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How gender norms shape opportunities for building resilience to climate change in low- and middle-income countries

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Abstract

This study examines how gender norms shape opportunities for women to build resilience within agrifood systems in low- and middle-income countries (LMICs). Amid rising pressures from climate change, population growth, and resource depletion, enhancing resilience among vulnerable populations is critical. In recognition of the gaps in understanding individual-level resilience, particularly related to power and agency, this article presents data from a systematic literature review from 82 articles published between 2016 and 2022. The review analyzes how gender norms and intersectionality influence women's resilience in LMICs'

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agrifood systems and women's placement along absorptive, adaptive, transformative, and inability-to-cope "resilience pathways."

Findings reveal that gender norms limit women's agency by restricting decision-making, asset control, voice in community processes, and access to profitable value chain activities. Intersectional factors such as age and disability can compound these constraints. Many women occupy absorptive pathways, meaning they deal reactively to shocks. However, women with greater agency have the potential to develop adaptive or transformative capacities, meaning that they exert a level of control over change processes. Downward movement between pathways can be worsened by factors including interventions, that aim to integrate farmers into agricultural markets, which do not take gender norms and dynamics into account. Collective action, social networks, gender-transformative interventions, and gender-intentional land reforms enable women to climb to higher resilience pathways.

Our study emphasizes the importance of addressing gendered power dynamics and norms to foster inclusive resilience. The study recommends gender-transformative approaches that enhance women's agency, incorporate intersectionality, and engage men as allies. Our Economic Resilience Pathways framework offers a valuable tool for empirical research and intervention design to support women's resilience in agrifood systems.

Keywords
resilience, climate change, gender norms, agrifood systems, women's agency, women, analytic framework, gender transformative change

Introduction

Globally, farmers and other agrifood system actors face increasing pressures from compounding crises and stressors including climate change, population growth, demographic shifts, biodiversity loss, market disruptions, and depletion of the natural resources on which food production systems depend (Swilling, 2020). These pressures make resilience-building critical, especially among already vulnerable populations. Resilience, in the context of socio-ecological systems, describes the capacity of social groups to manage stresses, shocks, and disturbances that result from social, political, and environmental change without incurring significant alteration or collapse of the system (Speranza et al., 2014; Anderies et al., 2013; Folke, 2006). Strengthening socio-economic resilience requires expanding a system's capacity to maintain, or improve, basic structures and ways of functioning essential for people to live, and continue to live (Speranza et al., 2014). Individuals, groups, and communities' ability to bounce back from these disturbances, to self-organize in response to challenges, and to learn from and respond to feedback loops is key to resilience (Ostrom et al., 2009). Measures to improve resilience can help people to recover in ways that reduce vulnerability to future stressors. When targeted at the most vulnerable, these measures also facilitate inclusive growth (USAID, 2012).

In the context of agrifood systems, building resilience involves strengthening the ability of farmers, farmer organizations, and other relevant actors (such as advisory services, government, development partners, women's groups and youth organizations, and private-sector players), to withstand disturbances and to self-organize to rebuild stronger systems. This requires "expanding economic opportunities, education, environmental sustainability, diverse livelihoods, and nutrition and health services, while also identifying and reducing risks" (Bryan et al., 2023, p. 240). Resilience-building interventions aim to assist actors across various scales in the wider agrifood system, to cope with and recover from shocks (Rietveld et al., 2023a).

The Importance of Power, Agency, and Norms to Develop "Resilience Pathways"

Theories around resilience generally focus on the ability of high-level systems to respond to and recover from shocks. Less theoretical work has been done to define factors contributing to resilience at the *individual* level. Because resilience is typically framed as the ability of *systems* to respond to and recover from shocks, to self-organize, and to transform, resilience frameworks often leave aside issues of power and agency for individuals within the system (Béné et al., 2014; Coulthard, 2012). The relevance of these concepts to *resilience*, particularly in the context of gender, is clear: the ability

of individuals to adapt and transform their circumstances and the wider systems surrounding them requires *agency:* the power to make decisions and act on them. The ability to exercise such power tends to be highly gendered.

In this study, we develop a resilience framework focused on the individual level, with relevance for the household, community, and agrifood system level. We draw upon a large body of research which shows that women and men—even when living in the same households—frequently have different abilities to achieve, and benefit from, resilience. To achieve our objective, we explore research which illustrates how power, agency, norms and diversity of choice shape the choices women have (Bohle et al., 2009; Lade et al., 2020; Rietveld et al., 2023a). Gender is an ever-present part of people's experience of themselves and others. It is a key frame for the enacting of social relations (Cislaghi & Heise, 2020). Gender norms, a subset of social norms, work to define acceptable and appropriate actions for women, men, boys, and girls in a given group at a given time (Garcia et al., 2021; Cislaghi &Heise, 2020; Cialdini & Trost, 1998). Some norms are so fully naturalized that they lie below the level of conscious awareness (Bourdieu, 1977; Farnworth et al., 2017). The concept of intersectionality is important. Gender norms restricting or facilitating a woman's pathways to action may be magnified or otherwise altered by her ethnicity, socio-economic class, religion, marital status, caste, disability, and other aspects of her identity (Crenshaw, 1991).

In this paper, we examine how gender norms shape the ability of women in agrifood systems to move onto specific "resilience pathways." In the context of this article, a resilience pathway means a way forward using a bundle of actions geared towards strengthening resilience. We expect that women will have one or more pathways for action available that they could potentially move onto (Lade et al., 2020). Through analysing the diversity of potential pathways, we focus on women's ability to adapt and transform their circumstances in agrifood systems as the key aspect of their capacity for resilience, and we consider the role of power and agency in this process. Power dynamics are some of the most important external forces shaping which actions are accessible for different actors. Individuals who lack power frequently experience weak access to resources, including knowledge and social networks, and thus encounter a smaller diversity of pathways for action in response to change or disturbance (Freed et al., 2025; Lade et al., 2020).

In our article, we distinguish three capacities that influence resilience to crises and shocks: absorptive, adaptive, and transformative capacities for resilience (Béné et al., 2014; Folke, 2006; Folke et al., 2010; Walker et al., 2004). We also discuss a fourth option defined by insufficient resilience capacities, resulting in a likely inability to cope with crisis. Each capacity is defined below.

First, absorptive capacity describes the ability of individuals, households, or communities to cope with the impacts of climate change on their livelihoods within their immediate means but without being able to prevent a deterioration in wellbeing (Béné et al., 2014). Associated actions are usually short-lived, reactive, and focused on survival. Example responses to shocks and disturbances that draw on absorptive capacity include taking on debt, selling assets, or reducing food consumption.

Second, individuals, households, or communities may develop adaptive capacity. Adaptive capacity describes the ability to mitigate risks by preparing for, coping with, and recovering from losses associated with a hazard (Kelly & Adger, 2000; Pelling, 2011). Adaptive capacity thus involves having the means to forecast and manage future risks and to put anticipatory measures in place to prepare for further shocks. Strategies might include diversifying livelihood activities—for instance, changing livestock and crop portfolios, moving into off-farm work, and engaging in climate-smart farming activities to minimize the impact—and mitigate the risk—of climate change over the medium to longer term (USAID, 2012).

Third, transformative capacity refers to a situation in which incremental adjustments—for whatever reason—no longer suffice (Walker et al., 2004). People actively participate in changing their institutional environment as well as their own daily routines. They break with 'business as usual' and contribute to the redesign of existing systems. For this, individuals need to work with the support of

family members, the wider community, and higher-level actors such as farmer cooperatives and private-sector actors. Often this means banding together with others to collectively shift the wider food system for instance through establishing multistakeholder platforms, changing policy, etc. At the household level, participants may shift decision-making in the household towards more mutuality, for instance by changing the gender division of labor (Rietveld et al., 2023a). Transformative capacity is about finding ways to enlarge these opportunities so women and men can exercise their agency more effectively and more ambitiously (Freed et al., 2025; Rietveld et al., 2023a).

