

# Uganda SWOT Analysis

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# SWOT Analysis: eCooking in Uganda

## Introduction

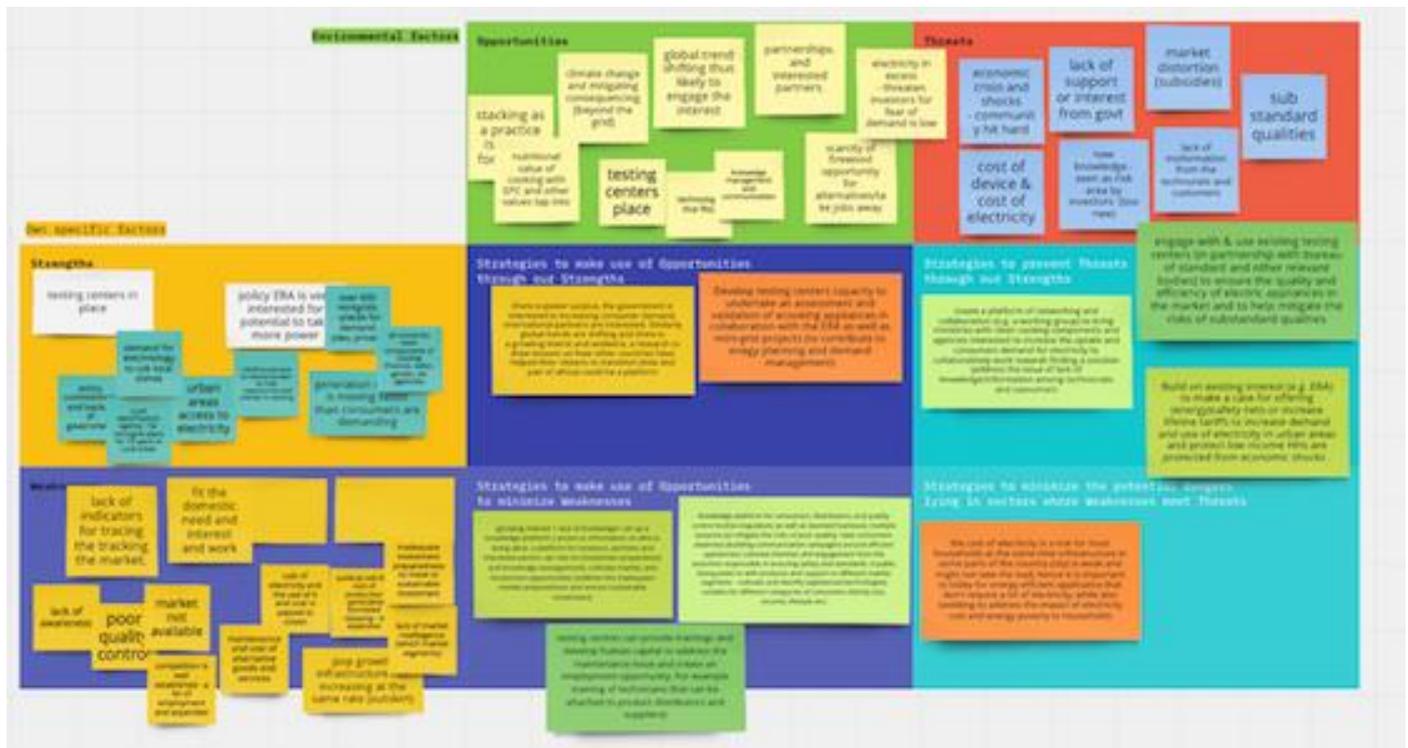
In Uganda, the cooking energy mix is dominated by biomass. Cooking with electricity (eCooking) is a viable alternative, at least to those with access to electricity, mainly in urban areas. However, eCooking is currently very limited. For example, in Kampala although over 70% of the population has access to electricity only 1% use electricity and liquefied petroleum gas (LPG) as their primary cooking fuel. Households transitioning from cooking with biomass to modern energy services including electricity can have positive impact on social and environmental factors, including limiting rates of deforestation, reducing the cost of cooking as well as time spent on cooking. Over the last two years, the Centre for Research in Energy and Energy Conservation (CREEC) and Modern Energy Cooking Services (MECS) have been carrying out research activities to examine the feasibility of cooking with electricity in Uganda. The research project was more specifically focused on the compatibility of an energy-efficient cooking device – Electric Pressure Cooker (EPC) - to households cooking needs and practices in Uganda. Findings of these studies show that about 82% of the typical Ugandan weekly menu can be cooked with an EPC, and that doing so saves households roughly half the time and 60-90% of the cost, particularly on dishes that require long period of boiling and steaming. Feedback from the households that participated in the study also shows that the EPC is a versatile and easy to use appliance.

