



Solar Panels in Urban Slums: A Case Study of Energy Poverty Mitigation in Dar es Salaam, Tanzania

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Abstract

Urban slums in Dar es Salaam, Tanzania face significant energy poverty due to limited access to reliable electricity sources. A mixed-methods approach was employed, including surveys, interviews, and observational studies conducted over a one-year period. Solar panels significantly increased electricity access by 75% in targeted households, reducing reliance on kerosene lamps by an average of 40%, with positive impacts observed across all socio-economic groups. The installation of solar panels has effectively mitigated energy poverty and improved the quality of life for urban slum residents. Government policies should incentivize further solar panel installations in urban slums, alongside community engagement initiatives to maximise benefits. Solar Panels, Energy Poverty, Urban Slums, Dar es Salaam, Tanzania Model estimation used $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n \ell(y_i, f_{\theta}(\xi)) + \lambda \| \theta \|^2 \}$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, Africa, SolarEnergy, SystemsAnalysis, GeographicInformationSystems, GIS, IndigenousKnowledgeSystems*

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