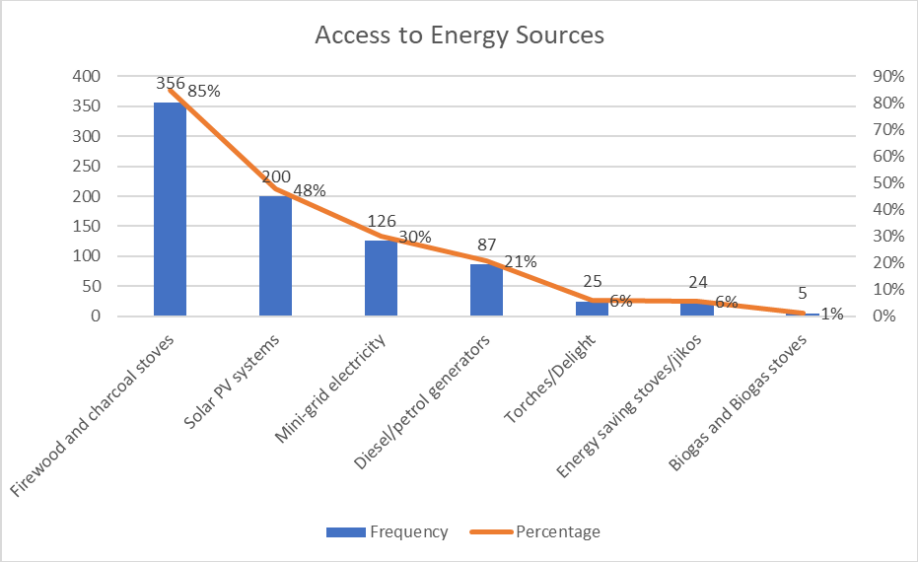


Figure 8 Access to energy sources in displacement settings

3.5 Key Actors and their roles

There are many organizations in displacement settings that partake very significant roles in energy access, end-user financing and payment systems. These organizations and their roles are listed in Table 3**Fehler! Verweisquelle konnte nicht gefunden werden.**.

Table 3 Key actors and their roles in EUF and PS

Stakeholder Category	Role	List
Local and national governments	Responsible for creating enabling environment for traders, financiers and end users. Plays an important role in standards and energy regulations	MoE, REREC, County administration, Refugees Affairs Secretariat, EPRA
Donors and humanitarian agencies	Provides substantial support in the humanitarian environment. Provide support link in government, private sector, host community and refugees	NRC, SNV, Sida, GIZ, USADF
UN agencies	They support energy-social economic nexus such as gender and social inclusion, promotion of economic empowerment and PUE, provision of public services such as food security, education and health	UNHCR, WFP, UNITAR, UNDP, IOM, FAO, World Bank
Non-government organizations (NGOs)	NGOs have collaborated with donors in developing programs for end user financing, based on market systems.	Moving Energy Initiative, LOKADO, Dan Church Aid, Jesuit Refugee Service, Action Africa Help International
Businesses	Involved in day-to-day provision of energy services that support the end-users.	Mkopa, BBOX, SunKing, Pawame, Usafi Green, Okapi Green, Renewvia,

Financial institutions	Key stakeholders in financing of energy projects, provide credit to local businesses and end-user financing	Equity Bank, KCB bank, IFC,

The role of UN, donors and NGOs cannot be underestimated when it comes to providing financing for energy products and services as seen in Figure 9.

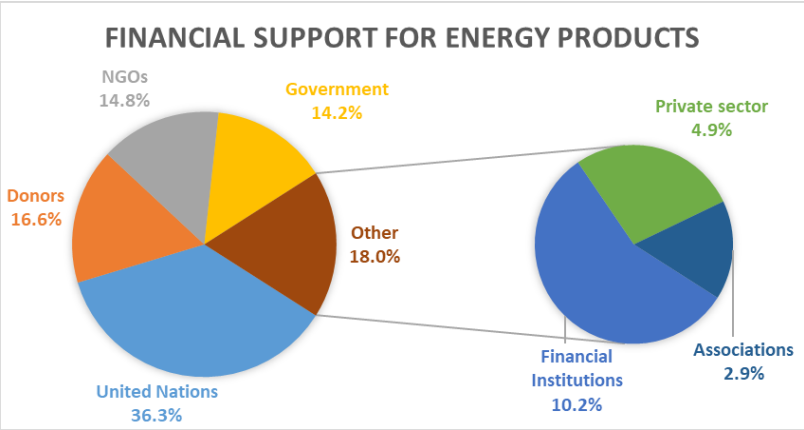


Figure 9 Key players in financing energy products

The roles by these agencies include; extensive research in energy for displacement setting, promotion of market-based energy solutions through grants, technical assistance, and result based financing of private sector in energy businesses. Sometimes there are overlapping responsibilities among the agencies but all for the common good. The private sector appreciates that the UNHCR and other implementing NGOs are playing a critical role in promoting and facilitating energy access in displacement settings by the offered technical assistance, on-ground logistics, grants and capital access, infrastructural development, as well as subsidies in to low-income households including result-based financing (Laura, Faisal et al. 2019, Karlijn 2020, Endev 2021).

The Moving Energy Initiative (MEI) is a consortium of world-class organizations involving collaboration between Energy 4 Impact, Chatham House, Practical Action, the Norwegian Refugee Council (NRC), the Office of the United Nations High Commissioner for Refugees (UNHCR) and the UK Department for International Development (DFID) working with private sector energy businesses to sustainably meet the ever-rising energy needs in refugees' settlements and hosting neighboring communities (Mohammed and Carol 2018). MEI in partnership with Kube Energy are at the forefront in providing power to 2 clinics in Kakuma under the International Rescue Committee (IRC). They are also involved with powering an Information and Communications Technology (ICT) Centre run by Crown Agent (Chathamhouse 2020).

The main players in the energy sector include Kenya Power (with the diesel mini-grid in Kakuma town), Renewvia (with the 60kWp solar mini-grid in Kalobeyei 1 and 20kWp solar mini-grid in Kalobeyei town), Okapi Green (with the newest 20kWp mini-grid in Kakuma), Yelele Limited with plans to have solar minigrids in Kalobeyei Village 3, Usafi Green Energy (providing clean energy

saving cooking stoves), MKopa, BBOX, Azuri, SunKing and Pawame. These last four players control the largest share in solar home systems providing PAYG services and mobile payment systems.

3.6 Access to financing

An entity that suitably utilizes end user financing can easily convert the potential customers for its sustainable energy systems and services into actual customers (Jacob, Ellen et al. 2009).

Access to financing is influenced by access to financial services. Equity bank is operating both in the refugee camps and in the host community. The bank has a branch in Kakuma town and Kalobeyei 1 settlement. To open a bank account with Equity bank, one needs a national ID or an Alien ID or a proof of registration document (manifest) with UNHCR and RAS. Refugees can now access same services as the locals and they will also be issued with a Visa debit card to access their funds. Equity offers access to credit to both the hosts and the refugees through its own mobile SIM based application (Equitel). Regular loans by the bank are not accessible to the refugees. However, the bank can give credit to refugees by partnering with NGOs who disburse the funds and select the beneficiary while equity holds the accounts and manage that loan. Kenya Commercial Bank also has presence in Kakuma town (IFC 2018).

Demand for financial services is high in both the camp and town. Among those who would like to start a business and have not done so, 99% were in the camp and 95% in town and the limitation is inaccessible capital or credit services. Main credit facility is only available from family members and friends and small groups savings. Banks and other financial service providers can bridge this gap by providing credit to start and expand businesses while providing goal-oriented savings accounts. Since collateral is not easy to get, they can use credit history ranking to assess the risks. In addition, business stock can act as collateral. Many financial institutions cite lack of collateral as a challenge to their lending expansion (IFC 2018). Survey done in July 2021, shows that banks can play a big role in providing payment platform for energy products and services as shown in the Figure 10

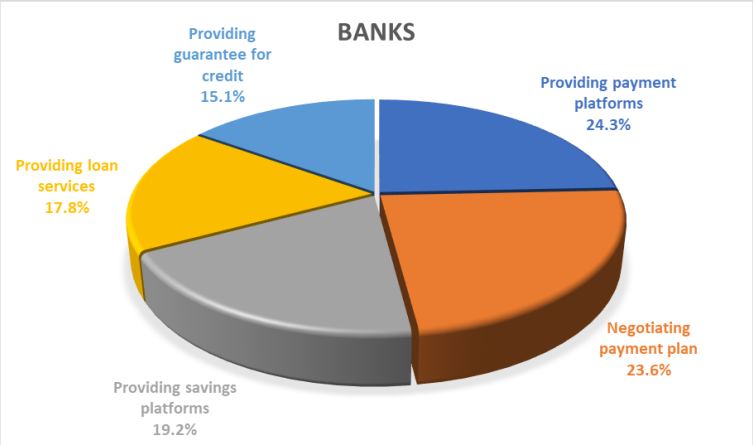


Figure 10 Role of banks in providing EUF and PS

Equity Bank controls approximately half of the financial services in Kakuma and Kalobeyei. KCB is the second biggest player by market size. Whereas KCB has a MoU with UNHCR to open bank accounts and associated financial services in Kakuma Camp, Equity bank does the same in Kalobeyei. UNHCR, WFP and other humanitarian agencies like Lutheran World Foundation collect data and share with commercial financial institutions hence easing access to refugees (DCA and Consulting 2020).

End user financing can be made easier when the formal financial institutions are willing to either offer credit facilities to the end users directly or to the private sector business to enable them extend the same to the end users. A number of NGOs and humanitarian agencies like GIZ (through EnDev project which is a strategic partnership that supports access to modern energy services) and SNV among others have been facilitating end user financing by offering grants, technical assistance and result based financing to businesses in energy sector.

3.7 Mobile and internet infrastructure

There is a widespread mobile phone (2G,3G) network coverage in Kakuma and Kalobeyei refugee camps and host towns with a number of airtime shops and mobile money agents with Safaricom being the leading mobile network service provider (GSMA 2019). About 85% of the host town residents have a mobile phone while 69% of refugees have a mobile phone. This is high penetration rate considering the low-income status which displays a high interest among the residents in owning a mobile phone. This also depicts a high opportunity for mobile banking and payment interventions in the settings. Over 86% of those having a mobile phone in host community use it for mobile banking, money transfer and payments as compared to 31% of those in refugee camps. This use of mobile banking, transfer and payments in town is higher than in the refugee camps and can be attributed to the regulatory restrictions on foreigners use of mobile banking. 19% of camp residents access internet via their mobile phone as compared to 33% of town residents. Smartphone ownership stands at 28% in the camps and 36% in the town hence this can prevent a majority of the population from accessing mobile apps-based services (IFC 2018).

Mobile network connectivity plays a major role in clean energy access and payment systems for energy products and services. Some mobile network operators are partnering with PAYG solar companies to provide the off-grid customers with a payment platform while at the same time meeting their lighting and charging needs in such settings. For instance, Safaricom partnering with M-KOPA in Kenya (GSMA 2019).

Safaricom is the predominant mobile service operator in the displacement settings with over 65% as shown in Figure 11.

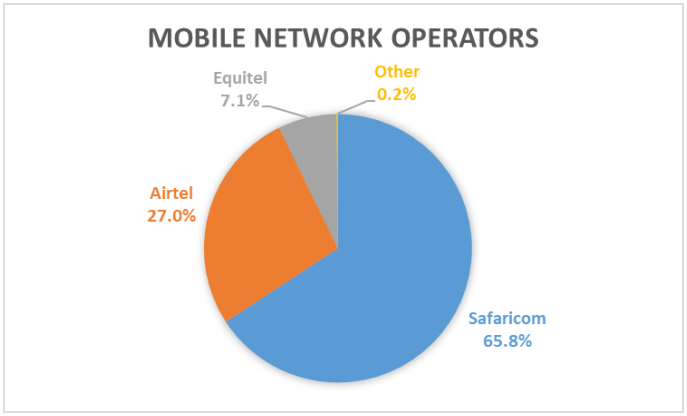


Figure 11 Mobile network operators in Kakuma and Kalobeyei

The use of mobile phone is increasing in the camps and the latest survey by UN-habitat in June 2021 showed that 80% of residents in Kalobeyei Settlement and 82% of residents in Kakuma had a mobile phone. There is a telecommunication cell tower which is located in Kalobeyei Village 1 to serve the camps (UN-Habitat 2021).

3.8 Regulatory framework

Since inception of the refugee camps in Kakuma, the Government of Kenya restricted them from moving outside the camps, seeking education and employment, though this has slightly changed over time (Jamal 2000). The encampment policy still holds to date but any refugee or asylum seeker willing to travel must obtain a special pass from RAS. The issuing of movement pass for all refugees who would like to leave the camp for a limited period for different purposes is in line with Refugee Act. The restriction of movement for refugees reduces their livelihood opportunities and results to overreliance on humanitarian aid. This in turn restricts their ability to add value to the hosting economy leading to an increase in informal businesses and trade. The refugees say this restriction leaves them hopeless, kills their dreams, and limits their thinking. Those in business cannot travel to get their business supplies and sometimes it is very costly, leading to reduced profits. It would make sense to waive the requirement for refugees in business related requests to have a movement pass within Turkana County, to have a multi-trip and/or one-year movement passes (NRC 2018). There are notable government restrictions against use of mobile phones and mobile banking by refugees, but the residents have circumvented this by having the locals register mobile SIM cards illegitimately.

4 EXISTING END-USER FINANCE AND PAYMENT SYSTEM

4.1 Energy products use and availability

The energy products subject to end-user financing mainly used within the Kakuma and Kalobeyei are mainly solar PV and mini-grid systems. While mini-grid systems are more likely to be found in Kakuma host town, and Kalobeyei 1, Solar PV systems are found across various locations. Figure 12 shows that Kakuma host town holds the largest share of those accessing electricity either via local mini-grid or solar PV system.

