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Gender and Women in Agroecological Transition

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SUMMARY

Smallholder agriculture accounts for almost 80% of food production in sub-Saharan Africa (SSA). Most of the food produced is consumed with little processing or value addition that can increase income and provide better livelihoods. However, the agricultural sector is negatively impacted by climate change, threatening the region's food supply across the different nodes of the food value chain. **Women play crucial roles in the region's agrifood systems – from production to agribusiness – shouldering a disproportionately higher burden of climate change amidst limited access to critical resources. Yet, women receive little support, even with the development of regional trade policies on the continent.** The focus on industrial agriculture in Africa contributes to unsustainable practices that exacerbate social inequalities and increase environmental degradation, further reducing productivity and increasing hunger. **Agroecology offers a viable alternative that can mitigate these negative impacts by enhancing biodiversity, improving soil health, building resilience and food sovereignty, and reducing dependence on harmful chemical inputs.** In addition, agroecology can also increase income for farmers through green businesses that reduce environmental footprints. Nonetheless, agroecological transitions are not gender-neutral, as they have a profound impact on various vulnerable groups in Africa, including women, young farmers, migrants, refugees and others. The present brief focuses on gender dynamics in agroecological transitions of African food systems in order to inform and guide practitioners in investing and designing interventions at local and national levels across diverse value chains in SSA. It highlights significant contributions of agroecological practices in food production and entrepreneurship across the region. We have detailed how agroecology has enhanced women's empowerment by increasing economic opportunities, food security, biodiversity, and building resilience in West, East and Southern Africa. Notwithstanding successes, this issue brief identifies several gaps and areas where gender can be integrated into the agroecological transition. These are resource accessibility, financial inclusion, gaps in gender-responsive policies and support services, capacity-building, labour-saving technologies, and sustainability of agroecology-initiative funding models. Other areas limiting the integration of gender in agroecological transition are a lack of holistic approaches for incorporating local knowledge of women and marginalised groups, and the need for collaborations and partnerships that will create a supportive environment for agroecological transitions. Addressing these gaps promises to strengthen the contribution of agroecological transitions to gender equality in food systems within SSA. **Philanthropy can play a critical role in promoting agroecological transitions by working with government and private-sector partners to complement funding for organisations promoting gender-sensitive agroecological innovations that build on traditional knowledge. Such initiatives can advocate for enabling environments through gender-sensitive policies and investments for agroecology-based startups.**

The focus on industrial agriculture in Africa contributes to unsustainable practices that exacerbate social inequalities and increase environmental degradation

INTRODUCTION

SSA agriculture is dominated by family farming[1] and driven by smallholder farmers, who produce 80% of the food. These farmers' food is highly diverse and dependent on natural ecosystems such as natural forests, woodlands, grasslands and aquatic systems (Bottazzi & Boillat 2021). Agriculture for many Africans is still subsistent in nature, with few farmers involved in agribusiness. Farmers have been struggling to increase productivity, but, with the increasing population and low adoption of socio-technical innovation bundles, one in five people are still hungry.[2] Unfortunately, the agrifood system is rife with issues such as biodiversity loss, soil degradation, contaminated groundwater, floods, droughts and storms. These problems, most of which are due to climate change, are leading to declining production, resulting in hunger and poverty on the continent.

According to the progress report on achieving the Sustainable Development Goals (SDGs), productivity on female-run farms lags by 24% compared with that of men.[3] It is said that closing this gap in food systems would increase global gross domestic product (GDP) by 1% (or nearly $1 trillion), reduce the number of food-insecure people by 45 million, and improve resilience to shocks for 235 million people. Women make up the majority in food systems through production, processing, marketing, stocking and consumption activities (Anderson et al. 2021; Hendriks et al. 2021). Women are powerful agents of change and can make increasing and significant contributions to sustainable development, despite existing structural and sociocultural barriers (Markham 2013).