Finally, some individuals, households, and communities experience an inability to cope. This describes an insufficiency of the three capacities for resilience described above. Individuals and people in households and communities then broadly lack the means to cope with shocks and disturbances. Of course, at some point individuals, households, and communities may be able to recover their ability to cope, for example with the help of humanitarian assistance.

The first three capacities parallel the three components of socio-ecological systems resilience: the ability to persist, to learn and change, and fundamentally transform as necessary (Anderies et al., 2013; Folke, 2006; Walker et al., 2004). These three capacities are broadly hierarchical, in that transformative capacity generally reflects greater pathway diversity than adaptive capacity, and adaptive capacity reflects more diversity than absorptive capacity. Movement between pathways is possible; women might climb to higher pathways as their capacities grow, but can also fall into lower pathways, or to an "inability to cope" state, if their capacities are weakened or the severity and/or frequency of shocks increases.

We use our literature review to explore three research questions: (1) How do gender norms and intersectionality influence women's placement in different resilience pathways? (2) What kinds of forces cause individuals to shift between pathways? and (3) What consequences arise from shifting between pathways?

Methodology

We conducted a systematic literature review in 2022, using Web of Science (WoS) (https://clarivate.com) to help us identify relevant literature. We cross-referenced the search terms in Table 1 with 'gender' and 'women.' Four additional selection criteria were (i) geographical focus on LMIC, (ii) agri-food system focus, (iii) analysis of primary data, (iv) English language articles, and (v) published in or after 2016. An initial 142 articles published between 2016 and 2022 were thus selected. After screening abstracts of these articles, we discarded 34 articles because they did not sufficiently meet the selection criteria. We read the 108 remaining articles, leading us to discard another 26 articles, mostly because their findings and discussion on the topic of interest for this article was too limited or superficial. This resulted in a final list of 82 articles. We then engaged in thorough reading and summarizing of every selected article to create detailed annotated bibliographies (Farnworth et al., 2024; Voss et al., 2024). Rather than predefine analytic headings, we made notes using the annotated bibliography until a sense of the main topic areas emerged. As synthesizing continued, we added new headings and changed old ones as necessary.

An overview of the geographic locations of the 82 articles reviewed is presented in Table 2.

Most articles focused on Africa (48 + 1 on Sub-Saharan Africa as a continent), followed by South Asia (9), Pacific (7), East and Southeast Asia (8 + 1 comparative study with Tanzania), Latin America (6), and Global (4). Within Africa, South-

Table 1. Search Terms for Web of Science Literature Review

Gender	
Women	
Economic resilience	Vulnerability; resilience climate change; resilience agriculture; climate change; sensitivity shocks.

ern Africa dominated with 17 articles, followed by East Africa with 15 articles. Eleven articles covered countries in West Africa. North Africa and the Horn account for the fewest articles (4). To help counteract the dominance of articles in the review on SSA and crops we made a particular effort to draw out findings from literature discussing other countries and non-crop value chains.

In this article, we augment our analysis of the 82 core articles by drawing on wider literature to help develop the Introduction and deepen the Discussion.

Findings

Our literature review illustrates the impacts of harmful gender norms on women's agency and economic resilience. The first part of our findings provides examples of key gender norms that limit women's pathways to action in the face of sudden or drawn-out systemic shocks or stressors. Although we disaggregate gender norms to help analyze the literature, we note that gender norms do not operate in isolation. They combine and reinforce each other synergistically (Rietveld et al., 2023b; Serote et al., 2021). The second part of the findings discusses how women can move between resilience pathways.

How Harmful Gender Norms Affect Women's Capacities for Resilience

The focus in this section is upon the operation of harmful gender norms assessed at the household level with respect to decision-making and control over assets. We also explore the privileging of men's voices in community decision-making bodies, in institutions, and women's marginalization in value chains. The study then explores interactions between gender, Intersectionality, and other social norms.

Men's control over decision-making at household level

In locations where men exercise strong normative control over decision-making (Organization for Economic Co-operation and Development [OECD], 2021), women can find it hard to build the capacities they need to develop strategies for resilience. The potential diversity of pathways available to women in LMICs tends to be limited by

Table 2. Overview of Countries Covered in Reviewed Articles

Global	West Africa	East Africa	Southern Africa	North & Horn	Pacific	Latin America & Caribbean	East-Southeast Asia	South Asia
Global	Benin	Kenya	Eswatini Lesotho	Egypt	Fiji	Colombia	Cambodia	India
Sub-Saharan Africa	Burkina Faso Mali Niger	Madagascar	Botswana	Ethiopia	Pacific Islands	Cuba	Indonesia	Nepal
	Cameroon	Tanzania	KwaZulu Natal	Somalia	Papua New Guinea	Guatemala	Myanmar	Pakistan
	Gambia		Malawi		Samoa		Philippines	South Asia
	Ghana		South Africa		Solomon Islands		Vietnam	
	Niger		Zambia		Western Indian Ocean			
	Togo		Zimbabwe					

their restricted decision-making authority. A South African study, for example, revealed gender norms that prioritize male farmers 'exclusive rights' to make decisions regarding how to adapt to climate change on their own and their wives' plots. Women were unable to draw on their own learning to formulate actions suited to their specific plots, thereby potentially facing loss of harvests and income as climate challenges mount (Molua & Ayuk, 2021). In one part of Cameroon, women struggle with voicelessness because their fathers and brothers dominate decision-making. Women cannot protest even if their brother takes their land—and crop—in the middle of the growing season (Azong et al., 2018). Similar normative situations elsewhere in Cameroon makes it extremely difficult for women farmers to respond to the increased temperatures and rainfall variations they are experiencing (Mbiafeu et al., 2024).

Men's control of assets at household level

Another widely held gender norm constructs men as the primary manager of land and nonland assets (OECD, 2021; Sen, 1987). For instance, the above-mentioned case regarding women's weak decision-making authority in Cameroon is partly underpinned and exacerbated by their weak land rights. Husbands frequently reject women's efforts to access, use, and make decisions about how to use land and land-based resources. This has the effect of undermining the ability of women farmers to develop strategies for resilience (Molua & Ayuk, 2021). Women frequently experience lower access to and control over nonland productive resources. For instance, a global study finds that women lack sufficient labor, cash, and equipment to adopt terracing, bunding, and check dams to help manage water (Zhang et al., 2021). A second study finds that women-headed households across southern Africa are less likely to adopt climate-smart technologies and practices due to their weak access to land, lower levels of formal education, and poor access to information on improved technologies (Makate et al., 2017). In Zambia, many women are locked into low-input forms of farming that inhibit them from taking up climate-smart practices and crops. They have limited access to cattle and manure and so find it hard to improve soil fertility. Women's low incomes also make it difficult to pay for market-based agricultural inputs and labor (Estrada-Carmona et al., 2020). Inequalities in terms of decision-making over land and assets can thus force women to move onto lower-level resilience pathways, leaving their spouses to occupy higher level pathways.

Men's privileged voices at community level

Community norms in Colombia do not explicitly prevent women from attending community meetings. However, women's voices are often not heard due to men's dominance of decision-making at household level. This is compounded by gender norms that privilege men's voices in community meetings—in this case, specifically with respect to managing and benefiting from large livestock. Even if women are present at community meetings, they find it hard to speak and ensure they are listened to. Their weak voice is compounded by the fact they have limited time to participate effectively in community-level decision-making processes since women are expected to devote considerable time to household and care work (Rios et al., 2022).

The relative volume of men's voices in many communities is strengthened by the tendency of agrifood system actors to consider men as key actors in agrifood systems. For instance, the fisheries literature reviewed for this study indicates that actors at all levels hold gender norms which privilege men, rather than women, as 'real' fishers (Branch & Kleiber, 2015). This assumption drives research predominantly into the types of fisheries, and the tasks, associated with men, such as boat-based, gear-driven, and finfish fishing in capture fisheries. In comparison, there is relatively little research conducted on women's work in fisheries, such as shellfish, onshore, and nearshore fishing, and the numerous tasks women conduct in capture fisheries (Gopal et al., 2020). The sidelining of women in fisheries research contributes to significant gaps in our understanding of women's roles, responsibilities, and benefits in that sector. In turn, this lack of insight can translate into a lack of institutional support for developing women's resilience to change (Cavole et al., 2025).

