

TaTEDO-MECS Thriving Market Briefing

Note Series: 9/11

Opportunities for TANESCO

Executive Summary

TANESCO (Tanzania Electric Supply Company) is the government-owned power utility in Tanzania, and is responsible for generation, transmission, and distribution of electricity. This briefing note explains the opportunity TANESCO has to take an integrated electricity access and modern energy cooking approach. TANESCO can increase its revenue and demand for surplus electricity in the future by promoting and accelerating customers' transition to electric cooking (eCooking) on energy efficient cooking appliances. At the same time this would affect the health and wellbeing of their customers, mitigate carbon emissions, and protect the local environment from deforestation. Our central concern is how the power utility planning processes can encourage grid-connected customers to efficiently use electricity for cooking at affordable costs. This is a win-win scenario where the financial sustainability of the utility, and the wellbeing of customers and the environment can all be positively affected through a strategic approach to integrate electricity access and modern energy cooking, as is being pursued in neighbouring Uganda and Kenya. We recommend a pilot of energy efficient cooking appliances to pursue this objective and can offer support in this endeavour.

Introduction on eCooking

This briefing note proposes an approach to scaling up electricity demand that aims not only to provide electricity services to the end-users but to ensure that those services are appropriately matched to people's needs.

The transition from solid biomass fuels for cooking to modern energy cooking services in Tanzania has been dominated by a gradual and slow ascent up the energy ladder. The majority of the population are still using solid biomass energy sources (firewood and charcoal) inefficiently for cooking. However, as their income increases some move upwards to include modern energy sources (kerosene, LPG and electricity) in their fuel mix.

Cooking with electricity is now a viable option for many households. It is cheaper to cooking with electricity on energy efficient cooking appliances compared to using other cooking fuels –in Tanzania, cooking on electricity with an electric pressure cooker (EPC) can be more than four times cheaper than cooking with LPG, and 6 times cheaper than using charcoal [1]. eCooking has the potential to realise a number of benefits, including but not limited to cleaner household air, lower cooking costs, shorter cooking times, less deforestation, reduced greenhouse gas emissions, and improved gender-equity outcomes (ref eCook study)[2]. According to Tanzania eCook Book, about 80% of the Tanzanian menu can be cooked on EPCs [3].

These positive findings led to TaTEDO and partners to initiate efforts towards developing sustainable delivery and business models for scaling up the uptake of energy efficient cooking appliances [4]. Initial efforts for promotion, awareness-raising and capacity building to different stakeholders have been very successful, and the market system has been developed to include Sustainable Energy Service Support Centres, repair and maintenance facilities, and eCooking distribution agents. According to the final progress report of country partner project by TaTEDO in Tanzania, about 3,000 households are cooking by electricity using energy efficient cooking appliances saving 80% of cooking energy budgets in their households.

The power utility can take advantage of this upcoming clean cooking solution to shift all revenue that is currently used in buying biomass and fossil fuels for cooking to the purchase of electricity for cooking.

Electricity Surplus and Demand Revenue

Tanzania is rapidly expanding its electricity generation capacity and soon will have a significant surplus of electricity

The current power generation capacity of Tanzania is 1,602 MW[5]. This is very low for a country with nearly 60 million people and expanding generation, transmission and distribution capacity is a key focus for the future decade: the Five Year Development Plan 2021/22-2025/26 lays out the target to expand generation from 1602 MW to 5000 MW by 2026[6].

Tanzania is a very resource-rich country when it comes to energy generation. The country has large untapped renewable energy sources: geothermal energy could add 5000 MW to the base load, wind and solar are as yet largely unexploited. Regarding fossil fuels, there are huge reserves of black coal (1.9 billion tons) and gas (1.6 billion m³), the majority of which are still untapped. The large potential for hydropower is in the process of being exploited - the largest single potential electricity generation project in Tanzania is a hydropower project at Stiegler's Gorge on the Rufiji River, the Julius Nyerere Hydropower Station, which will expand generation capacity by 2,100 MW and produce 5920 GWh annually [5]. This power capacity expansion alone is more than Tanzania's current peak demand – measured at the end of 2019 as 1120MW [5].

Electric cooking can stimulate electricity demand and provide new revenue streams for the utility

As Tanzania's generation, transmission and distribution capacity grows, it will be crucial that electricity demand grows to utilise that capacity to ensure strong revenue streams and to avoid a large surplus of power and energy. A similar situation has been experienced in Uganda by UMEME, where there is a generation surplus of 520MW compared to peak demand [7]. The electricity surplus created by increased generation will require stimulation of demand in order to increase electricity sales and revenue, and shifting household expenditure on fossil fuels for cooking on to electricity for cooking is a key opportunity to do that.