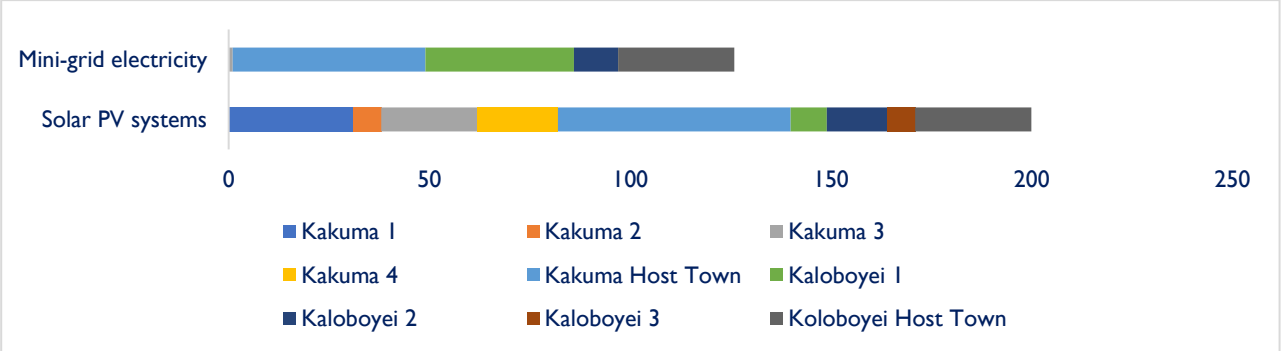


Figure 12 Energy products subject to end user financing in Kakuma & Kalobeyei

The dominance of the solar PV systems, is mostly associated with the ease of access, compared with the mini-grid accessibility as presented in **Fehler! Verweisquelle konnte nicht gefunden werden.**; as well as the perceived pricing, placing mini-grids at a perceived access price of more than KES 10,000, Figure 14 shows that Solar PV has been perceived to cost less than KES 10,000.

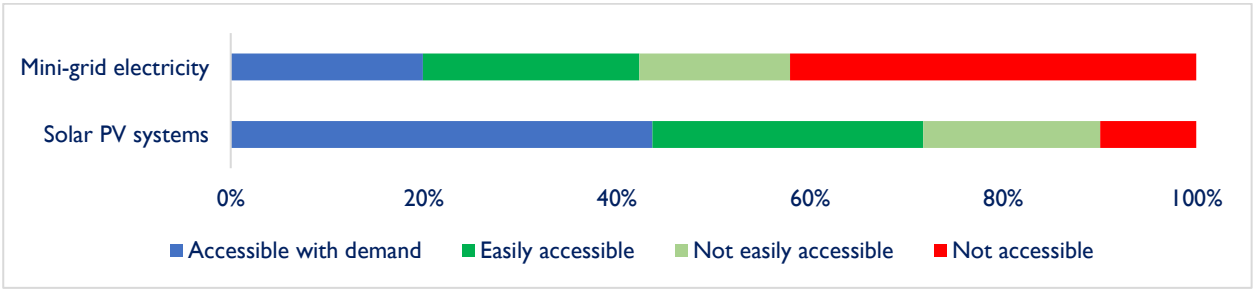


Figure 13 Level of access of energy products

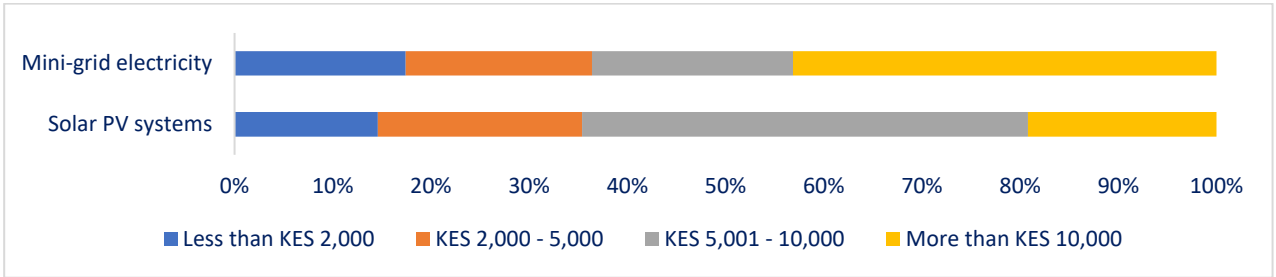


Figure 14 Pricing of energy products

Figure 15 shows that many of the respondents cited high level of satisfaction with the solar PV systems, perhaps associated with the higher level of adoption of the systems, compared with the mini-grids.

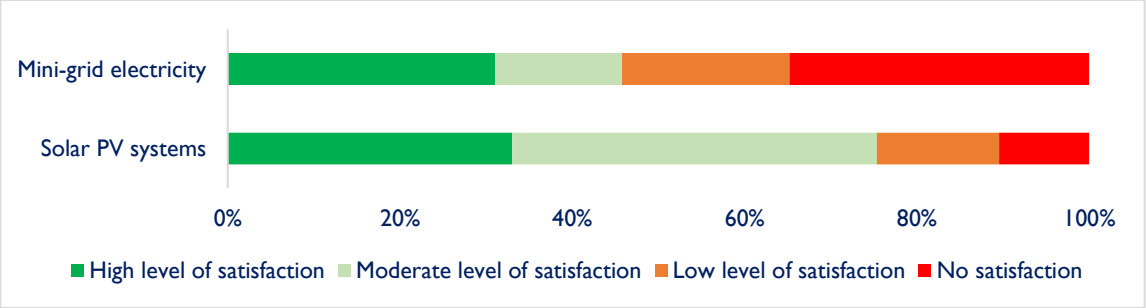


Figure 15 Satisfaction of energy products

The energy sources include batteries, biofuels, solar PV, generators, and mini-grid electricity. The most common energy sources being solar PV, while generators are more used by refugee communities and mini-grids for host communities, as presented in Figure 16.

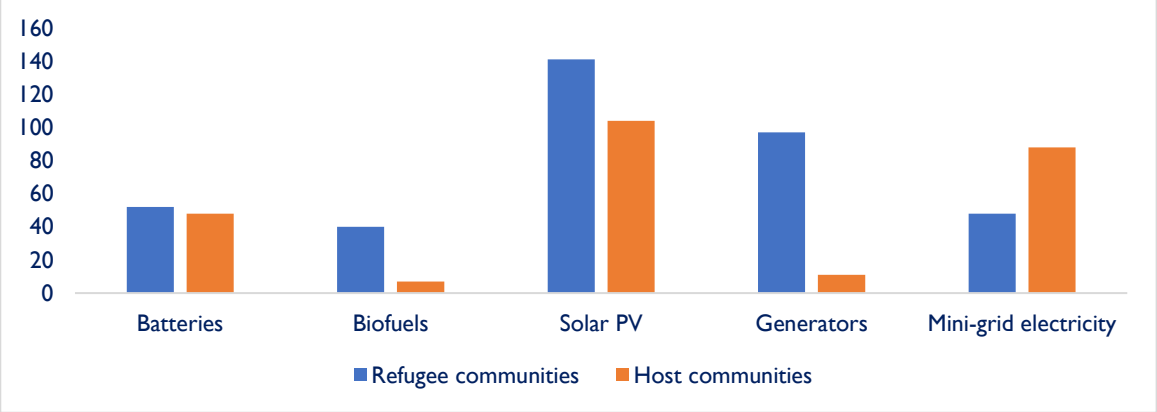


Figure 16 Sources of energy among refugees and host communities

4.2 Financing systems for energy products

The main financing systems for the energy products included cash, fee for service, leasing, and Pay-as-you-Go (PAYG).

4.2.1 User financing systems

The most prominent financing system is the Pay-as-you-go model, for both the host (see Figure 17), and refugee communities (see Figure 18). PAYG makes solar systems accessible to consumers who otherwise could not afford a large upfront payment, by distributing purchasing costs over time. Different companies in Kakuma and Kalobeyei have introduced a variety of PAYG products at different price points, with varying upfront payment amount, pay-back period, installment amounts, and consequences of non-payment. Customers, both host and refugees can select from various service providers depending on terms that suit their current financing and payment options.

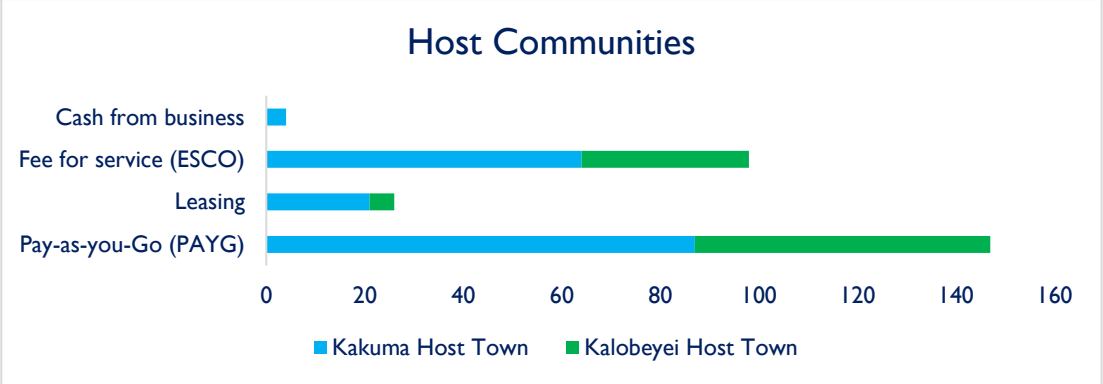


Figure 17 User financing system for host communities

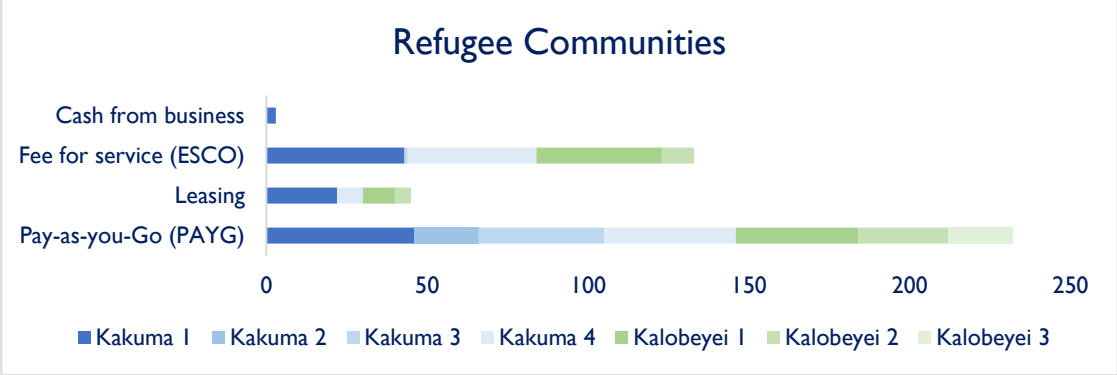


Figure 18 User financing system for refugee communities

Rural Electrification and Renewable Energy Corporation (REREC) for instance emphasizes that the PAYG model is effective, especially considering that many of the target users have access to mobile phones, thus the model is a market-based solution for the community. The PAYG business model has emerged as a mechanism to reduce upfront cost for consumers, while maintaining minimal risk to solar manufacturers and distributors. This model aims to improve the financial accessibility of off-grid solar home systems. The PAYG model also allows companies a high degree of flexibility to meet customers' needs. The flexibility of the PAYG business model allows it to be adaptable to a wide-range of contexts, and provides consumers the opportunity to choose the company that matches their needs and available resources. There are however other financing models that have been adopted in Kakuma and Kalobeyei as presented in Table 4.

Table 4 Existing financing options for energy products

Financing modality	**Descriptions**
Pay-as-you-Go (PAYG)	The PAYG model has been adopted in the energy sector from the mobile telecommunication sector and allows customers flexibility of payments and the ability to break up larger amounts into smaller payments, thus removing barriers to entry. It has been adapted to facilitate two distinct ways of delivering energy access where the customers either purchase a certain amount of credit to use energy and have to top it

	up once it runs out, or they pay small instalments over a defined period of time (on a daily, weekly or monthly basis) and eventually own the energy technology. PAYG models rely on asset financing for the energy technologies from the providers or other intermediary financiers. This means that to provide energy technologies under this model is capital intensive as energy technologies, whether SHS, and accompanying equipment are covered by the provider up front with the cost recovered, and profit made, over time.
Fee for service	In this model, end user pays for an energy service without having to make any upfront capital investment e.g. **Renewvia**. The mini-grid in the settlement has an installed capacity of 60kWp with 120kWh battery storage while the host town mini-grid has an installed capacity of 20kWp and 60kWh battery storage. Both have 100 kVA and 10 kVA diesel backup generators. All customers have pre-paid meters and use mobile money platforms to purchase tokens that they can redeem for a predefined amount of electricity. Local site agents and operation technicians carry out operation and maintenance, while a remote monitoring system is in place in order to understand consumption pattern. The mini-grids are run by a private company on a self-sustaining business model and provide electricity for households, businesses and social institutions from the refugee and host communities. Connected customers are charged an electricity tariff that is close to the national utility tariff which was achieved through a Results-Based Financing (RBF) subsidy on capital investment offered to private developers of the mini-grids (EnDev 2020). As they were unique cases providing electricity to refugee and host communities living in proximity, the subsidy was with 82% of investment costs higher than the 50% offered for mini-grids in other areas earmarked for development. 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. Since September 2019, both mini-grids are operational and serve close to 600 households, businesses and social institutions. **Okapi Green Energy** (also received funding from EDP Renewables to expand a mini-grid) aims to increase access to quality, affordable, and reliable electricity in the community of Kakuma, a refugee settlement in northern Kenya, through the installation of a solar mini-grid to supply electricity for small businesses, community centers, and individual households. Okapi Energy will sell electricity to end users using smart meters, to enable the users to only pay for power they have consumed. In addition, Okapi Green intends to install a Wi-Fi mesh network to help boost productivity of the businesses being reached
Leasing (rent to own)	The lease-to-own model and has been common in the deployment of off-grid solar home systems (SHS). **Pawame is a case study of reference**. Pawame believes that affordable, modern energy is the surest foundation for financial empowerment and the gateway to limitless opportunity. Pawame sells off-grid solar home systems across Kenya and to refugees in Kakuma who are already paying for dirty and expensive kerosene or diesel. The solar home systems work on a 19-month rent-to-own model

	with low daily payments that are cheaper than the solutions that they displace. Pawame customers benefit from improved indoor air quality, longer productive light hours for commerce and study, connectivity, time savings, and cheaper energy. But energy is just the beginning. By tracking repayment, Pawame can confidently offer further loans and product financing to their established customers. Pawame is currently seeking debt financing to expand their operations.
Cash from business	The cash model refers to payment for cash for energy products. Since June 2019, WFP has been piloting a new unrestricted modality of cash transfers for 1,050 households living in Kalobeyei. The value of the transfer remains KES 1,400 per month per person. But rather than using Safaricom accounts, the money is transferred to Equity Bank accounts, and households are provided with an ATM card to withdraw the money from Equity agents or to purchase goods at any shop that accepts Mastercard payments. The system is therefore unrestricted, in the sense that refugees can purchase any type of commodity at any shop.
Third party financing	This entails renewable energy companies developing partnerships with local financing institutions to finance the sales of products. Cash and vouchers can be delivered to beneficiaries through multiple mechanisms. Public-private partnerships, where the delivery is handed over to a bank, a micro-finance institution or traders, are common and often cost-effective ways of delivering money. There is also growing recognition that new technologies that use electronic payment systems such as pre-paid debit cards, smart cards, mobile money transfer systems and electronic vouchers have the potential to provide more efficient and reliable delivery systems than traditional "cash in envelope"-type distributions. A good case study for this model is the Digital Agents for Energy+. In this model, small business and entrepreneurs as last-mile distributors for clean energy products. The objective of Digital Agents for Energy+ project is to meet this demand while promoting financial inclusion and business development to create income-generating opportunities. The project is a unique collaboration of stakeholders across public, private and non-government sectors that will select and train 7 small businesses and 30 youth entrepreneurs (Digital Agents) to sell clean energy products in Kakuma and Kalobeyei. As a market leader in digital payment solutions, Mastercard supports the project with a digital platform through which wholesalers and digital agents are trading solar energy products supplied by Total. Field coordination is provided by the Norwegian Refugee Council (NRC), while the International Trade Centre (ITC) provides entrepreneurship training and business mentorship to participants. In addition to delivering solutions, TOTAL offered various training courses, including on solar products and sales techniques, as well as dedicated marketing.
User based financing	Usage-based financing is a flexible financing agreement where repayment is calculated based on the equipment's usage rate. For example, refugees who own generators provide electricity at specified times during the day to their neighbors and nearby businesses, charging a monthly fee based

