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Transforming African food systems: perspectives from the Food Systems Network for Africa (FSNet-Africa)

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ABSTRACT

African food systems face significant challenges, including poverty, inequality, climate change, and unsustainable practices. To ensure access to safe and nutritious food while addressing socio-economic and environmental issues, fundamental changes are necessary. A collaborative and inclusive research agenda that engages diverse stakeholders through case-study research, aligning with continent-wide frameworks such as Agenda 2063, the CAADP, and the Sustainable Development Goals (SDGs), is vital. There are few cross-case analyses that bring together empirical case study research to evaluate and provide holistic appraisals of African food systems. This perspectives paper aims to provide such a synthesis from the empirical case studies generated under the Food Systems Research Network for Africa (FSNet-Africa) project. 19 case study projects in six African countries, were conducted by 83 researchers. Five key focus areas were identified: food system governance, indigenous crops and African foods, innovations for sustainable production among small-scale farmers, consumer preferences, and

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food loss and waste. The findings emphasise an urgent need for collaboration to address food security and nutrition challenges in Africa. Major priorities for transforming African food systems include inclusive engagement and the integration of indigenous knowledge to improve local food choices and resilience, and reducing food loss through capacity-building efforts and changing perceptions of waste. Future research should focus on governance, indigenous crops, and innovations in sustainable production to drive a transformative shift in African food systems. These priority areas will be critical for the next global and regional development agenda, reflecting the needs and aspirations of underrepresented communities across Africa.

1. Introduction

1.1. Challenges facing African food systems

African food systems face significant challenges that are inextricably linked to the continent's development. More than half of the population live in poverty and one in five people in Africa face food insecurity [1]. Poverty and inequality are growing, with insecurity and conflict a reality for many [2]. Research points to widespread degradation of the natural resource base [3], compounded by climate change impacts, as drivers of declining productivity and resilience [4,85]. The goal for food systems is to address these development challenges while ensuring access to safe and nutritious food to combat the triple burden of malnutrition. Agriculture remains a critical tool for economic development and poverty reduction across the continent. The 2014 and 2015 Malabo Declarations from the African Union committed to ending hunger in Africa by accelerating agricultural growth and investment [5], while Agenda 2063 identifies a modernized agriculture sector as one of the 20 goals for development on the continent [73]. Thus, ending hunger and malnutrition, while strengthening livelihoods, remains a central goal for both the African Union and global frameworks such as the Sustainable Development Goals (SDGs).

Food systems encompass all the elements (e.g. environment, people, infrastructure, institutions) and activities (e.g. farming, transport, retail) that relate to the production, processing, distribution, preparation, and consumption of food (and waste management), and the outputs of these activities leading to socio-economic and environmental outcomes [6]. The literature argues that current food systems are unsustainable [7], responsible for greenhouse gas emissions, soil erosion, degradation of natural resources, biodiversity loss, food insecurity, poverty and inequality [8,9]. Achieving the commitments of the African Union of access to healthy and nutritious food for all, while avoiding negative environmental impacts, will require fundamental changes to the elements and activities of African food systems. Research is needed to understand food systems complexity and identify interventions and leverage points that enable transformation in ways that achieve the SDGs, e.g. eliminating hunger and eradicating poverty while contributing to climate action and biodiversity conservation. At the same time, these transformations must be cognisant of social justice implications to prevent or redress inequality [10], as well as consider social, economic, and environmental conditions for future generations.

Less attention has been given to African food systems in the literature [11], with a focus on production rather than the whole food system [12]. Food systems in Africa are varied, encompassing different agro-ecological, social, political, and economic spheres, but there are still common activities, actors, and conditions across the African continent. Many countries have a shared history of colonisation and underdevelopment, and their inclusion in world food systems is often under adverse terms of trade including tariffs, quotas, and technical regulations and standards that limit exports [13,14]. African countries are integrated within global and regional food systems as trading partners, investors, workers and consumers, but a lack of infrastructure, supportive regulations and logistical support, amongst others, means that official trade both within Africa and beyond, remains low [15]. As a result, African food systems incorporate both formal and informal supply chains. Food moves from farms, dominated by smallholders, to consumers across local, national, regional, and global scales, with different actors and regulations that govern them and their interactions. Gender and poverty are key cross-cutting issues in African food systems, influencing not only labour, inputs, and types of farming systems on the supply side, but also food preferences and cultures on the demand side. Critical drivers of change are emerging on the continent, including new forms of land colonialism alongside rapid urbanisation and a growing African middle-class [16]. All these require new conceptualisations of African food systems with interdisciplinary and systems focused approaches to understand their complexity and the opportunities for transformation and change. While individual case studies on climate smart agriculture, markets, or nutrition interventions abound, there is a lack of cross-case analysis. The literature on African food systems lacks consolidated evidence to reveal generalisable pathways for transformation.

