



Renewable Energy Integration for Nomadic Herders in Northern Kenya: Livelihood Enhancement and Sustainability Assessment

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Published: 28 June 2011 | **Received:** 02 February 2011 | **Accepted:** 21 May 2011

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DOI: [10.5281/zenodo.18930085](https://doi.org/10.5281/zenodo.18930085)

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Abstract

Renewable energy technologies are increasingly recognised as essential for sustainable development in arid regions like northern Kenya, where nomadic herders face significant challenges such as unreliable electricity supply and environmental degradation. A mixed-method approach combining qualitative interviews with semi-structured questionnaires was employed to gather data from local stakeholders, including herders, community leaders, and government officials. Nomadic herders in the region expressed strong interest in solar-powered water pumping systems (SPWPS) for improving herd health and milk production. The proportion of households willing to invest in SPWPS was found to be approximately 45%. Renewable energy adoption has significant potential to support nomadic herders' livelihoods by addressing key challenges such as water scarcity and reducing environmental impact, indicating the need for targeted policy interventions to facilitate wider uptake. Government policies should prioritise the provision of subsidies or incentives for renewable energy projects in pastoral areas. Strengthening community engagement through participatory planning processes is also crucial for successful implementation.

Keywords: *Nomadic, pastoralism, renewable energy, sustainability, assessment, adaptation, GIS*

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