



# Cost-Effectiveness Evaluation of Rainwater Harvesting Systems in Kenyan Village Communities,

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## Abstract

Rainwater harvesting systems have been proposed as a sustainable solution for water supply in informal settlements of Kenya. A mixed-methods approach was employed, including surveys, interviews, and financial analyses to assess system performance and community acceptance. The study found that while the initial setup cost for rainwater harvesting systems was high, they provided significant water savings in arid regions, reducing reliance on unreliable external sources by up to 50%. Despite higher upfront costs, the long-term benefits of reduced operational expenses and improved hygiene outcomes outweighed these initial investments. Communities should be encouraged to adopt rainwater harvesting systems through targeted subsidies and public education campaigns.

**Keywords:** *African Geography, Cost-Benefit Analysis, Sustainable Development, Participatory Research, Rural Water Supply, Quantitative Methods, Qualitative Inquiry*

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