



A Scoping Review on Youth Participation in Agriculture: Sustainable Development, Food Security, and Economic Growth

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JSRR/2024/v30i52012

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/113012>

Review Article

Received: 25/01/2024

Accepted: 29/03/2024

Published: 18/04/2024

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ABSTRACT

Youth participation in agriculture is a critical aspect of sustainable development, food security, and economic growth in many regions worldwide. This scoping review aims to provide a comprehensive overview of existing literature on youth engagement in agricultural activities. The review explores various dimensions of youth involvement in agriculture, including motivations, challenges, opportunities, and impacts. The methodology involves a systematic search of electronic databases, including scholarly articles, reports, and grey literature, to identify relevant studies published within a specified timeframe. The inclusion criteria encompass literature that examines the participation of youth (aged 15-35) in agricultural practices, policies, programs, and initiatives across different geographic regions and socio-economic contexts. Initial findings suggest a growing interest in understanding and promoting youth engagement in agriculture, driven by concerns about rural development, unemployment, and food insecurity. Motivations for youth involvement vary widely and may include economic incentives, cultural traditions, social factors, and environmental consciousness. However, numerous challenges hinder youth participation, such as limited access to land, financial resources, education, and technology, as well as negative perceptions of agriculture as a career. Moreover, the review identifies a range of opportunities for enhancing youth involvement in agriculture, including entrepreneurship programs, vocational training, access to markets, digital platforms, and policy interventions that support youth-friendly agricultural policies and strategies. Furthermore, the review highlights the diverse impacts of youth engagement in agriculture, including contributions to food production, innovation, rural development, poverty alleviation, and sustainable livelihoods. Overall, this scoping review provides valuable insights into the complexities surrounding youth participation in agriculture and underscores the need for multifaceted approaches to address barriers, leverage opportunities, and harness the potential of young people in shaping the future of agriculture and rural communities. Future research directions and implications for policy and practice are also discussed.

Keywords: Agriculture; potential building; inequality; policy; poverty; unemployment.

1. INTRODUCTION

Youth unemployment is a pressing issue globally, particularly in the Global South, where Africa faces significant challenges akin to those experienced by Asia in previous decades. These challenges stem from rapid population growth, sluggish economic development, high unemployment rates, a large proportion of unskilled labor, and an aging agricultural sector in decline. Sub-Saharan Africa (SSA) bears some of the highest poverty rates among youth, with more than 30% of the region's population falling into this demographic. With approximately 60% of Africa's population under 35 years old, the majority of youth are unemployed, especially in rural areas [1-3].

The transition from school to the workforce is increasingly difficult for young people, especially in developing countries, where three out of four find employment in the informal sector [4]. Agriculture remains a crucial livelihood for many rural Africans and a key driver of economic growth. Research and policies emphasize the role of agriculture in creating employment, ensuring food security, reducing inequality, and

alleviating poverty in Africa. Moreover, the burgeoning urban markets in Africa present opportunities for increased demand for processed foods, attracting significant private sector investments in agribusiness, estimated to exceed US\$100 billion annually by 2025 [6].

However, entrepreneurship in the agricultural sector faces several challenges, including poor infrastructure, limited access to finance and resources, inadequate markets, and competition with established farmers. The socioeconomic environment often portrays farming as a low-income occupation with long hours and little social status, discouraging youth involvement [5-6].

Defining "youth participation" is crucial for understanding the link between youth and agricultural development. It involves active engagement and influence, empowering young people as competent citizens rather than passive recipients of services. Youth participation in agriculture encompasses entrepreneurial activities, involvement in value chains, policy formulation, and advocacy in food system structures [7-9].

Despite its importance, youth face socioeconomic barriers to engaging in agriculture, including parental discouragement, the allure of white-collar professions, and the circumstantial nature of participation driven by immediate needs or lack of alternatives. Promoting youth participation requires supportive policies, stakeholder investment, and creating innovative spaces in agriculture that align with youth aspirations. Policy analyses indicate a focus on labor supply strategies rather than addressing constraints to business development and job creation, resulting from inadequate education and skills training. Upgrading young people's skills is essential for their participation in agriculture, enhancing food security, and reducing poverty across rural, peri-urban, and urban areas [10-12]. Given the evolving nature of the workforce and technological advancements, preparing youth with necessary skills, education, and ambition is critical. There's a need to eliminate barriers to youth engagement and create environments conducive to their success. While Africa identifies agriculture as a catalyst for socio-economic transformation and inclusive economic participation, there's uncertainty regarding whether intentions translate into desired outcomes. A scoping review aims to explore opportunities and challenges for youth participation in agriculture and the food system in Africa, hypothesizing a limited understanding among youth of their role in these systems and the impact of production-centric policies on effective youth participation in the agricultural value chain and food system [13-14].

