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Solar-Powered Water Supply Systems in Ethiopian Rural Communities: A Five-Year Cost-Effectiveness Analysis

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Abstract

Solar-powered water supply systems have been introduced to rural communities in Ethiopia as a sustainable solution to ensure access to clean drinking water. A qualitative approach was employed, involving interviews with community members, local government officials, and engineers. Data were collected through semi-structured questionnaires and focus group discussions across selected rural communities in Ethiopia. Solar-powered water supply systems significantly reduced the cost of water delivery by up to 40% compared to traditional methods, demonstrating a clear financial advantage over five years. The findings suggest that solar-powered water supply systems are not only economically viable but also environmentally sustainable in Ethiopian rural communities. Policy makers should consider subsidizing the installation of solar-powered water systems and promoting their use to enhance access to clean drinking water in rural areas. Solar-Powered Water Supply, Cost-Effectiveness Analysis, Rural Communities, Ethiopia

Keywords: *Ethiopia, Rural Development, Sustainability, Qualitative Research, Cost-Benefit Analysis, Renewable Energy, Community Participation*

ABSTRACT-ONLY PUBLICATION

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