	on the items they are powering regularly: light bulbs, charging outlets, televisions, refrigerators, etc. For example, they charge a monthly rate of KSH 3,000 for a TV, and KSH 5,000 for a refrigerator (Laura Patel 2019). Solar Freeze is selling solar-powered refrigeration units. Solar Freeze intends to develop an innovative Pay-As-You-Store model, and also train young women and youth in the repair, maintenance and operation of the solar units. Solar Freeze's solution is to provide refugee and host communities in Kenya with access to portable solar powered refrigeration through a "Pay-as-You-Store" model, enabling access to solar powered refrigeration at affordable pricing ($0.2 – $0.5 USD), allowing refugee owned businesses and host community clinics to own and operate solar assets. Solar Freeze will provide access to affordable, solar-powered cold storage for refugees in North Eastern Kenya, including Kolabeyei and Kakuma refugee camp, through a simple mobile money payment option allowing for monthly payments. They will also train individuals aged 18-35 on the repair and maintenance of the solar powered units.
On-Bill Financing by utilities or mini-grids	In the onbill financing, the utility collects repayments from the end customer via its monthly utility bill. There is flexibility for customers who wish to move out of their building, as the repayment obligation can be passed along to future tenants if structured as a tariff. Yelele is a good case study demonstrating this model. Yelele is installing a solar mini-grid to sell electricity to households and businesses in Kalobeyei settlement and host community in northern Kenya. Households and businesses will pay for electricity via smart meters.
Credit facility (consumer financing)	A more long-term solution for closing the affordability gap is tailor-made consumer financing options through use of microfinances institution. MFI Juhudi Kilimo (JKL) has also disbursed thousands of modern energy loans (60% solar) providing credit for solar products. Stimulated by the RBF, they launched a digital loan assessment system, partnered with solar companies, and strongly mobilised their local loan officers to promote solar products.

4.2.2 Energy sources financing

Figure 19 shows that the main source of money to pay for the energy sources is drawn from savings, and loans. Savings and loans are used to finance all energy sources, especially Solar PV, batteries, and mini-grid electricity solutions. Grants and donations also finance batteries and solar PV systems, and less on mini-grid electricity.

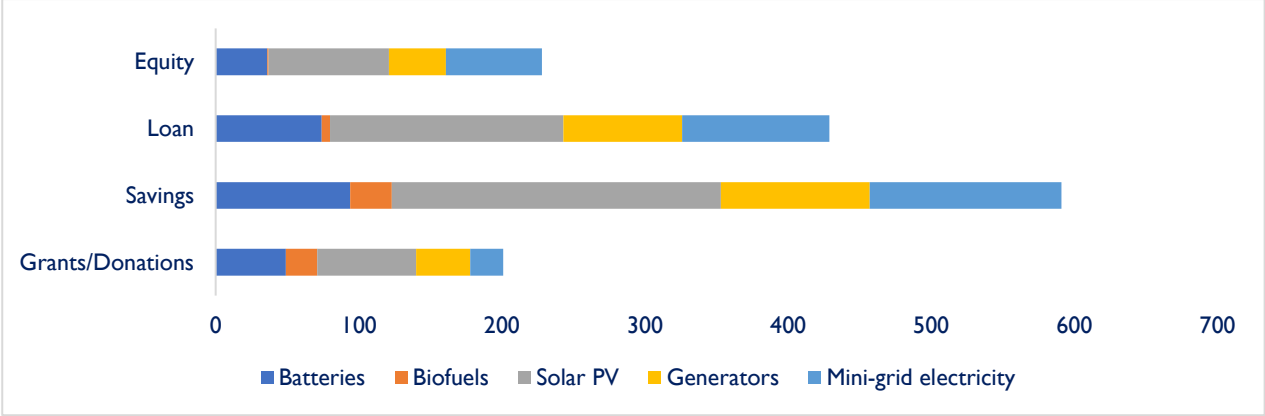


Figure 19 Source of financing for energy products

4.2.3 Requirements for financing

Access to these financing options for the energy products is dependent on various due diligence process inquiries. While the requirements for financing are relatively similar among host town residents and refugees, it is less likely that the refugees are required to provide proof of residential address, and details of place and date of birth. The very nature of displacement means that refugees may have either inadequate or no identification papers and documentation. Even when basic documentation is available, it may be difficult to verify other information required for customer due diligence, such as an individual's date of birth and address as provided in Figure 20.

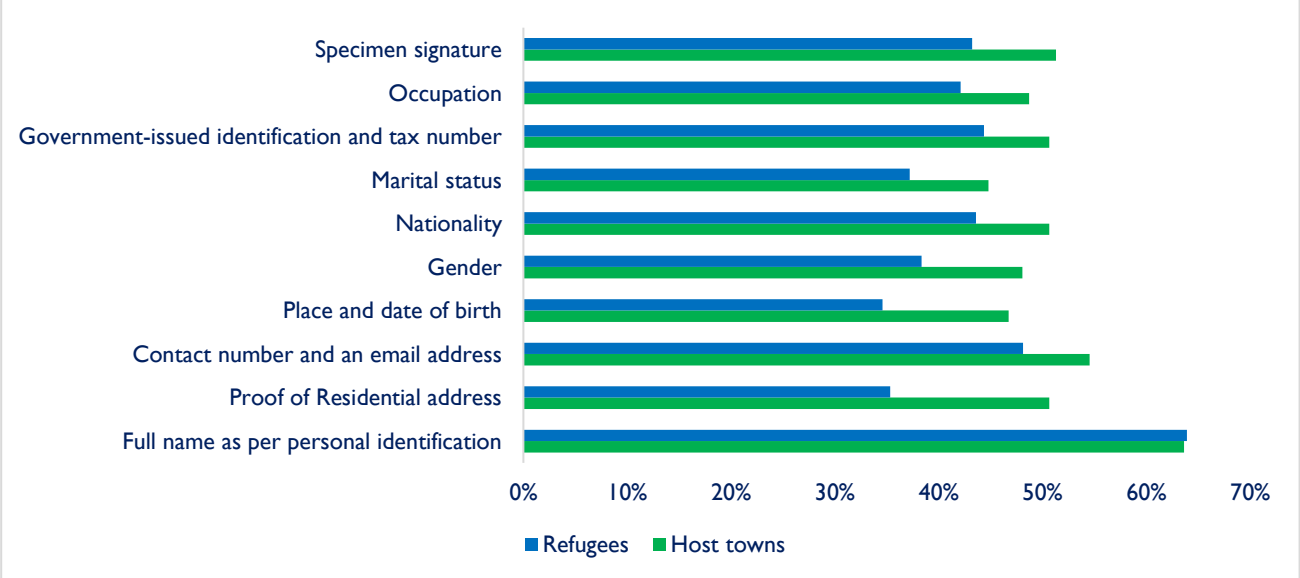


Figure 20 Due diligence inquiring for financing

The respondents indicated that they were required to mainly provide their full names as per personal identification, and contact number and email address. Many refugees do not have the identification documents (IDs) necessary to open an account, as defined both by the government through its regulations and by each individual financial service provider (FSP) through its internal procedures. One of the biggest challenges refugees faces in accessing financial services relates to satisfying the ID requirement for Know-Your-Customer (KYC) purposes. Most refugees do not have

a government-issued ID card. All refugees, however, have a proof-of-registration document issued by RAS. Some FSPs have proactively sought and obtained approval from the Central Bank of Kenya to accept proof-of-registration documents. A clear and general directive from the Central bank of Kenya that lists proof-of-registration documents issued by RAS, as valid KYC documentation, would make it easier for refugees to satisfy the KYC documentation requirement. Even if the government allows FSPs to accept a foreign ID or aid agency-issued ID, an FSP can choose not to accept it. As a result, financial institutions may be less willing to offer certain types of banking and payment products, because of the higher level of monitoring that would be required.

WFP chose to use the electronic voucher system (restricted cash) as opposed to direct cash because of Kenyan Government's 'know your customer' policy. This policy requires that customers provide their identity before they can open bank accounts or engage financial transactions. Due to restrictions in movements, inability to access relevant KYC documents and non- ownership, refugees are turning to those with access to mobile devices and products to provide them with proxy access. The rise of informal agents within the camps to fill the gaps left by both insufficient number of agents (both bank and mobile money) and agents operating with limited liquidity is also a notable trend in Kakuma and Kalobeyei. This trend increases the cost of transaction and expose the users to prevalent frauds.

4.2.4 Pre-conditions to financing

Besides the requirements detailed for applying for financing, Table 5 provides various preconditions that potential beneficiaries of the financing options need to satisfy.

Table 5 Pre-Condition for financing

Precondition	Descriptions
Financial capacity	The users are required to demonstrate their financial capacity to meet the payment terms. For instance, Sunking (Green Planet), require that the users make an MPESA deposit to unlock the system. PAWAME also checks for ability to pay, through verifying income sources
Access to vendors	The presence of vendors within the user's locality is a provision for access to the energy products. For instance, USAFI Green Energy provides that agents collect information of bamba chakula and other details are collected via a KYC form, in Kakuma.
Payment structure	The financing providers, develop agreements that the users need to endorse prior to accessing the energy solutions. In the agreements, the users are required to accept the payment terms, and structure.
Access to mobile phones/ registered mobile number	The dominance of mobile system transactions, makes the precondition of users to have registered telephone numbers, and possession of mobile phone devices in-escapable.

Security/Surety	There is general provision for users to provide information for surety, either through next of kin details, or guarantors. For PAWAME, as part of their due diligence, process, require that users provide details of next of kin.

4.3 Payment systems for energy products

4.3.1 Payment systems

Figure 21 and Figure 22 show that mobile payments are the most referred to payment modality for the energy products. However, for the host communities, use of cash payments for the products is significant. For the host community at the same time, use of pre-paid, and credit/debit cards is used, while these options are not used by the refugee communities.

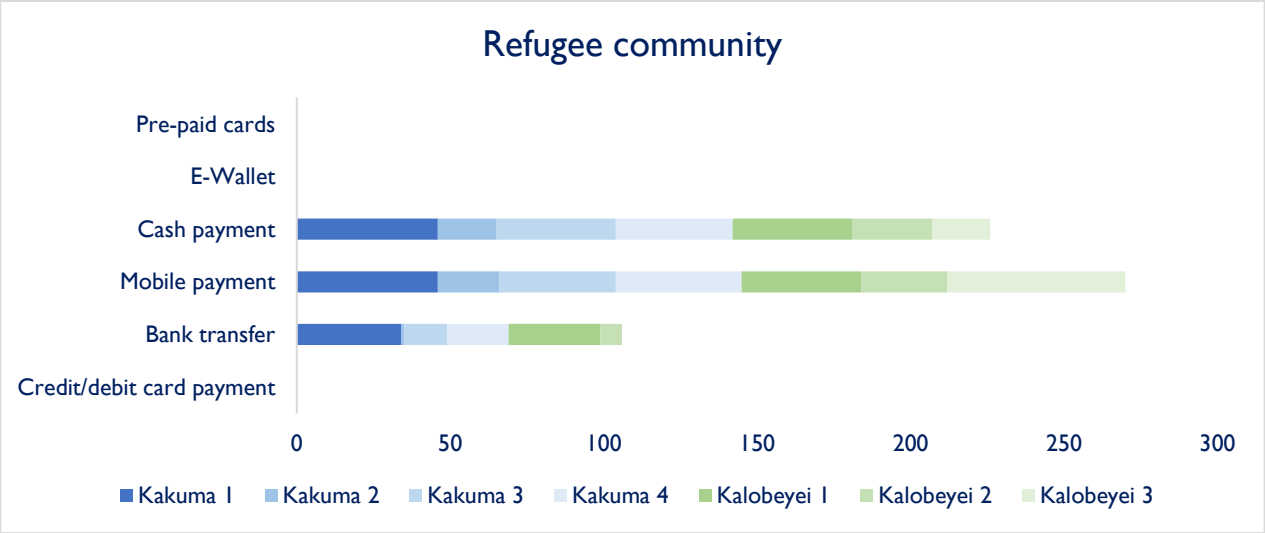


Figure 21 Payment options for energy products for refugee community

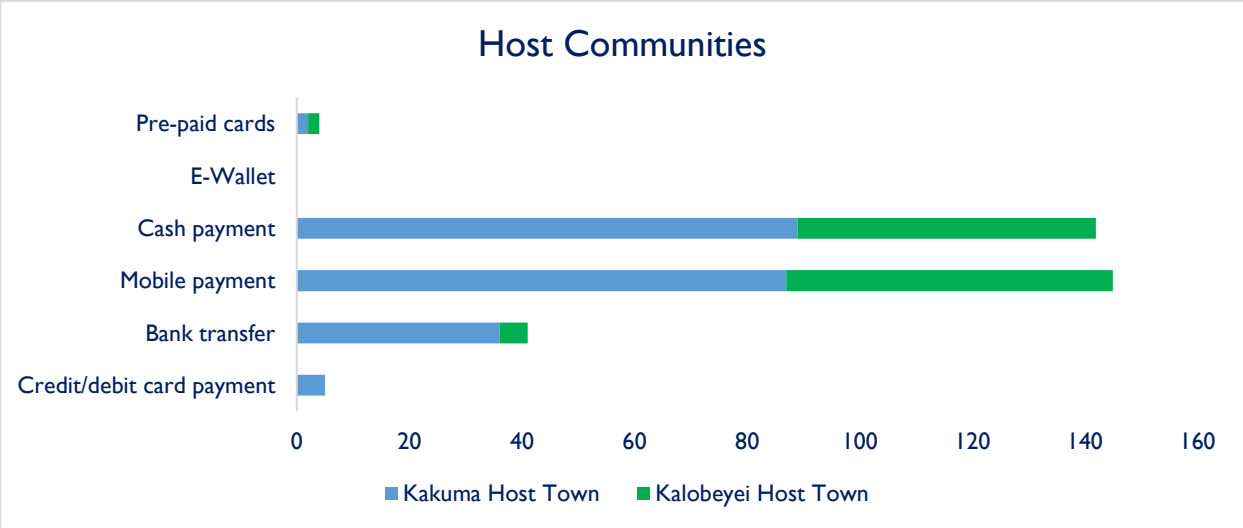
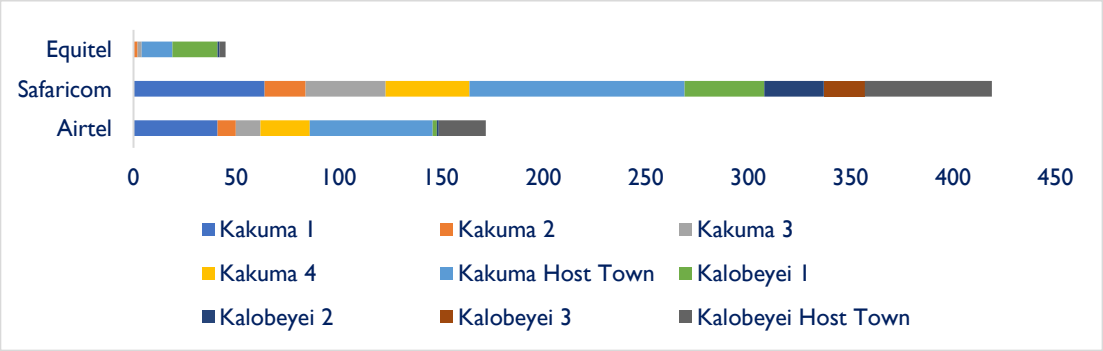


