

29 October 2020

Developing Sustainable Energy Value Chains in Displacement Contexts

Market-based Energy Access Project in Kakuma refugee camp & Kalobeyei integrated settlement, Kenya



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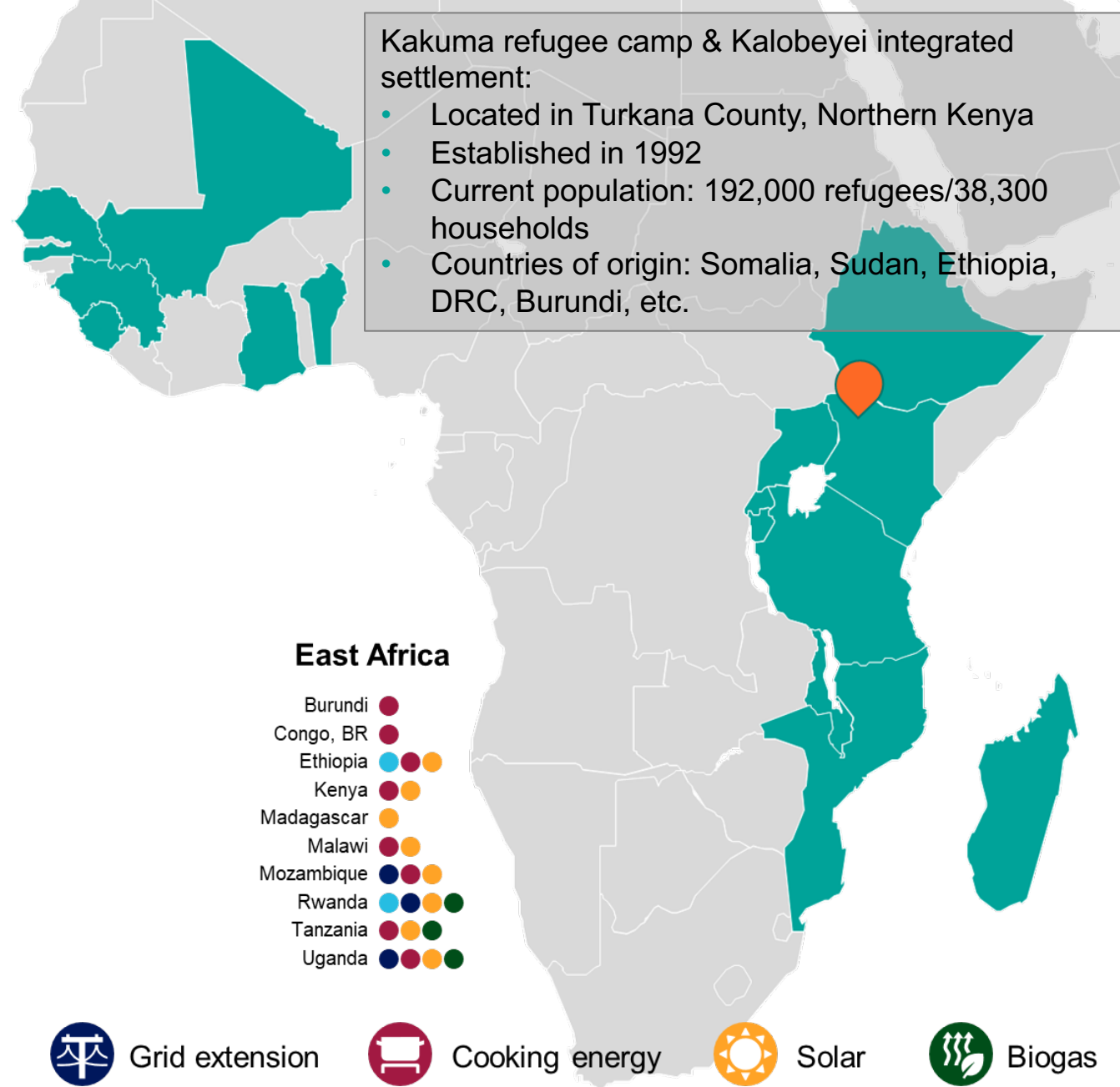
Developing sustainable energy value chains in displacement contexts

- Background
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Background

Energising Development programme in Kenya

- **EnDev Core**
 - Solar for productive use
 - Enabling environment
 - Cookstoves results-based financing fund
- **EnDev Refugees**
 - Solar & cookstoves for
 - Households (*refugees & host community*)
 - Microbusinesses
 - Social institutions



