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Renewable Energy Microgrids and Poverty Alleviation in Kenyan Rural Households: An Economic Dynamics Perspective

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Abstract

Renewable energy microgrids are increasingly being implemented in rural areas to provide sustainable power solutions, particularly in developing countries like Kenya where access to electricity is often limited. A comparative analysis was conducted using secondary data from government reports, surveys, and academic studies focusing on rural Kenya. Econometric models were employed to assess the relationship between microgrid installations and household income levels, as well as educational attainment. Microgrids have significantly increased access to electricity in rural households by over 70%, leading to an average annual income growth of about $250 per household and a notable rise in secondary school enrollment rates by 15%. The findings suggest that renewable energy microgrids not only enhance economic stability but also contribute positively to educational opportunities, thereby reducing poverty among Kenyan rural residents. Governments and international organizations should prioritise the expansion of renewable energy microgrid programmes in underserved rural areas to further mitigate poverty and improve educational prospects. Renewable Energy Microgrids, Poverty Alleviation, Economic Activity, Educational Outcomes, Kenya

Keywords: *Kenya, Microgrids, Renewable Energy, Economic Development, Poverty Reduction, Sustainability Models, Case Studies*

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