

PART 5

Toward More Inclusive Food Systems

TOWARD MORE INCLUSIVE FOOD SYSTEMS

Vulnerable and marginalized groups are at risk of being left behind in food systems transformation. Cultural norms, demographic shifts, and economic structures can systematically leave out certain groups from having healthier, more productive, and more resilient futures. Such groups include (but are not limited to) women, youth, small farmers, people living in conflict zones, and the urban poor. Designing policy that recognizes their situations, constraints, and opportunities not only is an end in itself but also can strengthen the broader economy. Part 5 discusses inclusion in food systems with a focus on women, youth, and small farmers.

Even though women's labor contributes substantially to food production, women still face barriers to accessing resources, credit, markets, and inputs. The indigenous chicken value chain is a clear case of the challenges facing women in food systems. Chapter 13 shows that women are responsible for rearing indigenous chicken but men often dominate decision-making regarding vaccinations, feed purchases, and selling, because men typically have control over household resources and are the household heads. Decision-making skewed toward men can lead to suboptimal decisions regarding the use of inputs, such as vaccinations. Chapter 13 suggests that vaccination of indigenous chickens can be improved through training and education targeted to both men and women but also through providing women with control over resources via microcredit interventions targeted to women or through women-led collectives. Further, promoting women's involvement along the entire value chain can address systematic barriers to their participation in indigenous chicken value chains.

Promoting off-farm jobs for women can help address another issue facing Kenya—the growing youth population, or youth bulge. Indeed, the food system has the potential to generate both off- and on-farm jobs for youth in the coming years. However, policymakers face challenges in ensuring there are enough high-quality jobs for the growing youth population in the country. Chapter 14 describes the challenges and opportunities for youth in food systems. It shows that youth are engaged in the food system in a variety of ways—developing

off-farm businesses, innovating on the farm, and leading climate action. However, the land tenure system, limited knowledge, household dynamics, and lack of job opportunities can prevent youth participation in food systems, especially for young women. For Kenya to properly support and leverage such participation, Chapter 14 suggests, policy should help youth build capacity and access capital for agribusiness, revive existing school-based programs to improve agricultural education (for example, 4K Clubs), and generate more evidence to better understand youth's heterogeneous needs.

With the right approach, strengthening value chains can deliver not only opportunities for women and youth but also value for smallholders. While Kenya is one of the world's largest exporters of avocados, including smallholder farmers in this export value chain remains a challenge. Chapter 15 presents a study on the avocado export value chain and shows that smallholder participation is limited by lack of technical knowledge, trust, access to market information, and contract enforcement. Policy can support smallholder inclusion by overcoming these barriers through improved extension and training services, disseminating market information, and enforcing contracts through third parties. Further, contract farming should be mainstreamed; this requires a stronger and clearer legal framework that provides adequate protection for smallholders.

Part 5 addresses various issues related to inclusion in food systems, specifically for women, youth, and smallholder farmers. While strengthening value chains has been a recurring theme throughout this book, Part 5 points to the need for a conscious effort to develop value chains in a way that benefits marginalized groups. Improved inclusion not only is a desirable outcome in itself but also improves the food system's ability to be healthier, more productive, and more resilient.

GENDER AND FOOD SYSTEMS: A CASE STUDY OF THE POULTRY VALUE CHAIN IN EASTERN KENYA

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Women are key stakeholders in sustainable and resilient food systems, given their roles as primary food producers and household caretakers (Visser and Wangu 2021). Understanding how gendered roles affect food security and women's well-being is essential for pursuing sustainable development (Angel-Urdinola and Wodon 2010; Doss, Meinzen-Dick, and Quisumbing 2018; Meinzen-Dick et al. 2019). Their participation in agriculture is documented widely, but there is a need for more gendered data on the roles of men and women in different contexts and agricultural value chains, including livestock value chains (Micere Njuki et al. 2016; Richardson 2018; Doss and Rubin 2021; Njuki et al. 2021).

Men and women play different roles within food systems. In terms of production, evidence shows women contribute approximately 40 percent of agricultural labor and in some countries more, for example Tanzania, where women contribute 53 percent (Palacios-Lopez, Christiaensen, and Kilic 2017). On top of providing a substantial share of agricultural labor, women typically have more domestic responsibilities than men, which can impose severe constraints on their time and limit their engagement in off-farm components of value chains, such as marketing. Further, when it comes to ownership of the factors of production (such as land), there is a notable gender gap in much of sub-Saharan Africa (SSA), which can make women less likely to access productive inputs and less connected to upstream segments of value chains. As a result, there is a substantial gender gap in productivity between plots managed by women and those managed by men in SSA (UNDP 2015). Gender differences are also evident in the types of value chains in which men and women participate. Men are more likely to be involved in cash crops and food production intended for sale, while women are more likely to work on food crops intended for home consumption

(UNDP 2016). Women are thus less connected to downstream segments of the value chain. This leads to differential control over income, which has serious implications for food security, as women are more likely to spend income on household goods, while men are more likely to spend on private goods.