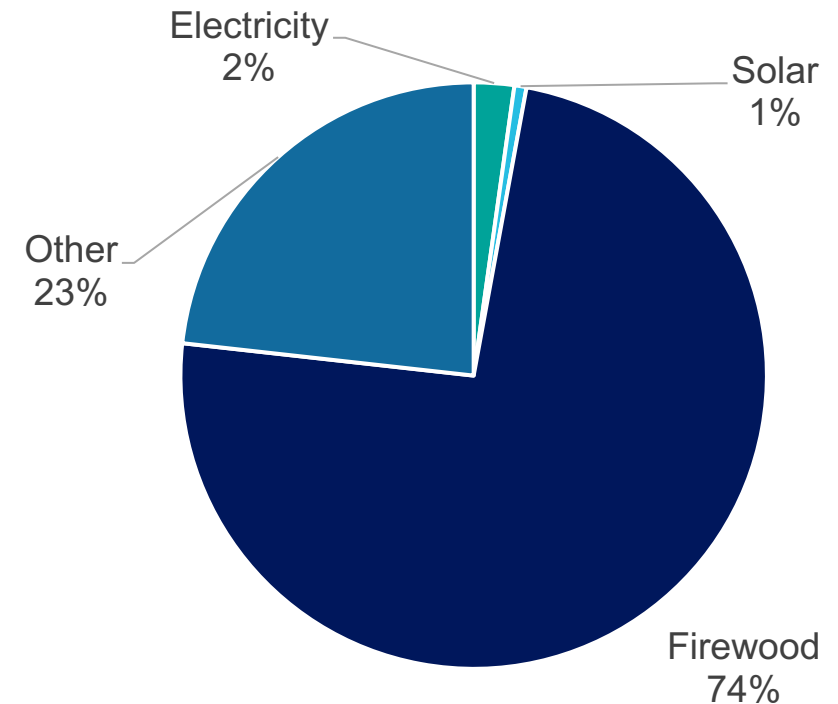
Background

Energy access in Kakuma & Kalobeyei - electricity

Electricity

- Lack of grid access for households and businesses in Turkana County as a whole
- No formal electricity access in the camps
 - Hybrid solar/diesel minigrid built through EnDev in Kalobeyei
 - Solar is increasing but diesel generators and informal diesel minigrids are still more common
 - **Sub-standard in-house wiring and overhead connections**
- **Firewood** is dominant source of lighting among households in the county, followed by kerosene
 - Increasing penetration of solar lanterns among refugees, but **risk of e-waste**

Source of **lighting** in Turkana North (2019 census)



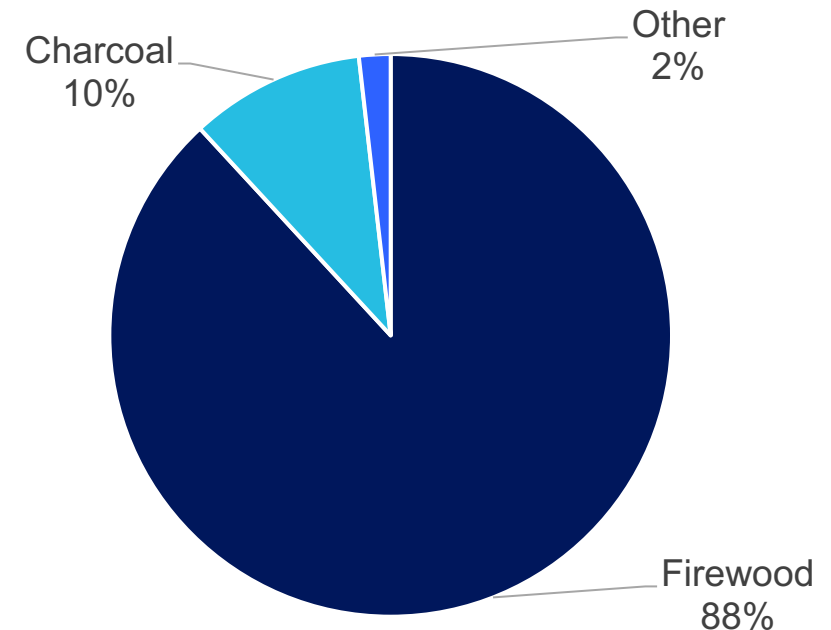
Background

Energy access in Kakuma & Kalobeyei - cooking

Cooking

- Free firewood supply through UNHCR
 - 10kg per household every two months
 - \$900,000 to meet 30 to 50% of household fuel needs
 - Cookstove provided on arrival, three-stone open fire popular
 - **Lack of local value chains for alternative fuels**
- Procured via local NGO Lokado within 100km radius of the camp
 - Firewood & charcoal trade = 7% of local economic activities
 - Charcoal trade alone valued at \$2million/year
- Annual firewood demand of 173,000tonnes for refugee and host community
 - **Deforestation and spread of invasive prosopis juliflora plant**
 - **Conflicts between host and refugee community over resources**

