African Applied Soil Science (Agri/Earth Science)

Urban Ghanaian Energy Efficiency and Demand-Side Management Innovations

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Abstract

Urbanization in Ghana has led to increased energy demand, necessitating innovative approaches to manage this growth sustainably. A mixed-methods approach combining qualitative interviews with quantitative data analysis was employed to assess the impact of these innovations on energy consumption patterns. Initial findings suggest that a targeted intervention programme for public lighting reduced electricity usage by approximately 20% across monitored urban areas. The effectiveness of demand-side management strategies in reducing energy consumption is promising, particularly when tailored to specific sectors like urban lighting. Further research should focus on scaling up these interventions and exploring their scalability across different urban settings. Urbanization, Energy Efficiency, Demand-Side Management, Ghana The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, urbanization, renewable energy, district heating, smart grids, behavioural economics, life cycle assessment*

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