

A Review of Evidence on Gender Equality, Women's Empowerment, and Food Systems



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1 Introduction

Women are key actors in food systems as producers, wage workers, processors, traders, and consumers. They do this work despite many constraints and limitations, including lower access to opportunities, technologies, finance and other productive resources, and weak tenure and resource rights. These constraints and limitations are shaped and reinforced by social and structural inequalities in food systems. Stark gender inequalities are both a cause and outcome of unsustainable food systems and unjust food access, consumption and production. In the agriculture sector, for example, evidence shows that women have unequal access, and, in some cases, unequal rights, to important resources, such as land, water, pasture, seeds, fertilizers, chemical inputs, technology and information, and extension and advisory services, all of which reduces their potential to be productive in agriculture, become empowered to make strategic decisions and act on those decisions, and realize their rights (Doss 2018; Meinzen-Dick et al. 2019a, b; Mulema and Damtew 2016; Madzorera and Fawzi 2020). In addition, compared with men, women are more vulnerable to chronic food and nutrition insecurity, as well as shock-induced food insecurity (Madzorera and Fawzi 2020; Theis et al. 2019).

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2 Conceptual Framing

We conceptualize gender as an important lever for progress across all aspects of food systems (Fig. 1) and draw upon key terms and definitions of women’s empowerment, women’s economic empowerment, and gender-transformative approaches (see definitions in Annex). Food system drivers are anchored in a gendered system with structural gender inequalities and are shaped by shocks and vulnerabilities that affect men and women in different ways. Structural gender inequalities and gendered shocks and vulnerabilities thus influence the ways in which men and women experience these drivers of food systems, which, in turn, shape the three main components of food systems: value chains, the food environment, and consumer behavior.

This conceptualization of gender in food systems recognizes and highlights the linkages and interconnectedness across these three components. For example, strengthened access to nutritious foods (food environment) is an important source and pathway to strengthening individual and household resilience (drivers), particularly as adverse effects of climate change will continue to negatively influence access to and consumption of diverse nutrient-rich foods (Fanzo et al. 2018; Theis et al. 2019). And, as food systems are both contributors to and impacted by climate change, nature-positive production schemes (production), such as sustainable agricultural intensification strategies, enable food systems to reduce their contribution to

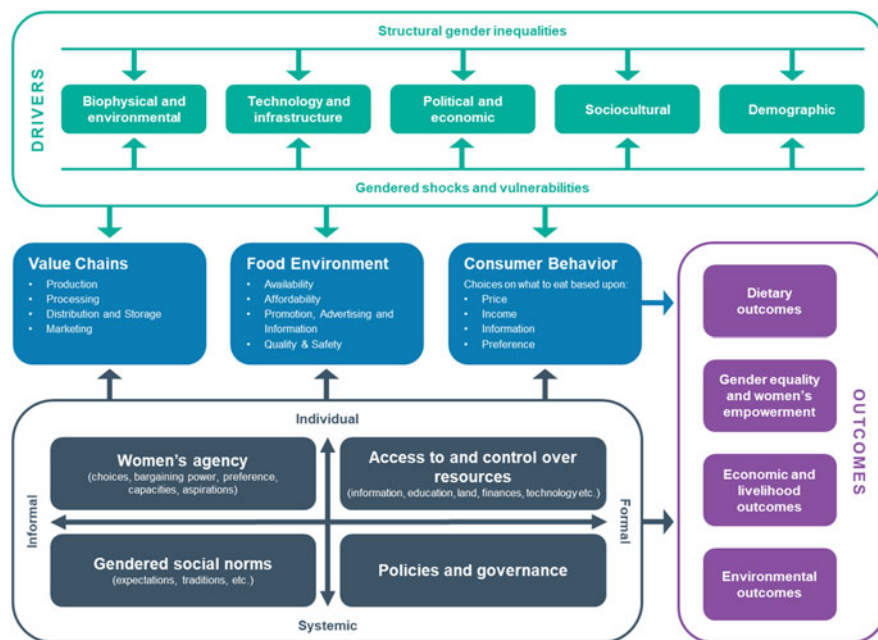


Fig. 1 Gendered food systems. (Source: Adapted from de Brauw et al. 2019)

and mitigate the impacts of climate change, thus strengthening resilience (drivers) (Campbell et al. 2014).