Source of **cooking fuel** in Turkana North (2019 census)

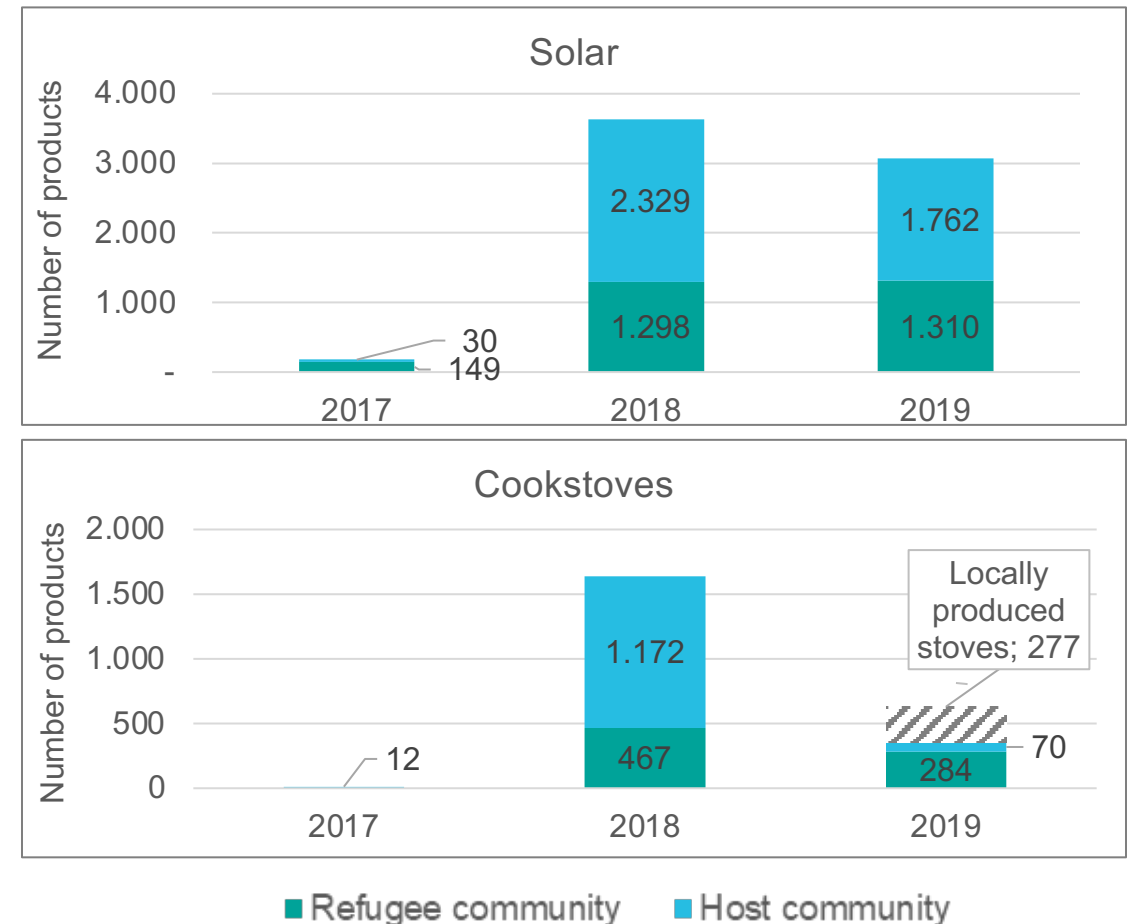


MBEA I pilot

Objectives, targets & results

Focus area	Specific objectives	Targets
Solar	<ul style="list-style-type: none"> Enhanced last mile distribution of solar products Increased awareness of quality solar products 	<ul style="list-style-type: none"> 7,700 lanterns and solar home systems (SHS) sales
Stoves	<ul style="list-style-type: none"> Awareness creation for improved cookstoves Development and construction of a stove production unit in the refugee camp Greater variety of affordable stoves within the refugee and host community Increased sales of improved stoves 	<ul style="list-style-type: none"> 550 industrial cookstoves sales 2,750 locally made improved cookstove sales
Fuels	<ul style="list-style-type: none"> Broader range of alternative fuels, e.g. ethanol and briquettes 	<ul style="list-style-type: none"> 3 new fuel types

