Gender and food systems in six African countries

Aligning research, policies and research funding

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Research plays a fundamental role in achieving food systems outcomes but research funders and researchers often set agendas that are not necessarily informed by policy needs. This analysis explores synergies between research publications, funding and policy priorities using a gender and food systems lens. In this article the authors argue that gender research is not being adequately leveraged to investigate food systems challenges that are considered national priorities. They call on research funders, researchers and policy-makers to collaborate to define research agendas that address policy needs.

Introduction

The interconnectedness between food, livelihoods and the environment has increased the need to look at food as a system as opposed to focusing on discrete elements (HLPE, 2017). With hunger, environmental degradation and poverty on the rise, a consolidation of resources and efforts is needed to integrate planning and governance (FAO *et al.*, 2023). Research plays a fundamental role in achieving food and nutrition security, health, environmental sustainability and improved livelihoods, which can be considered the outcomes of an effectively functioning food system. The centrality of research in food systems transformation was emphasised during the 2021 United Nations (UN) Food Systems Summit, with two days dedicated solely to science. In particular, one of the objectives of the dialogue was to strengthen the interface between science and policy (FAO, 2021). While pockets of research and policy innovations that advance gender equality exist, the interface between research and policy as it relates to gender remains constrained (Oliver & Cairney, 2019). Policy-makers generally develop policies in isolation from the evidence generated by researchers. Conversely, researchers and research funders set agendas that are not necessarily informed by policy needs.

Gender equality is a key lever in achieving positive food systems outcomes (Njuki *et al.*, 2022). For example, women, who have limited access to resources and limited decision-making power are often responsible for food processing and preparation. Women's limited control over these domains can compromise household food and nutrition security. Gender equality remains pivotal to the attainment of the sustainable development agenda, with Sustainable Development Goal (SDG) 5 explicitly focusing on gender equality (UNGA, 2015; Quisumbing & Doss, 2021). Tools to integrate gender into research exist (Parvez Butt *et al.*, 2019; de Beer *et al.*, 2017), and a significant body of literature focuses on gender mainstreaming in science, technology and innovation in Africa (Jackson, *et al.*, 2022; Garwe, 2021; Ampaire *et al.*, 2020; Beaudry *et al.*, 2023). However, the extent to which gender is mainstreamed in African food systems research has not been adequately explored. Furthermore, the extent to which food systems gender research is driven by policy priorities remains unclear. This study identified priority areas in gender and food systems research in six African countries and determined the alignment (or lack thereof) of the research with policy priorities.

## Gender and food systems research

In 2017, the High Level Panel of Experts (HLPE) on Food Security and Nutrition emphasised the growing demand for a food systems approach that addresses the multifaceted and interrelated challenges linked to achieving food and nutrition security in a manner that considers the environment, livelihoods and context (HLPE, 2017). While multiple food systems exist, there are central elements common to all food systems, including the actors and activities related to producing, processing and consuming food and the outcomes that emerge from the interactions between actors and activities. In this article we use the Food Systems Research Network for Africa (FSNet-Africa) Food Systems Framework depicted in Figure 1, developed by May (2021), as our theoretical and analytical framework.

FSNet-Africa Framework for Researching Food Systems

The FSNet-Africa Framework for Researching Food Systems, hereafter referred to as the FSNet-Africa Framework, was developed as a tool for researching African food systems.

While useful for conducting food systems analysis, the framework is not uniquely African and requires refining to underscore challenges and opportunities peculiar to the African context. The FSNet-Africa Framework emphasises food systems activities from the production environment on the one end all the way through to consumption on the other end, linked through the value chain. It also includes the food systems outcomes relevant to the African context, which May (2021) proposes are food and nutrition security and health, livelihoods, environmental sustainability, and territorial balance and equity. May (2021) highlights that Africa has multiple food systems. However, there is value in understanding how Africa's shared visions, history and collaborations could help frame the cohesive concept of an African food system.