There is a growing need to define a food systems research agenda for Africa, underscored by the impending conclusion of the SDGs in six years [17]. The African Common Position on Food Systems [18], outlines a shared vision and collective actions for resilient and inclusive food systems and informed the 2021 UN Food Systems Summit [18]. The Draft Comprehensive African Agricultural Development Policy (CAADP) Strategy and Action Plan (2026–2035) aims to achieve sustainable and resilient agri-food systems for Africa [19]. A core principle across these documents is inclusivity and a shared vision of a transformed food system. However, how to translate these broad goals into empirically grounded and context-specific interventions remains under debate.

This perspectives paper addresses critical gaps by providing a synthesis of empirical case studies generated under the Food Systems Research Network for Africa (FSNet-Africa) project. It applies an interdisciplinary, systems approach that integrates biophysical, economic and social justice perspectives to map cross-case insights to identify common leverage points for transformation across a diverse set of African agro-ecologies. The transdisciplinary design of the case studies enables the inclusion of underrepresented voices, such as those of smallholder farmers, NGOs, private sector actors and policy makers. By synthesising 19 case studies across 6 countries, this paper moves beyond the single case studies that are common in the literature, to identify pathways for multi-stakeholder collaboration, policy innovation and inclusive transformation of African food systems. It also contributes to a more robust evidence base to inform the next global development agenda and ensure that the voices of communities and stakeholders are included.

2. Methodology

2.1. The FSNet-Africa case studies

The case studies for this perspectives paper were obtained from the research projects conducted within the FSNet-Africa project. FSNet-Africa was a capacity building and research excellence project, funded by the Global Challenges Research Fund through a partnership between the African Research Universities Alliance (ARUA) and UK Research and Innovation (UKRI), that brought together 83 researchers to develop a framework and programme of research to better understand African food systems and the opportunities for transformative change. At the core of FSNet-Africa were twenty early career researchers (hereafter

referred to as fellows) recruited from ten academic institutions (see supplementary material) in six African countries (Fig. 1) who undertook food systems research in collaboration with relevant national food system stakeholders, supported and mentored by a wider network of established researchers [20]. Fellows were selected through a competitive application process, with a focus on identifying individuals interested in inter- and trans-disciplinary research broadly related to food systems. The selection process did not target specific crops or value chains. Instead, emphasis was placed on achieving disciplinary spread to ensure that the fellow's research collectively addressed multiple dimensions of food systems.

Applications were first screened for eligibility by the FSNet-Africa leadership team. Each institution then identified its top six candidates from within its applicant pool. These applications were reviewed by two senior members of the FSNet-Africa team, and the top 30 candidates were shortlisted for interviews. A comprehensive scoring and ranking process guided the final selection to reduce selection bias. Two fellows were selected from each of the ten African academic partner institutions. Fellows were connected to food systems stakeholders through one of the lead partners FANRPAN, a boundary spanning organisation that operates at the science-policy interface. Stakeholders were selected based on their relevance to the research, as well as their level of interest and influence. While this approach aimed to enhance research uptake and policy engagement, the authors acknowledge that the stakeholder selection process was shaped by existing networks and institutional relationships, which may have introduced an element of selection bias.

While this perspectives paper explores how the fellows' research intersected and contributed to broader food systems challenges, the design of the programme did not explicitly promote joint research. Fellows largely implemented their research independently, with structured opportunities for interaction and peer learning. However, these engagements rarely translated to cross-country or even intra-country collaboration. Nonetheless, the diversity in disciplinary perspectives provides insights into the complexity of food systems and offers a strong foundation for identifying priorities for food systems transformation.

2.2. African food system framework

The research in the FSNet-Africa case studies was supported by the development of an African food systems framework. There are a wide range of analytical frameworks, often using systems theory, that have been developed to understand food systems (e.g. [80,87–89,93,94]). Most of these frameworks comprise similar dimensions that recognise external drivers of food system change; describe the components of the food system, which includes institutions, actors, and activity in food supply chains; and identify a set of food system outcomes [12,21–25, 80]. The African food system framework developed in FSNet-Africa (Fig. 2) builds on these frameworks, particularly the TRANSMANGO framework [25], but outlines dimensions that are particularly important for African food systems, including informal supply chains, smallholder livelihoods and the less formal nature of institutions that govern food system activities [11].

Each case study was designed and implemented by the fellows using the African food system framework. This enabled an interdisciplinary approach to ensure that the fellows tackled food system challenges from multiple perspectives, as required by their complex nature [76], and to foster collective decision-making, creativity, and innovation [26]. Most projects focused on the core food system to produce outputs that are within the sphere of control of researchers. However, FSNet-Africa fellows engaged with policy, institutional, and governance stakeholders to emphasise the impact of such outputs in driving the transformation process. The African food systems framework was also used to structure and frame the cross-case analysis presented in this perspectives paper.