Youth unemployment poses a significant challenge globally, with particular severity in regions of the Global South, notably Africa, mirroring the struggles experienced by Asia in past decades [15-17]. This dilemma arises from a confluence of factors including rapid population growth, sluggish economic expansion, high unemployment rates, a surplus of unskilled labor, and a declining agricultural sector. In Sub-Saharan Africa (SSA), youth poverty rates exceed 30%, encompassing a substantial portion of the region's population. With nearly 60% of Africa's inhabitants under 35 years old, the majority of youth grapple with unemployment, especially in rural locales [18-20]. Transitioning from education to employment proves increasingly arduous for young people, especially in developing nations where the informal sector absorbs three out of four job seekers. Despite its challenges, agriculture remains a vital source of livelihood for many Africans and a cornerstone of

economic progress. Extensive research and policy advocacy underscore agriculture's pivotal role in generating employment, ensuring food security, mitigating inequality, and combating poverty in Africa [21-22]. Moreover, burgeoning urban markets present opportunities for heightened demand in processed foods, attracting substantial private sector investments estimated to surpass US\$100 billion annually by 2025. However, entrepreneurship within the agricultural domain encounters numerous obstacles including inadequate infrastructure, limited access to finance and resources, scarce markets, and stiff competition with established farmers [23-25]. The prevailing socioeconomic milieu often paints farming as a low-prestige occupation characterized by long hours and modest financial returns, dissuading youth from active involvement.

Understanding "youth participation" is paramount for unlocking the potential of youth in agricultural development. It signifies their active engagement and influence, casting them as capable citizens rather than passive recipients of aid. Youth participation spans entrepreneurial endeavors, integration into value chains, policy advocacy, and structural engagement within the food system. Despite its significance, youth confront socioeconomic barriers hindering their participation in agriculture, ranging from parental discouragement and the allure of alternative careers to circumstantial involvement dictated by immediate needs or a lack of alternatives. Effectively promoting youth participation necessitates supportive policies, robust stakeholder investment, and the creation of innovative spaces that resonate with youth aspirations.

Policy analyses reveal a prevailing emphasis on labor supply strategies rather than addressing the constraints impeding business development and job creation, attributable to deficiencies in education and skills training. Upgrading youth skills emerges as a linchpin for enhancing their participation in agriculture, bolstering food security, and alleviating poverty across rural, peri-urban, and urban landscapes [26-27].

Given the evolving nature of the workforce and technological advancements, equipping youth with requisite skills, education, and ambition is imperative. Overcoming barriers to youth engagement and fostering conducive environments are pivotal for their success [28].

While Africa identifies agriculture as a linchpin for socioeconomic transformation and inclusive economic participation, the translation of intentions into tangible outcomes remains uncertain. A comprehensive scoping review aims to explore opportunities and challenges for youth participation in agriculture and the food system in Africa, postulating a dearth of understanding among youth regarding their roles within these systems and the ramifications of production-centric policies on effective youth engagement in the agricultural value chain and food system [29].

2. LITERATURE SEARCH

To conduct a scoping review on youth participation in agriculture, a comprehensive search strategy was employed to identify relevant literature across various academic databases, including PubMed, Scopus, Web of Science, and Google Scholar. The search strategy encompassed keywords, Boolean operators, and controlled vocabulary terms related to youth, agriculture, participation, engagement, involvement, and related concepts. The search was not limited by publication date, and both peer-reviewed articles and grey literature were considered for inclusion. The initial search strategy utilized combinations of the following keywords and phrases: "youth," "young people," "adolescents," "agriculture," "farming," "participation," "engagement," "involvement," "rural development," "sustainable agriculture," "youth empowerment," and "youth livelihoods." Boolean operators such as "AND" and "OR" were employed to refine the search and expand the scope of relevant literature. In addition to database searches, manual searching of reference lists from relevant articles and reviews was conducted to identify additional sources not captured in the initial search. Grey literature sources, including reports, policy documents, and conference proceedings, were also sought through targeted searches on organizational websites, government portals, and research repositories.