Figure 1: FSNet-Africa Framework for Researching Food Systems (May, 2021)
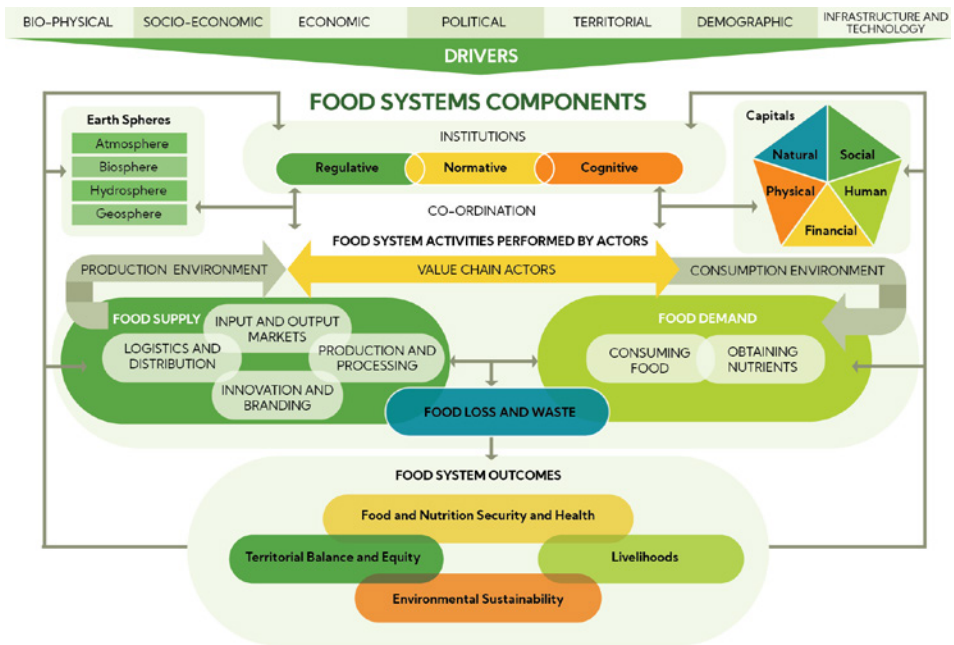
In the context of food systems, gender would be considered a normative institution, as gender norms, roles and responsibilities are often defined by society (Cislaghi & Heise, 2020). However, gender also cuts across all aspects of food systems and needs to be understood within and integrated into all aspects of food systems. Efforts have been made to integrate gender into food systems research (Mkandawire *et al*., 2021; Visser & Wangu, 2021). Njuki *et al*. (2022) found that much literature focuses on institutions, including social norms, and that while literature on decision-making power exists and is a fundamental cross-cutting challenge, research is isolated to specific elements of the food system rather than considering the system holistically. Other gaps identified include research on the links between women's mental health and nutrition. Linkages between gender-based violence and food systems are also under-researched (Njuki *et al*., 2022). Giner *et al*. (2022) argue that research gaps exist in relation to women's participation in entrepreneurship, including financing mechanisms and food systems in general. Limited data also exist on women's employment and leadership and the related

policies to facilitate gender equality. Evidence gaps on gender within the consumption environment also need to be addressed and linked to gendered interventions to inform food choices. However, it remains unclear why certain aspects of gender and food systems are researched compared to others.

Evidence-informed policy

There is rising interest in evidence-based or evidence-informed policies. Strydom *et al*. (2010) suggest that evidence-informed policy is essential for increasing the effectiveness of policy, confidence in policy by decision-makers and the range of options for policy-makers to select from in the policy-making process (Strydom *et al*., 2010). Research on gender is equally important for advancing the integration of gender into policies. Policies, policy objectives and policy targets should be informed by research that uses sex-disaggregated data as well as analyses that include cost-benefit analysis, gender impact assessment and gender-responsive budgeting to provide the evidence base for decision-making (Hosein *et al*., 2020). However, the integration or mainstreaming of gender in policy remains weak because of limited capacity / skills for gender mainstreaming, lack of gender equality enforcement mechanisms and misconceptions around the definition of gender (Mkandawire *et al*., 2018). Misconceptions, particularly in the context of policy, promote the notion that gender means women (Nyalunga, 2007; Okali, 2011). However, gender refers to men and women's socially determined roles and responsibilities and, importantly, the relationships between men and women (Cislaghi & Heise, 2020). Research presents an opportunity for better integrating gender into policy.

