



Enhancing Maasai Water Harvesting Systems in Northern Kenya: An Engineering Perspective

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Abstract

Maasai herders in northern Kenya face significant water scarcity challenges due to climate variability and poor infrastructure. A participatory approach involving community workshops was employed to design and test the effectiveness of the proposed system. Data collection included interviews, observations, and hydrological assessments conducted over a year. The modular rainwater catchment system proved effective in capturing an average of 30% more water compared to traditional methods, reducing herders' reliance on unreliable surface water sources. This study demonstrates the potential for engineering interventions to improve Maasai water security and highlights the importance of community engagement in sustainable development projects. Further research should explore scaling up this system across other Maasai communities, with a focus on integrating climate change adaptation strategies into existing infrastructure. Maasai herders, rainwater harvesting, engineering solutions, climate resilience. The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u + \epsilon$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Kenya, Maasai, Water Harvesting, Community Participation, Engineering Design, Sustainable Infrastructure, Climate Resilience

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