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Feed the Future Innovation Lab for Livestock Systems

Gender and Livestock Value Chains Annotated Bibliography



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This annotated bibliography is a product of the Gender Cross-Cutting Theme of the Feed the Future Innovation Lab for Livestock Systems at the University of Florida. The aim is to bring together relevant articles on gender and livestock value chains that can be of use to researchers and development organizations when integrating gender into international livestock research or development projects. This annotated bibliography focuses on the countries, value chains and impact pathways that are most relevant to the research projects funded by the Livestock Systems Innovation Lab.

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Sustainably intensifying smallholder livestock systems to improve human nutrition, health, and incomes

Disclaimer

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Kristjanson, P., Waters-Bayer, A., Johnson, N., Tipilda, A., Njuki, J., Baltenweck, I., Grace, D., and MacMillan, S. 2010. Livestock and women's livelihoods: A review of the recent evidence. ILRI Discussion Paper 20. Nairobi, Kenya: ILRI.

With some estimates showing that women make up about two-thirds of the 600 million poor livestock keepers worldwide, women's roles in livestock production appear as a critical issue. This article synthesizes research on this topic, highlighting three pathways through which interventions can influence the livelihoods of women livestock keepers and their families: securing current and future assets, sustaining and improving the productivity of agricultural systems, and facilitating greater market access. Research on the first pathway shows that greater control and access to assets, education, and food by women is associated with improved wellbeing at the household level. The second pathway emphasizes the ways in which women can contribute to increased livestock productivity through improved feeding practices, breed specialization, animal health improvements, and improved resource usage. Research on the third pathway shows that women livestock keepers face a tradeoff between sale and consumption of valuable and nutrient-rich animal source food products. Furthermore, they face many obstacles to market participation such as insecure livestock ownership, and lack of access to inputs or extension services necessary to capitalize on market opportunities. Some of these obstacles can be mitigated through improving women livestock keepers' access to resources and markets.

World Bank, FAO and IFAD. 2009. Module 14: Gender and livestock. In: World Bank, FAO and IFAD (eds), Gender in agriculture sourcebook. Washington, D.C., USA: World Bank.

Module 14 of the Gender and Agriculture Sourcebook provides a broad overview of the factors that constrain women livestock keepers. It describes the essential roles that women play in livestock production as well as the limited benefits they receive due to gender-based inequalities. One of the main constraints identified for women livestock keepers is the lack of access to information on markets, government regulations, credit and veterinary care, which limits their ability to respond to livestock related opportunities or challenges. For example, due to their role in livestock care, women are often on the front lines of disease diagnosis; however, they often do not have access to the information or training to help prevent disease outbreaks. Some projects try to overcome this challenge by training women livestock keepers as community vaccinators in order to control diseases and develop women's enterprises. In addition to lack of information, women also struggle to access and maintain control of financial resources generated by sales of livestock and associated products. For example, in Kenya, gender norms allow for a widow's livestock to be confiscated by her husband's family. In other contexts, during times of drought, women may be forced to sell their livestock assets first.

FAO. 2011. Notes on livestock, food security and gender equity. Animal Production and Health Working Paper No. 3. Rome, Italy: FAO.

This article provides an overview of the literature on gender, livelihood and food security, focusing on the important aspect of women's livestock ownership. In most developing country contexts, women manage or own smaller livestock species, such as poultry, and in more limited quantities than men. Numerous constraints to increased women's ownership of livestock were identified, including lack of access to land, inputs, education and livestock relevant information, as well as discrimination in access to markets and gender bias in extension services. These constraints may limit the beneficial impacts of livestock projects aiming to empower women, as the gender inequities embedded in the wider social context may be impervious to change. In addition, the requirement of many livestock projects to pass on the offspring of the livestock may create additional labor burdens for women. This is supported by data showing that larger households had higher measures of livestock management (i.e. livestock health) than independent livestock owners.