Sales results under MBEA I project (Nov 2017 - Oct 2019)



MBEA I pilot

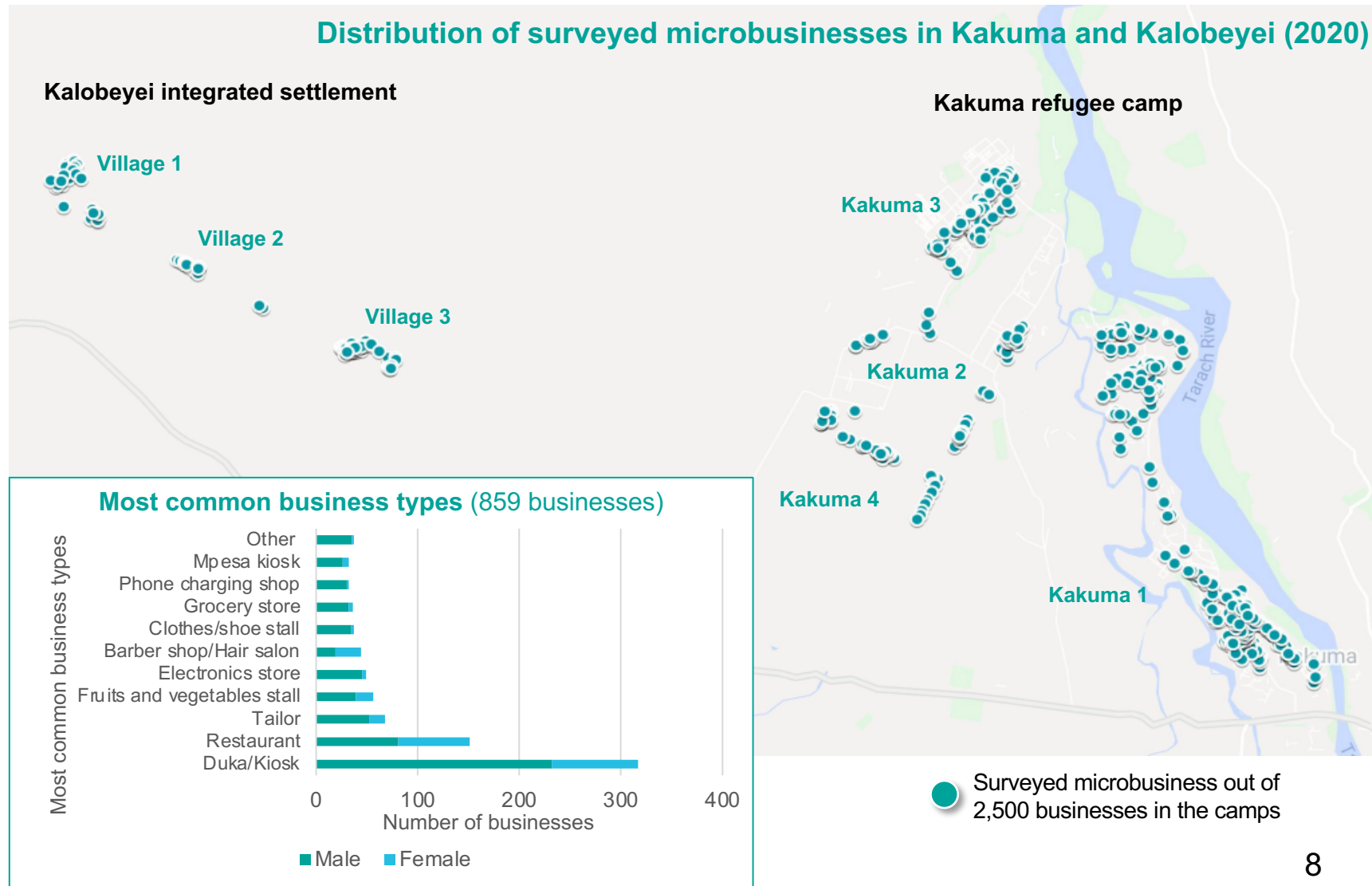
From lessons learnt to recommendations

- All **stakeholders** must be included and willing to commit to achieving the transition to a market-based model for energy access.
- Coordinate closely with partner organisations to maximise **synergies** and **complementarity** of interventions.
- Complement **marketing efforts** with **awareness raising** and **sensitisation** to increase acceptance and adoption of clean energy products.
- Focus on attracting industrially-manufactured, high quality cookstove suppliers while ensuring **sustainable supply** of alternative fuels.
- Address **access to finance barriers** and payment challenges.
- **Decentralise** maintenance operations to local level for improved customer service.