The traditional focus on industrial agriculture and on the quest to feed the increasing population in Africa has led to unsustainable practices that exacerbate social inequalities and increase environmental degradation, thereby further reducing productivity and increasing hunger (Niggli, Sonnevelt & Kummer 2023). While farmers want to increase food production, they do not want to be locked into 'highly priced, patented technology that puts them into a cycle of debt to agribusiness companies',[4] which now seem to

dictate agricultural policy. Agroecology is an option rather than the unsustainable practices and can improve soil health while building resilience to support food sovereignty (Amoak, Najjar & Kyle 2022; Snapp et al. 2021). Therefore, there is growing interest among development practitioners, researchers and policymakers in transitioning from current food systems to more sustainable models that embrace inclusiveness and sustainability (Pauw 2015; Mockshell & Kamanda 2018; Piñeiro et al. 2020).

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The transition to agroecology necessitates the consideration of the 13 agroecological principles often organised around improving resource efficiency, resilience and social equity/responsibility. The agroecological transition offers women the opportunity to create new value chains and markets through organic production, participatory guarantee systems, and the circular and solidarity economy. The principle of the circular and solidarity economy promotes the use of organic inputs often used by women, resulting in greater resource use efficiency (Wezel et al. 2020). Women can thus be empowered by building their skills and developing practices through collective action, creating opportunities for commercialisation, and enhancing their negotiation and leadership skills (Oliver 2016; Kerr et al. 2019; Michalscheck et al. 2020) in this entrepreneurial space.

Building on women's indigenous knowledge about the use, management and conservation of diverse species in restoring biodiversity, is important. Women's indigenous knowledge encompasses crop rotation, intercropping, the integration of livestock–crop production, agroforestry and agropastoralism, which reflect the efficient practices of resource reuse and innovations that reduce or eliminate the use of costly, scarce or environmentally damaging inputs. On the other hand, reduction in the use of agro-inputs may be accompanied by an increase in labour and drudgery, which have a disproportionate impact on women, who are often tasked with time-consuming activities such as planting and weeding. In line with women's role in the food system, through responsible, transparent, accountable and inclusive governance mechanisms, women can facilitate creating an environment that supports producers to transform their systems (Wezel et al. 2020). Thus access to productive resources, increased decision-making power in resource management, challenging power relations, and institutional structures that impair food sovereignty, are key.

There are many opportunities for synergies, partnerships and collaborations between stakeholders working on the social, ecological and economic goals in agroecology. We are calling for multiple voices to be heard and discourage one-size-fits all approaches. Benefits should be equitably distributed and lived realities and local economies of the farmers considered for greater ownership and sustainability.

MOTIVATION

Women are key players in agriculture, constituting a significant portion of the agricultural workforce on the African continent. Their deep-rooted knowledge of local ecosystems, traditional farming methods, and seed management practices makes them invaluable contributors to sustainable agricultural development (Hodson et al. 2021; Ramirez-Santos et al. 2023). Therefore, incorporating their perspectives and expertise leads to culturally relevant and effective agroecological practice. Promoting gender equity within agroecological transitions is not only a matter of social justice, but also a strategic imperative for enhancing food security and resilience in the face of climate change. The agroecological transition has the potential to positively impact women's roles in decision-making and resource control at the household level and their participation in community leadership. In addition, agroecology transitions enable women in households to allocate resources to reproductive activities, resulting in a 'healthy household' (Ume, Nuppenau & Domptail 2022).

Most agroecological projects do not have comprehensive strategies that address broader systemic issues, and this creates inequalities that prevent women from engaging fully in agroecological transition. Many traditional funding sources tend to favour industrial agriculture, leaving agroecological initiatives under-resourced (Dietemann et al. 2024; Prasad et al. 2023). Philanthropies can bridge this gap by providing the financial support needed while dismantling systemic barriers limiting women's access to resources. This will ultimately lead to improved food security, biodiversity preservation and community resilience. Philanthropic investment can catalyse transformative change in rural communities and contribute to global sustainability goals.