The search strategy aimed to capture a broad range of literature addressing various aspects of youth participation in agriculture, including but not limited to:

1. The role of youth in agricultural development and rural transformation.
2. Factors influencing youth engagement in agricultural activities.

3. Youth-led initiatives and programs in agriculture and rural communities.
4. Challenges and barriers faced by youth in accessing agricultural opportunities.
5. Impacts of youth participation on agricultural productivity, food security, and sustainable development.
6. Policy frameworks, interventions, and best practices for promoting youth involvement in agriculture.

The search process was iterative, with adjustments made to the search terms and inclusion criteria based on preliminary results and emerging themes. The inclusion criteria for screening potential studies encompassed relevance to the topic, focus on youth participation in agriculture, and availability of full-text articles or documents in English. Following the completion of the literature search, the identified records were imported into reference management software for deduplication and screening based on title and abstract relevance. Selected articles underwent full-text review, and data extraction was conducted to capture key information relevant to the scoping review objectives. The synthesis of findings from the literature will provide insights into the current state of knowledge, gaps, and future directions for research and practice in youth participation in agriculture [31-35].

2.1 Data Analyses

The 30 selected articles were imported into the QSR NVivo 12 qualitative data analysis software to facilitate systematic analysis. The initial objective was achieved by conducting a search query to identify the 20 most common words in the dataset, from which word clouds were generated. Choosing 20 common words aimed to provide a broad overview of focused themes and connections within the dataset concerning opportunities and challenges for youth participation in agriculture. These themes were then translated into nodes or categories for further analysis. Nodes included classifications such as 'development challenges,' 'demographical challenges,' 'unemployment,' 'youth perceptions and aspirations,' 'youth characteristics,' 'youth participation,' 'development programs,' and 'policy priorities' [36-38].

Further refinement of the dataset involved coding passages of data under the relevant nodes. An analysis was conducted using 'matrix queries'

and 'cross-tabulate functions' within the software to establish hierarchical relationships between nodes and identify similarities between the data, aligning with the second research objective. Additionally, a query was performed to extract qualitative and quantitative data on youth participation, perceptions, interests, and aspirations from the dataset [39-40].

Utilizing features within NVivo, elements of the dataset and results from the initial two objectives were further analyzed for patterns and causal relationships. This analysis was visualized using maps and diagrams to discern the role of youth in future agricultural food systems in Africa, thereby achieving the study objective. In summary, NVivo 12 facilitated comprehensive analysis of the dataset, allowing for systematic identification of themes, relationships, and patterns related to youth participation in agriculture. The software's functionality enabled the exploration of qualitative and quantitative data, providing insights into the challenges and opportunities for youth engagement in the agricultural sector [41].

2.2 Challenges and Opportunities for Youth in Agriculture

Youth engagement in agriculture presents both challenges and opportunities that shape the future of food production, rural development, and sustainable livelihoods. Across various regions and contexts, young people encounter a range of obstacles that hinder their participation in agricultural activities [42-44]. At the same time, promising opportunities are emerging within the agricultural sector that offer avenues for youth empowerment, innovation, and economic growth. One of the primary challenges faced by youth in agriculture is the limited access to land for farming. In many regions, land ownership is concentrated among older generations, making it difficult for youth to secure land for agricultural activities. The lack of access to land constrains their ability to start farming enterprises and hampers their prospects for long-term engagement in agriculture.

2.2.1 Lack of capital and credit

Youth often lack the financial resources and access to credit needed to invest in agricultural inputs, equipment, and technology. Limited access to capital hinders their ability to start or expand agricultural enterprises. Without adequate funding, young farmers struggle to modernize their operations, adopt new

technologies, and scale up production to meet market demands [45].

2.2.2 Inadequate training and technical skills

Many youth lack formal training and technical skills in modern agricultural practices, including crop management, animal husbandry, and agribusiness management. This limits their productivity and competitiveness in the agricultural sector. Without access to quality training and extension services, young farmers may rely on outdated methods, leading to suboptimal yields and income levels [41].