> **Policy-makers generally develop policies in isolation from the evidence generated by researchers.**

Gender mainstreaming features in various global and national agendas – for example, SDG 5 aims to "achieve gender equality and empower all women and girls" and thus articulates the intention to address existing gender inequality. Gender mainstreaming has, therefore, been advanced through various initiatives, but gender inequality remains a challenge on the African continent. The Africa Gender Index collates data related to gender gaps in employment and earnings, measuring equality between men and women in relation to representation and empowerment, social equality and economic equality. The Index scores for 2019 show an average score of 48.6%, yielding an overall gender gap of 51.4% (AfDB, 2020). Africa thus clearly still lags behind in its progress towards achieving gender equality in society.

While the Index suggests moderate success in efforts to reduce the gender gap, significant inequalities still exist, and slow progress is being made towards the attainment of SDG 5. Traditional social and cultural norms, which vary depending on context, shape women's roles in the food system. Often, these prevailing norms, policies and legislation constrain women's participation in and benefit from food systems (Njuki

et al., 2021). The interface between research and policy offers opportunities to improve the way in which gender is integrated into food systems research and food systems policy-making. However, the extent to which policies are informed by gender research or, conversely, the extent to which policy informs gender research is vague.

There is an increasing demand by African governments for research evidence to support agenda setting as well as the design, implementation and monitoring of policies. While the capacity to supply evidence is increasing, the content is largely driven by international policies and interests (Goldman & Pabari, 2020). Research on gender and food systems also exists, with clear indications of where gender gaps in food systems research are evident. However, little is known about the extent to which food systems policy and gender research align. This article acknowledges that policy is not influenced by research alone but by multiple factors, including emerging trends, crises and political agendas. Our literature review found that while research exists on gender and food systems and integrating gender into policy, as well as on influencing policy through research, a research gap exists on the extent to which food systems gender research and food systems policy align. Using the context of gender and food systems research as a case study, this paper identifies existing research on gender and food systems, its alignment with policy and the extent to which research publications are driven by research funding.

Methodology

Following Bowen's (2009) approach, our study combined a literature search and classification process with document and thematic analysis (Ahmed, 2010; Bowen, 2009). This process also supported the triangulation of research findings to increase credibility. Drawing on themes emerging from a systematic review, we integrated the data gathered to make meaning of the results. Documents were read, re-read, coded and categorised by at least two members of the research team to reduce bias and subjectivity.

The diversity of the research team involved in the study and analysis supported the exploration of varied interpretations and increased the rigour of the analysis. Researchers' disciplinary backgrounds included agricultural economics, health, political science, psychology and social science. Cultural contexts were mainly differentiated because of countries of origin, which included Jordan, Malawi, South Africa, the United States of America, Zambia and Zimbabwe. The study can be categorised as transdisciplinary as, in addition to transcending various disciplines, the research direction was also informed by consultations with the UN Interdepartmental Task Force on African Affairs (IDTFAA). Their inputs contributed to guiding the direction and refinement of the research methodology, transitioning the study from a standard literature review and analysis to an integrated document and thematic analysis. The methodology included four main elements: literature search and classification, review of the African Food Systems Guiding Framework, review of national policies, as well as research funding analysis.

Literature search and classification

Using the FSNet-Africa Framework depicted in Figure 1, a literature search was conducted using key words. The key words captured 28 elements of the food system as they relate to gender. The team systematically searched these key terms in combination with the terms "gender" and "food systems" across seven databases: EBSCO Host (so named after the company's founder, Elton Bryson Stephens), ScienceDirect, Scopus,

SpringerLink, Web of Science, Wiley Online Library and JSTOR ("Journal Storage"). These are the most commonly used and generally accepted databases for research related to agriculture and food systems. The exclusion criteria included geographic location (i.e. research being based in one of the six FSNet-Africa focus countries – Ghana, Kenya, Malawi, South Africa, Tanzania and Zambia) and year of publication (i.e. between 2015 and 2022). The FSNet-Africa project selected these countries to ensure geographic representation of east, south and western Africa. These countries were also selected because, as a Global Challenges Research Fund research excellence project, academic partners participating in the FSNet-Africa programme needed to be from African Research Universities Alliance (ARUA) affiliated institutions with a strong focus on food-related research. Non-ARUA universities were selected to strengthen research capacities at emerging and previously disadvantaged institutions. The timeframe selected is relevant because it coincides with the period in which the concept of food systems really began to gain momentum. While the HLPE only released their report in 2017, food systems articles date back to as early as 2011 (Ingram, 2011), with the Global Panel on Agriculture and Food Systems releasing a conceptual framework in 2016 (Glopan, 2016).