These three components of the food system interact with gender equality/inequality in a four-dimensional space: individual and systemic, formal and informal. Transforming food systems in equitable ways requires changes in gender equality at the individual and systemic levels and at the formal and informal levels. Changes must occur in: women's and men's consciousness, capacity, behavior and awareness (individual; informal); access to resources, services and opportunities (individual, formal); informal and implicit cultural norms, deep structure and the social values that undergird the way in which institutions operate (informal, systemic); and in formal policies, laws, and institutional arrangements (formal, systemic) in place to protect against social and gender discrimination and advance equality (Gender at Work n.d.). Change must go beyond simply reaching women through interventions, and requires facilitating the empowerment process so that women can benefit from food system activities (namely, increasing wellbeing, food security, income, and health) and can make and act upon strategic life decisions within food systems.¹ Women's agency, differences in access to and control over resources, gendered social norms, and existing policies and governance influence how men and women can participate in and benefit from food systems, leading to differences in overall outcomes (Fig. 1).

3 Methodology

This chapter uses a scoping review (Harris et al. 2021; Liverpool-Tasie et al. 2020) to assess the current evidence on gender issues in food systems. Given the broad range of key topics related to gender in food systems, topically relevant and published systematic reviews were purposively sampled to provide a baseline state of the evidence. After purposively sampling and identifying 16 systematic and scoping reviews to inform the baseline, additional articles were collected. Three databases (Google Scholar, ScienceDirect, and IFPRI's Ebrary) were used to gather and collect additional articles using key word searches aligned with 42 unique terms cross-referenced with the terms "gender" and "women." A total of 198 articles were selected from these databases for review after meeting the following inclusion criteria: the articles had to be empirical and peer-reviewed, published in English, and have a geographic focus in low- or middle-income countries (LMICs). The article also had to make an explicit reference to gender or women's empowerment *and* the key thematic term. For articles meeting these initial criteria, additional criteria were used to exclude some from the review, including if the methodology was inadequate to account for biases, or if the article was not relevant to agriculture or food systems. Duplicate articles from across the searches were eliminated from

¹See Johnson et al. (2018) for a discussion of the Reach-Benefit-Empowerment framework.

the database. Finally, additional articles were identified for inclusion from the citations in the articles collected above. All collected articles were managed in Zotero reference manager software.²

4 Findings

This section presents the main findings of evidence relevant to the components of the gendered food system conceptual framework (Fig. 1): drivers and cross-cutting levers, shocks and stressors, food and value chains, food environment, consumer behavior, and outcomes.

In general, the evidence reveals that women are important actors and contributors to food systems, but their contributions are typically undervalued, unpaid, or overlooked in food systems research. A 2021 map of food systems and nutrition evidence from the International Initiative for Impact Evaluation (3ie) indicates that, although women have a major role in food systems, relatively few studies have examined strategies for or the effectiveness of interventions aimed at improving women's decision-making power or have measured outcomes related to empowerment (Moore et al. 2021). Many food system interventions have not collected evidence regarding gender, an oversight that may result in poor outcomes or the inefficient use of funds to improve food systems (Moore et al. 2021).

Overall, the literature is largely in agreement as to how to advance gender equality and women's empowerment in food systems, but offers little evidence on causal pathways or mechanisms (Moore et al. 2021). The existing evidence, in general, offers locally or contextually specific findings; limited evidence exists that applies across contexts or at a geographic scale.³

4.1 Drivers: Shocks and Stressors

Men and women are differently exposed and vulnerable to shock and stress events. As a result of social norms and differing access to important resources, men and women have different capacities to mitigate risk and respond to these events (Mahajan 2017; Codjoe et al. 2012). The types of capacities needed include absorptive, adaptive, and transformative capacities, which are built by developing and

²All articles reviewed for this paper are compiled in a separate Excel database, with the following metrics collected for each article: author(s) name, article title, year published, journal or organization of publication, national focus (if specified), regional focus, methods used, and main finding(s). Additional information on the search methods and articles selected are included in the full review paper (citation forthcoming).

³The findings presented in this paper are high-level. A further, more nuanced explanation of the findings can be found in the full review paper (citation forthcoming).

leveraging resources and networks to reduce the risk of adverse impacts and facilitate faster recovery from shock and stress events. Gendered impacts of shocks are nuanced, context-specific, and often unexpected (Quisumbing et al. 2018; Rakib and Matz 2014; Nielsen and Reenberg 2010). Gendered perceptions of climate change and ensuing effects are based on livelihood activities and household and community roles and responsibilities, and often influence how men and women can leverage adaptation strategies to respond (Quisumbing et al. 2018; Aberman et al. 2015; Nielsen and Reenberg 2010).