Social norms and gender inequalities exacerbate the situation, with women facing more normative challenges than men with regard to access to and control over productive resources, credit, and markets. Farhall and Rickards (2021) note that these norms go beyond the community and household level and are deeply entrenched in international food organizations, including those supporting agriculture for development. Consequently, these norms affect policy and legal framework formulation and implementation, decision-making processes, and resource distribution at both the global and the local scale, as well as relevant institutional management and governance (Bell 2021). To address these biases, the literature points to the need to focus on all aspects of food systems, from input supply to consumption, to incorporate the commonly hidden trade-offs and sacrifices that different food actors make. As Bell (2021) notes, food system programs need to shift from encouraging equal participation of women and men toward transformative change and behavior if they are to tackle systematic gender inequalities.

Following the 2030 Agenda for Sustainable Development principle of leaving no one behind, Kenya developed a Country Programming Framework 2018–2022 with the overall objective of achieving 100 percent food and nutrition security by 2022. This had four priority areas: (1) developing an enabling policy and investment environment, (2) strengthening inclusive value chains, (3) increasing resilient food and livelihood systems, and (4) improving governance of natural resources.¹ Through the second and third priority areas, the Government of Kenya, working with the Food and Agriculture Organization of the United Nations (FAO), attempts to develop and improve women's positions in several value chains while also strengthening the connections between various value chain actors.

However, the goal of achieving complete food security by 2022 has not been met (IPC 2023). A 2021 food systems summit in Kenya revealed shortcomings in the policy design and implementation, resulting from inadequate consideration of the needs of smallholders, limited funding, and knowledge gaps among food producers along the value chain (United Nations 2021). Moreover, recent studies show that policies and frameworks overemphasize the role of women's

1 FAO, "FAO in Kenya." Accessed June 2023. <https://www.fao.org/kenya/programmes-and-projects/en/>

access to resources such as inputs and technologies and overlook the importance of cultural rules that deny or limit their use of such resources (Mkandawire et al. 2021). To inform the agenda for sustainable food systems and gender equality, including addressing the persistent gender gaps in food systems, a deeper understanding is needed of how gender interacts with food systems as well as on ways to strengthen women's roles and voice to make food systems more inclusive, efficient, and resilient (CARE 2021; Njuki et al. 2021). There is an urgent need for nuanced and comprehensive data that illuminate the different needs of men and women smallholder farmers and how they intersect with their families, communities, and institutions to drive gender relations. These data will make it possible to measure change over time, identify the drivers of change, examine heterogeneity of impact, and establish best practices in increasing food security and gender equality (Doss, Meinzen-Dick, and Quisumbing 2018; Njuki et al. 2021).

This chapter provides a gendered study of how farmers interact with various nodes along the indigenous chicken value chain to better understand the needs of men and women smallholder chicken farmers in eastern Kenya. Indigenous chicken plays a key role in the food system in Kenya as a source of income and nutritious food (Chapter 2). As of the 2019 census, 27 percent of all households in Kenya were raising indigenous chickens (KNBS 2019), making this an important case study for understanding the role of gender in the country's food systems. We look into gender dynamics along the value chain to understand the current state of participation at each node of the chain and related challenges and opportunities, as well as potential solutions that may contribute to a more viable, inclusive, and equitable poultry value chain that supports the needs and livelihoods of all smallholder farmers.

The first part of the chapter provides an overview of the literature on chicken value chains in SSA, and particularly in Kenya, with an eye to the gender differences in ownership, labor, and decision-making power. The second section reviews the results of a recent gender analysis conducted in Makueni County, Kenya, in preparation for implementing a gender-inclusive project to promote vaccination of indigenous chickens. This analysis shows substantial participation by women in both ownership of indigenous chickens and labor related to their production, with more limited participation by men, but also shows that men take on a larger role in decision-making over vaccines, chick purchases, and chicken sales. Our results indicate that identifying and addressing the different needs and priorities of men and women smallholder farmers in relation to food production challenges, such as livestock diseases and their management and access to and control of financial resources, could increase productivity, improve

food availability and security, and reduce related inequalities—helping to close the gender gap. The final section provides policy recommendations.

