



Economic and Social Impact Assessment of Solar-Powered Irrigation Systems in Maize Production, Southern Mozambique: A Decades-long Perspective

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Abstract

Solar-powered irrigation systems have been introduced in maize production across Southern Mozambique as a means to enhance agricultural productivity and sustainability. The study employed a mixed-methods approach combining econometric modelling with qualitative interviews to assess system performance and user perceptions. Over the study period, solar-powered irrigation increased maize yields by an average of 20% in irrigated fields compared to non-irrigated plots, demonstrating significant productivity gains. The systems have provided substantial benefits, including improved food security and reduced reliance on traditional water sources for irrigation. Governments should continue promoting solar-powered irrigation by providing subsidies and technical support to farmers in Southern Mozambique.

Keywords: *Sub-Saharan, GIS, poverty reduction, sustainability, rural development, climate change adaptation, participatory approach*

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