Many studies indicate that gender-differentiated access to or ownership of important resources—such as women having fewer assets and lacking access to information services or credit—is linked to different capacities to mitigate, adapt to, and recover from shock and stress events (Bryan et al. 2013; de Pinto et al. 2020; Fisher and Carr 2015). However, women's participation in collaborative farming schemes or group networks facilitates broader access to resources and additional social networks and types of social capital, which strengthen women's capacity to respond to these events (Vibert 2016). For example, participation in community groups and access to credit options in Mali have been positively associated with an uptake in climate-smart agriculture practices and technologies (Ouédraogo et al. 2019).

Women have fewer adaptation options than men, as social norms restrict women's mobility, freedom of movement, and access to transportation, as do time burdens associated with domestic and care responsibilities (Jost et al. 2016; Naab and Koranteng 2012; de Pinto et al. 2020). However, de Pinto et al. (2020) note evidence that certain components of women's empowerment led to increased crop diversification among small-scale agricultural producers in Bangladesh, suggesting that women do play an important and positive role in climate change adaptation. Access to context-specific and relevant climate information and appropriate technologies is a key determinant of adopting climate change adaptation practices, and women and men have different needs for and access to such information (see section below on Gendered Access to Services and Technology) (Bryan et al. 2013; Tambo and Abdoulaye 2012; Twyman et al. 2014; Mudege et al. 2017).

4.2 Food System Components

4.2.1 Agrifood Value Chains

Women are actively engaged across various roles in agricultural value chains, although women's positions are typically undervalued and overlooked in food systems research (Doss 2013). In Ethiopia, Abate (2018) found that women were predominately responsible for storage preparation, post-harvest processing, milk processing, barn cleaning, care for newborn livestock, cooking, grinding, fetching, and collecting fuelwood, and worked with men to weed, harvest, thresh, and protect crops from wildlife. Qualitative evidence from Benin suggests that women are predominately engaged in agricultural processing activities and, if they have access to land, are also engaged in production activities (Eissler et al. 2021a). Studies from

Benin and Tanzania also found that, regardless of the producer, men manage higher-value sales and marketing, while women only manage the marketing and negotiation of small-value sales (Eissler et al. 2021a; Mwaseba and Kaarhus 2015). Gupta et al. (2017) provided evidence that improving women's market access is strongly correlated with increased levels of women's empowerment in India.

Agriculture both contributes to and is affected by anthropogenic climate change. As population pressures continue to increase and place demands on food production, agricultural livelihoods across agrifood value chains must adapt approaches that will sustainably meet rising demand, reduce risk associated with adverse climatic events, and mitigate contributions to climate change. Such approaches include sustainable intensification (Tilman et al. 2011; Rockström et al. 2017), conservation agriculture (Montt and Luu 2020), and climate-smart and climate-resilient agriculture (Gutierrez-Montes et al. 2020; Duffy et al. 2020), among others. A growing body of evidence indicates that women producers are less able to adopt such sustainable and resilient production practices or methods given their limited access to necessary resources, including land, time, labor, information, and technologies (Theriault et al. 2017; Ndiritu et al. 2014; Grabowski et al. 2020; Farnworth et al. 2016; Meinzen-Dick et al. 2019a, b; Doss et al. 2015; Perez et al. 2015; Pradhan et al. 2019; Parks et al. 2015; Ayantunde et al. 2020; Khoza et al. 2019; Gathala et al. 2021; Montt and Luu 2020; Beuchelt and Badstue 2013; Halbrendt et al. 2014).

4.2.2 Food Environment

Several themes emerge from the evidence linking gender equality and women's empowerment with improving the availability of and access to safe and nutritious food. First, the affordability of nutritious food is an important issue for accessing nutrient-rich foods to advance gender equality and women's empowerment. Available evidence indicates that women are less likely than men to be able to afford a nutritious diet, as women often occupy lower-paying wage positions than men, earn and control smaller incomes than men, have less autonomy over household financial decisions, or have no income at all. For example, Raghunathan et al. (2021) estimated that, while nutritious diets have become substantially more affordable for both female and male wage workers in rural India, unskilled wage workers still cannot afford a nutritious diet; unskilled workers account for approximately 80–90% of female and 50–60% of male daily wage workers, and care for 63–76% of poor rural children.

Another important theme is ensuring equitable access to markets where nutritious foods can be purchased. Nutrient-dense foods, such as fruit, milk and vegetables, are difficult to transport and store, and therefore must be purchased locally, particularly in remote and rural areas (Hoddinott et al. 2015; Mulmi et al. 2016). Several articles linked women's mobility and freedom of movement to market access, and thus to positive nutrition and food security outcomes. For example, Aryal et al. (2019) found that physical distance to markets impacted household food security outcomes for female-headed households more than for male-headed households in Bhutan.