Lack of institutional gender responsiveness

Across different LMICs, the propensity of many external development partners and community bodies to consider men key actors in agrifood systems contributes to women's exclusion from processes that might expand their resilience capacities. In Uttar Pradesh in India, for example, local governing bodies did not inform women community members about a watershed management project that was to be implemented by external actors in their community. Men rather than women community members agreed how water was to be allocated. Women therefore played no role in determining the scope of the project and were unable to secure benefits. The study found that women's exclusion was unsurprising because in this area women are never invited to any type of community meeting, and no attempts were made to adjust gender norms to facilitate their participation as part of project design (Padmaja et al., 2020).

Furthermore, a lack of institutional gender responsiveness preceding or following climatic disasters such as floods and droughts can significantly hamper women's resilience. In Bangladesh, for instance, existing gender-biased legislation combined with community-level gender norms stymie women's ability to adapt and recover from disaster. Inheritance laws and difficulties accessing the legal system mean that women tend to lose access to their husband's or father's properties (land and other resources) if the latter are killed in disasters (Patel et al., 2019).

Institutions can also challenge gender norms, although this may not be adequate to change deeply embedded norms. For example, in Kenya, a fully revised Constitution (Republic of Kenya, 2010) expected to address gender inequality in the land tenure system by equalizing land rights. However, although women are aware of their legal rights to land, they often do not pursue land titles because they are enmeshed within complex extended familial relationships with parents, spouses, and parents-in-law (Po & Hickey, 2018). Women work hard to maintain relational mechanisms to access land, through sharing money and resources with their husband to show deference, and through building trust and reciprocity with parents-in-law to protect their access should they become widows or divorced. Challenging the normative framework that men hold assets could harm these complex reciprocal relationships (Po & Hickey, 2018). In instances like these, internal or external efforts toward systemic change do not necessarily lead to significant changes in gender norms, at least not in the short- to midterm, even if such change was the espoused intention of an intervention.

Women's marginalization from profitable activities

Gender norms at the household and community level affect women's abilities to take on higher-level, more profitable segments of value chains (such as processing, distribution, and retail). Gender norms at the organizational level limit women primarily to the primary producer node, with fewer women engaged in input supply, for example. It can be very difficult for women to move up the chain to occupy new more profitable nodes. Purcell et al. (2021) summarize studies of capture fisheries across LMIC which indicate that women's lower financial gains can be explained through several practices: women fishers are often restricted to low-value elements of the fishing chain, including gleaning, processing, selling, and fishing in intertidal areas; women do not have access to fishing boats; and women processors higher up in the chain are frequently quoted higher prices for fish by sellers. Overall, women fishers and processors work with lower numbers of fish and have lower incomes. Women are also more likely than men to be responsible for providing fish for household consumption, reducing their potential incomes still further (Purcell et al., 2021).

Intersectionality and social norms

Other aspects of women's identities (e.g., their age, caste, wealth, ability), in combination with their gender, can contribute to unique, intersecting forms of oppression that limit individual and group capacity for achieving resilience. In Somalia, for example, women and men living with disabilities are widely ignored in community-level decision-making about resources, which in turn hampers their efforts to create strategies to build their individual and household-level resilience (Lwanga-Ntale & Owino, 2020). In Cambodia, people living

with disabilities, particularly women, are frequently marginalized in daily life and are disproportionately affected by climate disasters. Their ability to seek alternative livelihoods to agriculture, when this is negatively affected by climate disasters, is very limited due to discriminatory processes in other potential livelihood sectors (Gartrell et al., 2020). In Eswatini, age and gender intersect to differentially affect the ability of boy- and girl-headed households to secure economically resilient agricultural livelihoods. Girl-headed households are offered relatively high levels of community support because the community is familiar with women *de facto* leading households and juggling housework and care tasks alongside agricultural tasks. However, boy-headed households are less resilient because boys are expected to show independence, to "man up." As a consequence, they are weakly supported by community members and by teachers (Mkhatshwa, 2017).

Furthermore, gender norms can play out differently for women according to the types of social capital they enjoy. In Ghana, women and men with lower political standing are less likely to leave land fallow (unused for cultivation for a period of time). Fallowing restores soil health, but poorly connected farmers risk having their improved land appropriated by more powerful community members. This discourages marginalized farmers from investing in fallowing (Goldstein & Udry, 2008, as cited in Zhang et al., 2021). In Zimbabwe, land reforms have broadly discriminated against women. However, women with higher socio-economic and political status have benefited more than poorer, lower-status women from land reform and government-subsidized farming implements (Muchacha & Mushenje, 2019).

Although social support networks are a key path to building resilience, the dynamics of these networks are themselves shaped by gender norms. Women's and men's support networks tend to differ greatly, in part because norms limit cross-gender social relationships in many contexts. In the fishing industry in Zanzibar, Tanzania, nonfinancial support networks are vital for establishing resilience by facilitating the achievement of food security and survival on narrow margins. Yet women fishers and traders participate in fewer and weaker social networks than men who have more extensive networks. Women traders tend to sell small low-value species to the local market, whereas men traders sell large fish to the tourism industry and to exporters. Men traders benefit more often than women traders from beneficial support relationships with fishers. They receive fish for home consumption, deferred payment schedules, and discounts. Women traders tend to support other women traders, and men traders support other men traders, with mixed-gender support networks being rare (Drury O'Neill et al., 2018). A second study from mainland Tanzanian shows that women in fishing communities engage in social networks that offer women members who are facing hardship support through material resources. Overall, though, men-headed fisher households are more resilient to the impacts of climate change because they have a wider range of assets (Yanda et al., 2021).

Movement Between Resilience Pathways

Shifting to, or staying on, lower-level resilience pathways
The examples described above illustrate how gender norms contribute toward situating women on certain resilience pathways. Norms that privilege men in terms of decision-making, resource control, voice, and engagement in productive economic activities frequently limit women to absorptive resilience pathways, where their responses to shocks are aimed at coping in the immediate or near future. Although their responses may aim to maintain well-being at preshock levels, overall women may experience a slow deterioration in well-being because absorptive resilience strategies often impose costs that can be hard to recover from: they might eat less, take children out of school, or sell assets (Bryan et al., 2018; Rietveld et al., 2023a).

Conversely, women who are less constrained by harmful gender norms, perhaps due to aspects of their intersectional identity which may convey power, specific circumstances, or the relative weakness of harmful gender norms in their context, might enjoy greater capacity for adaptive resilience. In this pathway, individuals can take charge of their livelihood over the longer term by mitigating risks and preparing for a recovery from shock-induced

losses. In Bangladesh, women have developed a range of measures to manage serious weather events, for instance by burying assets like ploughs and fishing nets to safeguard them when floods happen. Women also make portable mud stoves which are stored for potential use when disaster strikes, and they support disabled family members by building elevated platforms to help them survive floods (Dankelman et al., 2008, as cited in Patel et al., 2019).

It seems critical that women have adequate agency to put anticipatory measures such as climate-smart farming activities in place. In Ghana, "direct women cocoa farmers"—women cocoa farmers who operate their own cocoa land (inherited, purchased, or sharecropped)—experience high levels of decision-making autonomy regardless of marital status. This increases their resilience to shocks and disturbances because they can diversify into profitable off-farm opportunities to generate income. Married couples collaborate with and support each other on their respective farms, leading to "purposefulness and future orientation" among both women and men. Conversely, "indirect women cocoa farmers" labor on their spouse's land and experience low levels of decision-making power. Their low resource base means they typically try to diversify by selling low-value crop products into already saturated markets. Direct women cocoa farmers are thus far more resilient in the face of weather and climate change than indirect women cocoa farmers (Friedman et al., 2019).

There are many reasons women might fall to lower pathways, potentially to the point of facing an "inability to cope." Some of the reasons for downward shifts are personal, such as sudden illness, disability, loss of family members, or loss of assets. Major disasters such as floods, or outbreaks of violence can also contribute toward downward shifts (Farnworth et al., 2025). Here, we focus on one specific circumstance that emerged from the literature as a driver of women's loss of resilience: gender-blind interventions that aim at integrating women into agricultural markets.

