RESEARCH BRIEF: Business owners in Tanzania are willing to pay more for an improved electricity supply

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Topic: Stated Preferences with Survey Consequentiality and Outcome Uncertainty: A Split Sample Discrete Choice Experiment

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Research questions: How much are Tanzanian business enterprises willing to pay (WTP) for a better quality of electricity supply?

Key Messages

- **Business enterprises strongly value an improved electricity supply, urging policymakers and utilities to minimize power outages and revise tariffs accordingly.**
- **Business enterprises in Tanzania are WTP approximately 9% more for an additional reduction in outage frequency per month, 4% more for an hour reduction in duration of outages, and 16% more for 24-hour advanced outage notification, on top of the existing highest tariff rate of 350 TZS/kWh (US$ 0.15/kWh).**

Background and Methodology

Frequent and long-lasting electricity supply interruptions are common among grid-connected customers in many developing countries, including Tanzania. Policymakers in such settings struggle to allocate limited resources whether to prioritize expanding connections for new customers or improving the reliability of electricity supply for existing ones. Obtaining customers' insights regarding their preferences for improved electricity quality is useful in guiding policymakers and utility companies in decision-making.

Our study focuses on the valuation of improved quality of electricity supply among business enterprises in Dar es Salaam, the largest city and financial hub of Tanzania. According to the 2019 International Energy Agency (IEA) report, about 37% of the population in

Tanzania has access to electricity, with 73% in urban areas and 24% in rural areas. The electricity mix is dominated by large-scale hydropower and natural gas, albeit the share of hydropower is declining over time relative to gas. The state-owned electricity provider, Tanzania Electric Supply Company Limited (TANESCO), manages electricity generation, transmission, distribution, and sales. Like in many other Sub-Saharan African countries, customers connected to electricity experience recurrent electricity supply interruptions. Monthly outage data from TANESCO, covering July 2015 – May 2019, shows an average duration of 2 hours and 30 minutes per outage in Tanzania. Business enterprises are an important engine of economic growth, with electricity increasingly becoming a crucial input for their operations. As per the 2020 World Bank report, unreliable electricity supply in developing countries, specifically in Sub-Saharan Africa, is among the main obstacles to business operations.

In an attempt to understand business enterprises' valuation of improved quality of electricity supply, we conducted a survey with a total sample of 1,004 micro and small business enterprises in Dar es Salaam from August to September 2019, through face-to-face interviews.

In the survey, we presented respondents with choice tasks of improved quality of electricity supply described by fewer power outages, shorter durations, advance outage notifications, and associated cost increments. We then asked them to choose between the existing situation and the proposed choices task of improvement in electricity supply. From the choices made, we estimate how much the business enterprises are WTP for a more reliable electricity supply. On top of this, to increase the credibility of the proposed improvement in electricity supply, we include some uncertainty about the realization of the proposed improvement and the consequences of the survey responses on the proposed improvement and future tariff increases.