Literature Review

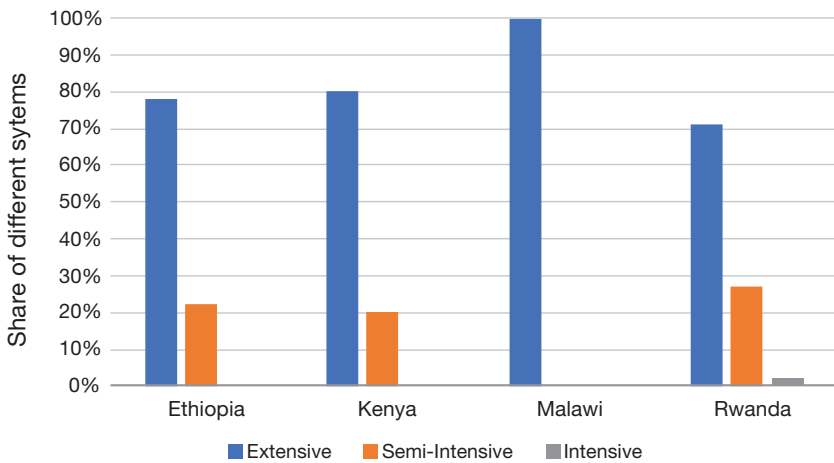
Overview of indigenous chicken value chains

Poultry value chains consist of all the linkages between poultry activities (from production to marketing and consumption) and the actors (input suppliers, producers, traders, processors, end-users) who are involved in value addition to poultry and poultry products until delivery to the final consumer (Mensah-Bonsu, Lartey, and Kuwornu 2019). The components of the poultry value chain include specific inputs (feeds, vaccines, drugs), breeding (stock, hatching, brooding), production (feeding, housing, chick care, disease management), collection and processing (eggs, chickens), transportation and marketing (handling of eggs/birds, transactions through brokers, traders, market outlets), and consumption (processing, packaging of poultry products) (KIT, Faida MaLi, and IIRR 2006).

Chicken value chains encompass both direct and indirect actors. The direct actors include farmers (producers), processors, and consumers. The indirect actors are the supporting systems, such as financial entities, research institutions, extension officers, and credit facilities (KIT, Faida MaLi, and IIRR 2006; Bulama et al. 2019). Value chain analysis can be used to understand the motives, incentives, and challenges that exist at various nodes of an indigenous chicken value chain and how different actors network and compete for optimum benefits.

Poultry production can be divided into three main systems: traditional extensive production systems that comprise mainly indigenous chickens, and semi-intensive and intensive systems that can comprise either indigenous or non-indigenous chicken. The prevalence of these different systems in East Africa is shown in Figure 13.1 (Mujiyambere et al. 2022). Eighty percent of Kenya's chicken production comes from extensive systems, and the remaining 20 percent from semi-intensive systems. The majority of chicken-producing households in low- and middle-income countries keep only 5–15 adult chickens (de Bruyn et al. 2015), but there has been significant growth in production through a gradual transition from backyard to more commercialized systems in East Africa (Vernooij, Masaki, and Meijer-Willems 2018).

In Kenya, the chicken value chain plays a significant role in the food system, with potential to contribute substantially to poverty reduction,

FIGURE 13.1 Chicken production systems in East African countries

Source: Adapted from Mujyambere et al. (2022).

improved diets, and economic growth (Chapter 2). According to Kenya's 2019 census, 30 percent of Kenyan households keep chickens in their household (KNBS 2019). Indigenous chicken, in particular, plays a key role in the food system—92 percent of all households with chickens keep indigenous chicken (a total of 27 percent of all households in Kenya) (KNBS 2019). The high percentage of households keeping indigenous chickens has been found in other settings in SSA as well. For example, in some areas of Zambia, 99 percent of chicken farmers keep indigenous chickens (Bwalya 2014).

The prevalence of indigenous chicken in Kenya, and elsewhere, reflects both demand and supply factors. On the demand side, indigenous chicken is often preferred for its unique taste qualities and its sociocultural import in local communities (Okello et al. 2010). Indigenous chicken characteristics such as plumage color, weight, size, and overall body constitution help determine chicken prices (Bett et al. 2012). These dynamics are not unique to Kenya—in China, Padhi (2016) notes increasing consumer demand for slow-growing chicken. In Ethiopia, birds with red and white plumage or pea-shaped combs are reported to fetch prices approximately 15–35 percent above prices for those without (Mengesha and Tsega 2011). On the supply side, indigenous chickens are often preferred for their natural immunity to diseases; their ability to survive in harsh climatic conditions; and because they are ideal mothers to their chicks and require relatively little management capital and care compared with other

species (Padhi 2016). Indigenous chickens even serve as an important source of emergency income in Kenyan households (Okello et al. 2010), making them critical to ensuring household food security.