2.3. Case study analysis and synthesis

The FSNet-Africa fellows, supported by mentors and food systems stakeholders, conducted research on aspects of African food systems between 2021 and 2024, with 19 projects completed (see supplementary material).

The perspectives presented in this paper were developed from an

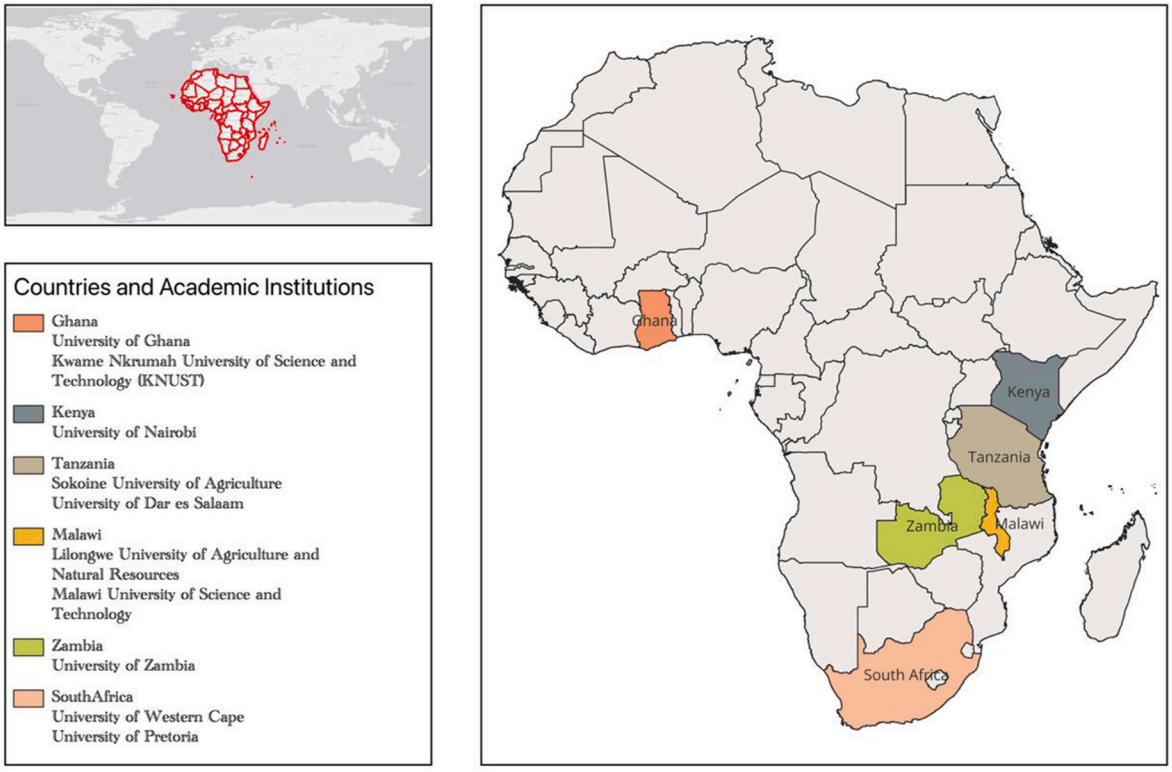

Fig. 1. FSNet-Africa early career researcher countries and institutions.