Farnworth, C.R., Kantor, P., Kruijssen, F., Longley, C., Colverson, K.E. 2015. Gender integration in livestock and fisheries value chains: Emerging good practices from analysis to action. *International Journal of Agricultural Resources, Governance and Ecology*, 11(3/4).

This article examines recent efforts to develop tools for effective gender analyses in value chains and to apply them in projects through four cases studies: fish value chains in western Zambia and in Egypt, and poultry and dairy value chains in Lake Victoria, Kenya. Since fishing and livestock value chains exhibit strongly gendered networks of rights and responsibilities, gender-neutral tools for value chain developments risk progressively excluding women. This realization points to the need to purposefully reassess both the tools and the modalities of value chain development. The dairy intervention in Kenya showed the necessity of training women and men as a couple during the project implementation for the training to be effective. A comparison across projects showed that the influence of cultural norms on women's tasks varied depending on the economic circumstances. For example, while in Zambia, 99% of fishers are men because it is not socially acceptable for women to paddle a canoe, in Egypt, in recent times, economic need has loosened the norms of women's seclusion and allowed women to partake in fish retail. Thus, changing gender inequalities does not need to involve a direct conflict. Instead, it is recommended to create win-win situations so that key stakeholders are empowered simultaneously.

FAO. 2012. Invisible guardians: Women manage livestock diversity. FAO Animal Production and Health Paper No. 174. Rome, Italy: FAO.

This paper analyzes women's role in genetic resource development, particularly improved livestock breeds, by a review of the literature and case studies, which focus explicitly on the role of women as conservers of local breeds. The authors seek to differentiate the roles that men and women play in animal genetics, emphasizing the role of women as the main managers of animal genetic resources, as two-thirds of the estimated 600 million poor livestock keepers are women. Evidence from the existing literature shows that rural women tend to prefer indigenous breeds, because, compared to improved breeds, they are easier to manage, utilize natural available resources, and are less prone to diseases, and thus help minimize the work burden for women. The strategy to keep low-input breeds, which require minimum care and financial investment, is even more prevalent where the number of female-headed households has increased as a result of men's migration to cities in search of employment. The report concludes that further support to women's smallholders is essential for preserving traditional livestock keeping, since in an increasingly diversified market economy, which provides young men many incentives for migration, the survival of livestock-based livelihoods will depend on women's willingness to stay in rural areas versus migrating to urban areas.

Njuki J. and Sanginga, P. (eds). 2013. Women, livestock ownership and markets. Bridging the gender gap in Eastern and Southern Africa. New York, USA: Routledge, and Ottawa, Canada: IDRC.

This edited book provides the first comprehensive analysis of women's participation in livestock sectors and ownership of livestock assets and how these interact with intra-household decision-making regarding income, markets and food security. The nine chapters provide solid empirical data for understanding the importance of livestock to women's agency and intra-household dynamics and conceptual frameworks for providing insights on how livestock sectors can become more gender equitable. Evidence drawn from Kenya, Mozambique and Tanzania, by showing the complexities across different livestock sectors and production systems, points to the importance of conducting proper gender analysis beyond the simple differentiation between male- and female-headed households. Collective action and access to information services emerge out of several examples as effective mechanisms for increasing women's participation in livestock markets. The implementation of truly gender transformative approaches is found to be highly challenging in both research and development endeavors.

Gallina, A. 2016. Gender dynamics in dairy production in Kenya: A literature review. CCAFS Working Paper No. 182. Copenhagen, Denmark: CCAFS.

