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Beyond inclusion: Gender-responsive nature-based solutions for climate-resilient agriculture in sub-Saharan Africa

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Abstract

Climate change is placing increasing pressure on agricultural systems in sub-Saharan Africa, where many rural communities depend on rain-fed smallholder farming and natural resources for their livelihoods. These pressures are made worse by land degradation, biodiversity loss, water stress and persistent rural poverty, all of which threaten food security and community resilience. Women are at the heart of these agricultural systems. They contribute to farming, seed management, food processing, household nutrition and natural resource management. Yet, their ability to adapt to climate change is often limited by unequal access to land, finance, extension services, climate information, technologies, markets and decision-making spaces. This review examines how gender-responsive Nature-Based Solutions can strengthen climate-resilient agriculture and improve women's adaptive capacity in Sub-Saharan Africa. Using a PRISMA guideline, the article synthesizes peer-reviewed studies and high-quality institutional literature published between 2015 and April 2026. The review focuses on Nature-Based Solutions relevant to agriculture, including agroforestry, ecosystem restoration, soil and water conservation, biodiversity-based farming, sustainable land management, farmer-managed natural regeneration and ecosystem-based adaptation. The evidence shows that Nature-Based Solutions can support agricultural resilience by improving soil fertility, water retention, biodiversity, microclimate regulation, livelihood diversification and ecosystem services. However, these benefits are not automatic. Their success depends on inclusive governance, secure land and resource rights, access to finance, recognition of local knowledge and gender-transformative implementation. When women's labour, knowledge, rights and agency are not properly considered, climate-resilient interventions may unintentionally reproduce or even deepen existing gender inequalities. Gender-responsive Nature-Based Solutions should go beyond simply including women as beneficiaries. Women should be recognised as farmers, innovators, knowledge holders, restoration leaders and decision-makers. Strengthening women's access to land, climate information, finance, extension services, technologies and leadership opportunities is essential for building resilient, equitable and multifunctional agro-ecosystems in sub-Saharan Africa.

Keywords: Adaptive capacity, climate change, gender-responsive adaptation, nature-based solutions, resilience, sub-Saharan Africa, women