Shroff et al. (2011) found women's low autonomy in mobility was positively associated with wasting in children in India. The evidence seems to associate women's limited mobility with stricter social gender norms and religion.

4.2.3 Consumer Behavior

Agriculture can influence diets and dietary choices through the consumption of household-produced crops or increased purchasing power derived from the sale of agricultural products. Moore et al. (2021) found that, in research carried out since 2000, women's roles in food systems have mostly been examined in terms of their role as consumers, such as household cooks, or as mothers who are breastfeeding or whose health affects that of their children. Other studies link gender norms, roles and responsibilities to women as food preparers and managers of the quality of household diets (Eissler et al. 2020a; Sraboni and Quisumbing 2018). Komatsu et al. (2018) found a positive association between the amount of time women spent on food preparation and household dietary diversity, and Chaturvedi et al. (2016) found a positive association between the time mothers spent with their children and nutrition status.

There is evidence showing positive effects of nutrition counseling, nutrition education, and maternal education for nutrition, dietary diversity, and health outcomes for women and children (Choudhury et al. 2020; Akter et al. 2020; Kimambo et al. 2018; Reinbott and Jordan 2016; Reinbott et al. 2016; Rakotomanana et al. 2020; Ragasa et al. 2019). Interventions for sustainable and nutritious diets are found to be more effective when they include components on nutrition and communication about health behavior change, women's empowerment, water, sanitation and hygiene (WASH), and micronutrient-fortified products (Ruel et al. 2018). Gelli et al. (2017) found preliminary evidence that WASH components of a nutrition-sensitive agriculture intervention in Burkina Faso may have mitigated the potential harm, such as the health risks, of introducing and enhancing small livestock production. However, more evidence is needed to understand the best practices for reducing potential harm of increased livestock production and management in nutrition-sensitive agricultural programs (Ruel et al. 2018).

4.3 Food System Outcomes

Recent research has examined the link between maternal mental health and psychosocial indicators and nutrition outcomes. There is mixed evidence regarding the link between maternal depression and mental health symptoms and child or household nutrition. Wemakor and Iddrisu (2018) found no association between maternal depression and child stunting in northern Ghana, whereas Wemakor and Mensah (2016) and Anato et al. (2020) found positive associations between women experiencing depressive symptoms and child undernutrition in Ghana and Ethiopia.

Wemakor and Mensah (2016) observed that women experiencing the highest levels of depression were also those with the lowest incomes or from the lowest-income households. Cetrone et al. (2020) found that food security improvements resulting from participation in a nutrition-sensitive agriculture program mediated women's depression symptoms in Tanzania. Such evidence, which is both mixed and limited, suggests that further studies are needed to understand the psychosocial impacts of women's empowerment and mental health on household nutrition and health outcomes.

Evidence links access to resources and empowerment to outcomes in nutrition and children's education. For example, evidence indicates that female livestock ownership or production diversity, combined with market access and women's empowerment, are important drivers of diverse household consumption and nutritional status (Sibhatu et al. 2015; Mulmi et al. 2016; Hoddinott et al. 2015). Additionally, Malapit et al. (2019) found in Bangladesh that, while gaps in parental empowerment had only weak associations with children's nutrition status, mother's empowerment is positively associated with girls' education and keeping older children in school in general.

A growing body of research has examined the pathways through which women's empowerment is linked with household nutrition outcomes and access to nutritious foods (Alaofè et al. 2017; Reinbott and Jordan 2016; Bellows et al. 2020; Malapit and Quisumbing 2015; Heckert et al. 2019; Lentz et al. 2019). These pathways are contextual and vary across countries and regions (Na et al. 2015; Ruel et al. 2018; Quisumbing et al. 2021). Ruel et al. (2018) observe that, while the current evidence broadly associates women's empowerment and nutrition outcomes, this evidence is generally context-specific, given that women's empowerment and gender roles and norms are closely linked. As more evidence is generated from cross-context evaluations, future research can create typologies to better explain how gender roles more broadly interact with nutrition-sensitive agricultural interventions (Ruel et al. 2018).

Specific to equitable livelihood outcomes, evidence indicates that women face disproportionate barriers in accessing finance and credit options compared with men (Adegbite and Machethe 2020; Ghosh and Vinod 2017; Dawood et al. 2019; Kabir et al. 2019). For example, Kabir et al. (2019) found that in Bangladesh, a lack of access to credit is the most significant barrier women producers faced, followed by a lack of need-based training, high interest rates, insufficient land access, and a lack of quality seeds. Women's ability to earn incomes and participate in income-generating activities is strongly mediated by restrictive gender norms, a lack of access to resources, and time burdens arising from normative roles and responsibilities. In a study of urban women vegetable traders in Viet Nam, Kawarazuka et al. (2017) found that women were able to work in less socially respected spaces, such as street trading, but still needed to negotiate their access to informal employment spaces with their husbands.