MBEA II scale-up

Promoting focus on productive use

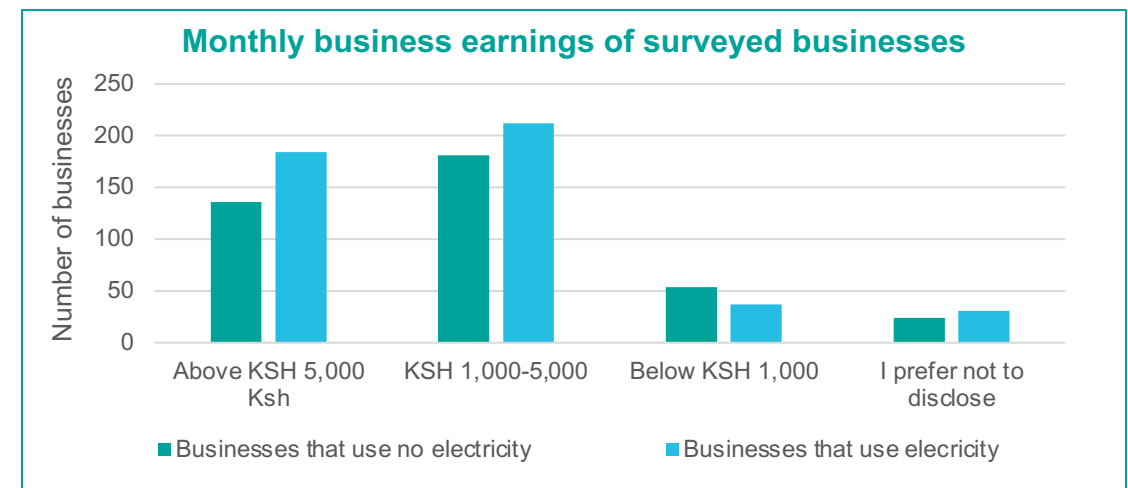
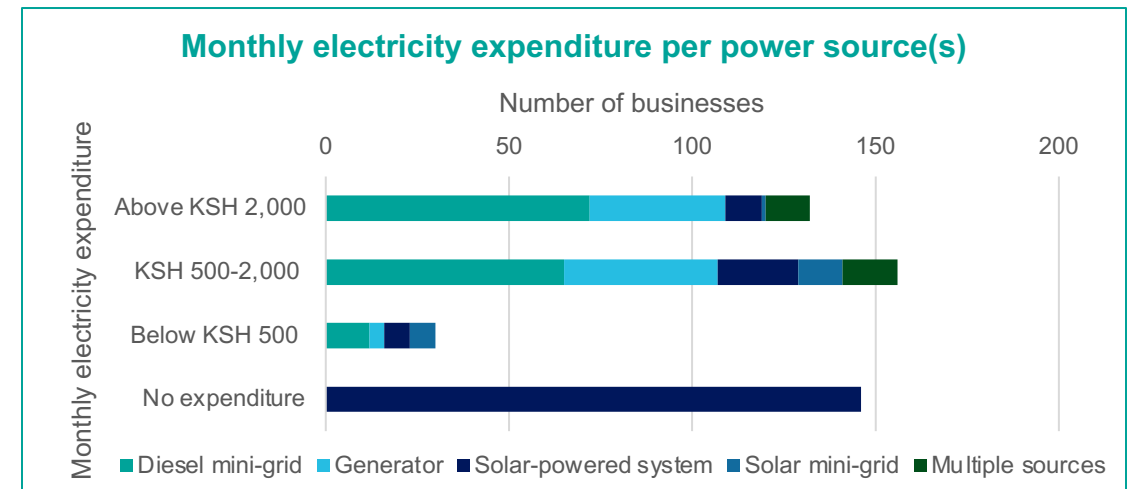
- **MBEA II** under implementation since October 2019
 - Increased number of solar companies from 5 to 8
 - New stoves companies onboarding
 - **Additional targets on energy access for businesses and social institutions**
- **Progress towards targets** despite Covid19
 - Stoves sales overachieved, solar products halfway to target (unverified)
- **Business survey** conducted in early 2020
 - Report to be published shortly