Low productivity of Kenya's indigenous chicken value chains, caused by disease outbreaks, limited knowledge on proper husbandry practices, and poor feeding, is a major concern (Magothe et al. 2012; de Bruyn et al. 2015). Farmers' disease management and control measures for indigenous chickens are largely limited to cleaning the chicken coop or sleeping area, preparing herbal concoctions as remedies, and administering human antibiotics as treatment and preventive care (Okello et al. 2010). There are also knowledge gaps related to poultry diseases, such as Newcastle disease (Kingori, Wachira, and Tuitoek 2010; Akinola and Essien 2011). For indigenous chicks, death rates are about 40–80 percent and malnutrition rates are high, owing to poor chick care. Most chicks are left with the mother for care, exposing them to a wide range of harm (Mahoro et al. 2017) and most must engage in competition with adult chickens for scarce feed (Kingori, Wachira, and Tuitoek 2010; Akinola and Essien 2011). Okello and colleagues (2010) note that indigenous chickens are generally left to scavenge for feed, with kitchen leftovers and grains and cereals as supplementary feed.

Strengthening upstream and downstream value chain linkages can help overcome productivity challenges for indigenous chicken producers. Upstream, poultry farmers need access to vaccines for disease control and proper feed for supplementation as well as knowledge on proper housing (Kingori, Wachira, and Tuitoek 2010; Akinola and Essien 2011; Mujiyambere et al. 2021). Downstream, better market linkages can help farmers receive more revenue from their chicken production, which can help finance productive inputs, such as vaccines. For successful value addition downstream, producers need access to both good husbandry knowledge and market information to be able to meet end-user quality demands as well as to benefit from the market structure in terms of fair pricing for their chicken (Mensah-Bonsu, Lartey, and Kuwornu 2019). The main actors in the marketing value chain are brokers (middlemen/women), traders/wholesalers, and chicken producers (Relucio 2021), with the brokers benefiting more than the producers and retailers. Even when local producers have informal engagements with urban buyers, through either long-term transactions or regular delivery agreements, brokers have more bargaining power in negotiating the selling and buying prices than either producers or retailers (Okello et al. 2010). As such, chicken producers are unable to capture the rents from the sale and production of chicken, and these dynamics are often gendered, as we discuss below.

The role of gender in poultry value chains

Gender plays an important role in terms of labor, decision-making, marketing, and access to productive inputs and services within poultry value chains, including in indigenous chicken value chains. For smallholders and rural residents, the local sale of chicken from traditional production systems is valued as a source of animal protein and revenue (Kingori, Wachira, and Tuitoek 2010; Kristjanson et al. 2014; Mathiu, Ndirangu, and Mwangi 2021; Mujiyambere et al. 2021). How gender plays a role in production and marketing is often context specific.

From a labor perspective, women tend to be more involved at the production stage, particularly in the extensive production systems that are prevalent in low- and middle-income countries. For example, in Burkina Faso, where chicken-raising has traditionally been considered the preserve of women, women are generally in charge of day-to-day activities of poultry management (Eissler et al. 2020). A study from Ethiopia shows that, while 77.7 percent of women participated in poultry management in men-headed households and 80.7 percent in women-headed households, only 2.2 percent and 5.1 percent of the men in men- and women-headed households, respectively, were involved (Gebremedhin et al. 2016). Likewise, on smallholder farms in Ethiopia, women (64 percent) are primarily in charge of caring for and maintaining chickens (Hailemichael et al. 2016). In western Kenya, women are largely responsible for feeding (75 percent), cleaning (75 percent), and tending to sick hens (60 percent). Although children also contribute (10 percent), men are usually in charge of building chicken coops (85 percent) (Okitoi et al. 2007). The high share of labor from women in extensive systems can also lead to time constraints. Bulama and colleagues (2019) show that in Maiduguri, Nigeria, women are the majority (60 percent) of producers involved in stocking, feeding, hygiene, and day-to-day care. Women are also involved in other gendered roles in different spheres (notably domestic duties) and therefore face time constraints when dealing with chickens.