Large-scale land acquisitions (LSLAs), enacted by governments and private-sector companies, have led to deepening concern over the past decade due to their often adverse impacts on local populations (Barajas et al., 2024). LSLAs often target communal lands or lands with weak formal documentation, leading to farmers and other land users (herders, users of non-timber forest products, etc.) being unable to assert their rights to land and its products. In some cases, local populations are completely moved off the land or expected to work on plantations established by the new landowner. In Cambodia, for example, the Land Law (2001) enables the government to lease land to companies for up to 99 years (Anti, 2021), and similar policies exist in many countries around the world.

LSLAs can seriously compromise women's potential to develop their capacities for resilience because company-led agreements to work with local communities (for example, over employment in plantations or to establish continued limited access rights) frequently target men rather than women at the community level. This can disrupt the mutuality of women's and men's rights, responsibilities, and entitlements that have developed over generations. In the Iringa Region, Tanzania, the New Forests Company (NFC)—a private company—developed an LSLA. This has provoked various kinds of land-grabbing of the remaining land within affected communities (grabbing of commons, grabbing between households and lineages, and grabbing of household land between husband and wife, brothers, and sisters). The NFC also instituted rules around which areas can be cultivated. Previously, communities were adapting to climate change by developing and modifying (over the past 50 years) common pool resource management instruments, as well as creating new markets for non-timber forest products and fruit trees. These activities are particularly important for women's resilience to climate change because women have lower access to alternative income-generation opportunities than men. However, grabbing of common land, and the prohibition by the NFC of planting in the fertile valley bottoms, means women can no longer plant beans, a key food security and cash crop. This is resulting in hunger in families. Women also no longer have access to specific species of grass growing on common land for making baskets and mats. Finally, a lack of transparency around compensation measures offered to men by the NFC for loss of

income meant that women lost negotiating power with their spouses. They are now more reliant on their spouses, have higher workloads, less income, and less food security (Gmür, 2020).

Shifting to higher resilience pathways

Our literature review highlights many ways that women can shift to higher resilience pathways, including gradual (unplanned) evolution of their roles, institutional changes such as gender-responsive land reform, gender-transformative interventions, and women-led innovation processes. Perhaps most significantly, women's increased resilience is boosted through collective action and the development of informal and formal social ties. These strengthen women's power with each other (Wong et al., 2019).

The slow-moving, unplanned weakening of entrenched gender norms can facilitate women's shift to higher resilience pathways. In some cases, this weakening emerges from livelihood diversification, migration, and the resulting flexibility of roles that men and women occupy in agri-food systems. For instance, in parts of Ghana, male outmigration is contributing toward women's increased role in intrahousehold decision-making. Their voice is strengthened by women's contribution to household income through their off-farm trade activities (Wrigley-Asante et al., 2017).

Planned efforts to shift harmful gender norms can assist women to gain access to climate and other information and help them to translate this information into planned actions inside and outside agriculture. Working to ensure previous harmful gender norms and strict decision-making responsibilities become more fluid can support women's own efforts to develop their *power within*, and their *power to act* (Ambler et al., 2017; Anderson et al., 2017; Lecoutere et al., 2016). Externally introduced gender-transformative methodologies, provided they can be taken over and adapted by local communities, have strong potential for allowing people to develop their own transformative resilience capacity (Bryan et al., 2022; Rietveld et al., 2023a). For example, the introduction of an empowerment methodology in Malawi called Gender Action Learning Systems (GALS) in maize-based systems contributed to the ability of women and men at household and farmer group levels to build resilience to climate change. GALS households, compared to controls, began to dissolve the gender division of labor in farm tasks, and they removed the designation of women's and men's crops. This facilitated women's ability to benefit financially from formerly men's cash crops like tobacco and maize upon which they had previously worked without remuneration. The study demonstrated causal links between jointness and improved yields. Women who had hitherto almost never taken up leadership roles found the confidence to stand for election. This led to women being highly represented among farmer group leaders (Farnworth et al., 2018). In Cuba, the introduction of a gender-transformative methodology, PIALA, directly confronted male-dominated institutional power structures through acknowledging and strengthening women's knowledge, expertise, and capacity to innovate. PIALA worked to develop and promote women as leaders and decision-makers in relation to agricultural innovation. As a consequence, previously male-led agricultural and knowledge systems became more gender-equitable. Women and men both benefited, and women's previously poor economic resilience to climate change was improved (Benitez et al., 2020).

Although gender-equitable land reforms are not always fully successful in empowering women (as noted in the discussion of constitutional reform in Kenya, above), reforms putting land ownership and management into women's hands can strengthen their ability to decide whether to adopt climate-smart and other practices. In Rwanda, women-headed households invested in bunds, terraces, and check dams following land registration (Ali et al., 2014). In Ethiopia, women-headed households made similar investments and also planted trees (Quisumbing & Kumar, 2014).

Strengthening agency through social capital or "power with"

Collective movements, including women's movements, can be extremely powerful instigators of change (Rodríguez & Varrotti, 2023). Women's cooperatives, such as dairy cooperatives in India, can support female members to build a greater pathway diversity (Agarwal, 2020; Ravichandran et

al., 2021). For example, in Papua New Guinea, climate-smart information services provided through extension services, national weather services, and media are almost entirely addressed to men. Women therefore find it difficult to access climate and weather forecasts and are less able to understand and implement climate-smart agricultural practices. However, women compensate through engaging in close informal learning interactions with each other based on a "sharing" model. These networks are fostered in church groups, families, and among friends, and are considerably more important for women than for men (Friedman et al., 2019). In Fiji, indigenous Fijian (iTaukei) women deploy their skills, knowledge, and unique local and traditional experience to increase the resilience of the community. They engage in strong social networks, including through church, to share their knowledge of gleaning freshwater and coastal animals, and skills such as sewing, quilting, and other crafts to help diversify livelihoods (Singh et al., 2022). In northern Benin, women broadly experience low agency and yet are primarily responsible for maintaining the agricultural system due to male outmigration. Their strong sense of group identity is a key defining dimension of the anticipatory adaptive capacity required to build resilience to climate change in the study site (Dah-gbeto & Villamor, 2016).

Similarly, in Kenya, many women farmers lack the natural, financial, and physical capitals available to men to augment their capacity to adapt. However, women build collective indigenous knowledge of weather, crops, and farming and share this knowledge in women's groups and community organizations. Women are now integrating crop and livestock production much more intentionally than in the past. This is improving food security and sovereignty, and women are becoming producers and practitioners of indigenous climate knowledge. Even so, the continued prevalence of gender norms that restrict their access to capital does limit their ability to scale their achievements and become fully resilient (Liru et al., 2021).

Impacts of shifting pathways

It is worth noting that changes in resilience pathways can have unanticipated negative outcomes. Illness, including mental illnesses, can result when people fall out of their resilience pathways, particularly there is a lack of gender-responsive support. For example, in Fiji, climate-induced loss of crops and damage to infrastructure has contributed to psychological distress, particularly among men because they are denied the ability to fulfill their normative breadwinner role. However, it is most often women who must contend with men's frustration and anger, and who must lead efforts to rebuild livelihoods (Singh et al., 2022). In Eswatini, men are close to burnout by having to perform their role of breadwinner in times of drought. Women, meanwhile, are locked into their domestic roles and are not included in initiatives to raise awareness about droughts, limiting their ability to work collaboratively with their spouses to handle challenges together (Myeni & Wentink, 2021).