Energy access for microbusinesses

Key findings of business survey: access, costs and earnings (electricity)

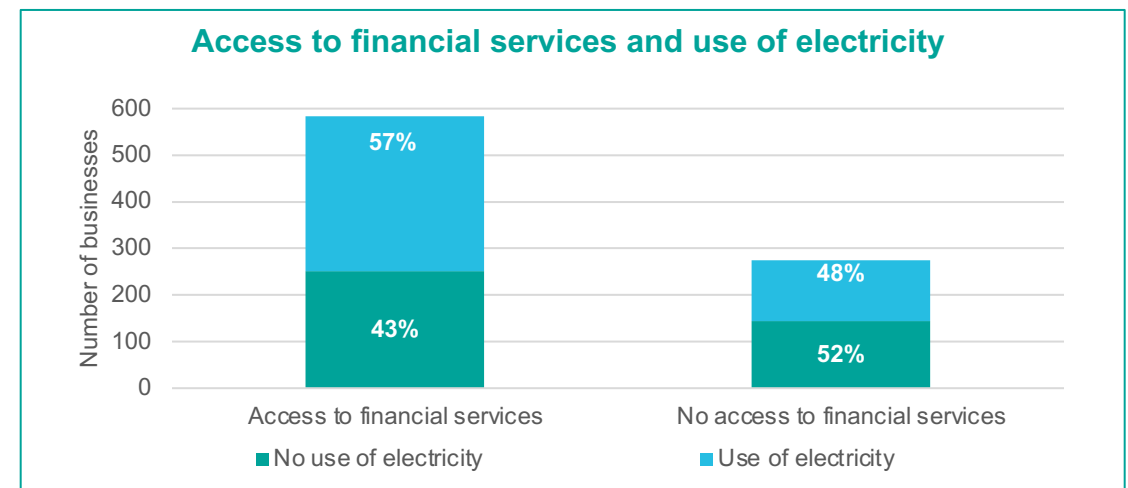
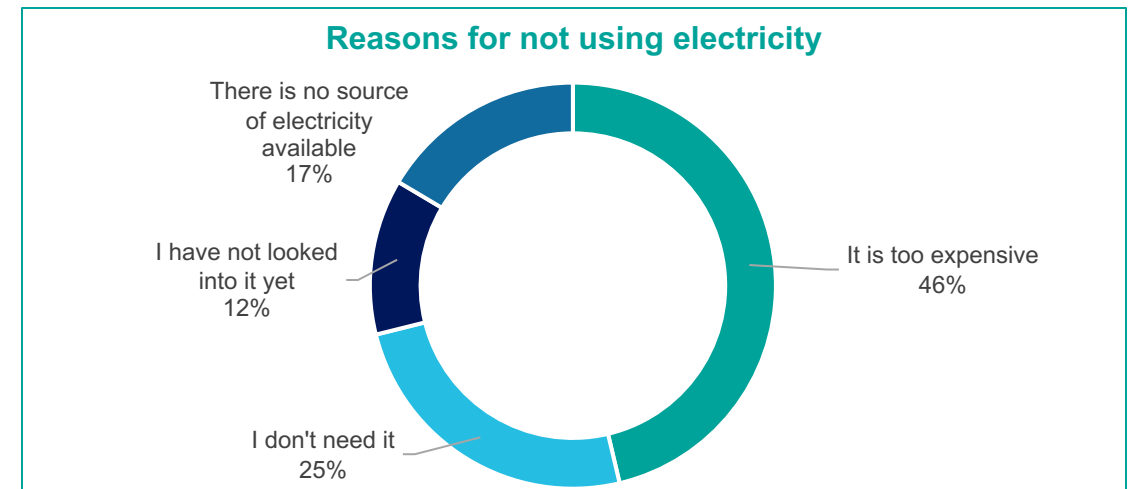
- **Electricity access is limited** (54% of businesses)
 - Diesel is the dominant fuel (mini grids or generator) for powering larger appliances, solar is used for lighting
 - 10% have more than one source of electricity (solar for lighting + diesel for larger appliances)
- **Willingness and ability to pay** for electricity exists, demonstrated by high electricity costs
 - Businesses using diesel incur highest costs for power-intensive appliances such as fridges, TVs and fans
- **Monthly earnings of businesses** with electricity access are higher for 25% of businesses above KSh1,000 (\$10)
 - Higher earnings differential (35%) for businesses earning above KSh5,000 (\$50) – impact of larger appliances
 - Smaller businesses experience less benefit of using electricity
 - Women entrepreneurs are less likely to use electricity