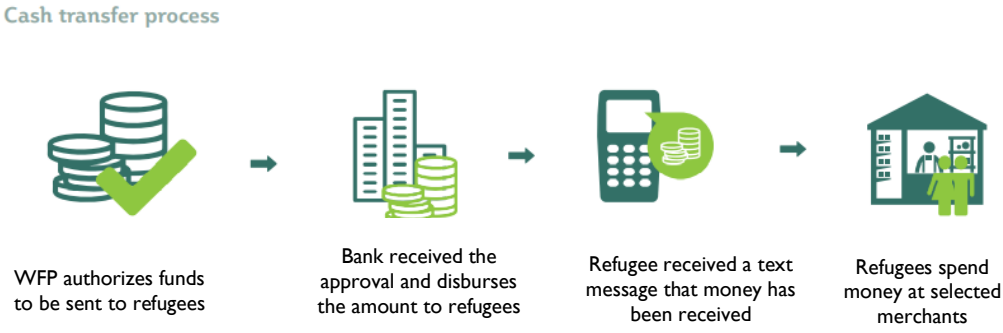
Figure 22 Payment options for energy products for host community

It is more likely that the community in Kakuma, use both mobile and cash payments interchangeably, however, in Kalobeyei community, mobile payment systems are more

prominent. At the same time, back transfer payments are also prominent in Kakuma, compared with Kalobeyei. The diversity of payment options presents opportunity for both host and refugee communities to enhance their access to energy products. Some payment modalities are summarized in Table 6.

Table 6 Payment options for energy products

Payment modality	**Description**
Mobile payment	Refugees and host community in Kakuma and Kalobeyei are able to make use of a wide range of internet and mobile banking services, underlining the applicability of mobile technology as a delivery mechanism for financial support. Many of the financial services provided to refugees make use of existing applications that leverage prepay cards and other forms of established online banking services, making them globally available to refugees to both send and receive remittances, locally and abroad. Dedicated services for refugees typically rely on partnerships between multinational businesses such as Safaricom and MasterCard, and multilateral organizations such as UNHCR and the World Food Programme. As this is often not sufficient to fulfil all their needs, many refugees in Kakuma and Kalobeyei rely on peer-to-peer money transfer, using services such as M-Pesa and Airtel Money. In most cases, however these services do not provide financial concessions to refugees and high transfer fees can reduce the impact of remittances received. The most prominent mobile network available supporting mobile payment is Safaricom as shown in Figure 23.  *Figure 23 Money transfer service providers*
Cash payments	In Kakuma and Kalobeyei, WFP and UNHCR are gradually transitioning from in-kind assistance towards cash-based assistance, with the dual objective of developing markets and fostering refugees' autonomy. In June 2019, WFP completed the registration and equipping of 1,064 households (6,010 refugees) with Equity Bank cards to initiate its first unrestricted cash transfers in Kalobeyei. Refugees continue to receive food assistance through Bamba Chakula where WFP sends e-money to refugees to buy food dependent on household size. Currently, food produced at the household level is insufficient, despite progress being made in the agricultural sector and diversifying income sources. With Bamba Chapa, money can be

	withdrawn in cash and used on anything. In conversations with refugees, Bamba Chapa can be saved and used to start a business. 
Bank transfers	In October 2016, Equity Bank won a bid to provide a payment solution to the WFP and open accounts for refugees. The bank opens an account for each head of household and links a multiple wallet MasterCard debit card to each account, which enables refugees to receive and send money, make payments at merchant points and withdraw cash at Equity Bank agent locations. Equity Bank is also exploring options for a guarantee fund, which would protect its investment from losses to mitigate the risk of lending to refugees (Group and Corporation 2019). This provides for risk guarantee or first-loss capital to limit an organization's exposure to potential loss, especially when the initiative is scaling to reach significant numbers of refugees The World Food Program, also in partnership with Safaricom, established a simplified M-PESA model that operated as an e-voucher account with specified vendors in Kakuma camp. This is helpful for distributing aid, especially as mobile phone penetration among refugees is high as most of refugees in the Kakuma and Kalobeyei town, host and refugee settlement have a mobile phone. UNHCR is also working with the microfinance sector to increase availability of lending to refugee microentrepreneurs.
Card payments	Issuance of cards is carried out instantaneously with accounts opening in the refugee settlement however few host community and refugee utilize prepaid cards. Before enrollment, all refugees are subjected to BIMS verification using the equipment provided in order to ascertain their identity. In terms of the Know Your Customer (KYC) requirements for opening bank accounts, refugee identity cards as well as attestation certificates issued by RAA were accepted as valid documents for opening up a bank account.

4.3.2 Payment for the energy systems

With reference to payment systems for the energy sources, PAYG is applicable across the sources, however, for biofuels, the main payment system is through pre-paid options as shown in Figure 24. The main reason for higher prepaid option is the market operation by local traders or retailers who employ a cash or mobile money payment and carry model.

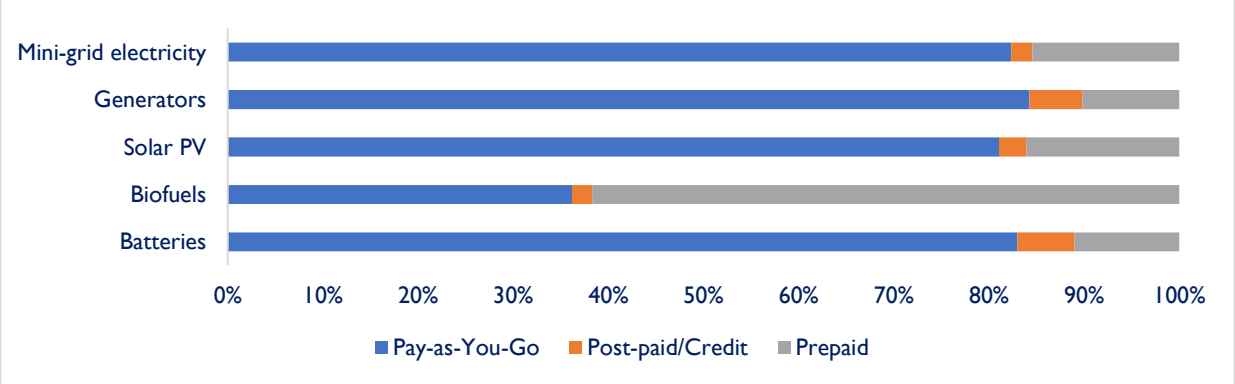


Figure 24 Modes of payment

Figure 25 shows that the prominent modes of payment being mobile payments, and cash payments. While generator users use PAYG-prepaid systems, they submit their payment either cash, or through mobile payments.

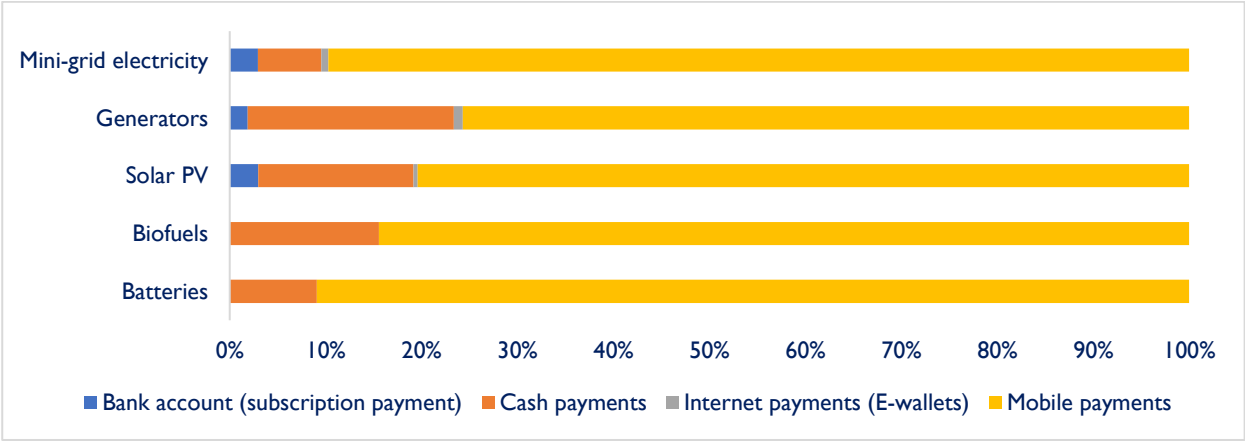


Figure 25 Mode of payment for different energy products

The cash payment modes are mainly drawn from cash earned from work to fund access to the energy sources, except for biofuels that are mainly accessed from cash assistance. An example in the project by Sanivation in partnership with UNHCR and NRC that delivered container-based sanitation with collection, treatment and conversion to charcoal briquettes. Through a direct-to-refugees distribution and sale model enhanced by increasing deployment of cash-based interventions, Sanivation sold an average of 2 tons of briquettes per month throughout the project duration. The refugee community access the cash for the energy sources from cash for work, and cash assistance, while the host community mainly access money from cash for work done as shown in Figure 26. To help avoid attrition and distinguish between different roles and levels of seniority, Sanivation through the project further provided non-salary benefits to refugee employees: transportation (for example, providing bicycles to employees), meals, cellphone airtime, time off, and fuel (Group and Corporation 2019).

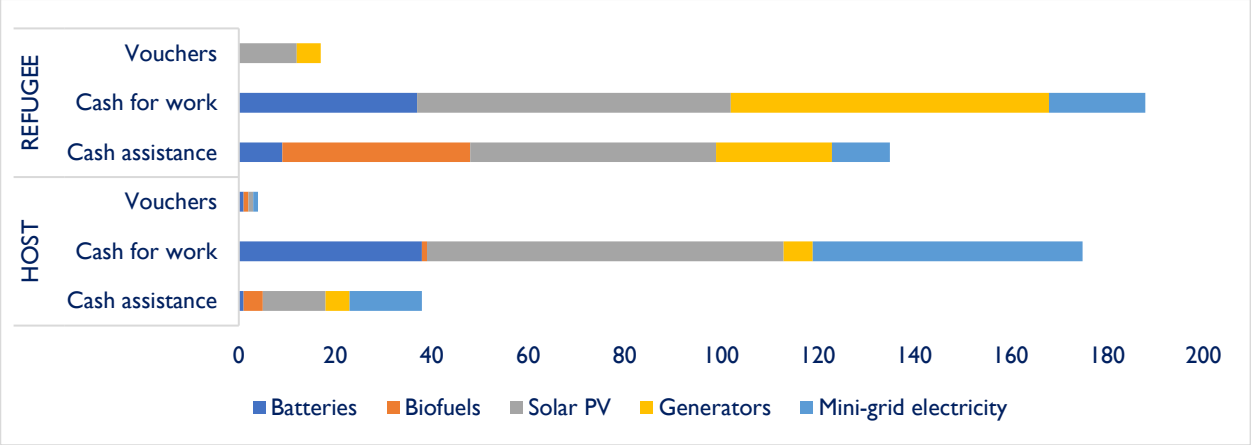


Figure 26 Cash based interventions

UNHCR uses cash-based interventions to provide protection, assistance and services to the most vulnerable. Cash and vouchers help the displaced meet a variety of needs, including access to food, water, healthcare, shelter, that allow them to build and support livelihoods, and to facilitate voluntary repatriation (UNHCR 2020-2021). Currently, most cash transfers are channeled through banks, which otherwise limit their outreach to low-income people because many believe that there is no business case in directly servicing these segments. The FSP revenue model thus mostly relies on fees for processing large humanitarian transfers. FSPs usually are contracted through a tendering process that often rewards the lowest bidder.

4.3.3 Opportunities for cash transfer to end user financing

FSPs that use the cash transfer model do not see cash transfer recipients as potential clients who have an array of financial needs. Development finance institutions can play an important role in changing this perception by providing FSPs with targeted subsidies that support them as they gain a better understanding of and build relationships with cash transfer recipients. In time, these recipients may earn enough to become sustainable customers.

Humanitarian cash transfers could lead to financial account ownership and subsequently to account use and access to a broader array of financial services, including savings and credit. Evidence shows that these services can support resilience and create a pathway to financial inclusion

Cash transfer programs may be the incentives FSPs need to expand services and infrastructure to reach a large population that otherwise lacks access to financial services (Chehade, McConaghy et al. 2020). As recipients use their transaction accounts not only to access cash transfer funds but also for other payment needs, they build a financial history, which opens doors to financial services beyond payments.

4.4 Failure and success factors for end user financing and payment systems

4.4.1 Factors of success

The key success factors regarding proliferation of sustainable energy product were g*ood marketing skills of the enterprise*, and *reputation of the seller/enterprise* Figure 27.

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 (EnDev 2020). Energy to businesses is often supplied through expensive and unreliable informal diesel mini-grids and standalone generators. Most businesses rely on by word of mouth from their fellow businessmen and women on effective energy sources to expand their business. There is however the need for effective information flows between energy supply- and demand-side actors through marketing activities that showcase a variety of alternative, quality energy products and services available through the local market especially energy for productive use options targeting the business community.