Supporting women's entrepreneurship is suggested as an important pathway to advancing gender equality and women's empowerment in food systems. Malapit et al. (2019) suggest that this is not necessarily the case if these businesses are small and home-based; such businesses typically make little profit and tend to add to

women's existing time burdens. And in a systematic literature review, Wolf and Frese (2018) emphasized the need to recognize that spousal support is a key factor for women's entrepreneurship or engagement in income-generating activities.

5 Cross-Cutting Gender and Food System Issues

5.1 Gendered Social Norms and Expectations

Social and cultural norms shape and reinforce the ways in which women and men can participate in, access, and benefit from opportunities and resources (Kristjanson et al. 2017; Meinzen-Dick et al. 2019a, b; Rao et al. 2019; Moosa and Tuana 2014). This has important consequences across all aspects of advancing women's empowerment and gender equality in food systems. For example, norms can hinder women's ability to access or adopt new agricultural practices (Kiptot and Franzel 2012; Njuki et al. 2014). Importantly, gender norms vary within contexts, such as by religious identity or social class. Kruijssen et al. (2016) noted that different normative expectations of women in Hindu and Muslim communities in Bangladesh influenced the ways in which these women were constrained or enabled in participating in aquaculture value chains.

In general, women often experience restrictive social norms that hinder their empowerment and full participation in household or community activities and value chains (Huyer and Partey 2020; Kruijssen et al. 2018). In a review of evidence on gender issues in global aquaculture value chains, Kruijssen et al. (2018) found that contextual gender norms shape the ways in which women and men participate in aquaculture value chains around the world, often limiting women's ability to participate in and benefit from aquaculture value chains equally.

Social gender norms are contextually and culturally specific and are strongly linked to women's empowerment (Eissler et al. 2020a, b, 2021a; Meinzen-Dick et al. 2019a, b; Bryan and Garner 2020). Emic understandings of an empowered woman and an empowered man vary, but importantly inform the understanding of cultural nuances and expectations of the roles and responsibilities of women (Meinzen-Dick et al. 2019a, b; Bryan and Garner 2020). Men are generally considered to be the household financial providers and decision-makers, whereas women are responsible for domestic chores, childcare, food preparation, and other unpaid care tasks. In rural agricultural settings, women may also provide household labor on their husbands' agricultural plots in addition to their domestic work, yet are not remunerated for this labor (Picchioni et al. 2020; Nahusenay 2017; Ghosh and Chopra 2019). Recent evidence also suggests that patterns of male dominance in the household are linked to individuals' gender norms, but are not necessarily correlated with intergenerational transfers of male dominance in intrahousehold decision-making (Leight 2021).

5.2 *Gendered Access to and Control over Resources, Services and Technology*

A large body of literature has examined differences in men's and women's access to, ownership of, and control over resources in the food system (Johnson et al. 2016; Uduji et al. 2019; Perez et al. 2015; Gebre et al. 2019; Fisher and Carr 2015; Lambrecht and Mahrt 2019). Evidence indicates that perceived or effective ownership of resources may be more important than actual ownership for women's empowerment and nutrition outcomes (Eissler et al. 2020b). Studies have found positive associations between women's land ownership and their participation in community groups or co-operative networks, suggesting that access to important resources, such as land, facilitates access to other resources, such as increased bargaining power and pooled assets. Further evidence indicates that when women's previously less lucrative or lower-valued activities begin to rise in value or earn higher incomes, control over the activity or resource may be transferred from women to men (Mwaseba and Kaarhus 2015).

Existing literature shows that women face social, cultural and institutional barriers to accessing and adopting agricultural technologies, information and services (Peterman et al. 2014; Peterman et al. 2011; Perez et al. 2015; Mudege et al. 2017; Ragasa et al. 2013; de Pinto et al. 2020; Raghunathan et al. 2019; Duffy et al. 2020). Men and women have different needs for and access to such information and technologies; gender analyses are therefore needed to tailor communication strategies so as to ensure that information and dissemination are adequately targeted towards men and women (Tall et al. 2014; Peterman et al. 2014; Diouf et al. 2019; Ragasa et al. 2013; Jost et al. 2016; Mudege et al. 2017; Duffy et al. 2020). Women have access to disproportionately less information than men overall, but they have access to more information regarding certain topics relevant to their gender-normative roles and responsibilities, such as post-harvest handling and small livestock production (Twyman et al. 2014).