Energy access for microbusinesses

Key findings of business survey: interests, barriers & finance (electricity)

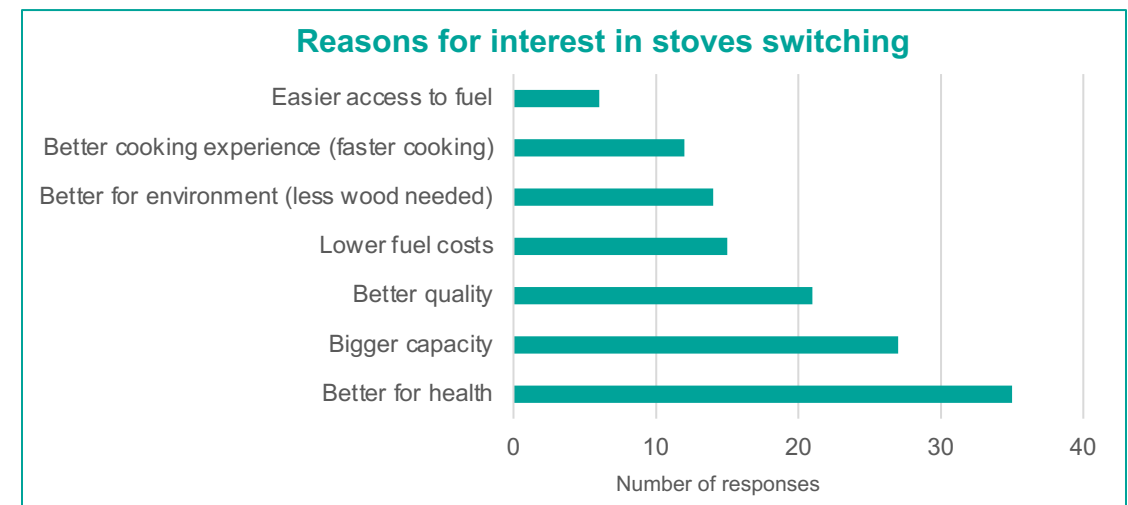
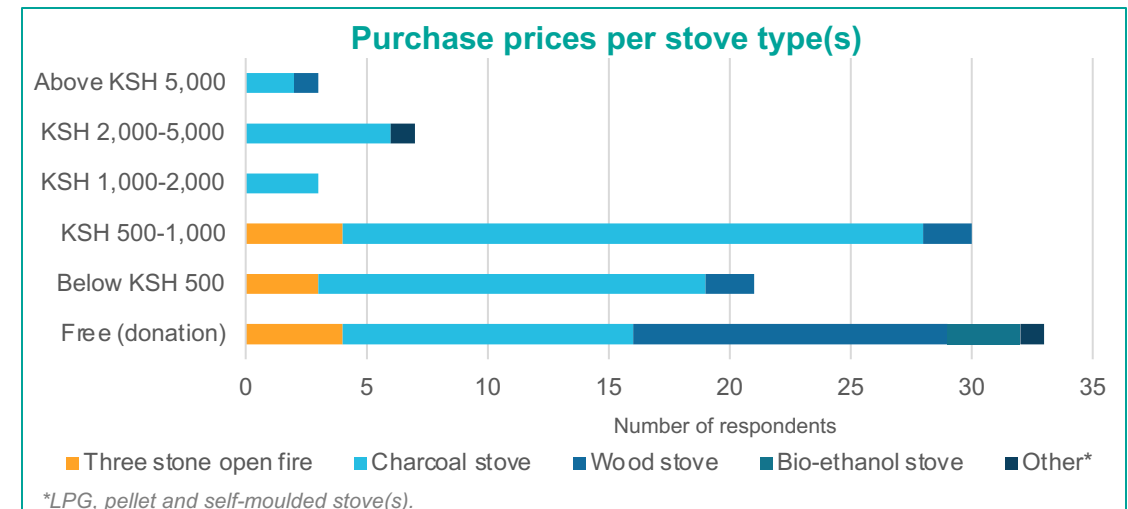
- **Businesses look for larger appliances and small solar-based devices**
 - 64% of businesses with existing access want to upgrade to fridges, TVs and audio systems
 - 85% of business without access are interested in using electricity – for lighting, phone charging and cooling
- **Barriers to access** include high costs, lack of information, access to affordable finance and payment plans
 - Access to finance is not a pre-requisite: almost 70% use financial services (incl. mpesa) but only just over half of them also access electricity



