

Enhancing, targeting and diversifying electricity generation in Tanzania

Beyond grand corruption, what incremental steps could lead towards a sustainable energy technology mix?

Research Questions

What factors have made the Tanzanian electricity sector particularly vulnerable to inefficiencies and corruption? How can incremental steps improve the electricity supply mix for different users in Tanzania?

Key Findings

Despite the presence of more reliable and cost-effective options for electricity generation, which could benefit both producers and users, trade-offs between expanding access to the grid and the incentives and technical conditions for reliable and efficient power generation have led to the financial vulnerability of Tanzania's electricity supply, and limited the development of the off-grid system.

Implications

Development of a more diversified, reliable and cheaper energy technology mix, including a targeted mix of on-grid and off-grid greener investments, will be possible if incentives are aligned around sustainable business value propositions, based on comparative energy cost structures, and options for smaller scale and incremental financial commitment from capable investors.

Project Summary

TANESCO is the Tanzanian state-owned electricity supply company. We question the sources of TANESCO's financial vulnerability and rent capture, and investigate which alternative energy technologies (including both on-grid and off-grid) could be deployed in a cost-effective manner, and how investments in these technologies could be incentivised.

Approach

We conduct an in-depth analysis of electricity procurement processes, the legal framework and the role of different players – including intermediaries – in defining contracts and cost structures. We collect detailed plant-level data from TANESCO to compare output across energy plants as well as data from Ewura on mini-grids plants. We then model different types of energy plant and sources to show opportunities for a cost-effective shift from one type of technology to another for specific energy needs and users.

Key findings

Historical Legacy:

- Trade-offs have taken place between expanding access to the electric grid and the incentives and technical conditions for reliable and efficient power generation.
- There has been inconsistent and incomplete reform of procurement and weak governance processes.
- The precarious financial constraints of TANESCO were exacerbated by a number of losses associated with emergency power producers; chronic limitations in cash flow surplus and thus limited infrastructure investment capacity; and an expensive and inefficient energy technology mix (hydro discontinuity and diesel).

Mounting pressure and responses:

- As a result a growing gap exists between the demand and supply of power, and this limits industrialization.
- Long-term financial commitment in an economic uncertain environment is difficult.

Policy and programming implications

1. Re-align incentives around sustainable business value proposition, generating benefits for both the Government and the private sector by: scaling-up and improving the mini-grid experience and capacity in rural areas (Rural Energy Agency), while promoting gas-based over industrial-diesel mini plants; aligning mini-grids to specific production needs/areas
2. Strengthen government institutions (TANESCO and Ewura) and attract capable investors to rebuild trust for long term financial commitment and investments by: competitive procurement; dismantling inefficient/highly costly industrial diesel-based generators.

Team members

Antonio Andreoni (SOAS University of London), Sufian Bukurura (REPOA), Luca Tasciotti (SOAS University of London), Emmanuel Tayari (TMBM) and Donald Mmari (REPOA).

Contact information

Antonio Andreoni (aa155@soas.ac.uk) and Emmanuel Tayari (E.Tayari@tmbmcapital.com)