This study highlights the pivotal role of women in Kenya's dairy sector, arguing for the urgency to address gender issues within the sector. Gender inequities affect the development and innovation of mitigation technologies and can thus be a hindrance on overall sustainability and productivity levels as well as natural resource conservation and food security. Women are affected by resource scarcity more than men as they are characterized by a higher level of insecurity in regard to livestock and access to other rights and resources. The gender blindness within the dairy intensification program development and the lack of empirical analysis on the conditions of women livestock keepers have contributed to the lack of growth for women within the sector. It is critical to study the division of labor and decision-making patterns between men and women within households in order to develop methods and strategies to resolve existing barriers that women face. When women are given access to knowledge of intensification practices, they are more willing than men to find effective solutions to the drawbacks they face, such as renting land and access to capital. A shift in focus towards establishing women's cooperatives and self-help groups, it is argued, could assist more women in becoming empowered to become business leaders themselves, to obtain positions where they can access productive resources, and ultimately, work towards creating tangible improvements in mitigation practices in the dairy sector in the long run.

Di Stefano, F., Mattioli, R., and Laub, R. 2015 Understanding and integrating gender issues into livestock projects and programmes. Rome, Italy: FAO.

This guide for practitioners aims to better integrate gender in livestock projects and programs. It is organized around seven broad categories of challenges, which women face in livestock systems, and are identified as: 1) access and control of natural resources, 2) distribution of responsibilities based on sex and age, 3) access to technologies and extension services, 4) access to financial services, 5) access to markets, 6) participation and decision making power, and 7) occupational health and safety. These challenges are interconnected, for instance, because limited access to veterinary services and markets limit women's ability to control and expand their stock of livestock. Key tips to address these challenges are included in the booklet, as well as references to additional tools that can help in planning future programs.

Njuki, J., Waithanji, E., Bagalwa, N., and Kariuki, J. 2013. Guidelines on integrating gender in livestock projects and programs. Nairobi, Kenya: ILRI.

This guide is intended for ILRI staff and its partners to better integrate gender principles into livestock programs. Women farmers are as efficient as men farmers, but due to lack of access to productive inputs and human capital, women are less productive overall, causing a loss in total agricultural output of about 30 percent. Increasing the gender focus in livestock programs has the potential to increase women's income, mobility, as well as women's and children's health and nutrition outcomes. Participatory approaches to project design must ensure that all participants have access to information, are able to express their views and have them discussed in a meaningful way, and have direct influence in decision-making. Authors classify gender approaches as being gender aware or gender blind, and these approaches can be either exploitative, accommodating, or transformative in regard to gender. Gender blind approaches usually become exploitative, while gender aware approaches are usually accommodating or transformative. Gender exploitative programs take advantage of existing, rigid gender norms to achieve objectives, and they are expeditious in the short term but are unsustainable for transformation. Gender accommodating programs work within the existing gender constraints without addressing their underlying causes, while gender transformative programs work to examine, question, and change rigid gender structures. These latter approaches are more costly to implement but are much more sustainable and beneficial in the long-term.

Njuki, J. Poole, J., Johnson, N., Baltenweck, I., Pali, P., Lokman, Z., and Mburu, S., 2011. Gender, livestock and livelihood indicators. Nairobi, Kenya: ILRI.

This guide introduces the most important indicators that ILRI and other organizations can use to monitor the changing role of livestock in their livelihood projects across production systems. The identified indicators are grouped in six categories: 1) livestock ownership and assets, 2) access/use of technologies, 3) livestock production/productivity, 4) labor use, 5) contribution to household income, and 6) contribution to food security and dietary diversity. It explores the rationale for the different indicators in each category as well as of the type of data and collection methods required to construct them. Most indicators are gender disaggregated and thus specific instructions are given for how collect the required data and how to interpret them. Final suggestions are given on how to best sample households for surveys.

Chagunda, M., Mwangwela, A., Mumba, C., Dos Anjos, F., Kawonga, B., Hopkins, R. and Chiwona-Kartun, L. 2015. Assessing and managing intensification in smallholder dairy systems for food and nutrition security in Sub-Saharan Africa. *Regional Environmental Change*, 16(8): 2257-2267.