Energy access for microbusinesses

Key findings of business survey: clean cooking

- Nearly all businesses (**96%**) involved in food preparation use a charcoal stove, wood stove, and/or three stone open fire, or a combination of the three
 - 72%** of businesses reported to at least use a charcoal stove, making it the most popular stove type
- The **purchase price** of the stoves is on average **below KSh1,000** (\$10), but **50%** of businesses spend more than **KSh1,000** on **fuel** every month
- 58%** of businesses would like to switch to an (improved) charcoal, LPG or bioethanol stove
 - High purchasing costs prevent these businesses to switch to a new stove
 - Awareness on benefits for health and capacity/quality exists



Energy access for microbusinesses

Recommendations & way forward

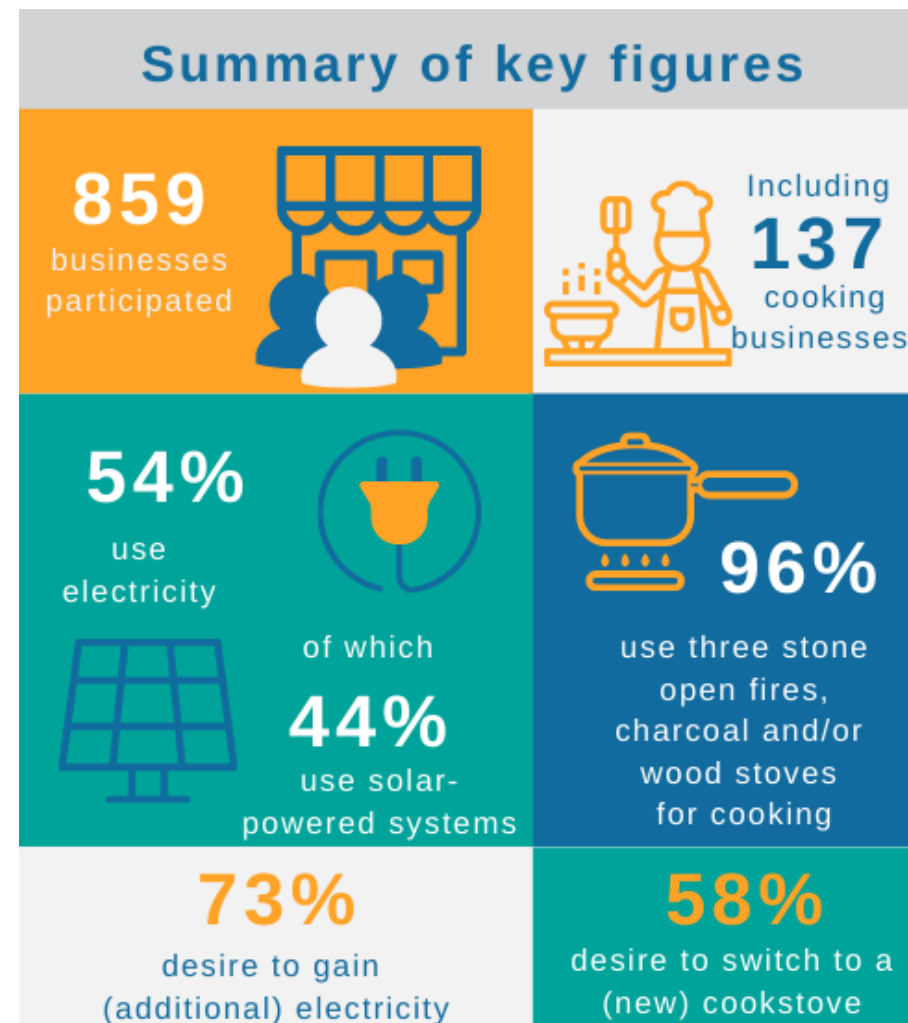
On electricity access

- **Facilitate market entry** of alternative solar-powered devices.
- Determine the **business case** for alternative solar-powered energy solutions.
- Raise **awareness on additional usages** of electricity for business purposes.
- Raise awareness on **productive benefits of basic solar appliances**.

On clean cooking

- Identify **opportunities in current stoves and alternative fuels supply**.
- **Promote market entry** of higher tier stoves and alternative fuels suppliers.
- **Address upfront cost barriers** through flexible payment models.

Going forward: fridge assessment, further engagement of companies offering productive use technologies, behavioural change campaign on clean cooking, cash-based initiative for fuels



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Thank you

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