At least two team members collaborated on each of the 28 food systems components to review the seven databases and identify relevant articles. The initial search resulted in 5,674 articles containing one of the key words relating to components of the food system; these were exported to Endnote. Duplications were removed and thereafter article titles and abstracts were screened manually based on inclusion of the term "gender" or "women" and whether the studies were located in one of the six focus countries. After this round of screening, the total number of articles was reduced to 644. Team members working on specific components tracked the results of their searches in Excel spreadsheets that utilised the same format for organising the data (i.e. all utilising the headings Component, Authors, Year, Title, Abstract, Link, Database, Country 1, Country 2, Country 3). These spreadsheets were then collated into one spreadsheet to eliminate duplication and allow for further analysis to understand which food systems areas were most researched in the identified gender and food systems publications.

African Food Systems Guiding Framework

Based on the results of the literature search and classification, a follow-up analysis to determine the extent to which the priority areas of publications aligned with policy priorities in gender and food systems in Africa was conducted. Consultations held with the IDTFAA, considered influential leaders in activities related to food systems in Africa, led to the recommendation of three key African policy documents. These documents are regarded by them as the guiding policy framework for African food systems, hereafter referred to as the African Food Systems Guiding Framework (Kebe, 2023). The identified documents include the Comprehensive African Agriculture Development Programme (CAADP) (NEPAD, 2003), the Malabo Implementation Strategy and Roadmap to Achieve the 2025 Vision on CAADP (AUC, 2020) and the Africa Common Position on Food Systems (AUC, 2021).

These documents were reviewed to extract statements that reflect priority areas related to gender and food systems. Each team member conducted an independent review of the statements related to gender and coded each statement based on its alignment with a food systems area from the FSNet-Africa Framework. Where coding was not aligned, the team discussed each statement until consensus was reached. This

process aimed to reduce the subjectivity of the coding. The common areas across the three documents in the African Food Systems Guiding Framework were analysed to determine where similar themes emerged in terms of gender and food systems policy priorities.

Review of national policies

The team also reviewed national policies in the six focus countries to explore gender and food systems priority areas. The medium-term development plans and the national agriculture investment plans (or documents similar to these, such as strategic plans) of the six countries, focusing on the timeframe of the literature search (2015-2022), were searched for priorities related to gender in the context of the food system. The National Agriculture Investment Plans (NAIPs) were selected for review because these documents are developed in line with domesticating the Malabo Declaration and the broader African Food Systems Guiding Framework. In 2016, the International Food Policy Research Institute (IFPRI), at the request of the African Union Commission, led efforts to provide technical support to countries in developing their NAIPs (IFPRI, 2019). This support ensured that while the content and structure may differ, the NAIPs followed the Malabo guidelines consistently and were comparable. The NAIPs are key in signalling which gender and food systems areas are national priority areas for investment. We recognised that these plans would be significantly biased towards the agriculture sector; therefore, we also explored national medium-term development plans in the six countries, which highlight national priorities across multiple sectors, including health, environment, education and governance, among others – all of which influence and are central to food systems. For example, priorities related to health look specifically at nutrition, which is a core element of the food system, while priorities related to the environmental sector look at land use, farming and pollution, and climate change management, which have very specific impacts on the food system. National medium-term plans inform sector policies and indicate national priorities for each sector. Policies are typically developed using the national medium-term plans. As such, it was essential to include national medium-term development plans to understand the policy priority areas that link to food systems more broadly.

... limited research exists in the areas of gender and finance, yet this is a critical policy priority ...