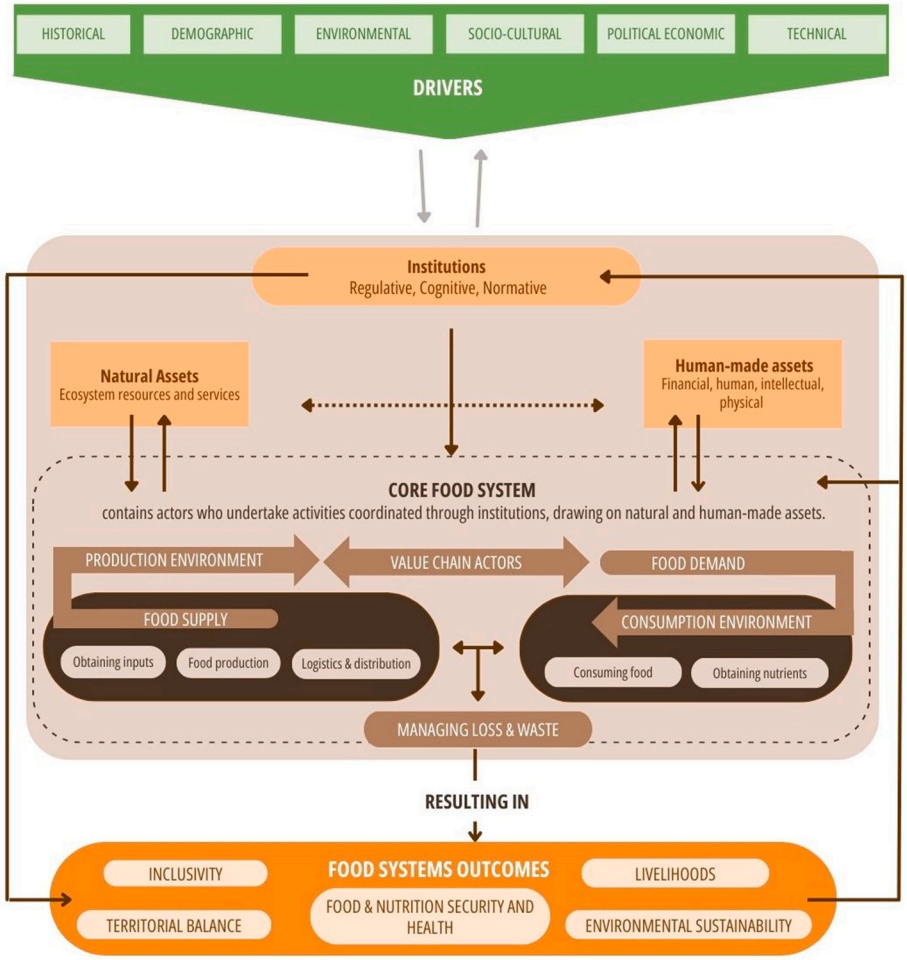

Fig. 2. The FSNet-Africa African food system framework (source: [11]).

initial mapping of the findings from the 19 completed projects onto the African food systems framework and the use of an inductive content analysis approach [27] to generate meaning and make inferences to identify five critical focus areas from across the research. These projects were selected as the analytical base because they represent the core research outputs of the FSNet-Africa project, each designed to

Table 1
FSNet-Africa project alignment with five critical focus areas for African food systems research.

Project Number	Food systems governance	Indigenous crops and African foods	Innovations for sustainable production for small-scale farmers	Consumer Preferences	Food loss and waste	References
1	X		X			[53]
						[54]
2	X		X			[33]
						[34]
3		X				[35]
4				X		[60]
5					X	[36]
6					X	[61]
7	X				X	[37]
8			X			[86]
9	X					[29]
10		X		X		[40]
11			X			[72]
12		X				[41]
13	X		X			[38]
14	X					[31]
						[32]
15			X			[49]
16				X		[50]
						[51]
17			X			[52]
18			X			[78]
19		X				[42]

investigate a specific dimension of food systems transformation. A layered validation process, which included the content producers (fellows), subject experts, and non-subject experts, was used to enhance the reliability and validity of the results. The first step in this validation process was a five-day workshop in April 2024, where 15 researchers from five countries and across eight disciplines interrogated the initial mapping and findings in smaller teams related to the critical focus areas.

Each team drew on project outputs, including blogs, presentations, posters, draft and published papers, and other written information, to validate the mapping of the projects against the food systems framework in an iterative process until consensus was reached. Each team focused on three to five projects linked to their critical focus area. Table 1 identifies where each project aligns with each critical focus area. The table also shows that many projects addressed more than one critical focus area, requiring an interdisciplinary approach. This was achieved with mentors from different disciplines.

Following the mapping exercise, the teams spent four days drafting text for each critical focus area, including consideration of outcomes, gaps, and lessons emerging from the research. Each draft was then shared with the whole group for review. On the final day, a plenary discussion allowed concerns to be raised, overlaps to be considered, and further gaps to be identified. The draft documents were then circulated after the workshop to the broader FSNet-Africa network of 83 researchers to elicit feedback on the identified critical focus areas, fill gaps where information was lacking, and validate the agenda for future research. Once feedback was provided, the paper was revised and again circulated to the network.

Due to time and scope limitations, the paper was not circulated to a broader group of stakeholders. However, the priorities reflected in this paper build on research that was validated through earlier engagements involving a broad and diverse group of stakeholders. These included academics from various disciplines, smallholder and commercial farmers, and policymakers. Although the final paper was validated primarily through researcher feedback, the priorities themselves emerged from a participatory process that included multiple stakeholder perspectives. Nonetheless, the authors acknowledge that elements of bias may have been introduced through the selection of stakeholders and researchers as outlined above.

The findings and critical focus areas in African food systems presented in this perspectives paper are grounded in the expertise, research interests, and intellectual contributions of the authors. This diversity of knowledge and disciplines strengthens the robustness of the findings and offers a valuable lens through which to view current food systems challenges and opportunities. The priorities identified were further considered in relation to the African Union's recently adopted continental framework, the Kampala CAADP Declaration on Building Resilient and Sustainable Agrifood Systems in Africa [90], to ensure their relevance to ongoing and emerging development priorities on the continent.

