



# Cost-Efficiency Assessment of Water Treatment Facilities in Ghana Using Quasi-Experimental Design

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## Abstract

Water treatment facilities in Ghana face challenges related to cost-effectiveness and operational efficiency. A quasi-experimental design was employed to evaluate the performance of existing water treatment facilities. The study analysed data from 10 randomly selected communities across four regions of Ghana, focusing on operational costs, energy consumption, and water quality outcomes. The analysis revealed that while some facilities operated within budget constraints (90% of facilities), there was a significant variation in energy usage efficiency among different treatment methods (mean reduction *rate* = -15%). This study provides insights into the cost-effectiveness of water treatment systems, highlighting areas where improvements are needed to ensure sustainable and efficient service delivery. Future research should focus on implementing more energy-efficient technologies and expanding access to these facilities in underserved communities. Water Treatment Facilities, Quasi-Experimental Design, Cost-Efficiency, Ghana

**Keywords:** *Sub-Saharan, GIS, econometrics, SWOT, TURF, sustainability, performance assessment*

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