This paper focuses on the potential for scale up of eCooking in Uganda. Having conducted and shared findings of the comparative study on cooking across different technologies inclusive of eCooking and engaged with the community to understand cooking practices as well as undertake a cooking diaries study, both technical and social findings seemed to favour eCooking particularly electric pressure cooker. Furthermore, there is a growing interest in eCooking from different stakeholders such as UMEME and Energy Regulatory Authority (ERA) to promote and support cooking with electricity and make eCooking products more available and affordable, and to build local capacity in post- sales support (repair and maintenance). Hence, the market seems ready for new technologies and for transition. However, while the context is changing and a lot of opportunities are emerging, the sector is still facing some barriers and obstacles that need to be addressed. This SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis aims to explore the challenges and risks associated with efforts to scale up eCooking in Uganda and what opportunities are currently there that can be exploited to mitigate the risks and address the weaknesses.

## Methodology

The SWOT analysis is used to assess strengths and weaknesses that currently exist in Uganda with regards to eCooking, as well as opportunities and threats. 'Strengths' refers to characteristics and attributes that currently exist in Uganda that give cooking with electricity a competitive advantage, while 'weaknesses' are existing attributes that could

potentially prohibit eCooking from being widely adopted. 'Opportunities' refer to favourable external factors that could give cooking with electricity a competitive advantage if harnessed, whilst 'threats' are factors that have the potential to harm or curtail eCooking. This exercise was conducted online due to COVID-19 restrictions.



SWOT mapping workshop – CREEC & MECS

## Strengths

**Improved supply and access to electricity:** The government has made considerable progress over the last years in improving electrification rates in the country. A recent household survey by the Uganda Bureau of Statistics indicates that the national electricity access rate has increased to 57%, comprising 19% and 38% on-grid and off-grid connections, respectively. At the same time, over the last decade the generation of electricity in Uganda has increased significantly – with total installed generation capacity doubling from 600 MW to 1200 MW between 2010 and 2019. However, with demand at about 750MW, Uganda today produces an electricity surplus of about 500MW.

**Policy commitments:** There are several policies that have been put in place with an objective to promote and encourage the use of electricity for cooking. The National Development Plan III (2020 – 2025) sets out a goal to increase access and consumption of clean cooking energy and promote the uptake of energy efficient cooking technologies including electric cooking. The Ministry of Energy and Minerals Development (MEMD) has

the following targets in its workplan for 2021/2022: Reduce share of tradition biomass energy used for cooking from 86 percent in FY2018/19 to 50 percent; increase the share of clean energy used for cooking from 15 percent in FY2018/19 to 50 percent. These are to be achieved through the increased utilization of alternative and efficient cooking technologies and the promotion of uptake of alternative and efficient cooking technologies such as electric cooking, use of LPG, Biogas. These clearly show that clean cooking is high on the ministry agenda and as such eCooking is well placed to support the achievement of these targets.

**Regulatory incentives:** Building on this the Electricity Regulatory Authority has recently introduced a 'cooking tariff' – a declining block tariff for domestic consumers to incentivise cooking with electricity. The new tariff offers a springboard to transform the way Ugandans cook. Furthermore, almost all government ministries (such as energy, finance, water, gender, agencies) have components of energy for cooking in their agenda.