Take advantage of the investment in grid extension and upkeep to pivot to a clean cooking future

Integrating electric cooking into the efforts of electricity development and policy now will ensure increased electricity demand and so increased electricity sales revenue to continue to pay for expansion and upkeep, while also solving the clean cooking challenge. The investment into expanding electricity access and generation is already planned, and TANESCO can take advantage of it to also move towards a higher demand, higher revenue future through eCooking. The only planning step required is to integrate energy efficient cooking appliances into the connection of grid electricity in households. There is the opportunity to pursue a business model which will increase the demand for electricity by introducing electric cooking in the TANESCO distribution portfolio and earn more revenue from this investment.

TANESCO is in a unique position to reach end users to distribute energy efficient electric cooking appliances as part of its activities

TANESCO is in a unique position to take advantage of this opportunity due to its monopoly in the sector and it's reach into the ever increasing number of customers connected to the grid in urban and rural areas. TANESCO could make energy efficient cooking appliances available to existing customers and include them as an option within grid-connection packages.

TANESCO is in a unique position to address the challenge of affordability of energy efficient electric cooking appliances

One of the main barriers to uptake of electric cooking is the relatively high upfront cost of energy efficient cooking appliances. There are various ways to address this high upfront cost and TANESCO is in a good position to integrate a solution into their existing system infrastructure. The costs can be included in customer monthly bills, spread out over time. For example, EPCs could be given to customers through loans which will be paid back over time through additional charges on the monthly utility bills. This mechanism encourages their customers to invest in energy-efficient cooking, which can decrease electricity consumption and bills.

Uganda and Kenya

Umeme-Uganda	KPLC – Kenya
<p>Uganda is rapidly expanding their generation capacity – 1249 MW of generation capacity was reported in 2019/20, with aims to increase to 2000 MW by 2021/22 [7].</p> <p>This has led to a generation surplus of 520 MW, and the government and the electric utility, Umeme, is proactively looking for ways to stimulate electricity demand, including at the household level.</p> <p>At the start of 2022, the regulator introduced an electric cooking tariff, whereby domestic users get a discounted unit price for a certain block of units, to incentivise the use of electricity for cooking, to stimulate household electricity demand [8]. ERA has also launched a Biomass-To-Electricity project to convert cooking in hospitals to electric cooking [9].</p> <p>There is interest from the utility and other stakeholders to conduct a pilot EPC distribution programme to stimulate electricity demand and the supply chain, and help to change the incorrect perception that electric cooking is too expensive in Uganda.</p>	<p>Kenya’s MECS team and KPLC have worked out the possibility of future collaborations for tapping into the huge potential for rolling out electric cooking solutions nationwide.</p> <p>These are the potential areas of convergence in eCooking (electric cooking) that MECS and KPLC will collaborate to benefit the people of Kenya and the power utility company (KPLC). It is clear that there is a huge potential in the electric cooking space in Kenya that KPLC and MECS may tap into, and most importantly, the striking similarities between the MECS objectives and the initiatives driven by programmes within the KPLC in terms of electric cooking.</p> <p>Some of the potential areas of collaboration that were identified include awareness creation e.g., through media campaigns and training community champions; capacity building e.g., technology advancement through the KPLC technical centre; demand stimulation through communication and eCooking demonstrations e.g., establishing demonstration centres across Kenya or through mobile kitchens; advocacy and policy influence; and finance access and entrepreneurship support e.g., through revolving financing mechanisms.</p> <p><i>(Information from Blog Post)</i></p>

Next Steps for TANESCO

The following are some of the concrete recommendations to the power utility to take advantage of these opportunities:

Integrate electricity planning with clean cooking

Electrification and clean cooking are commonly seen as two separate domains, however increasingly countries are recognising that thinking about the two together hold benefits for both sectors. TANESCO can begin to champion an integrated approach, considering how to stimulate electricity demand through electric cooking while planning the continued expansion and strengthening of the generation, transmission, and distribution infrastructure. Household expenditure currently spent on charcoal for cooking can be pivoted into the

electricity sector through encouraging electric cooking, and this is an easy change to make for the many urban households who already have an electricity connection. Power utility is supposed to pro-actively looking at electric cooking as a way of boosting electricity demand.

Encourage customers to cook with grid electricity

TANESCO could run awareness raising programmes to reach their customers to inform them that cooking with electricity is cheaper than their usual methods, clean, safe, and sustainable.

Establish an EPC Distribution Pilot Project

A pilot project, as is being considered in Uganda and Kenya, to distribute the highly efficient EPCs to customers would help to kick start the supply chain, and explore opportunities for on-bill financing. The pilot would target residential grid-connected customers and make use of the TANESCO offices and distribution centres in the major urban centres. The project would enable TANESCO to develop on-bill financing for these appliances, and a monitoring and evaluation strategy could be designed to give valuable insight into electric cooking demand and impact on the grid.

MECS and the TaTEDO/SESCOM partnership is ready to support the utility in taking advantage of this opportunity for increased electricity demand and higher customer wellbeing.

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