To facilitate **innovative marketing approaches** targeting both the host and refugee community, SNV market-based energy access project was set out to provide clean, safe and affordable cooking and lighting solutions through a market-based approach in Kakuma and Kalobeyei to both the refugee and host community. The project activities were primarily aimed at creating market supply through facilitating market entry and business development activities by suppliers of clean cook stoves and solar lighting systems. In addition, raising awareness and community sensitization activities promoted household demand for these products. The project also supported energy firms to continue to establish a long-term retail and marketing presence.

The provision of energy through a market-based approach offers an alternative that facilitates the inclusion and empowerment of refugee and host communities to develop markets and solutions that meet local needs (IEA 2018). Across the humanitarian community, there is a trend towards providing cash-based assistance instead of aid in kind

Most refugees and host community heavily rely on cash payment for access of energy services as opposed to taking advantage of PAYG. The **reputation of the enterprise and the seller** is a key factor for proliferation of sustainable energy products. The cash-based assistance programs further foster recipient agency and choice: households can prioritize their needs and become empowered as they gain purchasing power from preferred energy enterprise and suppliers.

According to a study by GSMA, over one million PAYG devices were sold during the first six months of 2019 (Association 2018). The growth of PAYG solar has only been possible with the rapid growth of mobile money and mobile connectivity that allows customers to pay by instalments, and companies to remotely control and monitor the Solar Home Systems (SHS). With high mobile phone and mobile money (MM) adoption rates in places like Kakuma, Pay as You Go solar also addresses the issue of affordability. Customers can make incremental payments rather than lump sums. This has facilitated financing of energy products to low income earners including refugees and host communities in Kakuma and Kalobeyei settlement and host town.

Other factors such as **proper maintenance and the quality of the system** including after-sales support to improve the customer experience is a key factor taking into consideration that willingness and ability to pay is highly dependent on customer satisfaction. There are also examples of training programs for refugees in Kakuma on solar energy: for example, a Norwegian Refugee Council program offers the opportunity for students to learn about solar technologies, including how to do electrical repairs and installation of technologies for various purposes.

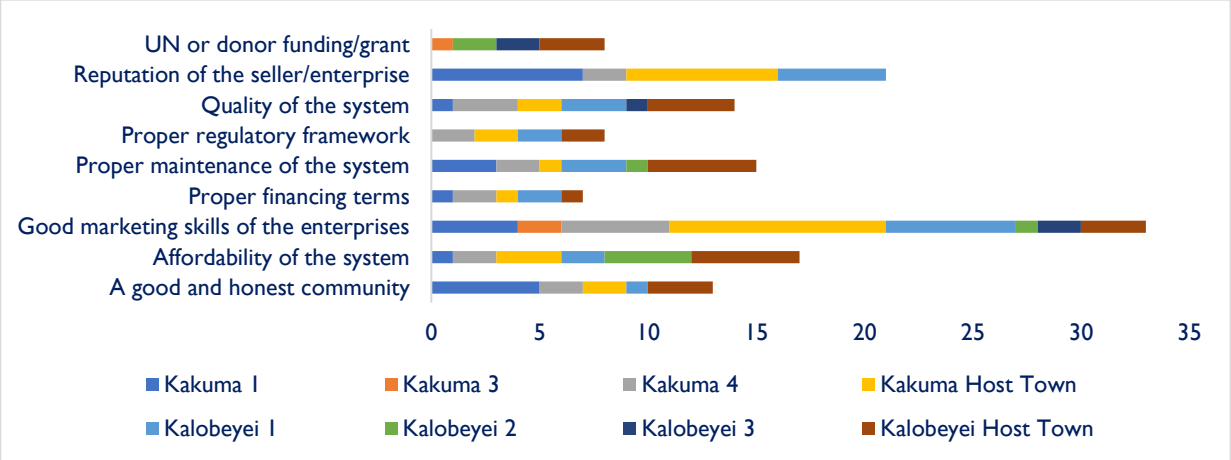


Figure 27 Factors leading to success of systems regarding proliferation of sustainable energy products

4.4.2 Reasons for failures

The key reasons for failure in business included *poor marketing skills, bad reputation of the seller,* and *unaffordability of the systems* as shown in Figure 28. In Kakuma 1, the key reason for failure included poor quality of the system, and poor marketing skills of the enterprises, and dishonesty in the community. In Kakuma 4, Unaffordability of the system, and Bad reputation of the seller were key reasons for failure. At the Kakuma Host Town, poor marketing skills and bad reputation of the seller were key reasons for failure.

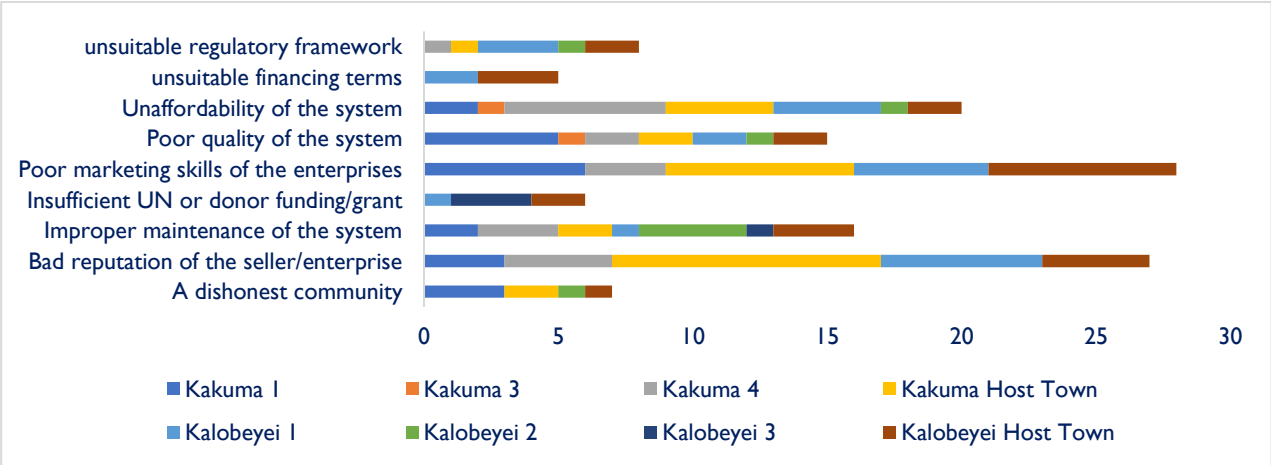


Figure 28 Factors leading to success of systems regarding proliferation of sustainable energy products

5 OBSTACLES AND FACILITATORS

5.1 Existing barriers to end user financing and payment systems

5.1.1 Economic and financial

a) High initial investment cost of energy services and systems

High cost of energy services and products compared to income of many end users in displacement settings and low-income communities is a great hinderance to their ability and willingness to pay despite the core role energy access plays. Many of the people living in displacement settings and low-income communities generally earn very little, and often irregular income. Affordability of energy products and services at market-based prices, low purchasing power among refugees and lack or limited financing undermining growth projections for adoption of clean energy services and products.

With the current Kenyan regulations, refugees are not allowed to work outside their designated settlements or camps, and therefore sometimes difficult to make money and buy needed goods and services. The little disposable income is more often spent on very essential needs like buying food, paying for school fees and associated costs, paying for medical costs, just to name a few. To target refugee community, and even host community, the energy service and systems providers need to understand the differences in their financial flows, as some of the refugees are fully dependent on UNHCR.

A number of the key informants however raised concerns about the cost of the new technologies like mobile payment system added overall system cost through the transaction costs, especially in case where the energy service provider or system provider has no working arrangement with mobile money service providers. It was noted that despite looking flexible and affordable, some financing models like PAYG model were quite expensive to the end user in the long run compared to cash and carry model.

b) Low capacity and willingness to pay for energy products and services

Low purchasing power and willingness to pay for energy products are evident in a situation where a number of different needs (food, education, health etc) must be met with very limited household incomes. Improving clean energy access in displacement setting and low-income areas is a challenge because of the high initial investment costs and actual low demand for clean energy services. Under normal conditions, consumer preferences, operational and capital costs of energy service and products, and availability of the energy resource affect households' decisions to acquire the service or product. Generally, very low household willingness-to-pay for clean energy access, and that willingness-to-pay diminishes as households' income declines. Chapter 6 provides a detailed review on the ability to pay and willingness to pay by the refugees and host community. As indicated in Figure 36, although majority indicated that they find energy services and products affordable, Figure 37 shows that the majority were still the majority (at 87%) were either not willing to pay or changed their willingness to pay.

5.1.2 Market barriers

a) Higher payment delay and/or default in displacement systems

The energy system providers sometimes do not give longer credit grace period and therefore end up recovering their products due to delay and default in payments. The case of high default rate by people living in displacement settings and low-income areas indicates that it is quite difficult for higher adoption of clean energy solutions with general low income of the members of the community. For this reason, there is higher dependency on donations or subsidized as well as competitively priced products and services. As reported in chapter 3 in Figure 7. majority of both the refugees and host communities spend up to 5,000 Kenyan shillings every month on energy (47.7% spending 2,000 – 5,000 Kenyan shillings and 40.6% spending below 2,000 shillings every month energy). Only about 15% of refugee community spend more than KES 5,000 to energy resources per month, while only about 12% of the host community spend this much. The above spending is against the average income on less than 8,000 Kenyan shillings by majority (19% earning 6000-7,999 Kenyan shillings every month, 27% earning 4000-5,999 Kenyan shillings every month, 15.6% earning 2000-3,999 Kenyan shillings every month, and 22.6% earning less than 2000 Kenyan shillings every month) as indicated in Figure 6. From the earnings indicated, it makes it a very challenging situation for many in the displacement setting to sustainable pay for credits extended to them amidst many competing financial demands.

b) Long procedure in carrying out due diligence

The discussion held with the key informants indicated that most refugees have no identification cards. Under this situation, opening and owning a back account, registering for a mobile phone SIM card as well as working is highly limited for refugees under the Kenyan law and regulations. As most of the services are currently moving cashless, most transactions in low-income communities are done via mobile money payment. Lack of legally used identification cards for most refugees is a great challenge for end user financing and payment system since they don't have access to mobile money or credit worthiness history.

While cash and carry option provided little or no liability to the energy service and product providers, financing on credit has often raised challenges of the providers being assured of full payments for their products by the end users. Most of the providers will also be restricted to only extend credit to end user customers who hold legal identification documents like the national identification card or alien identification card for refugees. In addition, good credit history is considered when extending credit to end users. A number of new providers are however coming in with more innovative technologies and models to enable them minimize risks of default in regards to those with insufficient proof of income and identification. Some providers have also created a relationship with clients and based on their payment history, it has become easier to be able to extend additional larger products on a more flexible credit model. Details of requirements have been provided under chapter 4 part 4.2.3. As provided in Figure 20, basic documentation is a necessary process in carrying out due diligence. In displacement settings, however, it may be difficult to verify other information required for

customer due diligence, such as an individual's date of birth and address among others that gives confidence to providers to extend credit.

c) Low number of formal micro-financing schemes for customers to access energy products.

Low number of formal micro-financing schemes for customers to access energy products has been observed. In most cases, energy kiosks have been providing payments in instalments to people they know and trust, so not many can access them. Other financing schemes available for displaced populations require more documentation as they carry out due diligence. The long processes generally affect uptake rate of clean energy services and solutions by end users.

d) Limited number of technical personnel

It was also noted that issues of inadequate or lack of trained personnel to carry out maintenance and repair within the displacement settings was hindering timely after sales service. Most of providers of small clean energy systems were noted to have their main operations in Nairobi and therefore having their branch in Kakuma only doing sales services. The key reasons for market failures as indicated in chapter 4 included poor marketing skills, bad reputation of the seller, and unaffordability of the systems as shown in Figure 28. In Kakuma 1, the key reason for failure included poor quality of the system, and poor marketing skills of the enterprises, and dishonesty in the community. In Kakuma 4, Unaffordability of the system, and Bad reputation of the seller were key reasons for failure. At the Kakuma Host Town, poor marketing skills and bad reputation of the seller were key reasons for failure.

e) Low profitability resulting from logistical cost to avail products to the market

Private sectors indicated low profitability resulting from huge cost of production and delivery of their products and services to the market. More often, these trends if not supported by development partners end up pushing the private sector interested to invest out of the market. Most private companies reported that transport cost for their products from Nairobi to Kakuma is 40% hence greatly shrinking their profit margins if they need their products to move. A number however indicated that they were planning to set up production facility in Kakuma to cut down on the cost.

5.1.3 Awareness and information

a) Lack of prevailing market information

Most end users lack information of the novel financing models available in their location to be able to make important decision to acquire an energy product or get energy services. In the recent past, private sector have identifies a great potential in displacement settings for provision of small energy systems like pico solar PV systems and improved energy efficient cooking stoves. Even with this development, increased activation of the community to start investing on clean energy technology is needed to break on aspects of lack of information on available solutions as well as overall benefits, both economic and socio-environmental.

b) Limited private sector involvement and familiarity with activities in displacement settings

Another main barrier or challenge that was noted through the key informant interviews for your end user financing approaches for clean energy solutions in Kakuma refugee camp, Kalobeyei refugee settlements and their host communities is that the private sector may not be fully involved in some activities like feasibility studies. Low involvement makes private sectors to struggle in understanding the market within the displacement settings and low-income areas. Private sector is mostly seen not to be familiar with the activities in the displacement settlement and suggests that these sectors to establish local branches within or near the displacement settings for easy operation, maintenance of the systems.

Some private sector players, especially coming to invest from other regions with different context, lack familiarity with activities in displacement settings. Discussion with key informants indicated that in addition to little background research companies mostly from Nairobi do, they mostly lack good presence in the region and therefore fail to do market adoptive models on the services and products they deliver to the end users. In this situation, their approach to the displacement context tend to follow the approach in other markets and therefore not breaking through this new and complex operating areas with people mostly having low income and dependent on aids and donations.