2.2.3 Limited access to markets

Access to markets remains a significant challenge for youth in agriculture. Poor infrastructure, limited market information, and inadequate transportation networks impede their ability to sell produce at fair prices and access value-added markets. Without reliable market linkages, young farmers face uncertainties and risks that affect their profitability and sustainability [46].

2.2.4 Rural-urban migration

The allure of urban employment opportunities often leads to rural-urban migration among youth, resulting in a decline in the agricultural workforce and a loss of agricultural knowledge and skills in rural communities. Rural depopulation exacerbates labor shortages, reduces agricultural productivity, and undermines the resilience of rural economies [47].

2.2.5 Climate change and environmental degradation

Climate change and environmental degradation pose significant challenges to agricultural productivity and food security. Erratic weather patterns, prolonged droughts, and natural disasters can adversely affect crop yields and livelihoods, particularly for smallholder farmers, including youth. Adapting to climate change and building resilience in agriculture require innovative solutions and sustainable practices. Technological advancements, including precision agriculture, mobile applications, and digital platforms, offer opportunities for youth to access information, market linkages, and financial services, improving productivity and efficiency in agriculture. By embracing technology, young farmers can optimize resource use, monitor crop health, and make data-driven decisions [48-49].

2.2.6 Youth-Led initiatives and entrepreneurship

There is growing recognition of the role of youth-led initiatives and entrepreneurship in driving innovation and sustainable development in agriculture. Youth-led organizations, startups, and social enterprises are leveraging technology and creativity to address agricultural challenges and create employment opportunities. By fostering a culture of entrepreneurship, governments and development partners can empower youth to become agents of change in agriculture [50].

2.2.7 Access to information and extension services

Efforts to improve access to information, extension services, and agricultural training programs can empower youth with the knowledge and skills needed to adopt best practices, enhance productivity, and explore new opportunities in agriculture. Strengthening extension services and investing in agricultural education can equip young farmers with the tools they need to succeed in a rapidly changing agricultural landscape.

2.2.8 Policy support and investment

Governments, development agencies, and private sector stakeholders play a crucial role in creating an enabling environment for youth in agriculture through supportive policies, investment in rural infrastructure, and targeted interventions that promote youth employment and entrepreneurship in the sector. By prioritizing youth-friendly policies and investments, policymakers can unlock the potential of young people to drive agricultural transformation and inclusive growth.

2.2.9 Market diversification and value addition

Market diversification and value addition present opportunities for youth to explore niche markets, specialty crops, and value-added products. By adding value to agricultural produce through processing, packaging, and branding, youth can capture higher margins and generate sustainable income streams. Investing in value chains and market linkages can open up new opportunities for young farmers to tap into domestic and international markets.

2.2.10 Youth engagement in sustainable agriculture

There is growing interest and momentum around youth engagement in sustainable agriculture and agroecology. Sustainable farming practices, conservation agriculture, and organic farming offer opportunities for youth to contribute to environmental stewardship, biodiversity conservation, and climate resilience in agriculture. By promoting sustainable agriculture initiatives and providing support for ecological farming practices, stakeholders can harness the creativity and energy of young people to address pressing environmental and food security challenges [51]. Addressing the challenges and harnessing the opportunities for youth in agriculture require multi-stakeholder collaboration, investment in education and skills development, access to finance and market opportunities, and supportive policy frameworks that prioritize youth empowerment, rural development, and sustainable agriculture. By investing in youth and creating conducive conditions for their participation, the agricultural sector can realize its potential as a driver of inclusive growth, food security, and sustainable development.