Section 3 synthesises these findings, situating FSNet-Africa's contributions within the broader body of literature and aligning them with evolving discourses around food systems transformation. Drawing on the FSNet-Africa network to present this perspective paper was a deliberate effort to highlight the collective insights generated across the 19 research projects completed under the FSNet-Africa project. While the perspectives presented here may reflect the specific contexts and experiences of this network, thus introducing some degree of bias, it remains a valuable and collective reflection validated through stakeholder engagement and situated within global food systems literature. As such, it contributes meaningfully to discussions on Africa's role in shaping the future of sustainable, equitable, and resilient food systems globally.

3. Results and discussion

3.1. Critical focus areas in African food systems

The five critical focus areas that emerged from the research in FSNet-Africa are food system governance, indigenous crops and African foods, innovations for sustainable production for small-scale farmers, consumer preferences, and food loss and waste.

3.1.1. Food system governance

Across the FSNet-Africa case studies, governance of African food systems emerged as a process shaped by multiple actors, institutions and context. Diverse formal and informal institutions and actors play pivotal yet distinct roles in governing African food systems. These include the government, private sector, civil society, consumers, and farmers. The involvement of these multisectoral and multilayered entities, each with its unique influence on the food system, is critical to the transformation process but raises significant challenges in relation to aligning interests, co-ordination, and mobilising capacity and resources.

A recurring pattern across FSNet-Africa case studies was the assumption of shared goals. In the case of food systems, it is often assumed that actors and institutions share the common goal of food and nutrition security, so all actions will be tailored to achieve this [28]. However, this assumption often masks underlying divergences in stakeholder priorities. For example, in Malawi [29], there was a clear difference in the approach government officials and community leaders believed should be taken to achieve food diversity for good nutrition. Technocrats promoted indigenous crops, while community leaders were interested in commercial crops that attracted more government subsidies and funding. This divergence reflects a broader trend observed in smallholder agriculture in other African countries [30], where goals and interests may vary within and between different stakeholder groups.

Similarly, in South Africa's Philippi Horticultural Area in Cape Town [31,32], conflicts between farmers and other stakeholders over land use and resource allocation illustrated how conflicting goals can lead to conflicting institutional pathways that can undermine collective transformation efforts.

Another consistent theme was the importance of coordination in enabling effective collaboration. Several projects [29,31–38] found coordination between institutions to be crucial in ensuring effective collaboration in addressing issues within African food systems, and for translating shared goals into appropriate interventions and sustainable solutions. For example, in Tanzania, the FSNet-Africa case study suggested that a well-coordinated framework could minimize postharvest losses in the tomato value chain [37], demonstrating the tangible benefits of alignment.

However, coordination breakdowns were also widespread. These coordination breakdowns were often rooted in capacity gaps and resource constraints. For example, in Malawi, the agricultural and nutrition sectors operated in silos despite having the common objective of reducing food and nutrition insecurity because a lack of capacity and resources meant that actors were unable to network or collaborate in multi-sectoral interventions, resulting in a lack of knowledge sharing or learning [29]. In South Africa's Philippi Horticultural Area [31,32] farmers were given resources and access to much larger farm holdings but without suitable capacity building, resulting in the failure of the intervention.

These case studies illustrate important lessons; that common goals must be negotiated and not assumed, and that coordination requires capacity and resources. The case studies reveal that trust building is needed to reconcile divergent interests but even with aligned goals, interventions may fail without adequate human, financial or infrastructural support. While these patterns are evident in these case studies, the configurations of actors, institutions and socio-economic conditions in specific contexts will shape how governance challenges arise and how they might be addressed.

3.1.2. Indigenous crops and African foods

Cross-case analysis identified culture and traditional knowledge, livelihood and nutritional contributions, and markets, as key themes for indigenous crops and African foods. Indigenous crops and African foods are increasingly recognised for their pivotal role in preserving cultural traditions and identities, promoting improved livelihoods and nutrition, and achieving sustainable and climate-resilient agriculture [39]. However, their potential is unevenly realised due to socio-cultural perceptions and market dynamics.

FSNet-Africa research projects [35,38,40–42] investigated how these crops can strengthen a community's control over their food systems and act as drivers for African food system transformation. For instance, in Tanzania [35], deep traditional knowledge about the significance and health benefits of indigenous crops has been passed down through generations, creating and maintaining important links between communities and the foods they eat. However, validation of their health benefits is needed if new avenues to increase their utilization are to be created. This validation gap hinders broader policy support and consumer trust. In Ghana [40], cucurbit seeds, part of traditional diets in many rural areas, offered a sustainable source of income and nutrition for households during the dry season, underscoring the importance of indigenous crops for local livelihoods. Similar findings in Zambia and South Africa [41,42] also highlighted the role of indigenous crops in diversifying diets and stabilizing incomes. These case studies underline the importance of indigenous knowledge and crops in building sustainable and climate-resilient livelihoods for communities [43,44].

