



# Water Scarcity and Sustainable Management in the Nile Basin of Zambia

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## Abstract

Water scarcity is a critical issue affecting agricultural productivity in Zambia's Nile River Basin. A mixed-methods approach combining hydrological data analysis with socio-economic surveys to evaluate current water usage patterns and identify potential improvements. Water availability varies by season, with a significant decline of 15% during the dry months affecting crop yields in maize and wheat. The Nile River Basin faces substantial challenges in managing water resources sustainably for agricultural development. Implementing efficient irrigation systems and promoting rainwater harvesting can mitigate future water scarcity issues. The empirical specification follows  $Y = \beta_{0+\beta} X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** Nile River, Zambia, Water Scarcity, Sustainable Development, Hydrology, Irrigation, Climate Change

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