5.1.4 Ecological and geographical

a) Logistical challenges for players outside Kakuma and Kalobeyei areas

Ensuring smooth logistics of service delivery by private sector companies remains a challenging issue to energy services and systems providers based outside the regions (Kakuma and Kalobeyei) due to remote location of the camp (e.g. delays in servicing products under warranty and risk of market spoilage supply chain uncertainty challenges).

b) Weak mobile network in some areas

Weak mobile phone network coverage in some areas within the displacement settings and low-income community brings about challenges in mobile payment systems which is the most preferred method of energy system and service tracking as well as payment system for those financed through credit. Most systems continue to be sold on a cash-only basis, as M-PESA or other mobile payment mechanisms (thus PAYG options) are not accessible to all due to providers network coverage.

c) COVID 19 uncertainties

COVID 19 uncertainties has affected the performance of the businesses. Some businesses have been impacted negatively by movement restrictions. The challenges brought about by the pandemic have to a greater extent limited the capacity and willingness of end-users to finance energy services and products as well as the enterprises in the market to offer the products and services.

d) Insecurity

Installed system security against theft, damage and vandalism remains a barrier towards the end user's willingness to own the system. Most of the end users will be more comfortable to invest and install energy systems with minimal or no potential fear of it being damaged, stolen or vandalized.

e) Perception of banks being expensive

This delays enrolment by those that are eligible to open bank accounts and transact through the various banking platforms. Slowness to access bank accounts by qualified persons as well as temporary nature of refugees to access banking services makes it hard for the local communities to proof their financial records to be able to own an energy system through credit. In addition, with cash-based transactions, there is always fear of losing money through theft etc.

5.1.5 Cultural and behavioral

a) Overdependence on grants

Overdependence on grants, reducing the effort to raise capital for business support has also been observed. With most refugee community, their prevailing socio-economic conditions are aligned to receiving support in form of gifts, donations and grants from exiting and even new humanitarian players in the market. This mindset on free delivery of energy services to refugees needs to be changed by phased triggering of market-based approach. To work out on a long-term change of mindset and existing culture, there is need for stakeholder engagement to start bringing about buy-in of market-based approaches. Multi-stakeholder involvement is vital to make the transition to a sustainable market-based energy access model in the camp and host community. All stakeholders must be willing to commit to achieving the change. Slow and progressive adoption of sustainable market-based solutions will eventually bring refugee households and businesses on the clean energy ladder.

b) Language barrier

This is primarily as a result of diversity of languages spoken by people within displacement settings. A number of refugees in the settings come from different countries and backgrounds and in some cases are not able to converse in English or Swahili. With most players in private sector mostly able to use English, Swahili and perhaps Turkana language, providing effective services and products to communities or end users who speak different languages other than the national and official languages can be a challenge.

c) Resettlement plans and Psycho-social instability newly arriving refugees

Resettlement plans affect the mind-set of the refugees, which reduces their commitment to doing businesses, and therefore having guarantee of income to invest in clean energy products. Refugees come in from various backgrounds, some very challenging. Psycho-social stability takes time for newly arriving refugees before they can start to invest in some needs like energy solutions.

5.1.6 Political and government Issues

a) Uncertainty on government intention to close the refugee camp and settlement

Announced intention to close the refugee camps and settlements is a doubt for many investors interested in products and service delivery in the displacement settings in Kenya. With this uncertain situation, many refugees will also not be willing to invest in a long-term energy solution.

b) Uncertainty around using refugee Identity Documents

The uncertainty around using refugee Identity Documents (IDs) versus national IDs during credit checks still exists. By regulation, refugees are not allowed to use mobile money services for more than three months.

5.2 Facilitators

5.2.1 Kenyan government has provided favorable policies and regulations to market-based approaches

Generally, the Kenyan government has provided favorable policies and regulations to market-based approaches within the clean energy sub-sector. Solar energy in the country is well developed and currently dominates decentralized and distributed renewable energy technology. In displacement settings, the sector has a fair number of local distributors that facilitated the engagement of private companies in providing energy services both for clean cooking and electricity generation.

5.2.2 Demand for clean energy Services and products is growing

Demand is there for the energy systems and therefore a customized market-based model to unlock opportunity is key. The high consumer demand for energy products backed by real lighting needs also was instrumental in the success of this project. With the displacement settings and low-income communities mostly being supported by humanitarian organizations, inclusion of host community helped creating a broader demand base for private sector partners to access.

5.2.3 High mobile phone penetration

As indicated in chapter 3 Figure 11, about 85% of the host town residents have a mobile phone while 69% of refugees have a mobile phone. This is high penetration rate considering the low-income status which displays a high interest among the residents in owning a mobile phone. This also depicts a high opportunity for mobile banking and payment interventions in the settings. Over 86% of those having a mobile phone in host community use it for mobile banking, money transfer and payments as compared to 31% of those in refugee camps. 19% of camp residents access internet via their mobile phone as compared to 33% of town residents. Smartphone ownership stands at 28% in the camps and 36% in the town hence this can prevent a majority of the population from accessing mobile apps-based services (IFC 2018). High mobile phone penetration is having a positive experience to end user financing and payment option. The widespread availability of mobile money systems in Kenya as a

whole enables PAYG for financing in the host community. Ownership of SIM cards and mobile money wallets. Refugees and host communities' ownership of SIM cards and mobile money per the previous registrations made it possible to implement mobile-based payments for PAYG systems.

5.2.4 Increased collaborations among players in displacement settings and low-income communities

Collaboration and open-mindedness of UNHCR and other partners was an important driver of successful sustainable market-based approach. Consensus among key implementing partners in refugee settlements to explore market-based approaches to energy access programming. This consensus can solidify fundamental cross-sectoral coordination mechanisms such as the CRRF. The support for market-based energy access interventions as contained in key policy documents such as the Comprehensive Refugee Response Framework (CRRF) and KISEDP for Refugees and Host Communities.

5.2.5 Acceptance of market-based solutions

The acceptance of the market-based solutions in refugee camps and host communities is also considered to be high. About 60% is considered the acceptance rate of the market-based solutions in the settlements. Framework conditions that would likely promote new programming among humanitarian agencies to enhance end user financing and payment systems are that humanitarian agencies support business models/market-based concepts and cash transfers for the lower class.

Willingness of the customers to get connected and to pay for energy systems is increasing in displacement settings and low-income communities. Ability to pay has increased since the year 2018 with Renewvia reporting that some customers have tripled consumption since connection.

Suggestions on how the UNHCR and other humanitarian agencies will facilitate implementation of end user finance and payment system in Kakuma and Kalobeyei settlement is for the humanitarian organizations to embrace and use market-based energy access. With realization that private sector are stronger in delivery, it is high time to invite as many private sectors as possible.

Mini-grid service providers Okapi, Yelele and Renewvia indicated that end users in Kakuma refugee camp and Kalobeyei settlement are willing to pay for the electricity services they receive. They noted that there is great opportunity for private sector to energy service or products delivery as the demand for electricity and other clean energy products is high.

Empowering is better than the handouts. With new development, handouts are diminishing. KISEPD pushes for capacity to improve, own businesses, schooling etc. There are efforts to train those already in business and show them where and how to get capital to enhance their businesses.

5.2.6 Increasing availability of financial institutions in the region

The recent past few years have increasingly seen some financial institutions penetrate the market in displacement settings and low-income areas. Despite increasing opportunity for financial institutions, there is need for more improved financial activities and models. Limited options of financial institutions offering different financing models and payment systems. The limited options generally minimize energy system and services financing opportunity. The presence of financial institutions generally improves the opportunity for financing energy systems and services.

5.2.7 Growing channel and distribution network in camp and host areas

There is indication of growing distribution channel of energy services and products. The number of private sector players is increasingly finding a great business opportunity and therefore setting up structures to improve their products and services sales. During the survey, solar PV companies like PAWAME, SunKing among others were identified. Companies offering clean cooking products like Usafi Green Limited and others are also coming up with their distribution channels targeting different end users.

6 END USERS WILLINGNESS AND ABILITY TO PAY FOR ENERGY PRODUCTS AND SERVICES

6.1 Expenses on energy

The survey analysis shown in Figure 29 indicated that the host community spend more (about KES 2,001 – 5,000), than refugee community who spend from below KES 2,000 to KES 5,000 on energy resources. However, about 15% of refugee community spend more than KES 5,000 to energy resources per month, while only about 12% of the host community spend this much.

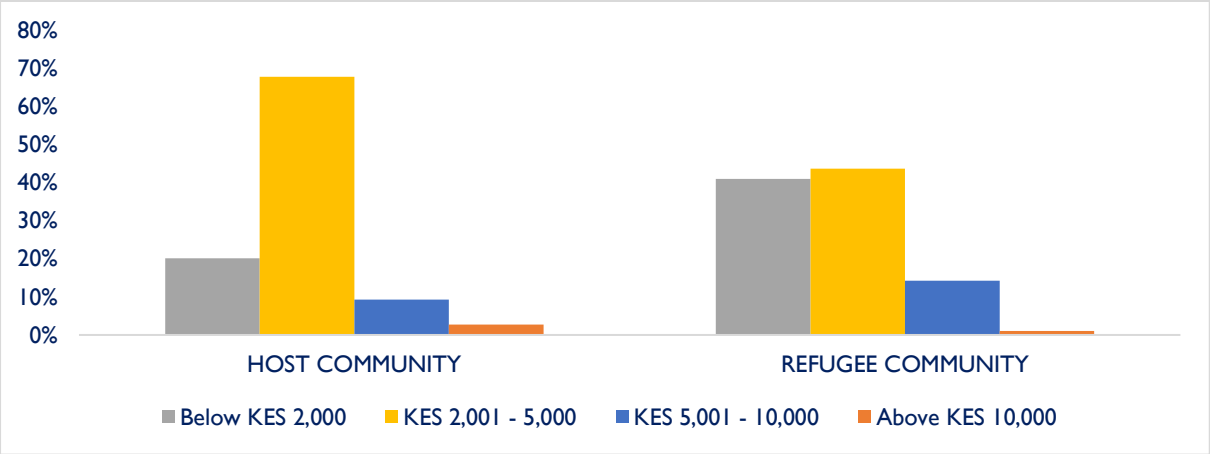


Figure 29 Energy spending for host and refugee community

At the same time, many of the residents in the project areas spend between KES 2,000 and KES 5,000 on the various energy products, except for users of biofuels who spend below KES 2,000, see Figure 30. A small fraction of the mini-grid electricity users spends more than KES 10,000 per month on energy resources.

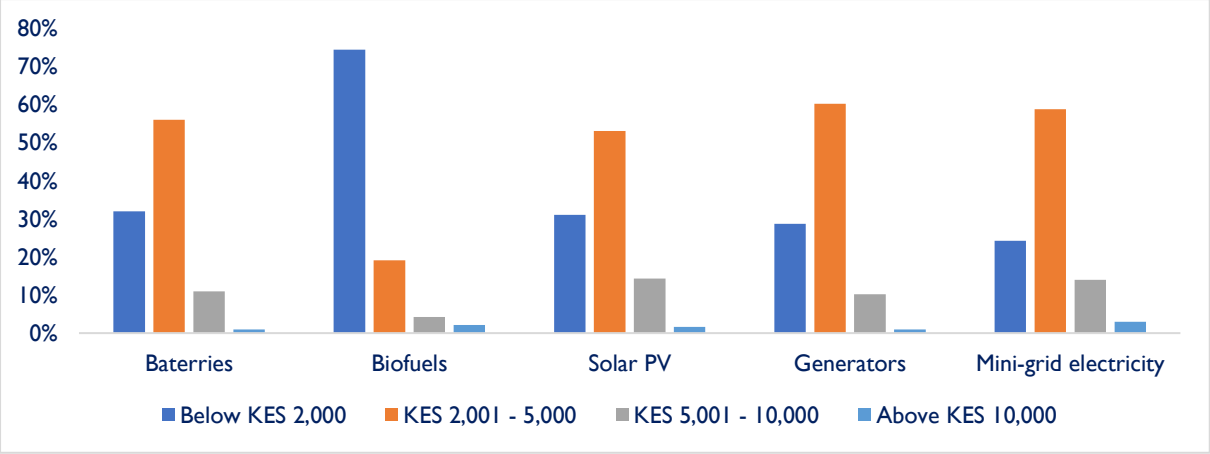


Figure 30 Amount spend on energy sources

Nonetheless, the perceived average amount spent on energy resources for both enterprises and households is between KES 2,000 and 5,000 as shown in Figure 31. However, more households than businesses are likely to pay for less than KES 2,000 for energy resources.

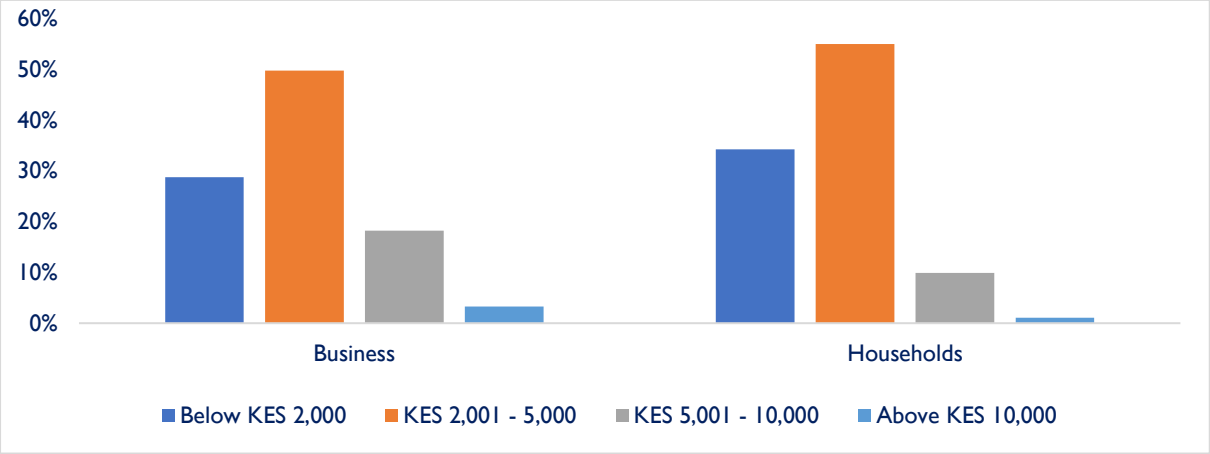


Figure 31 Energy spend by businesses and households

6.2 Income

The income of the respondents' range between KES 4,000 and KES 7,999 for the host community, and between KES 4,000 and KES 5,999 for the refugee community as shown in Figure 32. This highlights that the host community has more income per month, compared with the refugee community.

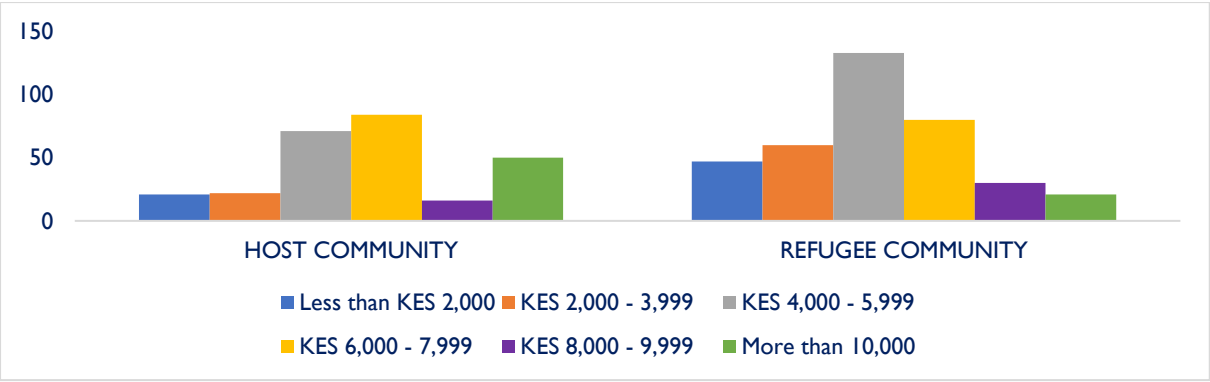


Figure 32 Income for host and refugee communities

By type of energy resources used, many of the respondents earn between KES 4,000 to KES 7,999 per month, except for biofuels users, where the respondents using biofuels earn between KES 2,000 and KES 5,999, see Figure 33. This is an indication that many of the respondents reliant on biofuels, are low income earners.

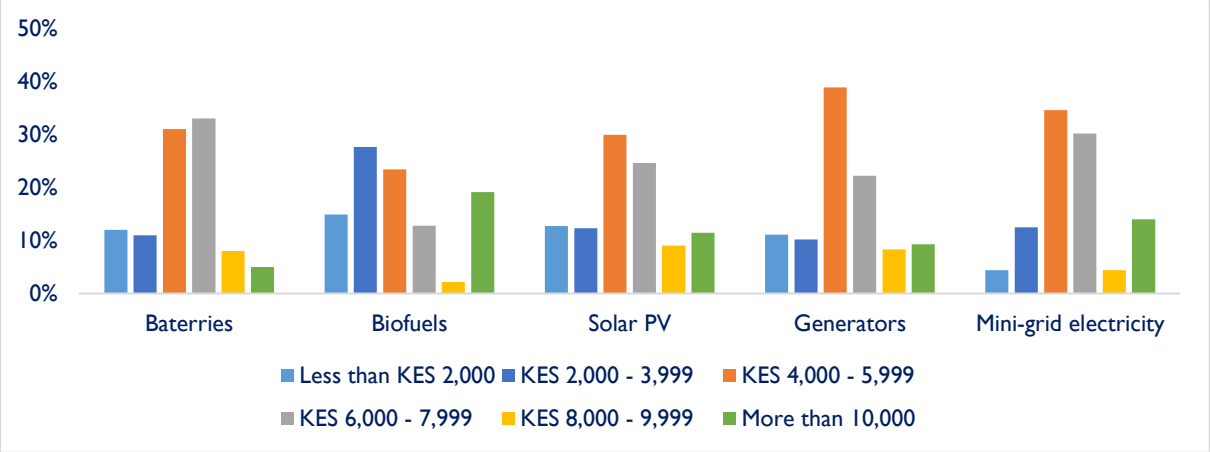


Figure 33 Income earned and type of energy sources owned

With reference to the types of end users, the survey results in Figure 34 shows that many of the businesses, as well as households earn between KES 4,000 and KES 7,999 per month. However, more business end users (21% of the business users), are more likely to earn more than KES 10,000.

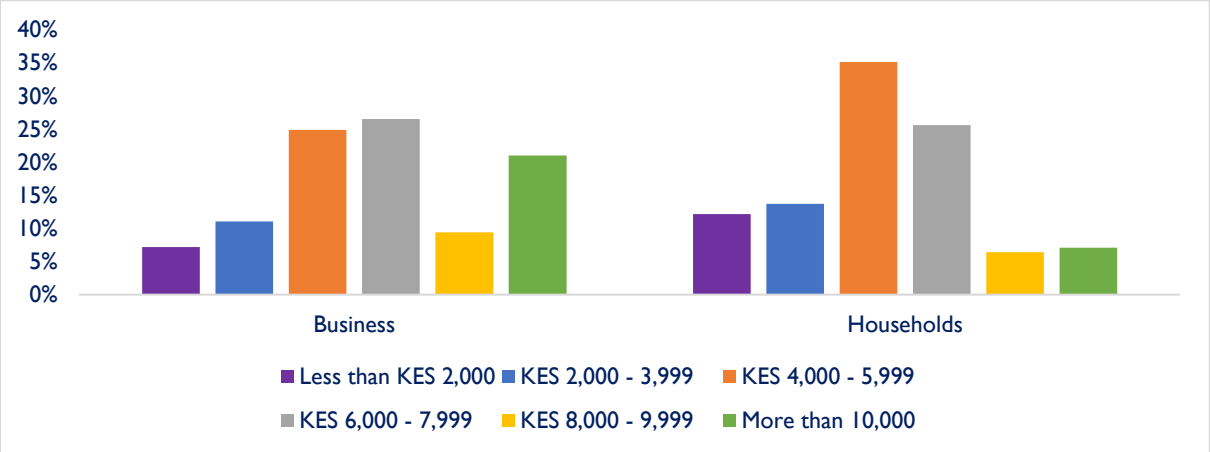


Figure 34 Income of businesses and households

6.3 Ability to Pay (ATP)

The synthesis here presents three key messages about perceived ability to pay for energy resources:

- The host community has more income, and therefore may be able to pay for various energy resources they use compared with refugee community. As a result, end user financing mechanisms designed for the project area, should prioritize the financing of refugee community, over the host community. However, the higher ability to pay among the host community, may be leveraged to enhance the market potential to support energy access in the project location.
- Users of solar, and mini-grid electricity generally have more monthly income. The

initial investment cost associated with getting solar and mini-grid electricity may be a prohibitory factor for low-income earners. However, end-user financing options have the capacity to remove the delimitation and encourage adoption of solar PV and mini-grid electricity.

- Productive users of energy resources can pay more for energy resources. The enterprise-based users of various energy resources, are generating more income, compared with those only using energy for the household. To this end, it would be objective for end user financing options to target business, since their capacity to pay for the financing is higher. On the other hand, this observation is an indication that empowering households, to start and sustain businesses, may result to higher access and uptake of energy sources.

The perceived ability to pay for energy resources was estimated as a ratio between the most cited expenses on energy resources across the board (KES 2,001 – KES 5,000), and the modal income among the locations ranging between below KES 2,000 (unable to afford energy resources), to more than KES 10,000, see Figure 35.

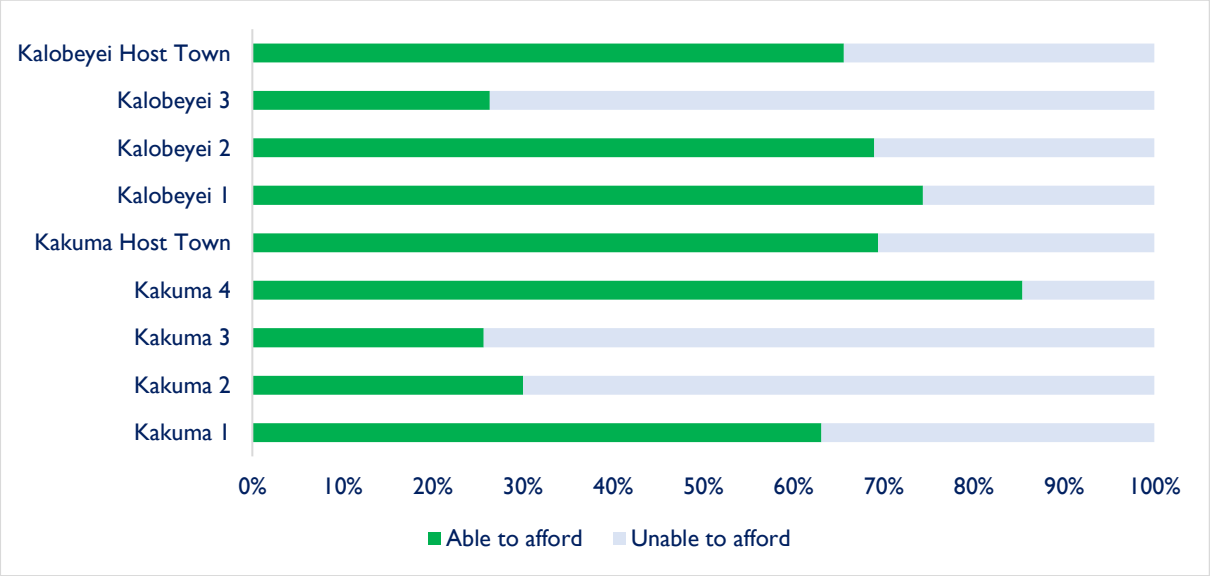


Figure 35 Ability to pay for energy products

It emerged that the respondents from Kakuma 2 and 3, and Kalobeyei 3, are less likely to meet the modal cost of energy resources access. At the same time, more business users (productive energy users), compared to household energy users, are able to pay for the energy resources that they use. Two-thirds (about 69%) of the business users are able to pay for the energy resources, while almost half (41%) of the household users may not be able to pay for the energy resources that they need, see Figure 36.

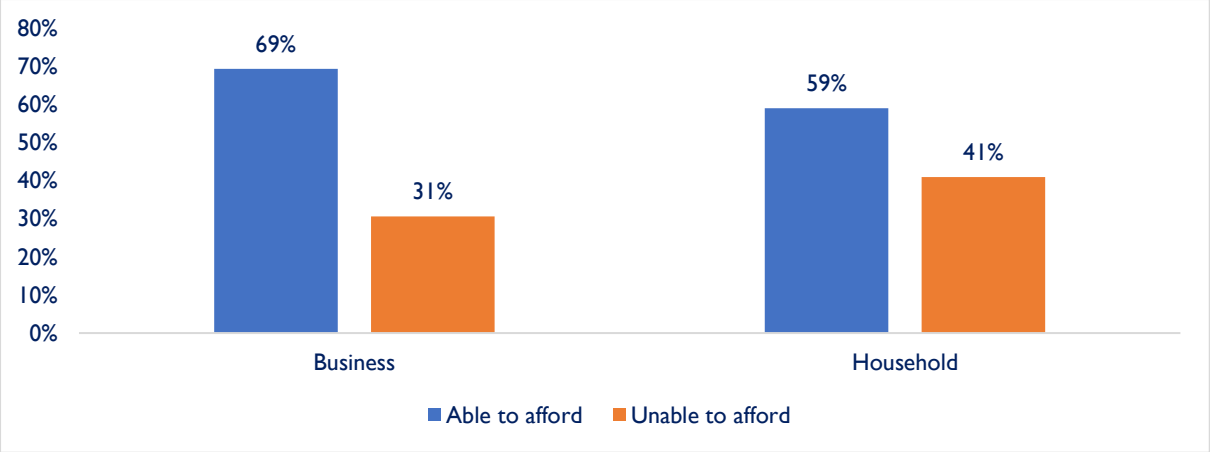


Figure 36 Affordability of energy products

6.4 Willingness to Pay (WTP)

As a result of the UN or Donor intervention, 5% of the respondents are not willing to pay for the systems, while 8% are more willing to pay. Nonetheless, the majority (87%) of the respondents have not changed their willingness to pay. The highest willingness to pay was registered among respondents in Kalobeyei 2, while the highest un-willingness to pay was registered among respondents in Kakuma 1 (see Figure 37). There was no change in willingness to pay among respondents in Kalobeyei 1 & 3.

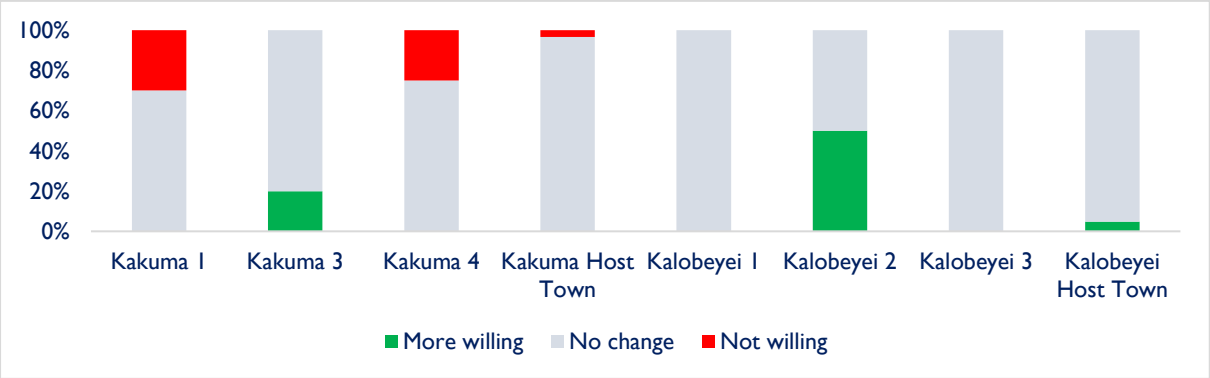


Figure 37 Willingness to pay for energy products

As provided in Figure 39 majority of the respondents indicated that there was no involvement of UN or Donors in acquisition of the energy products they have. The UN or Donors agencies were registered mainly in Kakuma 1 & 3, and Kalobeyei 2 & 3. Few (25%) of the respondents that cited that there was involvement of UN or Donor agencies indicated that their involvement made the market system better as shown in Figure 39. However, majority of the respondents said that the involvement resulted in No Change to the market system. Kalobeyei 2 showed the biggest market systems change, as a result of UN or Donor involvement.

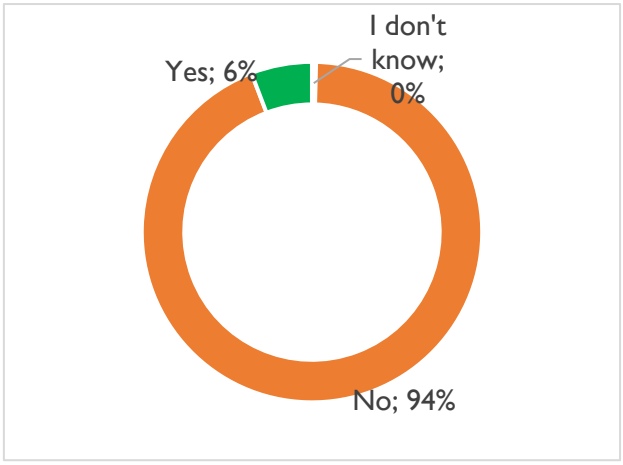


Figure 38 Involvement of UN agencies in acquisition of energy products and market systems

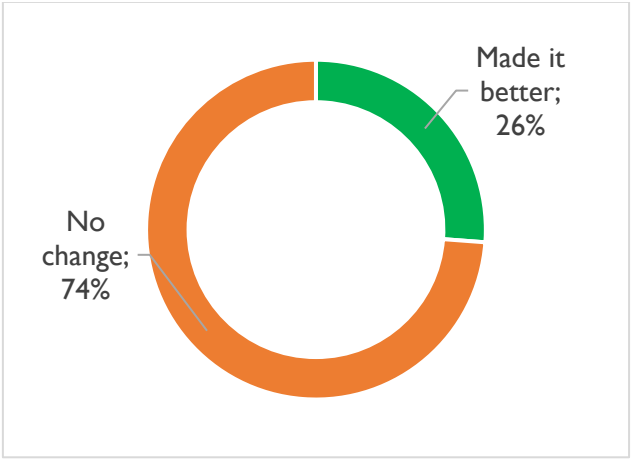


Figure 39 Effects of involvement of UN agencies in acquisition of energy products and market systems

The respondents indicated that the involvement of UN and Donor Agencies have not created any change on the viability of the private sector as shown in Figure 40. About one tenth of the respondents indicated that the private sector has become more viable with the intervention of the UN and Donor Agencies. However, the viability of private sector for Kalobeyei 2 (which had more presence of UN or Donor Agencies), was lower for the private sector compared with the other locations with lower UN or Donor Agencies activity (see Figure 41).

