



Solar Energy Innovations for Livestock Management in Maize Farming Communities of Upper West Region, Ghana: Economic and Technological Perspectives

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Abstract

Solar energy innovations have been pivotal in addressing rural electrification challenges, particularly in regions where access to conventional power sources is limited. A mixed-methods approach was employed, incorporating surveys, interviews, and focus groups with stakeholders from the agricultural sector and community members. Survey results indicated that over 60% of respondents reported significant savings in electricity costs due to solar energy solutions. There is a notable interest in technological advancements such as automated feeding systems powered by solar power. Solar energy solutions offer substantial economic benefits, particularly for livestock management and maize farming communities. Technological adoption is constrained primarily by initial investment costs but shows promising potential with supportive policies. Policy makers should prioritise funding mechanisms to reduce the upfront cost of solar energy systems while promoting public-private partnerships to facilitate technological innovation in rural areas.

Keywords: *Geographic, Sub-Saharan, Renewable Energy, Livestock Management, Technological Adoption, Sustainability, Rural Development*

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