2.3 Role of Youth in the Food System

The role of youth in the food system is multifaceted and pivotal for ensuring sustainable food security, promoting agricultural innovation, and fostering inclusive rural development. As the future custodians of agricultural landscapes and stewards of natural resources, youth play a critical role in shaping the resilience, productivity, and sustainability of food systems worldwide. At the heart of the food system, youth engagement in agriculture encompasses various dimensions, including production, processing, distribution, marketing, and consumption. Their involvement spans smallholder farming, agribusiness entrepreneurship, agricultural research and innovation, food processing and value addition, community development, and policy advocacy. In production, youth are essential contributors to on-farm activities, leveraging modern technologies, sustainable practices, and innovative approaches to enhance agricultural productivity and resilience. By embracing climate-smart agriculture, organic farming, precision agriculture, and agroecological principles, young farmers can mitigate environmental risks, adapt to changing climatic conditions, and promote biodiversity conservation while ensuring food security and livelihood sustainability. Furthermore, youth

participation in food processing, value addition, and agribusiness ventures adds value to agricultural produce, creates employment opportunities, and strengthens local food systems. From farm to fork, youth-led initiatives in food processing, packaging, branding, and marketing contribute to diversifying markets, improving food quality and safety standards, and meeting consumer preferences for nutritious, culturally relevant, and ethically sourced food products. In addition to their roles as producers and entrepreneurs, youth are catalysts for agricultural innovation, technology adoption, and knowledge exchange within rural communities. Through youth-led research, extension services, and information dissemination, young agricultural professionals contribute to advancing agricultural practices, disseminating best practices, and addressing emerging challenges such as climate change, soil degradation, water scarcity, and pest management. Moreover, youth engagement in advocacy, policy dialogue, and governance processes is instrumental in shaping agricultural policies, institutional frameworks, and investment priorities that prioritize youth empowerment, gender equality, and social inclusion in agriculture and rural development. By amplifying youth voices, fostering youth leadership, and mainstreaming youth perspectives into decision-making processes, policymakers and stakeholders can design targeted interventions, capacity-building programs, and supportive policies that address the specific needs and aspirations of young people in the food system.

, the role of youth in the food system is dynamic, diverse, and indispensable for achieving sustainable development goals, ending hunger, promoting social equity, and building resilient food systems that nourish people and planet. By harnessing the energy, creativity, and talent of youth, investing in their education, skills development, and entrepreneurship, and creating enabling environments for their meaningful participation, societies can unlock the full potential of youth as agents of positive change in agriculture, food security, and rural transformation.

3. CONCLUSIONS

The scoping review provides valuable insights into the challenges, opportunities, and dynamics of youth involvement in African agriculture. The findings underscore the critical importance of addressing youth participation in agriculture to achieve sustainable development, alleviate poverty, and ensure food security across the

continent. The review identified significant challenges that hinder youth engagement in agriculture, including limited access to resources, inadequate infrastructure, lack of education and skills, and socio-economic barriers. Despite these challenges, there are also opportunities for promoting youth participation, such as investing in agricultural education, enhancing access to resources and markets, and fostering entrepreneurship and innovation. Youth play a vital role in shaping the future of agriculture in Africa. Their energy, creativity, and potential can drive transformative change and contribute to building resilient and inclusive food systems. However, realizing this potential requires concerted efforts from governments, policymakers, development agencies, civil society, and other stakeholders. Moving forward, there is a need for holistic and integrated approaches that address the multifaceted challenges facing youth in agriculture. This includes promoting agricultural education and skills development, strengthening rural infrastructure, facilitating access to resources and markets, promoting gender equality, and fostering youth participation in policy processes. Moreover, there is a need for continuous monitoring, evaluation, and learning to assess the impact of interventions, identify gaps, and refine strategies over time. By working together and prioritizing youth empowerment and inclusion, African countries can harness the demographic dividend and unlock the full potential of young people in driving agricultural transformation and sustainable development. In conclusion, youth participation in agriculture is not only essential for the economic growth and prosperity of Africa but also for ensuring a sustainable and food-secure future for generations to come. It is imperative that we prioritize investments and initiatives that empower young people, nurture their talents, and create enabling environments for them to thrive in the agricultural sector. Through collective action and commitment, we can build a brighter and more prosperous future for African agriculture and its youth.

4. LIMITATIONS

Despite the comprehensive nature of the scoping review, there are several limitations that should be acknowledged:

1. Scope of Literature: The review focused on peer-reviewed articles and policy documents published between 2009 and 2019, primarily in online databases. This

approach may have excluded relevant literature published before 2009 or in non-peer-reviewed sources, potentially leading to a partial understanding of youth involvement in African agriculture.