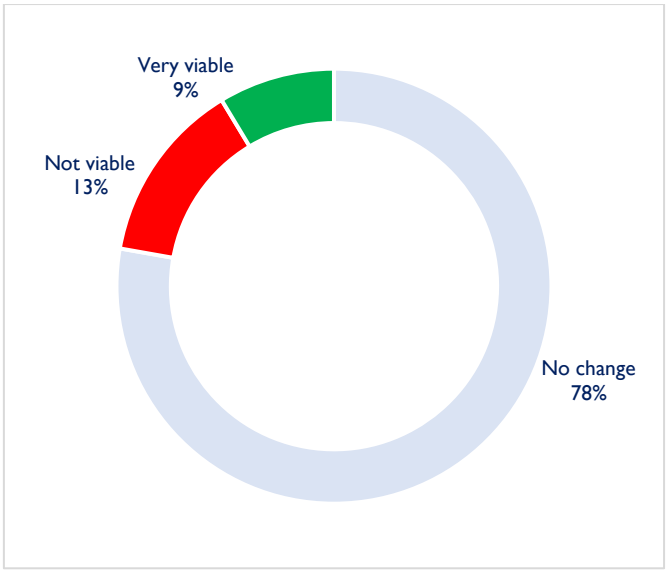


Figure 40 Viability of private sector in displacement settings

Figure 41 Viability of private sector disaggregated by area

7 MARKET BASED CONCEPTS

7.1 Market based delivery models in displacement settings

7.1.1 Innovative business models

Private sector participation in the market often come up with new business models to improve their products and services move in the market. Displacement settings in Kakuma and Kalobeyei has at least three business model approaches which could be applicable to displacement settings and which could help speed up the availability and uptake of clean energy solutions by alleviating the affordability issue.

As provided in the earlier chapters, Pay as You Go (PAYG) model or lease-to-own model has been widely deployed in the off-grid solar electrification sub-sector and more recently in the cooking sub sector. The PAYG model has been adopted in the energy sector from the mobile telecommunication sector and allows customers flexibility of payments and the ability to break up larger amounts into smaller payments, thus removing barriers to entry. It has been adapted to facilitate two distinct ways of delivering energy access where the customers either purchase a certain amount of credit to use energy and have to top it up once it runs out, or they pay small instalments over a defined period of time (on a daily, weekly or monthly basis) and eventually own the energy technology. PAYG has the highest potential in settings with an already established telecommunications infrastructure and, in particular, the availability of mobile money solutions on which PAYG providers rely for payments. Alternative modes of payment can include scratch cards or cash payments to providers' agents. However, mobile money transactions have been preferred as they eliminate the risk of fraud, eliminate the burden of cash management and reduce credit risk due to real time payment monitoring.

PAYG models rely on asset financing for the energy technologies from the providers or other intermediary financiers. This means that to provide energy technologies under this model is capital intensive as energy technologies, whether solar home systems, clean cook stoves and accompanying equipment or electric pressure cookers (EPC), are covered by the provider up front with the cost recovered, and profit made, over time. Typically, PAYG providers are vertically integrated meaning that they have to navigate the complexity of two distinct value chains as they are effectively providers of energy products and financial loans. This requires a high level of upfront capital from the providers or partnerships with microfinance institutions or other commercial lenders to cover the cost of the offered energy product and do so at scale. In order to facilitate that, increasingly off-grid energy providers, as well as providers of clean cookstoves, have been accessing debt and equity financing, as well as more innovative financing mechanism.

7.1.2 Innovative financing mechanisms

Innovative financing schemes and mechanisms can help speed up efforts towards providing all displaced people with access to clean, modern, safe and affordable energy. This is realized by de-risking investment for the private and public sector providers willing to enter

displacement settings. Consequently, there is building up of the market for energy products and services, and by lowering the price of such products and services for the target populations, thus addressing the affordability issue. They can help create incentives for public and private providers of energy services to access settings such as refugee camps or remote locations hosting displaced communities, which can be more challenging than other contexts, as well as help lower the price of the products and/or services for the target populations. They can also help address the capital expenditure challenge for providers operating under PAYG or similar capital-intensive models. Two innovations in financing energy access projects could be considered for the provision of clean energy services and products in displacement settings.

The first one is an RBF mechanism, a component of which has been embedded in the proposed Kakuma energy concession project. Under an RBF, private sector providers of energy technologies are incentivized by payments made after the installation or a delivery of their products or services is completed, typically after a specified number of customers has been reached, meaning that payments are received ex-post.

The second mechanism, so far not explored in clean energy access initiatives targeting displacement settings, is peer-to-peer lending (P2P). In P2P, energy providers receive a loan from a group of lenders through a crowdfunding platform. The lenders can be individual or institutional, or both.

7.2 Overcoming existing barriers to end user financing and payment systems

7.2.1 Grants to de-risk the businesses and provide subsidies end users

UNHCR and other humanitarian agencies can help in subsidizing the energy products and services charges in order to facilitate implementation of end user finance and payment system in Kakuma and Kalobeyei host and refugee community.

Most of refugees and low-income host community members may not have sufficient collateral to enable them finance larger energy systems through credit. Providing loan or credit guarantee support by third party may be a great opportunity to ensure more adoption of clean energy systems. The survey identified that the SNV results-based financing model was providing a new financing model that may require more support to enable many access clean energy services or own energy systems.

The SNV was identified as a present organization within Kakuma and Kalobeyei settlement to provide market-based energy solutions through support to private sector. Their market approach include support in transitioning from donor defendant to market-based approach. They support companies to set up local operation to remove barriers resulting from poor market knowledge and providing practical support and financial support. They also offer co-funding for private sectors, who eventually make energy products and services more affordable by end users in displacement settings and low-income communities. SNV also provides guarantee to private players as they cover the cost of the systems in case of default.

Government policy to ensure regulation on zero rating of solar and other clean energy products remains in force and will help lower the cost of products and therefore enhance adoption.

7.2.2 Technology price reduction

Energy is a core service and therefore very essential. With different technologies coming up, a number of adaptive options are being presented to different market situations. General cost reduction for energy systems with customization for different uses has come with benefits of making them affordable.

Providing the end user with the ownership of systems is one of the cheaper ways to promote adoption of clean energy technology, especially on access to electricity. Supporting end users in displacement settings and low-income community, through subsidies, to move away from centralized systems like access to grid or mini-grid electricity and start to do production and consumption close to them will help increase more adoption of electricity and improve livelihoods especially vulnerable groups like youth and women.

Concentrating in the nearer term on ultra-low-cost decentralized off-grid solar technologies and clean cook stoves may provide the much-needed impetus to financing.

7.2.3 Adoption of peer-to-peer electricity Framework

In specific circumstances, and with low level electricity, amending regulations to allow for individuals with ownership and operation of a larger system to provide electricity services to a certain radius of population in the adjacent neighborhood may be necessary.

7.2.4 Promotion of innovative and user-friendly payment modalities and financing model

Payment modalities, financing model and technology of the payment system used include: PAYG, Cash, Mobile payments. Most of the key informants consider PAYG services to be effective since most people have access to a mobile phone.

There is need to support private sector in providing market solutions in many clean energy solutions. Market-based approach are currently well developed for solar photovoltaic systems across the country, with some great progress on clean cooking technologies. With more refugee and host community getting used to the model, it is time to remodel approaches to a more sustainable market-based approaches.

7.2.5 Involvement of different partners

Encouraging more partnerships to enable increased access to electricity in the settlements. Since money provided by the humanitarian agencies is focused on provision of food, there is need to have provision of energy services.

7.2.6 Stimulate and facilitate access to credit for suppliers and end-users of off-grid solar systems and clean cooking solutions

With just a limited number of financial institutions available in the area, there is need to make efforts to encourage more financial institutions to be present in displacement settings. The presence of financial institutions who may extend credit to both private companies in the

area as well as end users to access the products and services will provide much more needed boost.

7.2.7 Create jobs along the energy access value chain

Training and equipping locals and refugee community with both technical and entrepreneurial skills is relevant to allow then enter or increase their income streams. This will in turn improve on local ability to do energy business, provide technical services like operation of systems, provide repair and maintenance services among others.

7.2.8 Boost information within the displacement settings and low-income community

Need for energy providers to educate, train and inform refugees and have representatives on site is critical to ensure many are aware of clean energy solutions in the market, their benefits as well as well as explain different market-based models to get the services or own the system.

Skills specific trainings of persons within the displacement settings on entrepreneurship and technical knowhow is critical to build local capacity to be able to offer localized solutions as well as manage installations and service easily and at a low cost within a short time.

One of the very important steps for private sector to learn is to know their customers in displacement settings. The interviewed key informants noted that many private sector players in energy sector within the displacement setting have very little understanding of their customers. There is need for detailed mapping and support to private sector so that they can properly design responsive solutions to the actual situation.

7.2.9 Provide technical demonstration of concept

Most systems continue to be sold on a cash-only basis, as M-PESA or other mobile payment mechanisms (thus PAYG options) are not accessible to all due to providers network coverage. Decentralization of supply and maintenance operations leads to improved customer service and should be expanded further to drive market sustainability. Marketing efforts needs to be complemented with increased awareness-raising and sensitization to increase acceptance and adoption of clean energy products. The study indicated that clean cooking lagging behind solar products in terms of the number of players in the two sub-sectors, level and maturity of technology, locals and refugees' level of awareness, just to name a few. There is need for increased technical demonstration and behavioral change campaigns to increase adoption of clean cooking products.

7.2.10 Improve networking between local players and experts

Increased local and expertise presence within the displacement setting and low-income communities can fill the technology gap that can also enhance a thorough assessment of challenges and conditions. With improved presence of locals and expert players, there can be a stronger network with different actors in the setting, such as community leaders, public and private sector organizations. The local presence can be very critical to understanding the systems and dynamics within the displacement setting – e.g. when and how money transfers are done, when and where to undertake networking and marketing events, etc. to accompany

and support the market penetration of products. Use of Local Capacity Builders to support awareness-raising and community engagement is necessary. Regularly checking in with distributors and end-users and obtaining feed-back on product performance and needs is important.

7.2.11 Enhancing the network connectivity in areas with weak network

As most energy service and products providers depend on the network providers to track and sometimes remotely control their systems on credit as well as enable payment of the services or energy systems, it will provide an improved adoption of clean energy systems to have connection improved in some areas where the mobile phone network coverage is missing or weak.

7.2.12 Engagement of private sector businesses in service delivery to refugees, otherwise undertaken by humanitarian agencies

Increased private sector engagement in the region is key to stimulation of the market-based approach in the displacement settings and low-income communities (Landeghem 2016). Mindsets on free delivery of energy services to refugees needs to be changed by phased triggering of market-based approach. To work out on a long-term change of mindset and existing culture, there is need for stakeholder engagement to start bringing about buy-in of market-based approach. Multi-stakeholder involvement is vital to make the transition to a sustainable market-based energy access model in the camp and host community achievable. All stakeholders must be willing to commit to achieving the change. Slow and progressive adoption of sustainable market-based solutions will eventually bring refugee households and businesses on the clean energy ladder.

7.2.13 Provide psych-social support

Most refugees usually require phyco-social stability before they fit in to the new community. Timely support is key for the new refugees to start adopting and integrating to the new environment where they start feeling comfortable to invest for products and services like energy.

7.2.14 Enhance socio-economic integration between the local host community and refugees

Policy regarding energy, finance and humanitarian needs to be factored in to enhance access to end user finance and payment systems among refugees and host community. Laws and regulations which hinder end user finance provision are that refugee's economic integration with local community is limited from the fact that refugees cannot formally work. In relation to the regulatory framework conditions, most key informants proposed that the more economic integration of refugees the easier it is for them to get access to energy. With Kenya having signed CRRF that allows refugees to participate in the growth of the economy, further discussions may be required to enable policy makers consider providing some framework under which the refugees may be allowed to move around, work, pay taxes etc. KISEDP - UNHCR supports the refugees to be economically motivated and therefore start shifting to financial empowerment rather than getting handouts and donations.

WFP noted that although laws and regulations which have been seen as either facilitating or hindering end user finance provision influence the ability of refugees to finance their energy systems, negotiations by key players with relevant authorities can unlock some barriers to allow the refugees to opened special bank accounts for aliens and even register for mobile SIM cards.

7.3 Proposed involvement of ESDS, UNHCR and policy advocacy groups to unlock barriers

As described above, Table 7 provided proposes concepts to overcome barriers identified at inhibiting end user financing and payment systems in the displacement settings through market based approach. As provided in the table below, the 14 identified concepts have been allocated to different organizations who are deemed suited to implement.

Table 7 Market concepts to overcoming existing barriers to end user financing and payment systems

S/No.	Concept to be implemented	ESDS to support implementation of the concept	UNHCR to facilitate the implementation of the concept	Advocacy at policy level to create conducive framework conditions and regulations for the implementation of the concepts
1	Grants to de-risk the businesses and provide subsidies end users			
2	Technology price reduction			
3	Adoption of peer to peer electricity Framework			
4	Promotion of innovative and user-friendly payment modalities and financing model			
5	Involvement of different partners			

6	Stimulate and facilitate access to credit for suppliers and end-users of off- grid solar systems and clean cooking solutions.			
7	Create jobs along the energy access value chain.			
8	Boost information within the displacement settings and low-income community			
9	Provide technical demonstration of concept			
10	Improve networking between local players and experts			
11	Enhancing the network connectivity in areas with weak network			
12	Engagement of private sector businesses in service delivery to refugees, otherwise undertaken by humanitarian agencies.			
13	Provide psych-social support			
14	Enhance socio-economic integration between the local host community and refugees			

Key

Highest Priority

Provide supporting role

Limited role

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