In semi-intensive and intensive production systems, the gender dynamics of labor are different. As chicken production evolves toward a more intensive production system, offering an alternative source of livelihood to crop farming, men are increasingly involved in production (Mathiu, Ndirangu, and Mwangi 2021; Mujiyambere et al. 2021). In intensive poultry production that involves larger-scale commercial chicken and egg production, men and women provide labor at different nodes of the production chain. For example, in Kericho, Kenya, men provide a large share of labor for logistics and cash-related activities, including selling culls (46.8 percent), buying and transporting feed (64.1 percent), and

paying hatching collectives and individuals to reserve chicks and transport them (73.4 percent) (Ngeno et. al. 2011). Studies in Ghana and Nigeria indicate that men dominate the producer (75.9 percent) and processing (83.3 percent) nodes of the commercial poultry value chain, while women dominate the marketing node (70.1 percent) (Mensah-Bonsu, Lartey, and Kuwornu 2019; Adeyonu et al. 2022).

Gendered decision-making and the control of benefits from the production and sale of poultry follow a pattern similar to the labor dynamics, with women contributing more in extensive systems and men more in semi-intensive and intensive systems. Studies from across Kenya suggest that women dominate indigenous chicken production in the traditional extensive system (95 percent) and have considerable access to and control of benefits from ownership and sale of the indigenous chicken produced on a small scale (Okitoi et al. 2007; Ngeno et al. 2011). In a study conducted in central and western Kenya, the majority of women (54.6 percent) and girls (57 percent) were found to make decisions about the type of poultry kept and the type of feed used (Waithanji et al. 2020).

In semi-intensive and intensive systems, however, men tend to dominate decision-making and control of benefits. Gammage (2009) indicates that chicken value chain operations reflect existing gender norms and inequalities in bargaining power (and decision-making), hence women are engaged at the lower nodes of the chain for relatively lower wages. For instance, in Burkina Faso, women are the main caretakers of poultry, but contestations arise between men and women on decision-making on the commercial disposal of birds. Women are thus found to have limited decision-making power in selling chicken in large quantities (Eissler et al. 2020). Intensified production, aimed at maximizing profits over the social value of chicken production, leads to inequalities especially for women. Intensification has often resulted in labor exploitation, diminishing decision-making power for upstream and downstream value chain segments, and little control over income generated from chicken and egg sales. Adeyonu and colleagues (2021) further argue that, despite variations in participation in the chicken value chain, men add more value than women, and benefit more, at the different nodes of the value chain because they operate on a larger scale.

Men tend to have better access to resources and knowledge than women in poultry value chains. The literature suggests that men chicken producers are more likely than women chicken producers to obtain credit (Mensah-Bonsu, Lartey, and Kuwornu 2019; Ndirangu, Mbogoh, and Mbatia 2018). This has been attributed in part to women's lack of collateral for securing credit, since they have limited or no say over productive resources such as land. Women's

limited mobility owing to normative constraints and unpaid care work limits their access to information through trainings and group networks, markets and marketing information, and chicken vaccination information, affecting their value addition as traders, producers, and processors (Eissler et al. 2020). These limitations can have important consequences. Mathiu, Ndirangu, and Mwangi (2021) show that in men-headed households, production is 19.69 percent higher than in women-headed households in Meru County, Kenya.

Gender analysis of indigenous chicken value chain in eastern Kenya

Given the different roles that men and women play at different nodes of the poultry value chain, gender analysis of value chains can provide insights needed for creating more productive and inclusive poultry systems. A gender analysis of the poultry value chain reveals the various nodes of the value chain that women and men occupy (Mutua, Njuki, and Waithanji 2014) and provides understanding of the value addition process (Adeoye, Adeolu, and Ibrahim 2013).

