

TAILORING INNOVATION: HOW REGIONAL DIFFERENCES SHAPE QUINTUPLE HELIX ECOSYSTEMS FOR CLIMATE-SMART AGRICULTURE ADOPTION

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Abstract: African economies rely heavily on agriculture, yet the sector faces increasing pressure from climate change. How can support structures effectively enable the adoption of climate-smart agriculture (CSA) practices among small-scale farmers? And how should these structures be designed across diverse regional context? This study examines the needs expressed by stakeholders to inform the design of CSA support systems in South Africa and Tanzania, drawing on qualitative data from 76 interviews with actors in the horticulture sector. The findings show that such structures are strongly shaped by stakeholder-identified constraints and needs, as well as by regional socio-economic and environmental conditions. The study tests the hypothesis that a quintuple helix ecosystem – integrating industry, academia, government, civil society, and environmental dimensions – offers a useful framework when applied through a bottom-up, demand-driven approach. Early stakeholder involvement emerges as a key mechanism for co-creation. The results indicate that no single support structure design can be applied across contexts, contributing to a better understanding of how context-sensitive innovation systems can support CSA adoption.

Keywords: Food security; Climate-smart agriculture; Innovation platforms; Helix ecosystems; Horticulture; South Africa; Tanzania.