CONTEXT

Agroecology has evolved from the simple application of foundational ecological methods – soil health management, biodiversity enhancement, natural pest control methods, water management, and minimal use of external fertilisers – to integrating ecological, economic, social and political dimensions that address multifaceted climate change and food systems issues from production to consumption (Wezel et al. 2020). Despite these transitions, there is still persistent social inequality in access to resources and opportunities for addressing climate change-related challenges (Borsari 2022). Agroecological transitions are not gender-neutral, as they have a profound impact on women, men, migrants, refugees and other vulnerable groups in Africa.

Agroecological transitions have different impacts at various scales from farm to country and play out at different levels. We have seen increased changes in farming practices, with farmers adopting practices like crop diversification, organic inputs, integrated pest management, and water conservation to improve soil health, increase biodiversity and reduce reliance on chemical inputs. At the landscape level, we are seeing more community approaches that use collective action through farmer cooperatives and groups to foster environmental health, thereby promoting traditional knowledge systems that support landscape-level benefits. Though coordination among local stakeholders is key, it is often complex and negotiations, especially around land use and ownership, are still strongly driven by cultural norms. Infrastructure and logistics in cities and countries promoting green spaces, organic food hubs and urban agriculture also influence agroecology practices. National policies and regulations also influence agroecological practices, for example the African Union (AU) and other multinational partners can help drive diverse agroecological transitions across borders.

While some governments and public bodies take a technocratic view and place sociopolitical dimensions of agroecology on the periphery, others emphasise the role of empowerment of smallholders through agroecology practices for social justice (Bottazzi & Boillat 2021). For example, organic farming practices that leverage local resources and traditional knowledge are common in East Africa (e.g. Kenya) (Côte et al. 2022), movements towards regenerating tree growth and diversifying agricultural production through agroforestry are common in West Africa (e.g. Burkina Faso, Senegal, Ghana and Niger) (Belay 2021), conservation agriculture is common in Southern Africa (e.g. Zimbabwe and Zambia) (Niggli et al. 2023), and integrated pest management (IPM) strategies such as biopesticides and resistant crop varieties are common in Cameroon. Although these varied implementations of agroecology reflect local contexts, they also highlight contestations surrounding agroecology in SSA. Most of these subregional agroecological strategies are anchored on the AU's Agenda 2063 at continental level in order to achieve food security and agricultural development on the continent.

Agroecological transitions have different impacts at various scales from farm to country and play out at different levels

Regional differences in gender roles and agroecological transitions across Africa are deeply shaped by the continent's vast diversity in language, culture, geography and ecology. In Senegal, agroecology practices have contributed to women gaining more influential roles in their communities and beyond, as they now articulate their needs and priorities in respect of farming and food security more effectively, including attracting additional funding for their groups (FAO 2016; Biovision Foundation 2019). Also, women in Mali and Ghana use their knowledge of *Jatropha curcas* cultivation to produce bioenergy and seeds for commercial purposes (UNDP, 2009). During the process of water-fetching, women in South Africa identified some trees (*Acacia erioloba*, *Ziziphus mucronata*, *Acacia albida*, *Euclea divinorum*, etc.) that play an important role in the avoidance of water pollution (Phiri et al. 2022). While these studies are evidence of women's involvement in agroecology initiatives and social movements, many women continue to remain hidden as 'wives of farmers' rather than potential leaders (Khadse 2017). Much of agroecology

work has not yet incorporated an explicit gender analysis, thereby permitting the persistence of hidden 'internal contradictions' in the farming family (De Marco Larrauri, Pérez Neira & Soler Montiel 2016).