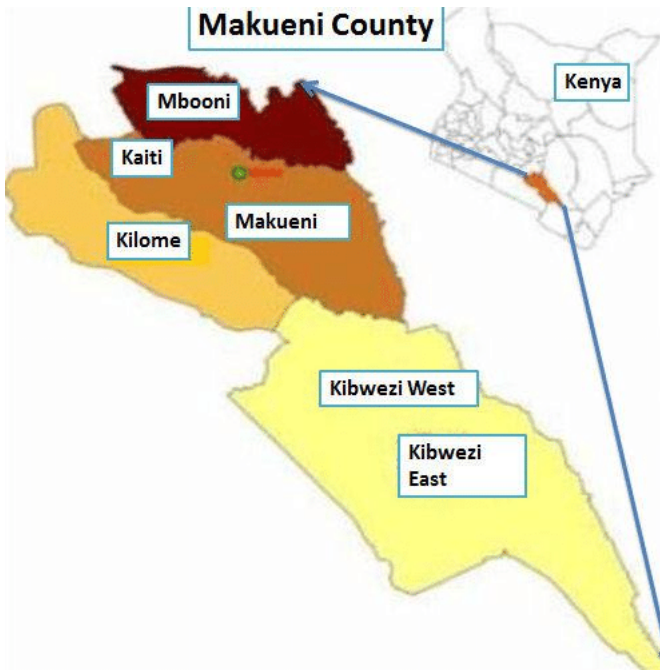
This study conducts a gender analysis of the indigenous chicken value chain in eastern Kenya in the context of the Gender Inclusive Vaccine Ecosystem (GIVE) project. To empower women smallholder farmers and improve their access to agricultural technologies, GIVE was funded under the Livestock Vaccines Innovative Fund by the International Development Research Centre and the Bill & Melinda Gates Foundation from 2019 to 2023. The project set out to enhance vaccine distribution and delivery systems in response to two endemic livestock diseases, Newcastle disease (ND) in chicken and contagious caprine pleuropneumonia (CCPP) in sheep and goats in eastern Kenya. A gendered value chain analysis was conducted to uncover and understand the factors that drive structural gender inequalities, particularly related to vaccine uptake, within the livestock value chain in rural Kenya.

For the analysis, a cross-sectional study design was used along with qualitative methods. Eighteen sex-segregated focus group discussions (FGDs) were conducted with a total of 153 participants in Makueni County (Table 13.1). These activities produced data on the management of chickens and specific roles, duties, and bargaining power positions, including decision-making, among women and men in smallholder farming households.

Gender-disaggregated data were collected on various aspects of rural indigenous chicken management, such as housing, feeding, and disease control, including vaccination, ownership, and decision-making. Using FGD data on gender roles, an analysis was carried out of the gender differentials and the

intensity of involvement of different household members in indigenous chicken management in the study setting, which is dominated by extensive production systems.

FIGURE 13.2 Map of Makueni County



Source: Musyoka and Mutia (2016).

TABLE 13.1 Gender focus group discussions conducted in Makueni County, 2023

Sub-county	Focus Group Discussions		
	Total sessions	No. of men	No. of women
Makueni	6	22	27
Kibwezi East	6	31	25
Kibwezi West	6	24	24
Total	18	77	76

Source: Authors.

Household indigenous chicken ownership and decision-making

The participatory exercise results are shown in Table 13.2. The FDG responses indicated that 51.2 percent of the chickens are owned by women, and 8.8 percent are owned by men. The remaining 40 percent are owned by children (11.6 percent), youth (9.5 percent), and jointly by couples (18.9 percent). Decision-making in the value chain is gendered: men and women participate in decision-making for different activities. In half of the focus groups, women were reported to be able to make decisions about selling chickens and their products (eggs and meat) as well as about their consumption. Men were reported to be involved to some extent in making decisions on selling chickens but less so on the sale of eggs. Men were reported to be most involved in decisions about the purchase of drugs and vaccination of the chickens. In all, women were reported to be the primary decision-makers for all activities, as shown in Table 13.2.

Ownership of chickens is linked directly with participation in decision-making regarding selling, consuming, distributing gifts, confining, and vaccinating the birds. Table 13.2 shows that women are the main actors in the different decisions related to chicken production and management, although men also participate significantly.

Figure 13.3 shows differences in men's and women's perceptions about ownership of indigenous chickens. Men regard their position as owners in rural indigenous chicken production and management to be almost equal to that of women. Women, however, consider themselves the majority stakeholders in terms of ownership of rural indigenous chickens, and their production

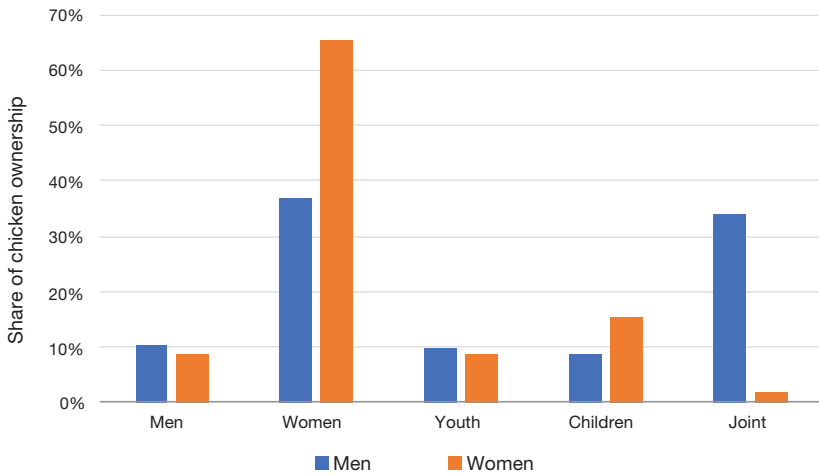
TABLE 13.2 Responses from FGDs on household chicken ownership and decision-making for indigenous chicken production (N=153 participants)