Sometimes, women's attempts to expand their agency and shift into higher resilience pathways results in significant backlash. For instance, in Darjeeling, India, "fempreneurs" (female entrepreneurs) began to grow certified organic and FairTrade tea. At the beginning of their entry into tea, their income generation was construed as supporting their household and care roles. However, the success of their ventures resulted in them being increasingly perceived as entrepreneurs at home and in the community. This perception caused increasingly bitter backlash within their own households and their broader community. When fempreneurs joined self-help groups to take out loans to expand their businesses, their reputations were severely threatened because they appeared to challenge the norm that men are breadwinners (Sen et al., 2018). Similarly, successful entrepreneurial women in Kenya who achieve economic empowerment through financial independence are considered to lead to the disintegration of family unity in some locations (Po & Hickey, 2018). Indeed, in some cases, women's movement into higher resilience pathways incurs gender-based violence. In Eswatini, gender-based violence is worsening due to gendered competition over scarce resources (Kamara et al., 2020). In Zambia, declines in rural household income ascribable to drought exacerbate various forms of gender-based violence. Girls, particularly from vulnerable households, are sent to

other rural communities to work as domestic help. Some girls are being forced into early marriages, with parents using the bride wealth (dowry) to ameliorate their financial situation. Some women exchange or sell sex to support themselves and their families (Rosen et al., 2022). Elsewhere, women migrating from Bangladesh and Nepal to try to generate new livelihoods are vulnerable to trafficking (Patel et al., 2019).

Discussion

The findings suggest that harmful gender norms play a strong role in perpetuating unequal and inequitable development. They challenge women's ability to achieve individual resilience and to contribute toward household- and community-level resilience by limiting their pathways to action in response to stressors and disturbances. Intersectional identities shape how individuals experience these norms and can lead to compounded constraints for women. Inbuilt gender biases leave men with the primary responsibility of managing the damaging outcomes of shocks upon their livelihoods, families and communities in an ever more challenging environment.

Our review of how gender norms shape women's resilience shows the powerful effects of norms on power and agency, which limit their available pathways to action in responding to crises. The most powerful forces that seem to enable women to climb to higher resilience pathways include collective action and social movements, and gender-transformative approaches.

Our focus on resilience in this study has several advantages. First, in practice, resilience usefully extends the timeframe in which responses to climate change and other stressors are considered, as it emphasizes long-term processes and transformation potentials rather than immediate responses to crises (Bryan et al., 2023). Second, it allows for more holistic assessment of how intersecting shocks and stressors affect a system, rather than evaluating the vulnerability or capacity to adapt to an isolated shock or stressor (Béné et al., 2014). Finally, the focus of resilience interventions upon the capacity of individuals and collectives to self-organize and transform draws attention to the agency of actors in the system to create better systems (Walker et al., 2004). For this reason, resilience has substantial importance to discussions of gendered agrifood systems.

It is important to note that restrictive gender norms do not conclusively determine individuals' fate. We see clear evidence of women building their resilience, and even reaching the transformative resilience pathway, through collective action, support from gender-transformative interventions, and other means. Personality traits can influence individual outcomes when external factors like social norms are experienced relatively equally; women's aspirations and motivations vary and can help determine their individual resilience pathways (Freed et al., 2025).

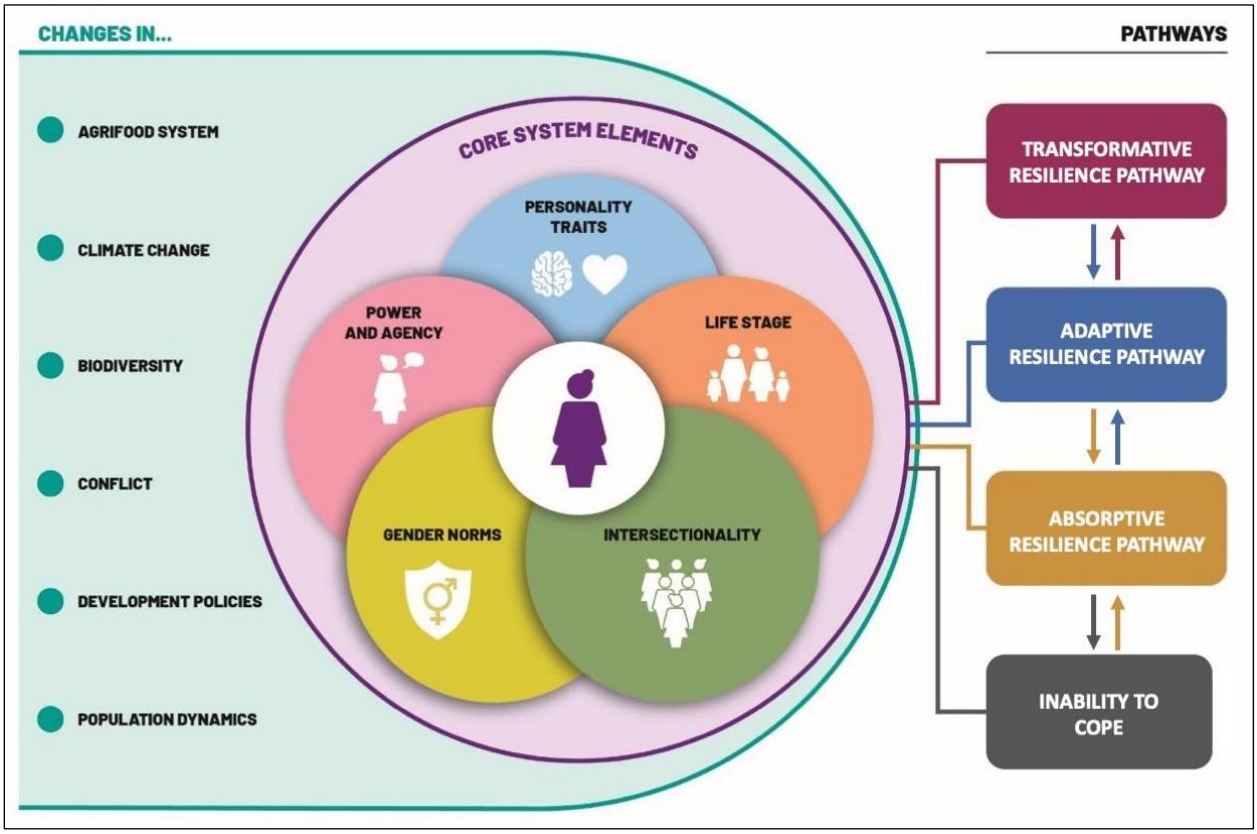
Recommendations

We recognize limitations to our study. Our data speak to interactions between gender norms and capacities for resilience, including individual personality traits, in specific locations. This limits our ability to provide detailed recommendations for strengthening capacities for resilience in new locations. To ameliorate this restriction, we propose the Economic Resilience Pathways conceptual framework (Figure 1) as a conceptual scaffolding that agrifood system actors can use to plan further empirical research into women's resilience, with the opportunity to create tailored recommendations for specific situations (Rietveld et al., 2023a).

The Economic Resilience Pathways framework first identifies some of the key systematic forces of change that bear upon an agrifood system (Figure 1, left side). Second, the center of Figure 1 highlights five potential core elements that this study has found to affect women's (and men's) agency in agrifood systems: gender norms, power and agency, personality traits, life stage, and intersectionality. These elements are proposed as critical focus areas for further research on resilience and gender. For example, the interactions between the various life stages that women undergo (such as youth, marriage, parenting young children) with gender norms could be studied in the context of the broader environment shaping and bounding the lives and livelihoods of the people living in a particular system.

The outcome of these interactions could then be mapped onto a specific type of resilience pathway

Figure 1. Economic Resilience Pathways Conceptual Framework



Adapted from Rietveld et al. (2023a).

and support measures could be devised to help maintain women's ability to stay on that pathway. As part of this, gender transformative approaches developed and implemented at all scales are likely to play a critical role in building women's economic resilience. Multifaceted interventions are needed to strengthen women's individual and collective agency through, for instance, simultaneously increasing women's income generation potential, personal control over their income, and capacity for collective action. These efforts can be complemented by training events and interventions that elevate women's knowledge and position them as decision-makers in their communities. Engaging men in this process will be essential, as supporters and as beneficiaries of processes that promote women's and men's equality. In all this, paying attention to intersectional identities is critical, as well as ensuring women's own capacity- and agency-building efforts are centered and supported in resilience-building efforts.