Gender-sensitive program designs that aim to increase access to technologies have positive impacts on women's nutrition and health outcomes (Kassie et al. 2020; Alaofè et al. 2016a, b, 2019). An evaluation of a gender-sensitive irrigation intervention in northern Benin found that women in the program had higher dietary diversity, increased intake of vegetables, reduced rates of anemia, higher body mass indexes (BMI), and improved household nutritional status through direct consumption as a result of women's increased crop diversification and increased income that allowed them to make economic decisions (Alaofè et al. 2016a, b, 2019).

Interventions to benefit or empower women may overlook the time trade-offs required for women's participation or for intended outcomes (Picchioni et al. 2020; Komatsu et al. 2018; van den Bold et al. 2021). Importantly, measuring time use itself does not address women's agency over said time use or the intrahousehold decision-making surrounding how and on what activities women may spend their time (Eissler et al. 2021b). There is little research to show how women can control

their own time use or how interventions can support women in managing their own time to advance their strategic choices in food systems.

5.3 Women's Agency: Decision-Making and Leadership

5.3.1 Household Level

Evidence suggests that there are positive nutrition, livelihood, wellbeing, and resilience outcomes when women are more involved and have greater influence in household decision-making. Several studies find that when women own or have joint title to land, they are significantly more involved or have greater influence in household decision-making, particularly regarding agricultural or productive decisions (Wiig 2013; Mishra and Sam 2016). And while Fisher and Carr (2015) found that women farmers in Ghana and Malawi were less likely to adopt drought-tolerant maize varieties due to differences in resource access, women strongly influenced the adoption of drought-tolerant maize varieties on plots controlled by their husbands.

5.3.2 Community Level

Diirro et al. (2018) found evidence that increases in women's empowerment, including women's participation in community leadership, is associated with higher agricultural productivity; and women from more food-secure households are more likely to participate in community leadership roles. Niewoehner-Green et al. (2019) found that, for women in rural Honduras, social norms and structural biases hindered their participation in leadership positions in agricultural groups and limited their influence and voice in community decisions. There is some evidence to suggest that men and women value and participate in different types of community groups. For example, women place a higher value on savings and credit groups than men and may have greater access to hyper-local institutions, whereas men have greater access to institutions and services from outside of their immediate community (Cramer et al. 2016; Perez et al. 2015). Other evidence suggests that women may participate in fewer groups than men (Mwongera et al. 2014).

5.3.3 Food Systems Level

Increasing women's voices and integrating their preferences into agricultural solutions, including technology design and implementation, is an under-researched pathway to empowerment and gender equality in food systems. For example, there is evidence that women may have different preferences than men with regard to crop varieties (Gilligan et al. 2020; Teeken et al. 2018), but there is limited evidence that

breeders' consider these preferences in varietal design and profiles (Tufan et al. 2018; Marimo et al. 2020).

5.4 Institutional Barriers, Policy, and Governance

The prevalence of gender-based violence (GBV) is a systemic barrier for women's empowerment in food systems. There is extensive research in health literature on GBV; however, research on violence against women in the context of food systems is limited. Some studies find evidence that women's asset ownership deters GBV, suggesting that when women own assets, their status may increase, making it easier for them to leave harmful relationships (Grabe 2010; Grabe et al. 2014). Buller et al. (2018) and Lees et al. (2021) found that cash transfer programs decrease the incidence of GBV. The new project-level Women's Empowerment in Agriculture Index for Market Inclusion (pro-WEAI+MI) includes indicators on sexual harassment and violence against women in composite measurements of empowerment for women in agricultural value chains (Ragasa et al. 2021; Eissler et al. 2021a), providing a tool to measure the incidence of GBV and its impact on women's empowerment in food systems.

Institutions and policies that support gender equality and women's empowerment in food systems are generally lacking in low-income countries (Meinzen-Dick et al. 2013). Bryan et al. (2018) observed that a lack of policies and institutional capacity hinders research and gender integration into climate change adaptation programs across a range of contexts, specifically noting a lack of staff capacity on gender, a lack of funding to support gender integration, and sociocultural constraints as key barriers to gender integration. Some evidence suggests a tension between formal legislation and practiced law. Pradhan et al. (2019) found that, in practice, women's joint and personal property rights differ from legal definitions. Eissler et al. (2021a) observed that, while Benin has formal gender equality and antidiscrimination laws, these are poorly enforced and do not align with social norms toward GBV or harassment. For example, women working in agricultural value chains often may not report incidents of sexual harassment in the workplace for fear of upsetting their husbands, suggesting that women may feel a sense of responsibility for inviting the harassment.