Household members	Decision-making (%)								
	Owning chickens	Selling eggs	Selling chickens	Consuming eggs	Consuming chickens	Gifting to visitors	Confining chickens	Vaccinating	Purchasing drugs
Men	8.8	5.1	23.3	7.6	16.9	27.2	27.9	32.9	37.4
Women	51.2	79.6	53.1	89.9	70.1	64.9	60.8	38.8	42.2
Youth	9.5	3.3	11.5	2.0	2.1	1.0	3.6	1.2	0.0
Children	11.6	0.0	1.4	0.5	2.3	0.0	2.2	1.3	0.6
Joint family	18.9	12.0	10.3	0.0	8.6	6.9	5.6	4.6	3.2

Source: Authors.

and management. Men also reported more joint ownership than women, which may imply that men perceive chicken-raising in their household as a joint venture, while women may have a different perspective. These are important differences in perspective to take into consideration when developing or implementing programs that touch on chicken value chains in the

FIGURE 13.3 Gendered perceptions of ownership of indigenous chickens



Source: Authors.

TABLE 13.3 Responses from FGDs on division of labor among household members in indigenous chicken management activities (N= 18 FGDs)

Household members	Construction of coop Mean (%)	Cleaning of poultry house Mean (%)	Feeding Mean (%)	Watering Mean (%)	Treatment Mean (%)	Buying of poultry Mean (%)	Selling of poultry Mean (%)	Protecting of chicks Mean (%)	Vaccination Mean (%)	Purchase of feed Mean (%)	Purchase of drugs Mean (%)
Men	44.7	1.9	13.5	17.4	35.2	27.5	22.5	16.7	25.8	34.6	43.8
Women	28.3	55.9	51.7	53.5	51.3	64.4	64.6	33.6	38.3	35.2	40.7
Youth	15.7	20.3	11.3	9.2	9.8	6.9	10.1	16.3	6.9	10.8	9.4
Children	3.9	16.3	9.4	7.0	2.7	0.0	0.0	10.6	5.7	2.0	0.0
Joint family	7.9	5.6	8.4	7.3	1.0	1.8	2.9	22.8	1.7	0.7	6.1

Source: Authors.

community. While ownership positions show the increasing role of men, there remains an imbalance in the division of labor, as presented in Table 13.3 and discussed below.

Division of labor

Men, women, youth, and children all provide labor in indigenous chicken management, but women were reported to provide the bulk of the labor in almost all the chicken management activities. Men's role was larger only in the construction of chicken houses and purchase of drugs. Women and children were said to do most of the time-consuming daily management work, while men engage in activities that may be demanding but one-off, such as constructing chicken coops.

Construction of chicken houses. The task of constructing chicken houses was reported to fall largely on men, with 44 percent participation reported. Depending on the type of chicken house, women also participate in the construction, with 28 percent participation reported. Joint family participation was reported at 8 percent. Youth and children were also mentioned as helping with construction, at 15 percent and 4 percent, respectively. Young men especially help find tree branches that are used to construct the houses and structures; in some households, they also build chicken houses on their own.

Cleaning of chicken houses. Cleaning chicken houses and structures was reported to be the job of women, youth, and children. This is because the women are mostly left at home, and youth and children play that role during weekends and school holidays. Women's participation was reported as 56 percent, youth participation at 20 percent, and children's at 16 percent. Joint family participation was reported at 6 percent, while men's participation was just 2 percent because they were away from the house most of the time to find employment.

Feeding. Feeding chickens was reported as a task performed by all household members. Women played the major role, with 52 percent participation reported. Men's participation was reported at 14 percent. Youth and children were mentioned as participating in feeding on the days they did not attend school. Their participation was reported as 11 percent and 9 percent, respectively. Joint family participation was reported at 8 percent.

Watering. Participation in providing water is reported to be similar to feeding, with women's participation reported at 54 percent and men's participation at 17 percent. Youth participation was reported at 9 percent, that of children at 7 percent, and that of the joint family at 7 percent.