Reflections

In some ways, writing this article has been surprising. As is common with many authors, we wrote this article in an iterative manner over several months. Earlier drafts allocated the findings more or less equally to each form of resilience and to inability to cope. However, upon reflection on each subsequent draft, we felt it necessary to allocate more findings to lower-level pathways and inability to cope. This is despite the fact that the focus of this article is not upon humanitarian relief in catastrophe situations. Furthermore, the findings suggest there is considerable blurring between inability to cope and absorptive resilience. This is partly because gender norms seem to be particularly rigid in both scenarios, and women slide easily between the two pathways. A large proportion of the studies suggests that women teeter on the brink of being unable to cope due to restrictive gender norms. They are at the very

margins of disaster in their attempts to manage their livelihoods in the face of system change. Although women attempt to exercise their agency in responding to disturbances and stressors, the scope of their ability to change the situation is often limited.

It is self-evident that systemic normative change cannot be achieved by virtue of women's agency alone due to the size and complexity of agrifood systems. However, it is precisely here that women could be so much better served by development partners. Institutional actors persistently frame men as primary knowledge holders and decision-makers in the household and community, and they structure their interactions accordingly (Farnworth et al., 2015; Rietveld et al., 2023a). Institutions—ministries of agriculture and fisheries, multilateral and bilateral development partners, research partners, and others—need to embrace and expand gender-responsive and gender-transformative programming as part of their planning for systemic change interventions.

Conclusion

In identifying how gender norms shape women's resilience, this study provides useful guidance to practitioners and a conceptual framework for further research on gendered experiences in agrifood systems. Our review of how gender norms shape women's resilience shows the powerful effect of norms on power and agency, which limits women's available pathways to action in responding to crises. The most powerful forces that seem to enable women to climb to higher resilience pathways include collective action and social movements, gender-intentional land reform, gender-transformative interventions, and women-led innovation processes. Practitioners working within agrifood systems can clearly build on these tools to support resilience-building through gender-transformative interventions, supporting women to achieve "power with," making space for innovation, and promoting the systems-level changes (including policy changes) needed to expand women's agency.

References

Agarwal, B. (2020). A tale of two experiments: Institutional innovations in women's group farming in India. *Canadian Journal of Development Studies / Revue canadienne d'études du développement, 41*(2), 169–192. https://doi.org/10.1080/02255189.2020.1779673

Ali, D. A., Deininger, K., & Goldstein, M. (2014). Environmental and gender impacts of land tenure regularization in Africa: Pilot evidence from Rwanda. *Journal of Development Economics, 110*, 262–275. https://doi.org/10.1016/j.jdeveco.2013.12.009

Ambler, K., Doss, C., Kieran, C., & Passarelli, S. (2017). *He says, she says: Exploring patterns of spousal agreement in Bangladesh* (IFPRI Discussion Paper 01616). International Food Policy Research Institute. https://ideas.repec.org/p/fpr/ifprid/1616.html

Anderies, J. M., Folke, C., Walker, B., & Ostrom, E. (2013). Aligning key concepts for global change policy: Robustness, resilience, and sustainability. *Ecology and Society, 18*(2), Article 8. https://doi.org/10.5751/es-05178-180208

Anderson, C. L., Reynolds, T. W., & Gugerty, M. K. (2017). Husband and wife perspectives on farm household decision-making authority and evidence on intra-household accord in rural Tanzania. *World Development, 90*, 169–183. https://doi.org/10.1016/j.worlddev.2016.09.005

Anti, S. (2021). Land grabs and labor in Cambodia. *Journal of Development Economics*, *149*, Article 102616. https://doi.org/10.1016/j.jdeveco.2020.102616

Azong, M., Kelso, C. J., & Naidoo, K. (2018). Vulnerability and resilience of female farmers in Oku, Cameroon, to climate change. *African Sociological Review, 22*(1), 31–53. http://www.jstor.org/stable/90023845

Barajas, J. a. R., Kubitza, C., & Lay, J. (2024). Large-scale acquisitions of communal land in the Global South: Assessing the risks and formulating policy recommendations. *Land Use Policy*, *139*, Article 107054. https://doi.org/10.1016/j.landusepol.2024.107054

Béné, C., Newsham, A., Davies, M., Ulrichs, M., & Godfrey-Wood, R. (2014). Resilience, poverty, and development. *Journal of International Development, 26*(5), 598–623. https://doi.org/10.1002/jid.2992

Benitez, B., Nelson, E., Sarduy, M. I. R., Perez, R. O., Morales, A. C., Rodriguez, C. C., Gomez, M. C., Bordon, A. M., Massip, A. M., Beltran, Y. H., & Daniels, J. (2020). Empowering women and building sustainable food systems: A case study of Cuba's local agricultural innovation project. *Frontiers in Sustainable Food Systems, 4*, Article 554414.https://doi.org/10.3389/fsufs.2020.554414

Bohle, H.-G., Etzold, B., & Keck, M. (2009). Resilience as agency. *IHDP Update*, *2,* 8–13. https://www.researchgate.net/publication/263111355_Resilience_as_Agency

Bourdieu, P. (1977). *Outline of a theory of practice* (Vol. 16). Cambridge University Press.

Branch, T. A., & Kleiber, D. (2015). Should we call them fishers or fishermen? *Fish & Fisheries, 18*(1), 114–127. https://doi.org/10.1111/faf.12130

Bryan, E., Bernier, Q., Espinal, M., & Ringler, C. (2018). Making climate change adaptation programmes in sub-Saharan Africa more gender responsive: Insights from implementing organizations on the barriers and opportunities. *Climate and Development, 10*(5), 417–431. https://doi.org/10.1080/17565529.2017.1301870

Bryan, E., Ringler, C., & Lefore, N. (2022). To ease the world food crisis, focus resources on women and girls. *Nature, 609,* 28–31. https://doi.org/10.1038/d41586-022-02312-8

Bryan, E., Ringler, C., & Meinzen-Dick, R. (2023). Gender, resilience, and food systems. In C. Béné & S. Devereux (Eds.), *Resilience and food security in a food systems context* (pp. 239–280). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-23535-1_8

Cavole, L.M., Gragnolati, M., Silva, P., Giarrizzo, T., & Reis-Filho, J.A. (2025). Unveiling gender disparities: The role of women in transforming small-scale fisheries. *Fish and Fisheries, 26*(6), 1146–1163. https://doi.org/10.1111/faf.70023

Cialdini, R. B., & Trost, M. R. (1998). Social influence, social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 151–192). McGraw-Hill.

Cislaghi, B., & Heise, L. (2020). Gender norms and social norms: Differences, similarities and why they matter in prevention science. *Sociology of Health and Illness, 42*(2), 407–422. https://doi.org/10.1111/1467-9566.13008

Coulthard, S. (2012). Can we be both resilient and well, and what choices do people have? Incorporating agency into the resilience debate from a fisheries perspective. *Ecology and Society, 17*(1), Article 4. https://doi.org/10.5751/ES-04483-170104

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review, 43*(6), 1241–1299. https://doi.org/10.2307/1229039

Dah-gbeto, A. P., & Villamor, G. B. (2016). Gender-specific responses to climate variability in a semi-arid ecosystem in northern Benin. *Ambio, 45*, 297–308. https://doi.org/10.1007/s13280-016-0830-5

Drury O'Neill, E., Crona, B., Ferrer, A. J. G., Pomeroy, R., & Jiddawi, N. S. (2018). Who benefits from seafood trade? A comparison of social and market structures in small-scale fisheries. *Ecology and Society, 23*(3), Article 12. https://doi.org/10.5751/ES-10331-230312

Estrada-Carmona, N., Attwood, S., Cole, S. M., Remans, R., & DeClerck, F. (2020). A gendered ecosystem services approach to identify novel and locally relevant strategies for jointly improving food security, nutrition, and conservation in the Barotse Floodplain. *International Journal of Agricultural Sustainability, 18*(4), 351–375. https://doi.org/10.1080/14735903.2020.1787618

Farnworth, C. R., Bharati, P., & Galiè, A. (2023). Empowering women, challenging caste? The experience of a dairy cooperative in India. *Frontiers in Sustainable Food Systems, 7*, Article 1114405. https://doi.org/10.3389/fsufs.2023.1114405