However, the legacy of colonialism and the links to regional trade and global markets has caused a significant shift in demand for what crops are grown and traded in local markets. Perception barriers exist where many view traditional crops as 'food for the poor' [35]. As such, the accessibility and acceptability of indigenous crops and African foods requires awareness raising about their nutritional value and advocacy to preserve traditional food systems. FSNet-Africa case studies [40,41] focused on developing improved recipes and new products from indigenous crops to demonstrate the potential for increasing community acceptance. Moreover, many case studies [35,40–42] investigated how indigenous crops and African foods might be promoted to consumers and integrated into local markets to make traditional foods accessible to everyone.

The lessons learned from this cross-case analysis are that knowledge sharing and collaboration between indigenous communities, researchers, and policymakers is needed to strengthen and preserve these traditional food systems and to tackle validation challenges, perception barriers and market challenges. This view is supported by existing literature that shows the importance of indigenous knowledge and crops in enhancing resilience to climate change and advancing the sustainability of food systems [45–47].

3.1.3. Innovations for sustainable production for small-scale farmers

Africa has fallen behind many other parts of the world in the use of technology and innovation in agriculture. Smallholder farmers still mostly rely on human power and simple tools, such as hoes, in agricultural production, resulting in low and stagnant crop yields [48]. The FSNet-Africa case studies collectively underscore the urgent need for appropriate innovation and technological solutions for smallholders that are more inclusive and climate-smart, that can improve crop and livestock production value chains, advance environmental sustainability, and improve livelihoods. These case studies offer a rich cross-case analysis of how technological solutions can be tailored to diverse contexts across the continent.

A solutions-focused theme characterised the FSNet-Africa case studies, emphasizing how technologies can best inform the optimal use of inputs [49] and other resources [33,34], and proposing context-specific and practical innovations to challenges faced by smallholder farmers in Africa [33,34,36,38,49–52,78]. Projects included digital technologies [49], new ways of financing production [78] and organising farmers to facilitate environmental and social learning and equitable partnerships to enable greater uptake of climate-smart agriculture interventions [53,54,78,86].

A consistent theme was the importance of designing technologies that are accessible and culturally appropriate [33,34,37,49,53,54,86]. For example, a project in Tanzania [49] focused on making technological advancements in precision agriculture accessible to farmers via smartphones. This technology delivers information in the local language (Swahili) and employs locally appropriate measurement systems. These case studies suggest that research and innovation that is inclusive can harness the capacities of farmers and foster co-creation and knowledge exchange for wider adoption of innovations, with potential for multiple benefits for farmers and society more broadly. However, digital literacy, infrastructure gaps and affordability present persistent barriers to access and highlight the need for differentiated strategies based on local capabilities.

In addition, the theme of multi-benefit innovations emerged, where innovations that are both climate-smart and improve the livelihoods and well-being of farmers and the broader community are more likely to achieve uptake and long term impact. For example, a case study from South Africa [38] proposed new markets and enterprises for farmers in moringa-fortified chicken feed. The project offers new business opportunities for farmers while promoting environmental sustainability, and animal and human health. However, institutions and markets may lag behind innovation, leading to uneven integration into existing value chains and policy.

Here the lessons are that technologies must be adapted to the local context and practical realities if they are to be adopted and that multi-benefit solutions may be more likely to be adopted and scaled up. However, structural support and infrastructure investment is needed if innovation is to be embedded into agricultural systems and markets in the longer term.

3.1.4. Consumer preference

Consumer preferences are increasingly recognised as a powerful driving force shaping food systems, influencing how food is grown, processed, marketed and consumed. Engaging with consumer demand, particularly around nutrition and food safety can create opportunities for improved nutrition and food safety [55] and drive positive transformation in food systems [56] by unlocking new pathways for improving public health, supporting local economies and enhancing food system sustainability.

A key theme from across the FSNet-Africa case studies [40,50,51] was leveraging familiar foods to achieve nutritional gains. The main crops researched were orange-fleshed sweet potatoes (OFSP) and cucurbit seeds (Egusi). OFSP is biofortified with beta-carotene (pro-vitamin A), which is metabolised into Vitamin A in the body. Thus, OFSP can contribute to the intake of vitamin A, a micro-nutrient deficiency commonly found in African children [57]. Egusi is known to have a high nutrient profile and is a climate-resilient crop [58]. In Kenya [51] the FSNet-Africa case study demonstrated that the incorporation of OFSP flour into wheat flour can improve the nutritional value of "chapati," a popular Kenyan flatbread. Similarly, in Ghana [40], improved Egusi was introduced into the recipes of two local dishes that are staples in many households, namely "wrewre" soup and stew. These projects not only improved the nutritional quality of the foods but also demonstrated that nutrition-sensitive innovations are more likely to be accepted when they build on existing culinary practices and preferences. Across the case studies local cultural contexts were leveraged, e.g. recipe adaptation, familiar packaging and community engagement, to increase consumer acceptance. This highlights the importance of cultural resonance in driving dietary change.

