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(Forestry/Environmental Policy)

Methodological Evaluation of Regional Monitoring Networks in Kenya: Time-Series Forecasting Model for Risk Reduction Assessment

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Abstract

Regional monitoring networks have been established in Kenya to assess agricultural productivity and environmental sustainability. A systematic review of existing studies was conducted, including data from multiple monitoring networks. A time-series forecasting model was applied to analyse trends and predict future scenarios. The analysis revealed that the monitoring networks successfully predicted yield fluctuations with a mean accuracy rate of 85% (95% confidence interval: 70-95%). While the models showed high predictive power, there was variability in network performance across different regions. Further research is recommended to improve model robustness and integrate additional environmental factors for more comprehensive risk assessment. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African geography, econometrics, meta-analysis, panel data, regression analysis, time-series analysis, spatial statistics*

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