These policy documents were reviewed to extract statements that reflected priority areas related to gender and food systems, using the search terms "gender", "women" and "girls" to narrow down the priority areas. The statements were coded to reflect a food systems area on the FSNet-Africa Framework. A second team member reviewed the list of statements and the coding assigned to each statement to corroborate the results.

Research funding

The results from the first three sets of analyses led to questions concerning research funding, which was proposed as being central to informing the dominant areas of gender and food systems research publications. A fourth analysis was conducted to deepen our understanding of the findings and explore the alignment of funding with research publications. A literature review explored grants related to gender in African food systems. Through this process, the Dimensions database was identified. Dimensions is a scholarly database that goes beyond research articles and their citations by including not only books, chapters and conference proceedings, but also grants, patents, clinical trials, policy documents and altimetric information (Hook *et al*., 2018). This database was used to assess research grants related to gender and food systems. While this database is not comprehensive and may overlook smaller grants from unconventional donors, it provides an indication of the type of gender and food systems research that is funded by key research funding organisations.

The inclusion criteria were grants that were awarded to the six focal countries in the period 2015 to 2022 and which made explicit reference to gender and/or women in the title or abstract. Three team members independently reviewed the grants and classified them using the 28 areas of the FSNet-Africa Framework. Where there was divergence, the team met to discuss and agree on the classifications. This minimised bias in categorisation and validated the results.

Results

The results are presented in three sections. The first section outlines the results from the literature search and classification. The second section combines the results from the African Food Systems Guiding Framework and the national policy analysis. The third section presents the results from the research funding analysis. An infographic summary of the full set of results is presented in Figure 3.

Literature search and classification

The initial results of the literature search yielded 5,674 publications. After removing duplications, 1,253 articles remained. The gender screening was then conducted and resulted in 644 articles. These were the articles that were included in the analysis.

The results of the mapping of gender research against the different areas/components of the FSNet-Africa Framework are presented in Figure 2. Research priorities related to gender and food systems identified in the six focus countries show that the majority of publications relate to institutions (195 articles found for regulative and normative institutions combined)

Traditional social and cultural norms ... shape women's roles in the food system.

and earth spheres (141 articles found across all four earth spheres combined), while the socioeconomic (6 publications), physical capital (6 publications) and natural capital (8 publications) categories rank fairly low in terms of published research. Economics as well as production and processing fall in the middle.

Figure 2: Number of publications identified for each food systems area/component
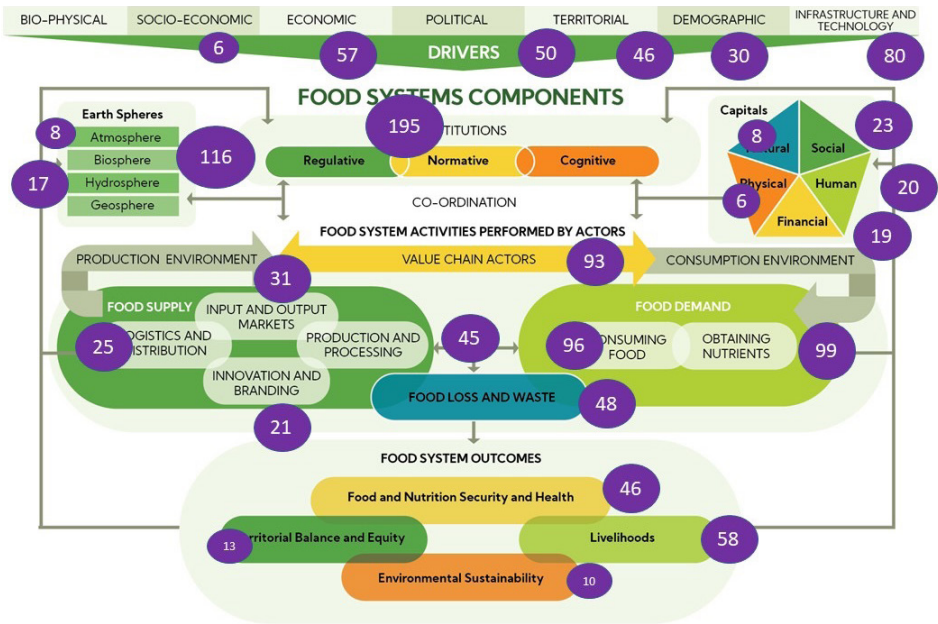
African Food Systems Guiding Framework

A total of ten food systems areas were prioritised across all three documents constituting the African Food Systems Guiding Framework, with the CAADP document including the largest number of priority areas.

