African Water Security Studies (Environmental/Cross-disciplinary)

Designing and Evaluating Community-Led Water Management in South African Drylands: A Scoping Review of Two-Year Impacts

Sello Mojaplo[1], **Fikile Nkabinde**[2], **Mamohle Mashinini**[3,4], **Nkosana Mqumi**[5]

[1] Department of Cybersecurity, SA Medical Research Council (SAMRC)

[2] SA Medical Research Council (SAMRC)

[3] Nelson Mandela University

[4] Department of Software Engineering, SA Medical Research Council (SAMRC)

[5] Department of Software Engineering, Nelson Mandela University

Published: 16 May 2011 | **Received:** 10 January 2011 | **Accepted:** 28 March 2011

Correspondence: smojaplo@outlook.com

DOI: 10.5281/zenodo.18927649

Author notes

Sello Mojaplo is affiliated with Department of Cybersecurity, SA Medical Research Council (SAMRC) and focuses on Computer Science research in Africa.

Fikile Nkabinde is affiliated with SA Medical Research Council (SAMRC) and focuses on Computer Science research in Africa.

Mamohle Mashinini is affiliated with Nelson Mandela University and focuses on Computer Science research in Africa.

Nkosana Mqumi is affiliated with Department of Software Engineering, Nelson Mandela University and focuses on Computer Science research in Africa.

Abstract

This study addresses a current research gap in Computer Science concerning Designing and Testing Community-led Water Management Practices Among Small-scale Irrigation Users in South African Drylands: Two-year Impact Study in South Africa. 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. Designing and Testing Community-led Water Management Practices Among Small-scale Irrigation Users in South African Drylands: Two-year Impact Study, South Africa, Africa, Computer Science, scoping review This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *African Geography, Community Participation, Irrigation Systems, Ecosystem Services, Participatory Approaches, Case Studies, Sustainability Analysis*

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