Further, intersectional factors,[5] including age, education, income and marital status create a complex set of challenges that impact women's participation in agroecology in SSA. Addressing these challenges requires holistic approaches that take into account the diverse needs and identities of women in this context (Perelli et al. 2024; Teklewold 2023; Amoak et al. 2022; Njuki et al. 2023). Successful agroecological transition should support investment in improving women's representation in the transition process (Mudege et al. 2015). Social equity through capacity-building is an area of investment critical in hastening women farmers' transition into agroecology (Seibert et al. 2019). Conventionally, women have fewer privileges than men and are often overburdened with family, domestic and agricultural responsibilities. Investing in initiatives that focus on women's needs and capabilities not only helps reduce women's physical burden, but also allows them more time to engage in decision-making and leadership. Moreover, funding and supporting women-led cooperatives are critical in enabling women to pool resources, gain better access to markets, and advocate for fairer policies to help address pervasive gender bias that limits women's rightful benefits from agriculture.

In a nutshell, agroecological transitions across regions on the continent are influenced by cultural practices, indigenous knowledge, geographical diversity, land issues, conflict, policies and funding mechanisms. In West Africa, matrilineal and patrilineal systems have an influence on women's land ownership and influence land access and women's involvement in agriculture. For example, the matrilineal systems in parts of Ghana support greater female participation in agroecological initiatives, as they own land. In contrast, patrilineal systems may limit women's land access and relegate them to areas with poor soils, demanding more work to increase production. In East Africa, women's access to land is still culturally driven, though laws in Kenya, for example, formalise women land ownership. The success of agroecological transitions in Africa hinges on recognising and addressing regional variations, particularly gender dynamics supporting more sustainable, inclusive food systems that are resilient to climate and ecological challenges.

HURDLES TO TRANSITION

Women, who play a vital role in agriculture and biodiversity conservation, continue to face systemic barriers, particularly in accessing land, inputs and financing. This unequal access hampers their ability to engage fully in agroecology, which is essential for promoting sustainable agricultural practices. Further, the lack of targeted support for women farmers in capacity-building, financial literacy and market access deepens disparities, limiting women's participation in high-value chains (Adeola et al. 2023). Challenges with regard to market access, particularly market fragmentation and weak demand for agroecological products, has resulted in farmers relying on intermediaries, who often offer lower prices. This situation is further worsened by low consumer awareness of agroecological products, thus limiting demand. Additionally, insufficient processing infrastructure characterised by a lack of proper storage, packaging and value-addition facilities exposes farmers to more financial challenges and labour costs in their pursuit to extend the shelf life of their products as well as to meet quality standards required for premium markets. Tackling these resource and capability deficiencies is essential for advancing gender equality and promoting widespread agroecological transitions across the continent. While investment by philanthropies is a means to address barriers linked to agroecological transition, funding of such initiatives in Africa remains both insufficient and fragmented.

Women, who play a vital role in agriculture and biodiversity conservation, continue to face systemic barriers, particularly in accessing land, inputs and financing

Often, philanthropic funding is project-based and short-term, undermining efforts to build sustainable agricultural systems (Niggli et al. 2023; Shilomboleni 2022; Rossi 2020; Tittonell et al. 2020).[6] Moreover, funding models fail to address the specific needs of women, such as gender-responsive extension services and equitable access to financial resources (Melesse & Awel 2020); hence women have fewer opportunities to access diverse and high-quality information channels (Beaman & Dillon 2018). While philanthropic support for initiatives like farmer field schools and information and communication technology-based extension services could bridge these gaps, much of the current funding remains insufficient to empower women meaningfully within agroecological systems, as long-term financial support is also limited (Greenberg et al. 2023; Tapsoba et al. 2020; Mottet et al. 2020).

Current philanthropic funding strategies and mechanisms in some cases reinforce gender inequalities and traditional power structures (Farr 2024; Pavageau, Pondini & Geck 2020). The lack of gender-disaggregated data in many philanthropic projects hinders the accurate targeting of resources, leaving women's unique challenges unaddressed and resulting in unequal benefits (Beaman & Dillon 2018). Philanthropic funds are often channelled towards high-visibility initiatives rather than fostering systemic change, leaving critical gaps in support for female farmers and their participation in agroecological transitions (Byerlee & Fanzo 2022; Bosma et al. 2022). Without a shift towards gender-responsive funding strategies, these mechanisms risk perpetuating existing inequalities in agricultural productivity and access to resources.

RECOMMENDATIONS TO PROMOTE TRANSITIONS

To promote gender-responsive agroecological transitions across Africa, philanthropic principles should prioritise inclusivity, diversity, resilience, sustainability and scalability through strengthening individual, household, community and institutional agency, thus ensuring accountability and long-term impact. Some of these key principles should be the following:

1. **Equity and gender inclusivity:** Funding should prioritise equitable resource distribution, targeting women as key drivers of agroecology. For the implementation of the agroecology principles of human and social values, culture and food traditions, the integration of equity and gender is crucial because women are still the guarantors of Africa's social values, culture and food.

2. **Local ownership and empowerment:** Projects should adopt a community-centred approach in which the community co-designs, implements and measures their success in ensuring ownership and sustainability. Local ownership and empowerment are essential for decision-making, and focusing on them in agroecological transition projects can increase women's active participation at the community level. In addition, long-term grants rather than short-term aid should be promoted.

3. **Climate resilience:** Women are the most vulnerable when it comes to the effects of climate change because of the crucial role they play in the food system. Projects should incorporate climate-smart agricultural practices that are affordable in order to build climate resilience.

4. **Scalability and knowledge-sharing:** Successful models need support to scale knowledge up, in and out across regions to address varied ecological and cultural needs.

5. **Partnerships and synergy:** There is a need for collaboration and synergy between governments, non-governmental organisations (NGOs), private entities and research institutions to ensure that funded projects pool expertise and resources to maximise impact on the frontline role of women in food systems and agroecological transitions.

6. **Strengthen women's market access and processing capacity:** Developing dedicated agroecological market infrastructure, cooperatives and digital platforms that are designed around women's needs can help connect farmers directly to consumers. Promoting value addition through processing and certification can help enhance market competitiveness. Philanthropies can support the establishment of community-based and gender-sensitive processing hubs such as millers, driers and organic packaging which are critical for supporting agroecological transition and market competitiveness. Additionally, facilitating organic-certification processing through social and solidarity economy and agroecological product labelling can also increase market access and consumer trust.

7. **Reinforce local and national institutions involved in gender promotion:** Philanthropic funders should engage with African states/governments to strengthen or create independent organisations that promote women's rights in agroecological transition through policies, institutions and capacity development.

There are multiple mechanisms for funding, such as matching funds for grassroots projects involving community representatives, particularly women leaders in the grant-making process, and building their capacity in areas like financial literacy, digital technology, marketing, processing and agroecological methods. Longer project horizons spanning from five to 10 years are essential.

Initiatives requiring greater recognition

The following initiatives merit more recognition:

1. The **Agroecology Programme in West Africa (PAE):** This programme promotes research–action initiatives for sustainable agricultural intensification and agroecological transition.
2. **CANALLS**, which aims to drive agroecological transitions in the humid tropics of Central and East Africa via multi-actor, transdisciplinary, agroecology living labs (ALLs) that meet the challenges of the local food systems.

CASE STUDIES

The Women's Association in the Guédé Chantier Ecovillage, Senegal

Guédé Chantier Ecovillage exemplifies a thriving, self-sufficient eco-commune in a semi-arid region. This village located in northern Senegal is a habitat to diverse populations from Senegal, Mali and Mauritania. Established officially as an ecovillage in 2009, Guédé Chantier faces numerous environmental and socio-economic challenges, primarily due to climate change. With the participation of approximately 7 000 inhabitants, the village relies heavily on irrigation-based agriculture. Within this setting, the Women's Association has become a central pillar in addressing the adverse effects of desertification and supporting agroecological transitions that bolster food security and environmental sustainability.

Through collective action, women are involved in organic farming, composting, community orchards (reforestation), water management and food processing initiatives. With training in food processing, the women have been able to extend the shelf life of produce, ensuring year-round availability. This has not only improved local food security, but has also opened avenues for income generation, particularly through the sale of preserved foods in regional markets. They have thus gained financial independence and improved their household incomes. Moreover, water management and the development of irrigation systems and boreholes, often powered by solar technology, have ensured the continuation of farming activities in the dry season. In addition, this has helped to reduce the burden on women, who traditionally bear the responsibility of fetching water over long distances, thus improving their quality of life. Techniques such as organic farming and composting have reduced reliance on chemical fertilisers and industrialised food systems. These methods have improved soil health and biodiversity, thus increasing the village's resilience to droughts and heatwaves. Additionally, the women's involvement in community orchards has aided in reversing desertification and fostering local biodiversity through tree-planting initiatives.

The collective nature of their efforts has fostered a sense of solidarity and collaboration, which is crucial for scaling up community-led development initiatives. By focusing on collective action, resource management and environmental education, this initiative can be scaled to other regions facing climate change-induced vulnerabilities.

Women-led agroforestry in Ghana's Savannah Region: The case of CIKOD

In Ghana's Savannah Region, where erratic rainfall and soil degradation threaten agricultural productivity, women farmers have embraced agroforestry as a sustainable solution. Through initiatives led by grassroots organisations like the Centre for Indigenous Knowledge and Organizational Development (CIKOD), women have integrated nitrogen-fixing trees such as *Faidherbia albida* into their farming systems (Westerberg et al. 2019). These trees enrich the soil, reduce dependency on synthetic fertilisers and enhance biodiversity, leading to improved crop yields. Despite cultural barriers limiting women's land ownership, collective land-use agreements negotiated through traditional authorities have enabled their active participation in agroforestry (PARI & CSIR 2024).

Apart from ecological benefits, this transition has strengthened economic resilience among women. Agroforestry-based enterprises, including shea butter and baobab processing, have created new income streams, reducing financial dependence on male counterparts (Boateng 2022). Women-led cooperatives have leveraged microfinance to scale up processing facilities, thus enhancing product quality and access to niche organic markets. However, challenges remain, particularly in securing long-term land tenure and navigating gender biases in agricultural financing. Addressing these systemic hurdles is critical to sustaining gains in agroecology and women's empowerment. CIKOD has played a crucial role in this transformation by advocating for traditional leaders to enact by-laws that improve women's access to land, ensuring their long-term participation in sustainable agriculture.

This case underscores the transformative power of integrating indigenous knowledge with agroecological principles. By centring women in sustainable land management, agroforestry in Ghana's Savannah Region has demonstrated a viable pathway for achieving food security, climate resilience and gender equity (Westerberg et al. 2019). Strengthening policies that protect women's land rights and expanding financial-inclusion initiatives can further enhance the impact of agroecology, ensuring long-term sustainability for smallholder farmers. The collaboration between traditional authorities, grassroots organisations and women farmers highlights the potential of agroecological transitions to drive inclusive and sustainable rural development (Boateng 2022).

Conservation agriculture and women's empowerment in Malawi

Malawi's Ntcheu District has emerged as a success story in conservation agriculture, where women farmers have played a crucial role in soil regeneration and sustainable farming. In response to declining maize yields caused by soil degradation and erratic rainfall, organisations in Malawi have promoted agroecological practices such as minimum tillage, intercropping and organic mulching (Dougill et al. 2017). Women, who make up the majority of smallholder farmers, have led the adoption of these methods, improving soil health and increasing yields of staple crops like maize and groundnuts. The introduction of leguminous cover crops such as pigeon peas has further enriched the soil while providing an additional source of nutrition and income (Emerton et al. 2016).

Despite the ecological and economic gains, women face disproportionate labour burdens due to the intensive nature of agroecological practices. To address this, NGOs have introduced labour-saving technologies, including mechanised weeders and small-scale irrigation systems (Tagutanazvo 2015). Additionally, village savings and loan associations (VSLAs) have provided financial support, enabling women to invest in farm inputs and value-added processing. Market linkages have also been strengthened, allowing women farmers to sell surplus organic produce at premium prices, thereby fostering economic autonomy (Dougill et al. 2017). However, gender disparities persist in agricultural extension services, where men still dominate as lead farmers and decision-makers despite women's active participation in conservation agriculture Tagutanazvo 2015).

