



Methodological Assessment of Regional Monitoring Networks in Kenya: A Cost-Effectiveness Evaluation

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Abstract

In Kenya, various regional monitoring networks have been established to enhance environmental surveillance in different sectors such as agriculture and health. A systematic review was conducted using predefined inclusion criteria for studies published between and . Data were analysed using a mixed-effects model with robust standard errors to account for heterogeneity across studies. The analysis revealed that the cost-effectiveness of monitoring networks varied significantly based on their operational costs, data quality, and environmental impact. This meta-analysis highlights the importance of integrating best practices in network design and operation to maximise efficiency while minimising expenses. Future studies should prioritise standardised reporting protocols and regular performance evaluations to ensure consistent and reliable monitoring outcomes. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Regional Monitoring Networks, Sub-Saharan Africa, Geographic Information Systems, Cost-Benefit Analysis, Sampling Techniques, Randomized Controlled Trials, Data Integration*

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