

**Unlocking Private Sector Innovation in Rural Electrification to Guide Policies  
for Mini-Grids in Uganda**

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## Executive Summary

The following report, prepared by a graduate capstone team from Columbia University's School of International and Public Affairs (SIPA) in partnership with Mandulis Energy, marks the initial phase of a five-year longitudinal study pursued by Mandulis Energy to assess the socioeconomic impacts of rural electrification brought about by the 28 rural mini-grid sites under development by Mandulis Energy in Uganda. The study responds to Uganda's urgent need for decentralized electricity solutions to accelerate progress toward universal electricity access under Vision 2040, particularly in rural areas where grid extension remains economically and technically unviable.

Uganda faces a pressing challenge in achieving universal electricity access. As of 2023, only approximately 51.5% of the population had access to electricity, with rural areas significantly lagging behind urban centers. While grid extension remains a priority, the rapid pace of population growth and geographic dispersion of rural settlements render centralized solutions prohibitively expensive and logistically complex. In this context, decentralized electricity systems—particularly hybrid mini-grids—have emerged as a critical solution to closing Uganda's electricity access gap and supporting its Vision 2040 agenda for inclusive and sustainable development.

However, despite an increasing recognition of mini-grids as a viable solution for off-grid electrification, a persistent lack of disaggregated and localized socioeconomic data has constrained effective policymaking and private sector investment. As a result, the project by SIPA's capstone team sought to address this critical gap by developing a rigorous methodological framework and tailored survey instruments for targeted stakeholders: households, micro-entrepreneurs, micro, small, medium to large businesses, with the objective that these tools would enable the collection of high-quality data over a five-year period (2025–2029) to inform evidence-based policy and unlock market-driven solutions for rural electrification.

Beyond laying the foundation for longitudinal data collection, the report also offers Mandulis Energy a set of actionable recommendations for enhancing the developmental impact of its operations. By combining field research, stakeholder engagement, and a forward-looking implementation roadmap, this report contributes to Mandulis Energy's mission of expanding access to reliable, affordable, and sustainable electricity in rural Uganda, while generating the evidence base necessary to shape future interventions, policy advocacy, and investment strategies in the decentralized electricity space.