The most highly prioritised areas in the context of gender and food systems in these documents were production and processing, and institutions. The results indicate that there is significant alignment between research publications on institutions (195 publications) and on production and processing (45 publications) and the policy priorities included in the African Food Systems Guiding Framework. However, natural, financial and human capital, which are considered high priorities in the African Food Systems Guiding Framework, yielded only 8, 19 and 20 publications respectively, in the context of gender and food systems research. While biosphere resulted in the second largest number of research publications in the context of gender and food systems, it was not included as a priority in the African Food Systems Guiding Framework.

After comparing the food systems areas that could be identified across the policy documents, only production and processing and institutions were identified as the two common areas that were overtly linked to the concept of gender. An example of such alignment of areas is where one of the documents focuses on policy priorities related to production and includes the participation of women in agricultural activities – in particular value chains. The three African Food Systems Guiding Framework documents also prioritised the development and implementation of policies related to women's access to land, resources and training. Natural and human capital, livelihoods, input and output markets, infrastructure and technology, and financial capital were the food systems areas identified as priorities in two of the three African Food Systems Guiding

Framework documents. The areas food and nutrition security and health, politics, obtaining nutrients and economic were coded in only one document.

National development plan priorities results

This study used the national agricultural investment plans in the six countries to identify the national policy priorities in terms of gender and the food system, given that agricultural production and consumption encompass a significant portion of the food system. However, the agricultural sector does not account for the entire food system. As such, the country-specific national medium-term development plans published by the relevant planning departments within each country were also analysed to enable a holistic view of what the policy priorities are within each country. The gender priorities in terms of the different food systems areas were identified and coded.

A total of 14 food systems areas were prioritised across the national agricultural investment plans and the national medium-term development plans of the six countries. The national medium-term development plans and the national agricultural investment plans of the focal countries highlighted that African governments have only prioritised gender to a limited degree, with a significant focus on obtaining nutrients (99 publications), financial capital (19 publications) and production and processing (45 publications) in the context of gender. Natural capital (8 publications) was also prioritised to a degree. Five of the six countries prioritised obtaining nutrients, but this could be specifically related to the prioritisation of health with an emphasis on pregnant women, as opposed to women and food systems more broadly. All six countries prioritised access to financial capital for women, specifically in terms of access to loans and credit, and financial literacy training. Reference was also made to prioritising the reduction of the wage gap. There has also been a significant focus on increasing women's access to the resources necessary for production, such as extension services. Additionally, women's access to land was prioritised in five of the six countries. Gender in the context of earth spheres (141 publications), specifically in terms of biospheres, was only prioritised in three of the six countries. One aspect that was noted in many of the national policy plans but which was not analysed as part of this research as it does not directly link to the food systems is the gender gap in education, which has a significant impact on women. Not only does it limit employment opportunities for women and reduce their ability to enter the formal labour market, but it also limits their opportunities to participate in decision-making processes.

There is significant alignment between the amount of research being conducted on a particular food systems area and the national priorities linked to that area in the context of gender and food systems, except in a few instances where much research is being done on an area, but it is not mentioned as a policy priority in the majority of focal countries. These instances relate to the following food systems areas: institutions (195 publications, with four out of six countries prioritising these areas), biospheres (116 publications, with three of six countries prioritising these areas), value chains (93 publications, with four out of six countries prioritising these areas), and obtaining nutrients (99 publications, with five out of six countries prioritising these areas). However, there is also some misalignment between the research being conducted and national priorities – particularly in the areas of natural capital (only 8 publications, but with five out of six countries prioritising this area) and financial capital (only 19 publications, but with six out of six countries prioritising this area).

Research funding results

The search for grants from the Dimensions database resulted in a total of 21,115 grants. After screening for country and gender and food systems, 32 grants remained and were analysed to identify the priority funding areas. Research funding was allocated to 16 food systems areas.