Farnworth, C. R., & Colverson, K. E. (2015). Building a gender-transformative extension and advisory facilitation system in sub-Saharan Africa. *Journal of Gender, Agriculture and Food Security, 1*(1), 31–50. https://cgspace.cgiar.org/items/73cb9e1b-b26a-4b3c-a1bc-38423ee99f4e

Farnworth, C. R., Douangsavanh, S., Chanthalath, A., Inphonephong, S., Sok, R., Kimala, V., Dubois, M., & Rietveld A. (2025). *Gendered resilience pathways—Ethnic minorities and climate-smart agriculture in Lao PDR.* Retrieved from CGIAR GENDER Impact Platform: https://cgspace.cgiar.org/items/8ae40faf-fc5a-4b1a-ad1e-9b57193797ca

Farnworth, C. R., Hà, T. T., Sander, B. O., Wollenberg, E., de Haan, N. C., & McGuire, S. (2017). Incorporating gender into low-emission development: A case study from Vietnam. *Gender, Technology and Development, 21*(1–2), 5–30. https://doi.org/10.1080/09718524.2017.1385314

Farnworth, C. R., Morahan, R., & Rietveld, A. (2024). *Gender norms in agri-food systems: Economic resilience. CGIAR Initiative on Gender Equity*. https://hdl.handle.net/10568/163540

Farnworth, C. R., Stirling, C. M., Chinyophiro, A., Namakhoma, A., & Morahan, R. (2018). Exploring the potential of household methodologies to strengthen gender equality and improve smallholder livelihoods: Research in Malawi in maize-based systems. *Journal of Arid Environments, 149*, 53–61. https://doi.org/10.1016/j.jaridenv.2017.10.009

Folke, C. (2006). Resilience: The emergence of a perspective for social-ecological systems analyses. *Global Environmental Change, 16*(3), 253–267. https://doi.org/10.1016/j.gloenvcha.2006.04.002

Folke, C., Carpenter, S. R., Walker, B., Scheffer, M., Chapin, T., & Rockström, J. (2010). Resilience thinking: Integrating resilience, adaptability and transformability. *Ecology and Society, 15*(4), Article 20. http://www.jstor.org/stable/26268226

Freed, S., Voss, R. C., Falk, T., Rietveld, A., Alary, V., Frija, A., Guettou-Djurfeldt, N., Lestrelin, G., Singh, S., Ndiwa, A. M., & Zingwena, T. (2025). Agency and behavior change in agricultural research for development: New directions for guiding agri-food system transformations. *Agricultural Systems, 228*, Article 104399. https://doi.org/10.1016/j.agsy.2025.104399

Friedman, R., Hirons, M. A., & Boyd, E. (2019). Vulnerability of Ghanaian women cocoa farmers to climate change: A typology. *Climate and Development, 11*(5), 446–458. https://doi.org/10.1080/17565529.2018.1442806

Garcia, C., Greenfield, P. M., Navarro-Hernández, A. M., Colorado-García, J., & Vidaña-Rivera, T. M. (2021). Cooperative play and globalized social change: Mexican children are less cooperative in 2017 than in 1967. *Current Research in Ecological and Social Psychology, 2*, Article 100003. https://doi.org/10.1016/j.cresp.2020.100003

Gartrell, A., Calgaro, E., Goddard, G., & Saorath, N. (2020). Disaster experiences of women with disabilities: Barriers and opportunities for disability inclusive disaster risk reduction in Cambodia. *Global Environmental Change, 64*, Article 102134. https://doi.org/10.1016/j.gloenvcha.2020.102134

Gmür, D. (2020). Not affected the same way: Gendered outcomes for commons and resilience grabbing by large-scale forest investors in Tanzania. *Land, 9*(4), Article 122. https://doi.org/10.3390/land9040122

Gopal, N., Hapke, H. M., Kusakabe, K., Rajaratnam, S., & Williams, M. J. (2020). Expanding the horizons for women in fisheries and aquaculture. *Gender, Technology and Development, 24*(1), 1–9. https://doi.org/10.1080/09718524.2020.1736353

Kamara, J. K., Sahle, B. W., Agho, K. E., & Renzaho, A. M. N. (2020). Governments' policy response to drought in Eswatini and Lesotho: A systematic review of the characteristics, comprehensiveness, and quality of existing policies to improve community resilience to drought hazards. *Discrete Dynamics in Nature and Society*, *2020*(1), Article 3294614. https://doi.org/10.1155/2020/3294614

Kelly, P. M., & Adger, W. N. (2000). Theory and practice in assessing vulnerability to climate change and facilitating adaptation. *Climatic Change, 47*(4), 325–352. https://doi.org/10.1023/A:1005627828199

Lade, S. J., Walker, B. H., & Haider, L. J. (2020). Resilience as pathway diversity: Linking systems, individual, and temporal perspectives on resilience. *Ecology and Society, 25*(3), Article 19. https://doi.org/10.5751/ES-11760-250319

Lecoutere, E., & Jassogne, L. (2016). *"We're in this together": Changing intra-household decision-making for more cooperative smallholder farming* (Working Paper). Institute of Development Policy and Management. https://ideas.repec.org/p/iob/wpaper/201602.html

Liru, P., & Heinecken, L. (2021). Building resilience: The gendered effect of climate change on food security and sovereignty in Kakamega-Kenya. *Sustainability, 13*(7), 3751. https://doi.org/10.3390/su13073751

Lwanga-Ntale, C., & Owino, B. O. (2020). Understanding vulnerability and resilience in Somalia. *Jamba—Journal of Disaster Risk Studies, 12*(1), Article a856. https://doi.org/10.4102/jamba.v12i1.856

Makate, C., Makate, M., & Mango, N. (2017). Sustainable agriculture practices and livelihoods in pro-poor smallholder farming systems in southern Africa. *African Journal of Science, Technology, Innovation and Development, 9*(3), 269–279. https://doi.org/10.1080/20421338.2017.1322350

Mbiafeu, M. F., Molua, E. L., Sotamenou, J., & Ndip, F. E. (2024). Climate, agroecology, and farm returns: Differential impacts with implications for agricultural progress in the face of climate change. *Frontiers in Sustainable Food Systems, 8*, Article 1322568. https://doi.org/10.3389/fsufs.2024.1322568

Mkhatshwa, N. (2017). The gendered experiences of children in child-headed households in Swaziland. *AJAR—African Journal of AIDS Research, 16*(4), 365–372. https://doi.org/10.2989/16085906.2017.1389756

Molua, E. L., & Ayuk, J. E. (2021). Male-female sensitivity in climate-induced income insecurity: Some empirical evidence from farming households in Northern Cameroon. *Development in Practice, 31*(8), 1014–1039. https://doi.org/10.1080/09614524.2021.1937528

Muchacha, M., & Mushunje, M. (2019). The gender dynamics of climate change on rural women's agro-based livelihoods and food security in rural Zimbabwe: Implications for green social work. *Critical and Radical Social Work, 7*(1), 59–72. https://doi.org/10.1332/204986019X15491042559655

Myeni, S., & Wentink, G. J. (2021). A gendered approach to drought-coping mechanisms: A case of the Lubombo region, Eswatini. *The Journal for Transdisciplinary Research in Southern Africa, 17*(1), Article a744. https://doi.org/10.4102/td.v17i1.744

Organization for Economic Co-operation and Development [OECD]. (2021). *Man enough? Measuring masculine norms to promote women's empowerment*. OECD Publishing. https://www.oecd.org/en/publications/man-enough-measuring-masculine-norms-to-promote-women-s-empowerment_6ffd1936-en.html

Ostrom, E. (2009). A general framework for analyzing sustainability of social-ecological systems. *Science, 325*(5939), 419–422. https://doi.org/10.1126/science.1172133

Padmaja, R., Kavitha, K., Pramanik, S., Duche, V. D., Singh, Y. U., Whitbread, A. M., Singh, R., Garg, K. K., & Leder, S. (2020). Gender transformative impacts from watershed interventions: Insights from a mixed-methods study in the Bundelkhand region of India. *Transactions of the ASABE, 63*(1), 153–163. https://doi.org/10.13031/trans.13568