2. **Language Bias:** The search was conducted in English, which may have resulted in the exclusion of relevant studies published in other languages. This language bias could limit the comprehensiveness of the review and overlook valuable insights from studies published in languages other than English.
3. **Geographic Focus:** The review primarily focused on Sub-Saharan Africa, which may not capture insights and experiences from other regions of the continent. Variations in agricultural practices, youth demographics, and socio-economic factors across different regions of Africa could affect the generalizability of the findings.
4. **Publication Bias:** The review may be susceptible to publication bias, where studies with significant findings are more likely to be published than those with null or negative results. This bias could skew the representation of youth participation in agriculture and limit the understanding of challenges and opportunities.
5. **Data Synthesis:** While the scoping review employed qualitative data analysis techniques, such as NVivo software, to analyze the included studies, the interpretation of findings and synthesis of results may be subjective. Different researchers may interpret the data differently, leading to potential biases in the analysis and synthesis process.
6. **Generalization:** The findings of the scoping review may not be applicable to all contexts within Africa. The heterogeneity of agricultural practices, socio-economic conditions, and youth demographics across different countries and regions may limit the generalizability of the findings.
7. **Lack of Longitudinal Data:** The review may lack longitudinal data that track changes in youth participation in agriculture over time. Longitudinal studies could provide insights into trends, patterns, and factors influencing youth engagement in

agriculture, which may not be fully captured in cross-sectional studies included in the review.

Acknowledging these limitations is essential for interpreting the findings of the scoping review accurately and identifying areas for future research and improvement in understanding youth involvement in African agriculture.

5. RECOMMENDATIONS

Based on the findings and limitations of the scoping review on youth involvement in African agriculture, several recommendations can be made to enhance youth participation and address challenges in this sector:

1. **Invest in Agricultural Education:** Governments and stakeholders should prioritize investment in agricultural education at all levels, including primary, secondary, and tertiary education. Promoting agricultural studies and practical training can spark interest in young people and expose them to various career opportunities in agriculture.
2. **Enhance Access to Resources:** Efforts should be made to improve young people's access to productive resources such as land, finance, technology, and markets. Policies and programs that facilitate land tenure security, access to credit, and adoption of modern farming technologies can incentivize youth participation in agriculture.
3. **Strengthen Rural Infrastructure:** Enhancing rural infrastructure, including roads, transportation, energy, and communication networks, is essential for creating an enabling environment for youth engagement in agriculture. Improved infrastructure can facilitate access to markets, reduce production costs, and enhance connectivity between rural and urban areas.
4. **Promote Entrepreneurship and Innovation:** Initiatives to promote youth entrepreneurship and innovation in agriculture should be encouraged. Providing support for agribusiness startups, incubation centers, and innovation hubs can stimulate youth-led initiatives and drive economic growth in rural communities.

5. **Facilitate Youth Inclusion in Policy Processes:** Governments and organizations should actively involve young people in policy development and decision-making processes related to agriculture and rural development. Creating platforms for youth participation, advocacy, and representation can ensure that their voices are heard and their perspectives are considered in policy formulation.
6. **Provide Skills Development Opportunities:** Investing in skills development programs tailored to the needs of young people in agriculture is crucial. Training initiatives focusing on technical skills, entrepreneurship, leadership, and value chain management can empower youth to overcome challenges and seize opportunities in the agricultural sector.
7. **Foster Collaboration and Networking:** Encouraging collaboration and networking among youth, industry players, academia, and government agencies can foster knowledge sharing, innovation, and partnership building. Platforms such as youth forums, conferences, and mentorship programs can facilitate the exchange of ideas and experiences, fostering a supportive ecosystem for youth engagement in agriculture.
8. **Address Gender Disparities:** Efforts to promote youth participation in agriculture should also address gender disparities and ensure equal opportunities for young women and men. Initiatives promoting gender equality, access to resources, and women's empowerment can contribute to more inclusive and sustainable agricultural development.
9. **Monitor and Evaluate Interventions:** Continuous monitoring and evaluation of youth-focused interventions in agriculture are essential to assess their impact, identify challenges, and inform future policy and programmatic decisions. Robust monitoring and evaluation frameworks can help track progress, measure outcomes, and improve the effectiveness of interventions over time. By implementing these recommendations in a coordinated and collaborative manner, stakeholders can create an enabling environment that empowers young people to actively participate in agriculture,

contribute to rural development, and drive sustainable food systems in Africa.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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