The results depicted in Figure 3 show the total amount of funding allocated to a specific food systems area between 2015 and 2022. The majority of grants that focused on gender and food systems were in the areas of biosphere (11), regulative institutions (11), production and processing (9), and obtaining nutrients (7). These constituted over half of the total grants funded in the context of gender and food systems research. Although research related to gender and institutions was funded by more donors, research related to gender and earth spheres received the largest amount of funding: up to $76,515,706 for biosphere, hydrosphere and atmosphere combined, compared to $50,634,138 for institutions (see Figure 6). Economics was the third largest area in terms of actual funding amounts invested, with research in this area receiving $41,411,812. Gender and food systems research publications align significantly with research funding. This finding is evidenced by the large number of publications related to institutions (195), earth spheres (141) and production and processing (45), and the amount of funding directed towards research in each of these areas.

There is significant alignment between research funding, research publications and national policies in the areas of institutions, earth spheres and obtaining nutrients. However, based on our analysis, other highly prioritised areas in the context of gender and food systems in national policies and the African Food Systems Guiding Framework – including input and output markets, financial capital and natural capital – have received no research funding.

Figure 3 presents a summary of the collated results looking at gender and food systems research publications, policy priorities and research funding in the six countries.

Figure 3: Results summary of the alignment between research publications, policy prioritisation in the six countries and research funding

Discussion

The results reflect significant alignment between gender and food systems research funding, research publications and policy in the areas of institutions and obtaining nutrients, and moderate alignment in the area of earth spheres. These findings are consistent with Njuki *et al*. (2022), who found that much of gender and food systems literature focuses on social norms (institutions). In the context of food systems, legislation and policies – particularly around land and women's land rights – have attracted much attention in recent years. The findings are also aligned with increased global commitment towards nutrition and environmental sustainability. For example, between 2014 and 2022, there has been an increased number of initiatives to advance nutrition, including the 2014 Rome Declaration on Nutrition (FAO, 2014), the 2016 announcement of the UN Decade of Action on Nutrition (WHO, 2016) and the emphasis of the 2020 Global Panel on Agriculture and Food Systems for Nutrition (Glopan) report on diets (Glopan, 2020). Similarly, there has been significant emphasis on environmental sustainability through commitments such as the 2015 Paris Agreement where 193 member states committed to reducing carbon emissions and strengthening collaborative efforts to adapt to the impacts of climate change (United Nations Framework Convention on Climate Change, 2015).

However, the limited number of publications focused on natural capital, financial capital, human capital, and input and output markets is concerning, particularly considering the rising levels of hunger and poverty in Africa. Globally, Africa continues to have the largest share of extreme poverty rates. The Africa Gender Index reflects significant inequalities in employment, earnings and economics. This finding is consistent with Giner *et al*. (2022), corroborating our findings, which indicate that limited research exists in the areas of gender and finance, yet this is a critical policy priority as reflected in national policies and the African Food Systems Guiding Framework. Our findings suggest that although these are policy priority areas, the limited research funding channelled towards these areas might be contributing to the lack of research. Consequently, there is some dissonance between research priorities as reflected in research publications and policy priorities.

Our results suggest that the publications in the six countries are aligned with research funding in the areas of gender and earth spheres. Our results indicate that 24% of funding in the area of gender and food systems was allocated to research on earth spheres. The area of gender and earth spheres was only a national priority in three of the six countries investigated and not a priority in any of the African Food Systems Guiding Framework documents. Financial capital was a priority in all six countries as well as the African Food Systems Guiding Framework. However, no funding was identified as directed towards financial capital in the context of food systems. Limited research funding (only 13%) was targeted towards economics, which contributes to financial capital, but in the context of our analysis is not necessarily classified as financial capital (an area that received no funding).

