

BRIEFING NOTE SERIES: TOWARDS A THRIVING ECOOK MARKET IN TANZANIA



6/7: Opportunities for TANESCO: How Utilities Benefit from eCooking



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 the demand for surplus electricity in the future by promoting and accelerating customers' transition to electric cooking (eCooking) on energy efficient 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. TANESCO's 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. Most of the population are still using solid biomass energy sources (firewood and charcoal) inefficiently for cooking. However, as their income increases some 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 (Sawe and Aloyce 2020). 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 (Batchelor et al. 2018). According to the Tanzania eCooking Market Assessment, just over 90% of the Tanzanian menu can be cooked on EPCs (Clements and Fodio Todd 2022).

These positive findings led TaTEDO and partners to initiate efforts towards developing sustainable delivery and business models for scaling up the uptake of energy efficient cooking appliances (Shuma et al. 2022). Initial efforts for promotion, awareness-raising and capacity building 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. By mid 2022, SESCOM had vended 4,000 EPCs to households since starting operations and households are making substantial savings in their cooking energy budgets. One household reported a reduction of 80% in their cooking energy budget.

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 (Ministry of Energy 2020). 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 by 5760MW by 2026 (Ministry of Finance and Planning 2021).

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 (Ministry of Energy 2020). This power capacity expansion alone is more than Tanzania's current peak demand – measured at the end of 2019 as 1120MW (Ministry of Energy 2020).

eCOOKING CAN STIMULATE DEMAND AND PROVIDE NEW REVENUE STREAMS FOR TANESCO

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 (Electricity Regulatory Authority 2020). 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.

Integrating eCooking into the efforts of electricity planning and development 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 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 eCooking in the TANESCO distribution portfolio and earn more revenue from this investment.

TANESCO is in a unique position to take advantage of this opportunity due to its monopoly in the sector and its 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 eCOOKING APPLIANCES

One of the main barriers to uptake of eCooking 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 acquired by 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, having positive effects on customers' health and the wellbeing of the environment.

EXAMPLES: UGANDA AND KENYA

Umeme in Uganda	Kenya Power in Kenya
<p><i>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 (Electricity Regulatory Authority 2020).</i></p> <p><i>This has led to a generation surplus of 520 MW, and the government and Umeme are proactively looking for ways to stimulate electricity demand, including at the household level.</i></p> <p><i>At the start of 2022 the Electricity Regulatory Authority (ERA) introduced an eCooking tariff, whereby domestic users get a discounted unit price for a certain block of units. The aim of this was to incentivise the use of electricity for cooking and to stimulate household electricity demand (Electricity Regulatory Authority 2021). ERA has also launched a Biomass-To-Electricity project to convert cooking in hospitals to eCooking (Busein Samilu 2022).</i></p> <p><i>Umeme and other stakeholders, working with MECS, will be soon conducting a pilot EPC distribution programme to stimulate electricity demand and the supply chain, and to change the incorrect perception that eCooking is too expensive in Uganda.</i></p> <p><i>For more background on eCooking in Uganda, see (Price, Tesfamichael, and Chapungu 2022)</i></p>	<p><i>Over 90% of electricity generated in Kenya comes from renewable sources, and there is surplus power available on the grid. Kenya Power has long promoted eCooking to stimulate demand for this surplus electricity. Their Pika na Power (Cook with Electricity) programme (relaunched in 2017) promotes eCooking through biweekly cooking classes, social media and national TV, tackling misconceptions that electricity is too expensive for cooking. Cooking demonstrations (live and televised) use energy meters to show audiences the true cost of cooking with electricity, and they work with suppliers, distributors, and financiers to support the market.</i></p> <p><i>MECS is working with Kenya Power and UK Partnerships for Accelerating Climate Transitions (UK PACT) to accelerate the transition to eCooking. The focus is building capacity and developing the market and a range of activities are planned, for example: generating evidence on how eCook can stimulate demand for Kenya Power; capacity building within Kenya Power; piloting utility-enabled finance models to mitigate the high upfront cost of eCooking appliances; designing an eCooking roadshow.</i></p> <p><i>eCooking is also a key government focus in Kenya. Currently the Kenyan government is in the process of developing a National eCooking Strategy, alongside a clean cooking strategy, and Kenya Power is a key stakeholder in this process.</i></p> <p><i>For more background on eCooking in Kenya, see (Leary 2022)</i></p>

TANESCO IS IN A UNIQUE POSITION TO REACH END USERS TO DISTRIBUTE ENERGY EFFICIENT eCOOKING APPLIANCES

TAKE ADVANTAGE OF THE INVESTMENT IN GRID EXTENSION AND UPKEEP TO PIVOT TO A CLEAN COOKING FUTURE

NEXT STEPS FOR TANESCO

The following are some of the concrete recommendations for TANESCO to take in order 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 eCooking 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 eCooking, and this is an easy change to make for the many urban households who already have an electricity connection.

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. This pro-active promotion of eCooking is a way of boosting electricity demand.

Establish an EPC distribution pilot project

A pilot project, as is being planned 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 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 eCooking 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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