Patel, S. K., Agrawal, G., Mathew, B., Patel, S., Mohanty, B., & Singh, A. (2019). Climate change and women in South Asia: A review and future policy implications. *World Journal of Science Technology and Sustainable Development, 17*(2), 145–166. https://doi.org/10.1108/WJSTSD-10-2018-0059

Pelling, M. (2011). *Adaptation to climate change: From resilience to transformation*. Routledge. https://doi.org/10.4324/9780203889046

Po, J. Y. T., & Hickey, G. M. (2018). Local institutions and smallholder women's access to land resources in semi-arid Kenya. *Land Use Policy, 76*, 252–263. https://doi.org/10.1016/j.landusepol.2018.03.055

Purcell, S. W., Tagliafico, A., Cullis, B. R., & Gogel, B. J. (2021). Socioeconomic impacts of resource diversification from small-scale fishery development. *Ecology and Society, 26*(1), Article 14. https://doi.org/10.5751/ES-12183-260114

Quisumbing, A. R., & Kumar, N. (2014*). Land rights knowledge and conservation in rural Ethiopia: Mind the gender gap* (IFPRI Discussion Paper 1386). International Food Policy Research Institute. https://cgspace.cgiar.org/server/api/core/bitstreams/0f2f4980-c52f-4bd0-a572-1892ac1d74f5/content

Ravichandran, T., Farnworth, C. R., & Galiè, A. (2021). Empowering women in dairy cooperatives in Bihar and Telangana, India: A gender and caste analysis. *Journal of Gender, Agriculture and Food Security, 6*, 27–42. https://doi.org/10.22004/AG.ECON.338772

Republic of Kenya. (2010). *The Constitution of Kenya, 2010*. https://www.parliament.go.ke/sites/default/files/2017-05/The_Constitution_of_Kenya_2010.pdf

Rietveld, A. M., Farnworth, C. R., Nawaz, M., Timler, C. J., Tittonell, P. A., van der Burg, M., & Groot, J. C. J. (2023b). Understanding diversity in gender norms within farming communities: A Q-methodology approach applied in Uganda. *NJAS—Impact in Agriculture and Life Sciences, 95*(1), Article 2279542. https://doi.org/10.1080/27685241.2023.2279542

Rietveld, A. M., Farnworth, C. R., Shijagurumayum, M., Meentzen, A., Voss, R., Morahan, R., & López, D. E. (2023a). *An evidence synthesis of gender norms in agrifood systems: Pathways towards improved women's economic resilience to climate change*. Biodiversity International. https://hdl.handle.net/10568/136053

Rietveld, A. M., van der Burg, M., & Groot, J. C. J. (2020). Bridging youth and gender studies to analyse rural young women and men's livelihood pathways in Central Uganda. *Journal of Rural Studies, 75*, 152–163. https://doi.org/10.1016/j.jrurstud.2020.01.020

Rios, A. M. P., Baca, M. F. D., Valencia, K. J. E., Ángel, N. T., & Burkart, S. (2022). Gender inequalities in the Colombian cattle sector: An econometric analysis. *Development in Practice, 33*(4), 400–415. https://doi.org/10.1080/09614524.2022.2098256

Rodríguez, F., & Sosa Varrotti, A. P. (2023). Thirty years of sowing hope to globalise the struggle: Women and youth of La Via Campesina in the construction of food sovereignty—A conversation. *The Journal of Peasant Studies, 50*(2), 559–577. https://doi.org/10.1080/03066150.2023.2176758

Rosen, J. G., Mulenga, D., Phiri, L., Okpara, N., Brander, C., Chelwa, N., & Mbizvo, M. T. (2022). "Burnt by the scorching sun": Climate-induced livelihood transformations, reproductive health, and fertility trajectories in drought-affected communities of Zambia. *BMC Public Health, 21*(1), Article 1501. https://doi.org/10.1186/s12889-021-11560-8

Sen, A. K. (1987). *Gender and cooperative conflicts* (WIDER Working Paper Series wp-1987-018). World Institute for Development Economic Research. https://digitallibrary.un.org/record/54138

Sen, D. (2018). Fempreneurs or organic tea farmers? Entrepreneurialism, resilience and alternative agriculture in Darjeeling, India. *Journal of Political Ecology, 25*(1), 732–747. https://doi.org/10.2458/v25i1.22386

Serote, B., Mokgehle, S., Du Plooy, C., Mpandeli, S., Nhamo, L., & Senyolo, G. (2021). Factors influencing the adoption of climate-smart irrigation technologies for sustainable crop productivity by smallholder farmers in arid areas of South Africa. *Agriculture, 11*(12), Article 1222. https://doi.org/10.3390/agriculture11121222

Singh, P., Tabe, T., & Martin, T. (2022). The role of women in community resilience to climate change: A case study of an Indigenous Fijian community. *Women's Studies International Forum, 90*, Article 102550. https://doi.org/10.1016/j.wsif.2021.102550

Singh, R. K., Zander, K. K., Kumar, S., Singh, A., Sheoran, P., Kumar, A., Hussain, S. M., Riba, T., Rallen, O., Lego, Y. J., Padung, E., & Garnett, S. T. (2017). Perceptions of climate variability and livelihood adaptations relating to gender and wealth among the Adi community of the Eastern Indian Himalayas. *Applied Geography, 86*, 41–52. https://doi.org/10.1016/j.apgeog.2017.06.018

Speranza, C. I., Wiesmann, U., & Rist, S. (2014). An indicator framework for assessing livelihood resilience in the context of social–ecological dynamics. *Global Environmental Change*, *28*, 109–119. https://doi.org/10.1016/j.gloenvcha.2014.06.005

Swilling, M. (2020). *The age of sustainability: Just transitions in a complex world*. Taylor & Francis. https://doi.org/10.4324/9780429057823

USAID. (2012). *Building resilience to recurrent crisis: USAID policy and program guidance*. https://icma.org/sites/default/files/304412_USAIDResiliencePolicyGuidanceDocument.pdf

Voss, R., Meentzen, A., Morahan, R., & Rietveld, A. (2024). *Gender norms in agri-food systems: Adaptive capacity* (Gender equality annotated bibliography). CGIAR Initiative on Gender Equality. https://hdl.handle.net/10568/163602

Walker, B., Holling, C. S., Carpenter, S. R., & Kinzig, A. (2004). Resilience, adaptability and transformability in social-ecological systems. *Ecology and Society, 9*(2), Article 5. http://www.ecologyandsociety.org/vol9/iss2/art5/

Were, M., Odongo, M., & Israel, C. (2021). *Gender disparities in financial inclusion in Tanzania* (WIDER Working Paper No. 2021/97). The United Nations University World Institute for Development Economics Research [UNU-WIDER]. https://doi.org/10.35188/UNU-WIDER/2021/037-5%0A

Wong, F., Vos, A., Pyburn, R., & Newton, J. (2019). *Implementing gender transformative approaches in agriculture: A discussion paper for the European Commission*. CGIAR Collaborative Platform for Gender Research. https://hdl.handle.net/10568/160018

Wrigley-Asante, C., Owusu, K., Egyir, I. S., & Owiyo, T. M. (2017). Gender dimensions of climate change adaptation practices: The experiences of smallholder crop farmers in the transition zone of Ghana. *African Geographical Review, 38*(2), 126–139. https://doi.org/10.1080/19376812.2017.1340168

Yanda, P. Z., Mabhuye, E. B., & Mwajombe, A. (2021). Linking coastal and marine resources endowments and climate change resilience of Tanzania coastal communities. *Environmental Management, 71,* 15–28. https://doi.org/10.1007/s00267-021-01553-z

Zhang, W., Elias, M., Meinzen-Dick, R., Swallow, K., Calvo-Hernandez, C., & Nkonya, E. (2021). Soil health and gender: Why and how to identify the linkages. *International Journal of Agricultural Sustainability, 19*(3–4), 269–287. https://doi.org/10.1080/14735903.2021.1906575