Finance is a major driver of food systems transformation and influences the various components and agendas of the food system. The latest Ceres 2030 report estimated that an additional US$14 billion of donor funding, leveraging US$33 billion of national government expenditure, will be needed to achieve SDG 2 alone (Laborde, 2020). Generally, funding channelled towards gender is limited. This is evidenced by the official development assistance (ODA) report showing donor financing levels in 2018-2019

dedicated to gender equality were at only 2.4% of all climate-related and food systems projects (OECD, 2022). Even gender and earth spheres, where the majority of research funding is directed, does not constitute a significant proportion of total funding. The integration of gender in policy and research remains a tick-box exercise and without deliberate efforts to reserve resources for gender research, efforts to address gender equality in the context of food systems will continue to stagnate.

The mismatch between policy focus and research focus raises concerns around the successful uptake of research into policy. While research evidence may indeed be robust and valid, if it does not align with the policy agenda it is unlikely that national budgets will fund solutions based on the research evidence. Oliver *et al*. (2019) suggest that one of the main barriers to the uptake of research evidence into policy is the lack of relevance and importance of the evidence to policy. A vital facilitator to evidence-informed policy would thus be collaboration between policy-makers and researchers to ensure the research conducted is relevant to policy. This goes beyond once off consultations on research or policy priorities but continuous engagement to establish a shared vision including joint workshops and seminars with a specific focus on co-creation in the context of the science policy interface.

Gender equality is a key lever in achieving positive food systems outcomes.

The mismatch between gender research and policies could also be attributed to the weak integration of gender into policies as well as the lack of implementation of gender policies. The gender research conducted in the six focus countries does not align with the policy priorities and, therefore, can provide little evidence on how best to integrate gender into policy. Similarly, lack of research evidence integrated into the gender policies that are prioritised means that there is limited guidance on the most appropriate interventions and strategies for policy implementation.

A balance is needed to ensure that research capacity, including human and institutional, is being optimally leveraged to support both policy-led research and research-informed policy. Strengthening relationships between policy-makers and researchers remains vital to the uptake of evidence into policy. When trust and credibility have been established with policy-makers, the likelihood and ease of the uptake of research into policy increases (Uneke *et al*., 2020). However, the nurturing of these relationships relies significantly on research funding. Researchers rely on funding to support the advancement of their work. If research funding is not aligned with policy, the work of researchers is unlikely to focus on policy priorities.

Conclusion

Gender inequalities continue to constrain food systems outcomes, and there are inherent trade-offs when negotiating policy and research funding priorities. The results of this study indicate that the foci of research publications are more aligned with research funding than policy priorities, suggesting that research is primarily driven by funding.

The number of papers that were identified as genuinely including gender (644) indicates that there is a paucity of research that explicitly investigates gender in food systems research in the six focus countries. Further, the gender and food systems areas that are frequently prioritised in policy are the least researched in the six African countries. These include areas such as women's access to financial resources or participation in decision-making processes. Concerningly, it appears that the research capacity in the six African countries investigated is largely channelled towards research areas that are not defined by the countries in which the research is conducted.

While further research is needed to determine what drives research funding priorities, our results suggest that funding could be more effectively allocated to increase coherence between the priorities/focus areas of research, research funding and policy. Tailoring of research funding priority areas to align with national and continental policy priorities is vital to ensure that synergies across food systems are unlocked to contribute towards the desired food systems and gender equality outcomes. However,

the relevant stakeholders – including policy actors, researchers and research funders – must collaborate on setting the research agenda. In particular, investments in policy-led research are needed to ensure that the research capacity on the continent is leveraged to contribute specifically to Africa's defined policy priorities. Research funders need to collaborate with researchers and policy-makers to define research agendas that cut across disciplines to effectively explore and optimise trade-offs and leverage points in the food system. This is essential, not only for ensuring food systems that can function effectively, but it is also essential for promoting gender equality in all aspects of food systems.

Limitations

Using search words such as "gender," "women" and "girls" in the research, policy documents and grants database may have excluded important documents that address gender indirectly. Given the extensive number of articles retrieved (1,253), the authors opted to exclude research articles that did not explicitly focus on gender to ensure the data remained manageable. However, for policy documents and grants, where the data set was less extensive, a comprehensive read of available documentation was conducted alongside the keyword search. Further qualitative research is needed to explore specific parameters that may further explain the alignment or misalignment of the research with funding and policy priorities.

Declaration of interest statement

None of the authors included in this manuscript have any conflicts of interest. `NA94`

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