African Ecology and Conservation (Environmental/Earth Science)

Integrated Watershed Management in Uganda: A Review of Practices and Impacts on Sustainable Agriculture and Water Supply

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Abstract

This study addresses a current research gap in Environmental Science concerning Integrated Watershed Management for Sustainable Agriculture and Water Supply in Uganda. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured review of relevant literature was conducted, with thematic synthesis of key findings. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Integrated Watershed Management for Sustainable Agriculture and Water Supply, Uganda, Africa, Environmental Science, systematic review This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African geography, Integrated watershed management, Sustainable agriculture, Water resources, Ecosystem services, Participatory approaches, Hydrology*

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