**Advances in energy efficient cooking technologies:** In recent times, there has been an advancement regarding the efficiency of electric cooking stoves. Thus, offering both energy and cost saving opportunities while also the convenience, health and environmental benefits of cooking with modern energy services. One such technology is the EPC, which as per the studies carried out is also compatible to cooking traditional Ugandan dishes. Studies conducted thus far show that the Electric Pressure Cooker can efficiently and effectively cook over 82% of Ugandan menu; such as steamed matooke, a major cultural dish in Central and Western Uganda, karo, a major cultural dish in Eastern and Northern Uganda.

## Weaknesses

**Low political will – poor inter-organisational coordination:** Inadequate coordination between government entities and implementation of policies is a challenge. Though the different entities, agencies have cooking in their work plans, the efforts are not integrated which can prohibit upscale.

**The perceived high cost of electricity:** In Uganda, currently households pay 747.5 UGX per unit (£0.15 or \$0.17/kWh). Households do enjoy a lower rate of 250 UGX per unit (lifeline tariffs) but it applies only to the first 15 units/month and only for households that consume less than 100 Units of electricity in a month. Cost is likely to remain high given that the cost of electricity generation is also significantly high in Uganda due to the high borrowing and expensive repayment arrangements.

**Infrastructure lagging behind population growth:** There is a steady improvement on the infrastructure in urban areas which makes access to improved services accessible. However, progress still lags behind rapid population growth and urbanisation. This development has impact on the quality of electricity available at the outskirts of major urban areas hence a hindrance to eCooking.

**Poor market intelligence:** There is lack of information and understanding of what consumers want and what they are willing or able to pay for. Our studies show that most

middle income households are able and likely to acquire energy efficient cooking devices like the EPC, if it is made available. However, there is a huge information and data gap when it comes to understanding consumers demand, preference and willingness to pay. This presents a challenge to enterprises that might consider to supply the market.

**Inadequate preparedness to move to sustainable investment:** There is inadequate market preparedness for eCooking evidenced in the low ability to present sustainable projects. Knowledge management and communication around eCooking is still limited or not available in a coordinated manner. Lack of coordinated approach to knowledge management, information and data could undermine investment decision making.

**Consumers' lack of awareness:** The majority of urban households are privy to the dangers associated with traditional cooking. Thus, the need for modern cooking technologies; however, many of them are unaware of the cost benefits of cooking with energy-efficient appliances as they deem cooking with electricity expensive given the high electricity tariffs. This perception is deeply entrenched and has greatly influenced the adoption of eCooking technologies.

**Weak supply chain:** The market availability of efficient electric cooking appliances such as the Electric pressure cooker is exceptionally low. For instance, in 2019, for a period of six months, only 2,300 EPCs were imported into the country.

## Opportunities

**Global trend on climate change mitigation and adaption:** The global climate change trends for 2022 show a need for redoubled efforts and commitment from all nations to curb the climate change, biodiversity loss and carbon pollution crisis and thus minimise the harm to people and the planet. This shifting trend implies that any efforts geared towards minimising these effects will receive attention. As such clean cooking, in particular eCooking with its benefits of reduced loss of biomass cover, better health due to reduced indoor air pollution, energy efficiency improvements are a good fit in the current global drive on climate change to attract stakeholder interest.

**Testing centres in place:** To curb the issue on quality of eCooking products on the market, there are already recognised testing centres in place that can play a key role in testing and ascertaining the quality of precooking products entering the market. In collaboration with the Uganda National Bureau of Standards that is mandated on standards and quality of products on the market, testing centres can ascertain the quality related issues at the point of entry.

**Increased interest and support to the promotion and adoption of modern and clean cooking technologies from development partners:** Different stakeholders are continuing to show interest in activities geared towards improved access to cleaner energy services, examples are shown below.

Who	What	Aims/objectives relevant to eCooking
<b>GIZ ENDEV</b>	Innovation Fund project on eCooking	Build market intelligence to support existing study findings; expand baseline e-cooking usage and consumption studies, and support the establishment of e-cooking supply chains.
<b>UNDP</b>	Accelerator program	Reduce the burden on biomass especially for cooking
<b>Electricity Regulatory Authority (ERA)</b>	Charcoal to Power project	Switch biomass to electricity for cooking with an overall goal of reducing carbon emissions through increased per capita consumption of electricity.
<b>EnerGrow/Burn</b>	MECS/Electric Cooking Outreach (ECO) project	Sell EPCs to 200 households using their utility-enabled financing model
<b>PowerUp/UpEnergy</b>	Pilot on PAYGo eCooking	Piloting a customised EPC product for the Ugandan market which will have a PAYGo system incorporated
<b>CREEC/MECS</b>	MECS battery augmented eCooking pilot	Piloting a battery-supported grid-connected and solar electric cooking systems in weak-grid and off-grid regions respectively
<b>UMEME</b>	eCooking pilot	Promote electric cooking to promote overall household consumption and enable affordable electricity tariffs; with consumer finance schemes
<b>Pesitho ApS</b>	Solar powered eCooking (Pay-as-you-cook)	Building solar-powered community kitchen in refugee settlements.

**Planned mini-grids:** The Rural Electrification Agency (REA) has a plan to install over 600 mini grids and microgrids in 14 areas across the country in 10 years; this means more connectivity for households and businesses and as such an opportunity for integration of eCooking right at the design stage of these initiatives. Mini grids create an atmosphere for enhanced reliability of supply at a lower cost in remote locations presenting an opportunity for households to have access to improved cooking services.

**Electricity in excess:** the current surplus in power generation capacity also presents an opportunities for eCooking as a cost effective, practical and desirable solution. More so when considering the scarcity of firewood and increasing cost of charcoal. Many urban households are already spending on fuel for cooking commonly using charcoal whose price has tripled in the last decade from UGX 40,000 to about UGX 120,000 currently. In addition, the quality and amount of charcoal coming into the trading centres has declined over the years. This same expenditure on charcoal can thus be switched to eCooking with efficient appliances.

**Growing demand for a convenient technology to cook local dishes** According to the 2019/20 Uganda National Household Survey (UNHS), the population of Uganda was 40.9 million, with 27% living in urban areas and of which, over 70% are already connected to the national grid, though only 4% use electricity for cooking whilst 52% rely on charcoal for their cooking needs. Majority of these households relying on charcoal are already connected to the national grid and present a significant untapped market segment for

eCooking given that they already appreciate the benefits of convenience and accessibility they currently enjoy whilst using charcoal.

## Threats

**Slow implementation of government policies:** Though there are policies in place that are favourable to eCooking, the implementation of these policies is lagging and most remain on paper only. These have multiple consequences including delays in securing the investment funding as well as awareness raising and promotion activities necessary to support and ensure the uptake of eCooking.

**Lack of standard and quality control:** The appliances market is categorised by a variety of electric cooking appliances of varying qualities; however, there is also an infiltration of inferior quality and less durable appliances which could easily affect the demand for eCooking. With poor quality or inefficient appliances, electricity consumption is high and this reinforces the negative perceptions the public has regarding eCooking.

**The high cost of electricity:** Even with interventions of rural electrification, the cost of electricity remains high due to the production cost. Unless electricity production costs are lowered, the electricity tariff will remain high which is a threat to the sustained use of electricity for cooking.

**The high cost of electricity connections:** since the removal of the free Connections Policy in December 2020 which had been implemented for about two years and had achieved close to the target of 300,000 new electricity connections per year, new electricity connection rates have greatly reduced as domestic connection fees increased to over UGX 720,883 for single phase no-pole service in addition to UGX 41,300 inspection fees. This is a hindrance to increased power consumption as the electricity customer growth rate is low.

**Cost of device:** The cost of the eCooking appliances remains high and may be a hindrance to adoption as the upfront costs for purchase are quite high. For example, some of the Electric Pressure Cookers that are currently available on the local market cost between UGX 230,000 to UGX 550,000.

**Economic crisis and shocks – community hit hard:** the economic crisis especially because of the COVID-19 pandemic has led to a reduction in investments where returns are uncertain and long term. Furthermore, investments in R&D which would provide new knowledge and increase productivity has been limited by these investments.

