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Circular food systems as a policy pathway for climate-resilient agro-ecosystems in eastern and southern Africa

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Abstract

Climate resilience in African agri-food systems is frequently framed through improved production practices, yet the institutional conditions required to close resource loops and sustain multifunctional agro-ecosystems remain underdeveloped. This paper examines how circular food systems are being enabled, constrained, and governed in Tanzania, Mozambique, and Zimbabwe across diverse agro-ecological and institutional settings. It draws on comparative analysis of national policy and regulatory frameworks, country case evidence, and findings from structured multi-stakeholder policy dialogues involving government, research organisations, producers, private sector actors, and civil society.

The results show that circularity is already present in practice through composting, nutrient recycling, use of crop and livestock residues, water reuse, biomass-based energy, and waste-to-value enterprise activity. However, these practices remain weakly embedded in mainstream policy implementation. Across the three countries, the principal constraints are institutional rather than technical. Circular initiatives are limited by fragmented mandates, sectoral policy design, weak incentives for resource recovery, poor coordination between agricultural and municipal systems, and inadequate recognition of informal and small-scale circular enterprises within planning and investment frameworks. While existing agricultural, environmental, and local government policies contain relevant provisions, they operate in isolation and rarely provide an integrated basis for scaling circular practices.

The paper argues that circular food systems should be treated as a governance framework for reorganising relationships among production, consumption, waste, land, water, and local markets. Where policy alignment is stronger, circularity contributes to improved soil health, more efficient resource use, diversified rural incomes, and reduced exposure to climate and market shocks. Advancing climate-resilient agro-ecosystems therefore requires more than technical innovation. It requires policy architectures that integrate circularity into agricultural transformation strategies, territorial planning, and public investment systems. The paper concludes by proposing a policy framework centred on cross-sector coordination, locally grounded enterprise development, and stronger science-policy interfaces to support the transition from fragmented pilots to system-level implementation.

Keywords: Agro-ecosystem governance, circular food systems, climate resilience, policy integration, resource recovery