

Effectiveness of Urban Agriculture as a Nature-Based Solution for Urban Climate Resilience in Mutare, Zimbabwe

Munashe Catharine Kurehwatira – *Africa University*

Sebastian Chakaredza – *Africa University*

Joseph Kamuzhanje - *Coopers Zimbabwe*

Faith Chinete – *Africa University*

Vigilance Zibako – *Africa University*

George Pfumai Miti – *Africa University*



2025

Executive Summary

1. Introduction

Urban areas are expected to survive, adapt and thrive in the face of the changing climate. However, the world's urban areas are struggling with poverty, growing population, food insecurity, pollution and inequalities in the face of climate change, making climate resilience an important attribute for urban areas today. The beneficial and promising role of urban agriculture as a nature-based solution (NbS) for urban resilience is widely acknowledged by various stakeholders. However, there is a dearth of information on the effectiveness of urban agriculture as a NbS for building urban climate resilience. Therefore, this study sought to assess the effectiveness of urban agriculture as a NbS for enhancing urban climate resilience in Mutare.

2. Methodology

The research followed a sequential mixed methods case study design. Key informant interviews and focus group discussions were used during the first phase of data collection. Household Survey were conducted during the second phase of the research to collect quantitative data. Qualitative data from interviews and focus group discussions were analysed using thematic content analysis. Descriptive statistics were used to summarise the findings, while multiple linear regression and correlation analysis were used to examine the benefits, challenges, and stakeholders' perceptions of urban agriculture as a NbS for enhancing urban climate resilience. The research received approval from both the Africa University Research and Ethics Committee and the relevant local authorities. The study strictly adhered to all established research protocols, including community entry procedures.

3. Key findings

Urban Agricultural Practices in Mutare, Zimbabwe

Participants across all areas reported engaging in urban agriculture activities that included field crop, horticultural, fruit and animal production. Participants from all residential zones acknowledged the dual role of urban agriculture, that is for both household consumption and income generation. Participants in all residential zones indicated value added activities in addition to the production practices. Various spaces used for urban agriculture, including, backyards, which were identified as the most used spaces across all zones.

Benefits of Urban Agriculture in Mutare

Participants from all areas expressed generally positive attitudes toward urban agriculture, emphasising the multi-dimensional value to households and the broader community. Participants emphasised the role of urban agriculture in enhancing food security, improving access to fresh and healthy food, and promoting positive dietary habits. Economic benefits were also highlighted, including reduced household food costs and opportunities to generate supplemental income, particularly in high-density areas. Environmental advantages such as waste management, greening of urban spaces, and community environmental awareness were noted.

Challenges facing urban agriculture farmers in Mutare

The data reveals that urban farmers face multiple, overlapping challenges with particular emphasis on land access, climate variability, pests and disease management as well as policy ambiguity. More than 60% of the participants indicated lack of space (72%), pests and diseases (74%), water shortages (69%), heat stress (67%), conflict with the authorities (64%) and licencing and permits (63) as top challenges.

Coping strategies being adopted by Urban agriculture farmers in Mutare

More than 60% of the participants indicated that they rent land from neighbours, diversify production to spread risk, practice crop rotation and engage in alternative business ventures as

their top coping strategies. In contrast, formal support services like extension services and collaborations are less utilised.

Potential Strategies for Scaling up Urban Agriculture

Participants expressed strong support for practical, low-cost, and technology-driven interventions that are adaptable to the constraints of urban environments. The use of innovative technologies, such as hydroponics, vertical farming and sack gardening, was also mentioned, by all participants.

Urban Agriculture as a Nature-Based Solution for Climate Resilience

Urban agriculture in Mutare demonstrates strong alignment with several core principles of NbS as defined by the International Union for Conservation of Nature (IUCN) and other international frameworks.

4. Implications and recommendations

- Urban agriculture in Mutare clearly functions as a critical safety net, providing both food and income for vulnerable populations across diverse residential zones.
- Clear communication of land use rights, licensing procedures, and institutional responsibilities is essential to reduce regulatory ambiguity and build trust among stakeholders.
- Extension services need to be expanded and restructured to provide technical support specifically adapted to urban farming systems.
- Investment in demonstration plots, training programs, and farmer field schools can promote adoption of innovative, resource-efficient technologies.
- Enhancing market access and developing local value chains will further increase the economic viability of urban agriculture, providing meaningful income-generating opportunities for households.
- Creating feedback platforms and farmer forums can improve accountability and encourage local ownership of urban agriculture initiatives.
- Longitudinal research is needed to track the evolution of urban agriculture in response to climate change, urban growth, and policy shifts. Evaluations of the effectiveness of technology adoption, support services, and community-based interventions will help refine strategies and allocate resources more efficiently.

5. Conclusions

This study has provided a comprehensive examination of urban agriculture practices, benefits, challenges, coping strategies, and potential pathways for scaling in Mutare. The findings reveal that urban agriculture is deeply embedded across all residential zones, serving as a vital livelihood activity that supports both household consumption and income generation. Farmers engage in diverse practices including crop production, horticulture, fruit cultivation, and animal husbandry. Urban agriculture offers multiple tangible benefits, ranging from enhanced food security, improved income and improved nutrition to environmental conservation and waste management. Despite these advantages, urban agriculture farmers in Mutare face significant challenges, notably limited land access, climate variability, pests and diseases, water shortages, and regulatory ambiguities. In response, farmers have developed adaptive coping strategies such as land rental, production diversification, and alternative income generation, though formal support services remain underutilised. Importantly, the study highlights strong community support for scaling up urban agriculture through technology-driven and resource-efficient interventions, such as water harvesting, soil testing, and vertical farming. However, effective

expansion will require integrated policy frameworks that address spatial barriers, inclusivity, sustainability, and integration into broader urban planning and climate resilience strategies.