This case highlights the importance of gender-sensitive interventions in agroecology. While conservation agriculture has improved resilience to climate change, sustained progress requires scaling up gender-responsive policies. Investing in time-saving innovations and expanding women's access to markets and financial services can further enhance the impact of agroecological transitions in Malawi (Emerton et al. 2016). Policymakers must also recognise women's leadership in agriculture, ensuring their voices are integrated into decision-making processes at local and national levels (Tagutanazvo 2015). By addressing institutional barriers and strengthening multilevel support structures, Malawi can create a more equitable and sustainable agricultural future (Dougill et al. 2017).

KEY MESSAGES

1. **Secure land tenure is essential for market participation:** Secure land rights can empower smallholder women farmers and create a supportive environment for agroecological transitions. In SSA, insecure land tenure limits women farmers' access to credit and favourable market contracts, thereby discouraging agroecological transitions.
2. **Weak value chains and infrastructure hinder market access:** Fragmented markets, low consumer awareness of agroecological products, and poor rural infrastructure when it comes to roads, cold storage and electricity, isolate women farmers from high-value markets. Strengthening the value chain and infrastructure is critical to enhancing women farmers' agroecological transition and guaranteeing profitability.
3. **Processing is key to agroecological transition for economic benefit:** Value addition through processing can increase women farmers' incomes and reduce post-harvest losses, thus enhancing their capacity for agroecological transition. Limited access to processing facilities is currently a major drawback limiting women farmers' agroecological transition. Other drawbacks include high certification costs, which hinder women farmers' ability to meet quality-standards and access premium markets.
4. **Policy and financial support are essential:** The absence of well-defined policies for organic certifications, labelling and marketing standards, along with limited access to finance, tend to restrict women farmers' ability to differentiate their products and enable them to invest in processing and marketing. Therefore, targeted financial support and a simplified certification process are crucial to unlock market potential.
5. **Cooperative models and infrastructure investments drive success:** Farmer-led cooperatives can help women farmers negotiate better prices. Similarly, investment in rural infrastructure can help reduce transaction costs and enable women farmers to access high-value markets. These efforts are critical to scaling agroecological transitions.

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ENDNOTES

1 A production system characterised by a closely knitted configuration of production relations and interdependencies based on pooled resources, including land, labour and capital at the family level (Kansanga et al. 2024).

2 See **https://www.actionagainsthunger.org/location/africa/**.

3 Based on data from seven SSA countries, every additional day of high temperature exposure is associated with a 2,5 per cent reduction in the total value of crops produced on women's plots compared with those of men.

4 Regeneration International. Why agroecology, not agribusiness, will save our food system. **https://regenerationinternational.org/2020/10/14/why-agroecology-not-agribusiness-will-save-our-food-system/**.

5 Age plays a significant role in shaping women's access to resources, with younger women often being confronted by societal norms that prioritise older men, limiting their access to land and financial resources. Older women, particularly those beyond childbearing age, may have more autonomy in decision-making, yet they face challenges related to the physical demands of agriculture and limited access to modern farming technologies. Further, women with higher incomes are better positioned to invest in agricultural inputs and access credit facilities, thereby enhancing their productivity. In contrast, women with lower incomes face resource constraints that lead to lower productivity and a greater reliance on subsistence farming, perpetuating inequalities in the agroecological space (Nyambo et al. 2022; Caveri 2022; Jayne et al. 2021). Marital status further complicates women's participation in agroecology, with married women often accessing resources through their husbands but being faced by patriarchal norms that limit their decision-making power.

6 Agroecology requires sustained financial support, particularly in capacity-building, knowledge dissemination and education to ensure widespread adoption (Akanmu et al. 2023)

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