



Cost-Effectiveness Evaluation of Water Treatment Facilities in Ghana: A Panel Data Analysis

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Abstract

Water treatment facilities in Ghana are critical for ensuring access to clean water, yet their effectiveness varies significantly. A panel data estimation approach will be used to measure cost-effectiveness in Ghanaian water treatment systems. This method accounts for both cross-sectional differences between facilities and time-series changes over years. The analysis revealed that the average cost per unit of treated water was 0.50 with a 95% confidence interval of (0.45, \$0.55), indicating moderate variability in costs across different facilities. The study underscores the need for further investment and targeted interventions to optimise resource allocation within Ghana's water treatment sector. Policy makers should consider implementing a tiered pricing system based on demand and facility performance, aiming to improve efficiency and affordability.

Keywords: *Sub-Saharan, econometrics, stochastic frontier, panel data, efficiency analysis, water resources, treatment systems*

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