

Rooftop Rainwater Harvesting and Dry Season Household Water Security in Maroua

A Governance and Maintenance Perspective

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ABSTRACT

In the Sudano-Sahelian city of Maroua, Cameroon, prolonged dry seasons exacerbate household water insecurity. Rooftop rainwater harvesting (RRWH) is promoted as a critical adaptation strategy, yet its effectiveness is often analysed through purely technical or hydrological lenses, overlooking socio-institutional factors. This perspective piece examines the governance and maintenance dimensions of RRWH systems, arguing that these factors are primary determinants of their sustained contribution to dry-season water security. The analysis synthesises field observations and stakeholder interviews from the city, applying a political ecology framework to interrogate the lifecycle of RRWH infrastructure. A key finding is that approximately 60% of systems surveyed were non-functional within five years of installation, primarily due to neglected maintenance and a lack of clear institutional responsibility for support. The potential of RRWH for enhancing water security is significantly undermined by fragmented governance and the absence of sustained maintenance ecosystems, not by technical design flaws. Establish clear municipal guidelines for RRWH installation and upkeep; integrate community-based maintenance collectives into urban water governance; develop targeted subsidy schemes for spare parts and repairs. water security, rainwater harvesting, urban governance, maintenance, Sahel, Cameroon This perspective provides a novel governance-focused analysis of RRWH, shifting the discourse from initial installation to long-term institutional support as the critical success factor.

Keywords: *Sudano-Sahelian region, household water security, rainwater harvesting, urban governance, infrastructure maintenance, Cameroon, adaptation strategies*

Article Highlights

- System failure is driven by governance gaps, not technical design flaws.
- Fragmented oversight undermines the long-term potential of rainwater harvesting.
- Clear municipal guidelines and community-based

Policy Imperative

Shift focus from installation to long-term maintenance ecosystems, integrating community collectives and targeted subsidies into urban water governance.

This analysis reframes water security through a political ecology of infrastructure maintenance.

<p>maintenance are critical for sustainability.</p> <ul style="list-style-type: none">• The lifecycle of infrastructure requires sustained institutional support to secure water.	
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