**Fuelwood supply chain a source of livelihood:** Furthermore whilst, the scarcity of wood presents an opportunity for alternatives such as use of electricity for cooking; it is important to note that the fuelwood supply chain is a means of livelihood for many families and stakeholders; thus, promotion of alternatives presents a threat to their livelihoods. Thus, efforts to promoting eCooking could potentially be met with resistance, unless planned well and in consideration of all stakeholders affected by it.

**New knowledge – seen as risk area by investors (too new):** With a much faster transition in technology, there is need for higher investment with carefully coordinated interventions. However, investors are not willing to do investments as they lack evidenced clarity on the future of the technology. This is due to absence of data to measure data, to measure sector progress. The low number of investment-ready players has contributed to limited financing.

**Poor information flow between the technocrats and customers:** Poor information flow on eCooking technologies and their impact between the technocrats and customers. There are gaps between theoretical and real-world stove-level performance, a bigger challenge is linking cookstove performance to household-level impacts. The lack of awareness means that potential distributors and entrepreneurs should do extra publicity to bridge the gap.

## Moving forward

To activate the market and demand for eCooking in Uganda, government's commitment is a major strength as seen in the efforts towards increased power production, favourable policy on cooking tariffs, and incorporation of eCooking in government workplans. However, the lack of awareness present as the weakest link, leading to the threat that the less the people know about the potential of eCooking using efficient appliances, the bigger the threat to eCooking. Thus combined efforts are required to increase awareness whilst building the weak supply chain using innovative business models and financing to ensure sustained adoption of eCooking. In this section, we recommend steps to create a conducive environment for promoting and scaling up the investment and adoption of eCooking in Uganda sustainably.

### Building on strengths and opportunities to minimize and mitigate weaknesses and threats

**Use opportunities through existing strengths:** There is power surplus and key stakeholders (the Ministry of Energy, Electricity Regulatory Authority, and UMEME among others) are interested in increasing consumer demand. This creates an opportunity for cross-sectoral and multi-stakeholder coordination to improve knowledge, consumers demand, as well as use data to build a coherent framework of engagement. Furthermore, the engagement from development partners as well as the existing testing centres, offer an opportunity to undertake an assessment and validation of eCooking appliances in collaboration with ERA (to contribute to energy planning and demand management).

**Use opportunities to minimize weaknesses:** Although there is a growing interest in eCooking in Uganda, there is still lack of knowledge and where this is information is not well coordinated or accessible to those that want to invest in the eCooking market. An information platform for investors, partners and interested parties can play an important role in supporting in areas of investment preparedness and knowledge management; cultivate market, and address the inadequate market preparedness. A knowledge platform for consumers, distributors and quality control bodies (regulatory as well as standard bureaus) can then be used to mitigate the risks of inferior quality; raise consumers

awareness (building communication campaigns around efficient appliances); and cultivate interests and engagement from the authorities responsible in ensuring safety and standards. A public facing platform with products and support to different market segments - cultivate and identify (appliances/technologies) suitable for different categories of consumers (family size, income, lifestyle etc).

**Using existing strengths to prevent threats:** Create a platform of networking and collaboration (e.g., a working group) to bring ministries with clean cooking components and agencies interested to increase the uptake and consumers demand for electricity to collaboratively work towards finding a solution (address the issue of lack of knowledge/information among technocrats and consumers). Engage with and use existing testing centres (in partnership with the Uganda National Bureau of Standards and other relevant bodies) to ensure the quality and efficiency of electric appliances in the market and to help mitigate the risks of substandard qualities. Build on existing interest (e.g., ERA) to make a case for offering (energy) safety nets or increase lifeline tariffs to increase demand and use of electricity in urban areas and protect low income households from economic shocks.

**Minimising potential risk where weaknesses meet threats:** The cost of electricity is a risk for most households at the same time infrastructure in some parts of the country (city) is weak and might not take the load, thence it is important to lobby for the energy efficient appliances that don't require a lot of electricity, while also seeking to address the impact of electricity cost and energy poverty to households.