# Participatory GIS Mapping for Water Management in Ethiopian Drylands: Adoption and Economic Impacts

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**Published:** 21 July 2001 | **Received:** 15 March 2001 | **Accepted:** 17 June 2001

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**DOI:** 10.5281/zenodo.18728718

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## Abstract

Participatory Geographic Information System (GIS) mapping has been applied in various contexts to enhance water management and support sustainable development, particularly in arid regions like Ethiopia's drylands. A mixed-method approach was employed, including a survey questionnaire and focus group discussions (FGDs) with local stakeholders. Data were analysed using descriptive statistics and thematic mapping techniques. Participatory GIS adoption rates varied significantly across different geographic regions in Ethiopia, with higher uptake in areas characterized by more pronounced water scarcity and limited access to formal education. The findings suggest that participatory GIS can be an effective tool for improving water management practices in Ethiopian drylands, although its full economic benefits require further empirical validation. Further research should focus on quantifying the long-term economic impacts of participatory GIS and exploring ways to enhance adoption rates among more remote communities. GIS Mapping, Water Management, Drylands, Adoption Rates, Economic Impacts The empirical specification follows $Y = \vec{\beta_{0+\beta}} \, p \, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *African Geospatial, Participatory Approach, GIS Techniques, Sustainable Development, Rural Economics*

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