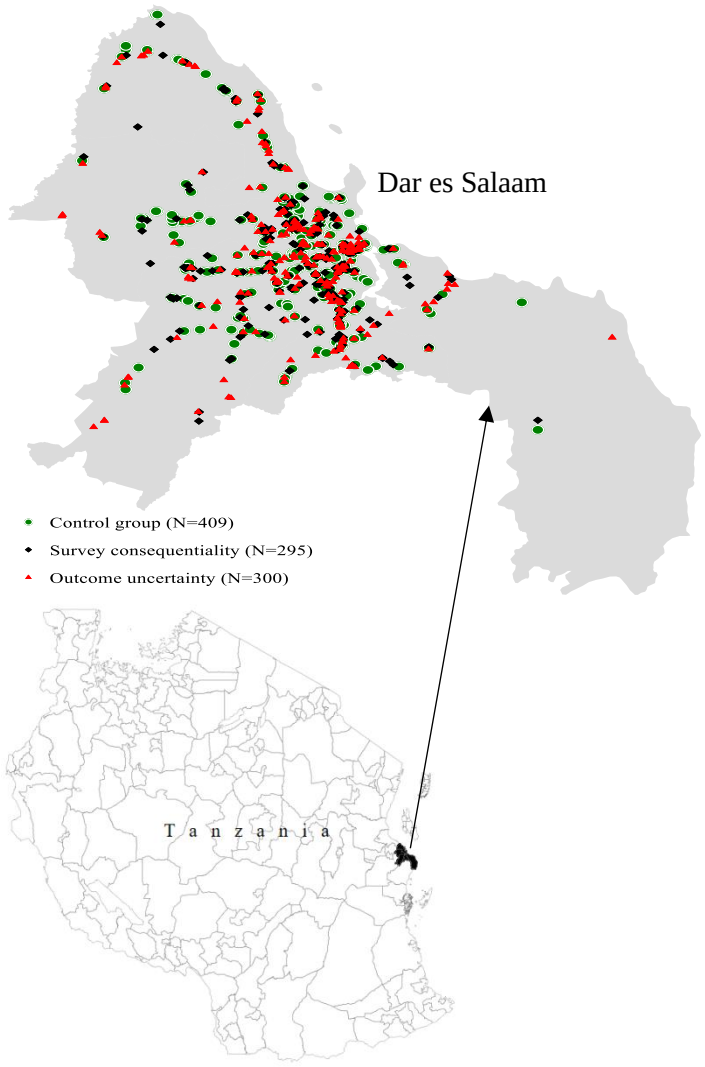

Fig. 1. Distribution of the sample business enterprises across the Dar es Salaam region (study area)

Results

Our results show that business enterprises in Tanzania are, on average, WTP about 9% more for an additional reduction in the frequency of outage per month, 4% more for an hour reduction in duration outages, and 16% more for 24-hour prior outage notification, on top of the existing highest tariff rate of 350 TZS/kWh (US$ 0.15/kWh). Figure 2 displays WTP estimates for the different attributes of power outages in Tanzanian shillings (TZS), with 1 USD ≈ 2,300 TZS at the time of the survey.

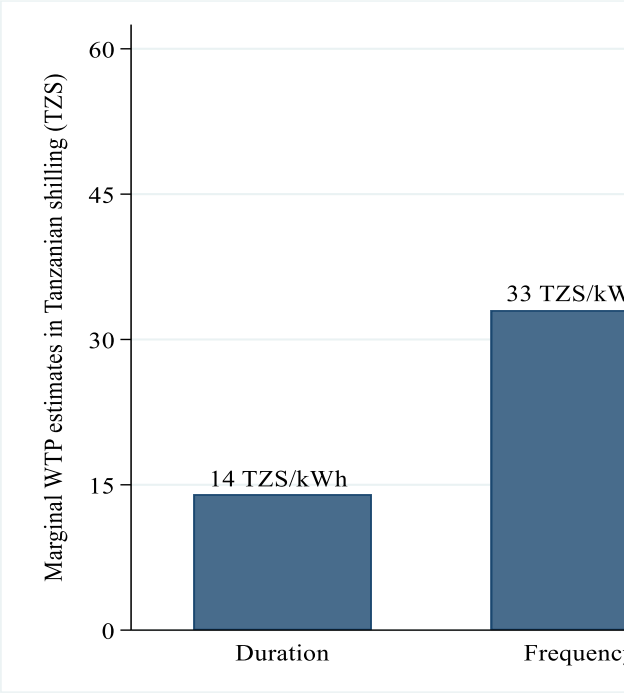

Fig. 2 Marginal WTP estimates for the attributes of power outages (N=1,004)

Policy Implications

Our research underscores that business enterprises are WTP more for a better quality of electricity supply. In light of these findings, policymakers and utilities should strongly consider substantial investments to enhance the reliability of electricity and simultaneously raise tariffs to recover costs. By doing so, they can effectively mitigate the main hindrance to business operations: recurrent power outages. Furthermore, when designing a stated preference survey, it is important to incorporate some uncertainty about the realization of the proposed improvement and the consequences of the survey responses on the proposed improvement and future tariff increases. These would improve the credibility of proposed changes. However, their inclusion may have minimal or no economic and statistical implications for overall welfare estimates.

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