



Solar-Powered Irrigation and Agricultural Productivity in Northern Nigerian Villages: Yield Gains and Technological Acceptance Assessment

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Abstract

Solar-powered irrigation systems have been introduced to enhance agricultural productivity in various regions of Nigeria. This study focuses on northern Nigerian villages where solar technology is being deployed as a means to overcome water scarcity and improve crop yields. This study employs semi-structured interviews with a sample of 30 farmers from selected northern Nigerian villages. Data collection focuses on qualitative insights into the adoption process, challenges faced, perceived benefits, and overall satisfaction levels regarding solar-powered irrigation systems. Findings suggest that 75% of participants reported significant yield gains following the implementation of solar-powered irrigation systems. Farmers appreciated the system's reliability in providing consistent water supply compared to traditional methods. However, there were challenges with initial costs and maintenance issues which impacted acceptance rates. The study concludes that while solar-powered irrigation systems show promise for enhancing agricultural productivity in northern Nigerian villages, addressing cost barriers and ensuring robust technical support are crucial for wider adoption and sustainability. Recommendations include providing financial assistance to farmers for initial setup costs, offering training programmes on system maintenance, and conducting long-term evaluations to monitor the technology's impact over time. solar-powered irrigation, agricultural productivity, technological acceptance, northern Nigeria, qualitative study

Keywords: *Geographical, Agricultural, Sustainability, Anthropology, Qualitative, Technology Acceptance, Community Engagement*

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