Treatment of chicken. The FGD participants mentioned that the administration of medication to treat chicken diseases is mostly done when they are being given feed and water. Women were reported to participate at 51 percent. Men's participation (35 percent) was slightly higher for treatment than their participation in feeding and watering. Youth participation was reported at 10 percent, children at 3 percent, and the joint family at 1 percent.

From these results, we see that women and children were responsible for most of the daily management routines for indigenous chickens, including feeding and watering the chickens and cleaning the chicken houses. Focus group participants noted that men provide support in these duties when their wives are unwell or away from home, and the children are at school.

Decision-making for vaccination of chickens

The proportion of women who make the decisions about vaccination of chickens is slightly larger than the proportion of men who do so. According to the 18 participatory exercises we carried out, 32 percent of men and 38 percent of women made decisions regarding vaccinations, respectively. Focus group participants suggested that women are slightly more likely to make vaccination decisions than men because they are the primary owners of chickens; however, men also frequently make these decisions, because they usually provide the money to buy vaccines, which gives them the decision-making power. Discussants in four of the FGDs reported that they do not vaccinate their chickens at all due to their perception that vaccination is only needed for improved or hybrid chickens. These farmers use herbal remedies to manage the health of indigenous chicken but use commercial vaccines for their hybrid chickens. As one woman explained, "*I vaccinate the commercial chickens which I keep here at the market but for the ordinary chickens at home I only use herbal remedies*" (FGD#5). This reflects variations in management for different breeds of chicken.

Conclusions and recommendations

The poultry value chain is a driver of food security and sustainable development and represents a viable pathway out of poverty for the poor, especially women. It plays a significant role in the Kenyan agriculture sector, with 30 percent of all households keeping chickens (KNBS 2019). Traditional extensive production, which comprises mainly indigenous chickens and occurs mostly in rural settings among smallholder farmers, could contribute toward transforming food systems to empower women and enhance gender equality. Women already play a key role

in the indigenous chicken value chain, although various sociocultural factors often limit their contribution. The value chain provides unique opportunities for women especially, with significant implications for household food security and socioeconomic well-being (Grace et al. 2014). However, an analysis of the value chain using the case study presented here highlights some gender considerations that are crucial to achieving a sustainable food system.

The indigenous chicken value chain is gendered along aspects of access to and control over resources. It is mostly women who are the owners of chickens, and thus they have more control over sales and income. However, joint ownership exists in some coupled households, which could influence intrahousehold bargaining dynamics when it comes to decision-making and have negative impacts on women's agency if not handled in an equitable manner. Nevertheless, women are the main decision-makers in indigenous chicken production. However, it is interesting to note that men's involvement is greater in decision-making concerning sales of chicken but not sales of eggs. This could imply that men compete with women where they know there is greater benefit; indeed, it has been noted that, with commercialization or intensification of other crops (such as groundnuts), men tend to take more control of the value chain than when the practice is small in scale (Forsythe et al. 2015).

Women reported that they have some power to make decisions about vaccination, while men indicated that they are the decision-makers because they provide the money to purchase vaccines and because they are the household heads. Although women are the main owners of indigenous chickens, their limited access to finance and other resources can be a constraining factor in their capacity to engage and scale up their production into a higher-value agri-enterprise, which is seen in cassava value chains (Forsythe et al. 2016).

In terms of division of labor, women are more involved in roles that seem light (cleaning chicken coops, feeding, watering) but are repetitive, whereas men construct coops in a one-off engagement. Women's roles can thus be time-consuming, adding to their multiple household responsibilities, and may hinder their engagement in other productive activities. Value chain interventions should take into consideration the time burden that may be placed on men and women by new technologies, hence the need for doing cost and time benefit analysis.

Given that women engage in the marketing of chicken and related products, improved marketing strategies that enable women smallholder farmers to obtain premium prices for their products would go a long way toward improving their economic and livelihood outcomes as well as contributing indirectly to improved dietary outcomes. Indigenous poultry farming can make a positive

contribution to household economies and subsistence, and can contribute toward a resilient food system in the face of climate change. Tackling gender inequalities in access to resources for indigenous chicken production and management and in marketing dynamics will advance women's empowerment and household income.

Finally, noting that various factors may interact to create inequalities, it is important to include an intersectionality lens in any gender review of food system value chains. Areas for future research include the collection of sex-, gender- and intersectionality-disaggregated data on participation and roles in the poultry value chain to provide empirical evidence to inform inclusive policy and programming, as well as to set up indicators for monitoring gender aspects in the poultry value chain.

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