



The Impact Assessment Framework for Mining and Agricultural Land Use in Zambia: A Methodological Approach

Sambo Kapenda^{1,2}, Chinaza Mwale², Lupindu Kalilo³

¹ University of Zambia, Lusaka

² Zambia Agricultural Research Institute (ZARI)

³ Copperbelt University, Kitwe

Published: 25 September 2008 | **Received:** 14 May 2008 | **Accepted:** 01 September 2008

Correspondence: skapenda@yahoo.com

DOI: [10.5281/zenodo.18869430](https://doi.org/10.5281/zenodo.18869430)

Author notes

*Sambo Kapenda is affiliated with University of Zambia, Lusaka and focuses on Agriculture research in Africa.
Chinaza Mwale is affiliated with Zambia Agricultural Research Institute (ZARI) and focuses on Agriculture research in Africa.*

Lupindu Kalilo is affiliated with Copperbelt University, Kitwe and focuses on Agriculture research in Africa.

Abstract

Mining activities in Zambia have significantly impacted agricultural land use, leading to a need for robust assessment methodologies. The study employed a mixed-methods approach combining remote sensing data with field surveys to assess land use changes, soil quality alterations, and crop yield impacts. A multivariate regression model was used to estimate the relationship between mining activities and agricultural performance. Remote sensing analysis revealed a 10% decline in arable land coverage due to mine reclamation efforts over the past decade. The developed framework provides stakeholders with actionable insights for sustainable land use planning, mitigating environmental degradation from mining operations. Stakeholders should prioritise soil remediation and integrated pest management strategies to enhance agricultural productivity in affected areas. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African geography, GIS, remote sensing, agricultural zoning, sustainability assessment, econometrics, land use change*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge