



Integrated Watershed Management in South Africa: A Sustainable Agriculture and Water Supply Perspective

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Abstract

Integrated Watershed Management (IWM) is a holistic approach to managing natural resources within watersheds for sustainable development. A mixed-methods approach combining quantitative analysis of field data with qualitative interviews to assess the effectiveness of IWM interventions in selected watersheds. Data from three pilot watersheds indicate an average increase of 15% in crop yields due to improved irrigation systems and soil conservation practices implemented under IWM. IWM has demonstrated significant potential for enhancing agricultural productivity and water supply security, particularly through targeted interventions such as contour farming and drip irrigation. Policy makers should prioritise the scaling up of successful IWM projects with a focus on community engagement and capacity building. The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African Geographic Watershed, Sustainable Development, Integrated Water Resources Management, Methodological Framework, Quantitative Analysis, Environmental Economics, Participatory Planning*

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