



Quasi-Experimental Evaluation of Cost-Effectiveness in Water Treatment Facilities in Tanzania

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Abstract

Water treatment facilities in Tanzania have been implemented to improve access to clean water, but their cost-effectiveness varies significantly due to differing local conditions and infrastructure. A quasi-experimental approach was employed to analyse data from 50 randomly selected villages across Tanzania. The analysis included econometric models to estimate the cost-effectiveness of water treatment systems in terms of both financial benefits and environmental impact. The econometric model revealed that village-specific factors significantly influence the cost-effectiveness of water treatment facilities, with a coefficient indicating that for every

10 increase in initial investment, villages with higher economic development saw an average reduction in waterborne diseases. The econometric model is represented as $Y_{it} = \beta_0 + \beta_1 X_{it} + \epsilon_{it}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, African, Spatial, Impact, Econometrics, Randomized, Cluster*

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