6 Conclusions

This scoping review aimed to elucidate evidence and identify evidence gaps for advancing gender equality and women's empowerment in food systems. We see evidence that women have differing access to resources compared with men, such as essential services, knowledge and information, technology dissemination, land, credit options, time, and markets. This differing level of access is shaped and

reinforced by contextual social gender norms. Existing evidence shows that context-specific pathways link women's empowerment to important outcomes, such as household nutrition and dietary diversity, noting that these pathways may vary between and within contexts. Cross-contextual evidence exists of positive associations between maternal education (and specifically, access to nutrition education) and positive outcomes for child and household nutrition and diet quality.

While this review was not systematic, it appears that only limited studies address important areas of inquiry regarding gender equality and women's empowerment in food systems. Specifically, only a few studies included in this review examined gender considerations in food systems for women in urban areas or aquaculture value chains. There have been few studies geared at understanding best practices and effective pathways for engaging men in the process of women's empowerment in food systems, or addressing issues of migration, crises or indigenous food systems. Additionally, while there are gender-informed evaluation studies examining the effectiveness of gender- and nutrition-sensitive agricultural programs, there is limited evidence to indicate the long-term sustainability of such impacts.

In conclusion, this review suggests that there is substantial agreement about pathways to improve women's empowerment and gender equality in food systems, but the actual evidence to support these pathways, specifically cross-contextual evidence, is limited. Existing evidence is extremely localized and context-specific, limiting its application beyond the focus area of the study. And finally, relatively few studies included a gender-informed design and conceptual framework to best understand mechanisms for promoting equality and empowerment. Moving forward, further research is required to produce stronger evidence on cross-contextual pathways to improve gender equality and women's empowerment in food systems.

7 Recommendations for Investment

7.1 Invest in Maternal Education, Particularly Nutrition-Focused Education and Counseling

Cross-contextual evidence indicates that maternal education and experiences with nutrition counseling are positively associated with improved diet quality and diversity, leading to better nutrition outcomes at the household level. For example, Choudhury et al. (2019) found a positive association of maternal education and maternal health, household dietary diversity, and nutrition and health outcomes for household members in 42 countries, suggesting that dietary diversity may be driven by preferences and knowledge. In Tanzania, Kimambo et al. (2018) found positive associations between women's nutrition knowledge and consumption of African vegetables. Rakotomanana et al. (2020) found that, in Madagascar, children of mothers with knowledge and positive attitudes about complementary nutrient-rich foods had more nutrient-diverse diets, while those with mothers who had lower incomes and greater time burdens had less nutrient-diverse diets. Studies also found

benefits from involving grandmothers in nutrition counseling, education and dialogues in Sierra Leone (Aidam et al. 2020; MacDonald et al. 2020) and Nepal (Karmacharya et al. 2017). Investments should focus on increasing women's educational attainment, coupled with nutrition-focused counseling.

7.2 Invest in Programs/Interventions that Aim to Improve Women's Influence and Role in Decision-Making and Leadership at All Levels of the Food System (Household, Community, and Systems)

Women's influence and role in decision-making is associated positively with nutrition, women's empowerment, and livelihood outcomes at all levels of food systems. At the household level, in northern Ghana, for example, women are less likely to have decision-making autonomy over productive decisions, purchasing, selling or transferring assets, and speaking in public (Ragsdale et al. 2018). In Bangladesh, de Pinto et al. (2020) found that households have higher levels of crop diversification when women have more influence in productive household decision-making, suggesting that an increase in women's bargaining power can lead to more resilient agricultural livelihoods. At the community level, evidence indicates that women's participation in community groups also enhances resilience, increases access to important resources such as land and labor, builds and facilitates social networks, and increases their influence and participation in community-level decision-making (Kumar et al. 2019; Aberman et al. 2020). For example, Kabeer (2017) found that women in Bangladesh who expand their active social networks through community groups have higher levels of empowerment. Raghunathan et al. (2019) found that Indian women's participation in self-help groups was positively associated with increased levels of information and participation in some agricultural decisions, but did not affect agricultural production or outcomes, possibly because of women's limited time, financial constraints, or restrictive social norms. At the systems level, there is limited evidence to suggest that technology development (including crop breeding, for example) incorporates women's different preferences and needs into design (Tufan et al. 2018; Marimo et al. 2020). Investments should be made in interventions that address and facilitate improvements for women's influence and participation in decision-making at all levels.

