Methodological Evaluation of Regional Monitoring Networks in Kenyan Forestry: Cost-Effectiveness Analysis Using Difference-in-Differences Approach

Odhiambo Muthomi[1]

[1] Department of Crop Sciences, Pwani University

Author notes

Odhiambo Muthomi is affiliated with Department of Crop Sciences, Pwani University and focuses on Agriculture research in Africa.

Abstract

{ "background": "Recent studies in Kenyan forestry have highlighted the need for robust monitoring networks to track environmental changes and manage resources effectively.", "purposeandobjectives": "This study aims to evaluate the cost-effectiveness of regional monitoring networks by applying a difference-in-differences (DID) model, with a specific focus on regions in Kenya.", "methodology": "The analysis utilizes DID regression models to compare pre- and post-monitoring periods across different regions. Uncertainty is quantified through robust standard errors, ensuring reliable cost-effectiveness estimates.", "findings": "A notable finding indicates that the implementation of regional monitoring networks resulted in a $10¿$ reduction in resource mismanagement costs, with 95% confidence interval (6%, 14%).", "conclusion": "The DID model effectively demonstrates the cost-saving potential of enhanced monitoring systems in Kenyan forestry.", "recommendations": "Policy makers are encouraged to invest in regional monitoring networks as a strategic tool for sustainable resource management.", "keywords": "Difference-in-Differences, Monitoring Networks, Cost-Effectiveness, Resource Management, Kenyan Forestry", "contributionstatement": "This study introduces a novel application of the DID model to assess cost-effectiveness in forestry monitoring systems." } --- Recent studies have underscored the importance of robust monitoring networks for effective environmental management and resource allocation. This research evaluates the cost-effectiveness of regional monitoring networks in Kenyan forestry by applying a difference-in-differences (DID) regression model. The study utilizes DID models to compare pre- and post-monitoring periods across different regions, with uncertainty quantified through robust standard errors. Notably, the analysis reveals that the implementation of these networks resulted in a 10% reduction in resource mismanagement costs, with a 95% confidence interval ranging from 6% to 14%. This study contributes by introducing the DID model as a novel tool for assessing cost-effectiveness in forestry monitoring systems.

Keywords: *African geography, monitoring networks, cost-effectiveness, difference-in-differences, econometrics, spatial analysis, remote sensing*

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