Food safety presents particular challenges in African food systems given the predominance of informal supply chains and local markets governed by weak or non-existent regulations [59]. In Tanzania, the case study revealed that consumers are more concerned with visible

hygiene (e.g. the cleanliness of markets and restaurants) than with upstream food safety risks (e.g. production practices and sourcing) [60]. This lack of knowledge and awareness limits the ability of consumers to demand safer food and for consumer awareness to act a lever for food safety.

The lesson from these case studies is that nutritional improvements are likely to be successful when they enhance, rather than replace, familiar foods. This will require innovations tailored to local tastes, cultures and traditions to gain consumer trust. However, challenges remain in leveraging consumer preferences for food system change. While nutrition-focused case studies successfully engaged consumers through familiar foods, the food safety case study identified greater challenges due to limited consumer awareness of 'invisible' risks. This suggests that nutrition messaging may be more immediately actionable than food safety messaging, which will require deeper education and trust building. The potential of big data analytics [61] and technologies like blockchain to enhance food traceability and safety is promising [62] but consumer trust and digital literacy will vary widely. Institutional support and communication will be needed for such innovations to gain traction.

3.1.5. Food loss and waste

Reducing food loss, particularly at production, post-harvest and in distribution, is a critical priority for African food systems. FSNet-Africa case studies [36,37,51,53,54,61,86] investigated how to minimize food loss and waste and maximise resource efficiency across the food value chain and revealed that circular economy principles, appropriate technologies and multi-stakeholder collaboration were central themes in achieving these goals.

A circular economy approach is becoming increasingly important to achieve a sustainable food system. The circular economy is a relatively new concept that creates new value chains and reduces waste compared to a linear economy [63]. It is based on using resources more efficiently with minimal effects on the environment. The concept of a circular economy for reducing waste can enhance sustainability. Across the case studies in Ghana and Tanzania [36,37,51,53,54,86] there was a shared emphasis on repurposing agricultural by-products such as cashew fruits, sweet potato leaves and organic waste. These case studies reflect a growing shift towards resource use efficiency and waste minimisation, aligning with circular economy principles.

Leveraging appropriate technology for transportation and storage presents a significant opportunity for addressing food loss and waste, as explored in the case study directly focused on this issue in South Africa [61], where it was found that technological innovations could improve efficiency and reduce losses across the food supply chain. These innovations included improved storage facilities, transportation methods, processing technologies and digital platforms for market access and information sharing. However, the appropriateness of these technological solutions is important [37]. The FSNet-Africa case studies highlight that education and knowledge exchange that changes perceptions around waste and by-product use [36,37], or technology that is tailored to the scale, capacity and needs of smallholder farmers and informal market actors, is needed [61].

Many of these case studies (e.g. [37,61]) identified the difficulties in securing stakeholder buy-in, particularly from actors in fragmented or informal value chains. Without trust and collaboration, developing and implementing solutions is a significant challenge. This may involve facilitating connections to formal markets, supporting cooperatives, and promoting fair trade practices. Additionally, adopting integrated approaches that target multiple points along the value chain will be important. This makes multi-sectoral collaboration and governance not just valuable but essential.

3.2. Priorities for African food systems

There is growing concern about the need for more progress in meeting the food security and nutrition targets outlined in SDG 2 - Zero Hunger by 2030, and the Malabo targets aimed at eradicating hunger and all forms of malnutrition by 2025. These concerns have been highlighted by international agencies and organisations [64,65]. While global disruptions have played a significant role, it is crucial to acknowledge the diverse nature of African food systems. The polycrisis for African food systems, where there is a combined impact of increasing social inequities, conflict, severe climate events and economic disruptions, demands a multifaceted approach that considers all stakeholders. Solutions need to engage all stakeholders collectively and consider context to address the unique challenges and opportunities present in each region while striving for sustainable and resilient food systems. Therefore, as has been learned from across the FSNet-Africa case studies, coordination, collaboration and communication are essential when seeking solutions.

Multistakeholder collaborations for food systems transformation have been highlighted in this analysis and are often promoted in the literature. Many platforms exist to facilitate these, however, most of these platforms continue to focus on single areas, e.g., nutrition or climate-smart agriculture, as opposed to the entire food system [30]. Critical features of successful platforms are that they are embedded in inclusivity and foster learning and coordination [66]. The 19 FSNet-Africa projects synthesised in this perspectives paper emphasise the importance of action research through collaborations. These projects demonstrate the direct impact of research developed through co-creation with stakeholders aimed at real solutions. However, collaboration within the context of food systems requires buy-in and inclusion of a diverse range of stakeholders and may require the integration of multiple stakeholder platforms, including communities that are often excluded from decision-making. Our understanding of how to integrate multiple multi-stakeholder platforms and how that might impact food system transformation remains limited.

