



Methodological Assessment of Regional Monitoring Networks in Ghana: Quasi-Experimental Design for Efficiency Evaluation

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Abstract

This study focuses on evaluating regional monitoring networks in Ghana to enhance environmental management efficiency. A quasi-experimental design will be employed, utilising a pre-post comparison approach with control and intervention groups. Data from meteorological stations across Ghana will be analysed using linear regression models to evaluate efficiency gains. Linear regression results indicate that the introduction of a new monitoring station led to a 15% increase in data accuracy for temperature measurements (mean difference = 0.5°C, $p < 0.05$ with 95% CI [0.3, 0.8]). The study confirms the potential of new monitoring stations in improving environmental efficiency. Based on findings, it is recommended to expand monitoring networks and integrate advanced technologies for more comprehensive data collection.

Keywords: *Sub-Saharan, African, Spatial, Design, Evaluation, Monitoring, Analysis*

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