7.3 Invest in Interventions that Promote Positive and Equal Gender Norms at the Household, Community, and Systems Levels

Gender norms and associated expectations vary by context; however, restrictive gender norms shape and, in many ways, hinder women's empowerment across contexts and limit their ability to participate in and act upon strategic decisions or

activities to advance their own empowerment across all components of food systems. For example, a study in Egypt found that a woman's normative role as an unpaid household caregiver limited her ability to sell fish compared with her husband, who did not face time burdens associated with caregiving and who maintained decision-making control over his and his wife's activities (Kantor and Kruijssen 2014). In Papua New Guinea, Kosec et al. (2021) found that men are more likely to support women challenging normative gender roles in terms of their economic participation during periods of household economic stress because this can raise household income, not because they support transforming women's role in society more generally. Contextual gender norms may also shape women's food allocation preferences, which hold important implications for nutrition. In Ethiopia, for example, women may favor sons over daughters for more nutrient-dense foods (Coates et al. 2018). Sraboni and Quisumbing (2018) found that women's preferences in allocating nutritious foods were influenced heavily by social norms in Bangladesh, where women favored sons over daughters because of male advantage in labor markets and property rights. Investments should be made to promote positive and equal gender norms for and with men and women across contexts and scales from the household to system levels.

7.4 Invest in Interventions and Efforts that Improve Women's Access to Important and Necessary Resources

The evidence overwhelmingly indicates that, across contexts, women have less access to important resources than men. These resources include, but are not limited to, land, agricultural inputs, financing options, financial services, technology, technical services, and time. Nuanced variations exist across and within contexts. For example, in sub-Saharan Africa, studies indicate that women may rely on informal sources of information, such as personal connections, whereas men rely on formal sources of information, such as extension or the private sector; however, in Colombia, men may have more access to information overall compared to women, but both rely on the same sources of information (Twyman et al. 2014; Mudege et al. 2017). With regard to time, Komatsu et al. (2018) found that women's time allocation and household nutrition outcomes varied by local context, such that women's time in domestic work was positively associated with diverse diets in Bangladesh, Cambodia, Ghana, Mozambique and Nepal, but in Mozambique, the relation between women's time in agricultural work and children's diet quality varied with women's asset poverty. Picchioni et al. (2020) found that, in India and Nepal, women and men participate equally in productive work that requires high levels of energy, but women shoulder most of the reproductive work at the expense of leisure opportunities. Van den Bold et al. (2021) found that a nutrition-sensitive agricultural intervention in Burkina Faso significantly increased the time women spent on agriculture and led to improved maternal and child nutrition outcomes, and that women's increased time

spent on agriculture did not have deleterious effects on their own or their children's nutrition. Investments should be made to target improving women's access to and control and ownership over such resources so as to ensure that they are able to effectively benefit from these resources.

7.5 Target Research to Yield More Cross-Contextual Evidence for Advancing Gender Equality and Women's Empowerment in Food Systems

Finally, the overall outcome of this review revealed that the current evidence on advancing women's empowerment and gender equality in food systems is locally specific and linked to contextual gender norms. Developing cross-contextual typologies can support the development of evidence that has broader application. More targeted research is required to identify patterns of successful and effective interventions and pathways to advance women's empowerment and gender equality in food systems with contextual norms. The outcome of such research would be clear typologies that link successful interventions and recommendations by gender norms.

Annex: Key Terms and Definitions^a

Term	Definition	Source
Women's empowerment	One's ability to make and act upon strategic and meaningful choices and decisions related to one's life.	Kabeer (1999)
Power within	One's subjectivity, consciousness, and sense of self-worth, self-awareness, self-knowledge and aspirations	Rowlands (1998)
Power to	One's access to and ability to use important resources (material, human, social) to employ greater control over key aspects of one's life and realize one's own aspirations	
Power with	Collaborative and collective power with others that occurs through mutual support, collaboration, and collective action that recognizes and respects differences	
Women's economic empowerment	"The process which increases women's real power over economic decisions that influence their lives and priorities in society. Women's economic empowerment can be achieved through equal access to and control over critical economic resources and opportunities, and the elimination of structural gender inequalities in the labor market including a better sharing of unpaid care work"	Törnqvist and Schmitz (2009, p. 9)

(continued)

Term	Definition	Source
Gender-transformative	Approaches that “go beyond the ‘symptoms’ of gender inequality to address the social norms, attitudes, behaviors, and social systems that underlie them”	Hillenbrand et al. (2015, p. 5)

^aWe acknowledge that a fourth type of power—power over—is also addressed in the literature as one's control over people, resources, or others' lives (Rowlands 1998)

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