The exclusivity around food systems decision-making in Africa, where only certain stakeholders have a voice, begs the question of whose food system is being transformed and whose knowledge and opinion matters. Knowledge and power play a fundamental role in food systems transformation [67]. The role of knowledge has been highlighted in many FSNet-Africa case studies. Actors who possess certain knowledge have greater influence over who participates in and benefits from food systems. Such power dynamics may erode existing or prevent the development of new valuable knowledge on indigenous crops, local innovations in climate-smart agriculture, or to reduce postharvest losses. Inclusive food systems require an exploration of how knowledge and power interface with various aspects and areas of the food system and how local, traditional and indigenous knowledge can be incorporated into food system transformation.

While the notion of food systems transformation has been articulated in the literature, understanding what it means to local African communities is valuable [17,68]. The FSNet-Africa case studies highlight the importance of indigenous and underutilised crops within the food baskets of households. This is significant because in recent years, most communities have had limited crop choices, mainly due to the dominance of industrial agriculture [91]. Nonetheless, there are a variety of crops with high nutrient content that can provide options for diversifying food choices in local communities [39,69] and opportunities for innovation by smallholder farmers. These crops, often classified as indigenous, traditional, neglected, underutilised, forgotten, or opportunity crops, hold great potential to address food and nutrition security in Africa [17,91,92]. Recognizing the potential of these crops should inspire hope, optimism and local ownership for the future of African food systems. Similarly, livestock provides protein, income, and cultural value to African food systems. Indigenous breeds like Ankole cattle and Red Maasai sheep thrive in local environments, resist diseases, and efficiently use resources [70,71], making them key to sustainable and resilient food systems.

New research opportunities are needed to explore the transformative

impact these indigenous, traditional, neglected, underutilised, forgotten, or opportunity crops and food (including livestock and insects) can have on African food systems. A new research agenda focusing on what local African communities consider to be transformative foods, encompassing all food classified as indigenous, traditional, neglected, underutilised, forgotten, or opportunity, is necessary. A systems approach will be essential to consider opportunities for smallholder innovation, supply chains and consumer demand. Critical features of these foods must include affordability, resilience, climate-smartness, acceptability, and livelihood enhancement.

Beyond ensuring the availability of these transformative foods, it is crucial to prioritise the reduction of food loss. Food loss poses a significant challenge in African food systems, necessitating a shift in behaviour among stakeholders with critical focus on farmers and consumers. Promoting cognitive re-framing to change the perception of waste towards a zero-waste orientation and resource opportunity can be impactful. To achieve this, investing in capacity-building programs for farmers, producers, consumers and other actors in the food supply chain is needed. These programs should focus on training in best practices for harvesting, handling, storage, and processing to improve skills and knowledge and minimize losses. Equally important is the need to clearly define the interests of all stakeholders to ensure the development of a solution that aligns with each stakeholder's expectations, thereby securing their buy-in and ensuring successful implementation.

4. Conclusions

Addressing Africa's food security and nutrition targets requires a comprehensive and inclusive approach that integrates the diverse perspectives and needs of stakeholders. As we approach the final stages of the SDGs, it is vital to establish a food systems research agenda that aligns with existing strategies and priorities while fostering the next wave of research initiatives. Emphasizing inclusivity — particularly for underrepresented groups like smallholder farmers and NGOs — is vital. The FSNet-Africa project highlights the significance of a transdisciplinary approach to inform future global development agendas and enhance Africa's voice. Promoting indigenous knowledge, local innovations, and underutilised crops and livestock is essential for building resilient and sustainable food systems. By fostering collaboration, understanding power dynamics, and addressing food loss through best practices, transformative solutions can be developed that combat hunger and empower communities. Engaging local voices in decision-making ensures that interventions are relevant and practical, paving the way for a sustainable and food-secure future by 2030 and beyond. Future research priorities must focus on food systems governance, indigenous crops, and innovations for sustainable production, particularly regarding smallholder farmers and food loss, to catalyse an African food systems-focused transformation.

CRediT authorship contribution statement

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Ethics

Ethical clearance for the FSNet-Africa project, including the synthesis workshop, was obtained from the University of Pretoria, Natural and Agricultural Science Research Ethics Committee under the reference NAS104/2021. Each of the 19 projects included in this perspectives paper received ethical clearance from their respective institutional and/or national ethics committees.

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Declaration of competing interest

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jafr.2025.102289.

Data availability

Data has been published in journal articles, policy briefs, etc. associated with the primary research

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