



Methodological Quasi-Experimental Design for Evaluating Regional Monitoring Networks in Ghana: A Framework for Assessing System Reliability

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Abstract

Regional monitoring networks play a critical role in assessing climate change impacts and adaptation strategies across Ghana. However, their effectiveness is often underpinned by theoretical frameworks that guide methodological evaluations. The proposed framework employs statistical models to assess system performance under varying conditions. A key component is the application of time series analysis (e.g., $ARIMA(p, d, q)$) to predict future trends and uncertainties within the network. The theoretical framework presented offers a robust methodology for evaluating and enhancing regional monitoring systems, providing actionable insights for stakeholders in Ghana's energy sector. Stakeholders should prioritise the implementation of these advanced data processing algorithms to improve system reliability and ensure more accurate climate change impact assessments.

Keywords: *Sub-Saharan, GIS, econometrics, stakeholder analysis, climate modelling, intervention studies, evaluation frameworks*

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