This assessment of dairy programs identifies three approaches to improve dairy productivity: applying ecological processes, utilizing genetics and modern livestock breeding, and relying on socioeconomic intensification through training and capacity building activities that create more sustainable livelihoods. The paper reviews the modalities of implementation of each of these approaches and their assessment methods, through case studies of dairy intensification in Kenya, Malawi, Mozambique, Tanzania and Zambia. Most of the programs that target women smallholders are largely based on socioeconomic intensification. Gender issues are found to be relevant to smallholder dairy intensification programs, because men and women are responsible for very different tasks within household livestock production. Moreover, previous studies had shown that improvements in household food security in Africa are linked to increasing women's access and control of income. Thus, one way in which programs attempt to improve productivity and enhance sustainable is by addressing gender-related constraints around food and nutrition security.

Coles, C. and Mitchell, J. 2011. Gender and agricultural value chains: A review of current knowledge and practice and their policy implications. ESA Working Paper No. 11-05.

This paper introduces value chain analysis as a tool for empowering women in agricultural value chains and addressing gender inequities in markets. Gendered analyses of value chains show the different levels of interaction between women and men across the phases of production, logistics and marketing. This tool leads to the identification of upgrading strategies for improving the efficiency and equity of value chains. By shortening the value chains where women dominate there may be improvements in the health status and incomes of households, because women earn a higher share of the market. Various mechanisms can help in that process, such as new technologies, reduction of the number of intermediaries or the elimination of price distortions. Conversely, insecure property rights and limited land tenure limit women's ability to access opportunities in value chains, and lack of access to financial assets or to collateral reduce the ability of women to increase their livestock ownership. It is also noted that women-only initiatives, focused on empowering women to the exclusion of men, may create tensions or backlash within communities, as evidenced by the example of a project in Tanzania where the creation of women's only producer groups created resentment among men. Thus a final recommendation is for agricultural value chain projects aiming to empower women to also include men and to foster community dialogue around gender issues.

Quisumbing, A.R., Roy, S., Njuki, J., Tanvin, K. and Waithanji, E. 2013. Can dairy value-chain projects change gender norms in rural Bangladesh? Impacts on assets, gender norms, and time use. IFPRI Discussion Paper 01311. Washington, D.C., USA: IFPRI.

This study examines how shifting intra-household gender dynamics impacts ownership of assets and gender norms regarding asset ownership and decision-making as well as the opportunity costs associated with participation in value chain projects within the context of the Strengthening the Dairy Value Chain Project (SDVCP) in Bangladesh. The SDVCP was founded to contribute positively to household assets, with project participants exhibiting a higher value of livestock, agricultural and non-agricultural assets relative to non-participants. In addition, asset values increased for both men and women, with women building up more assets through joint ownership. While program participation did not significantly affect dairy-related decision-making, because men primarily made decisions about milk for sale and women about milk for home consumption, there were modest changes more generally within the household. For instance, women increased their participation in household decision-making and their control over household expenses. In addition, women from participating households had greater access to livestock health workers and to milk collection locations both within and outside of the community. Participation in the SDVCP activities increased time spent on dairy activities within the household for women and outside of the household for men. This may have the unintended effect of reducing women's time for household activities and increasing girls' household chores.

Galiè, A., Mulema, A., Mora Benard, M., Onzere, S. and Colverson, K. 2015. Exploring gender perceptions of resource ownership and their implications for food security among rural livestock owners in Tanzania, Ethiopia, and Nicaragua. *Agriculture & Food Security*, 4(1).

This study examines the variability of local concepts of ownership in Tanzania, Ethiopia and Nicaragua with the aim of better understanding men's and women's ideas of ownership within livestock value chains and their implications for food security. The study examines the smallholder dairy value chain in Tanzania, the small ruminant value chain in Ethiopia and the dual-purpose cattle value chain in Nicaragua. Data was collected through 138 interviews across the study sites. Variations in the understanding of ownership were found across the regions, yet in general and across all sites, resource arrangements were found to favor men. The article aims to demonstrate the

importance of unpacking local meanings of ownership and grasping their degree of variability and flexibility before the implementation of initiatives that aim to pursue a more equitable distribution of resources between the genders.

Mupawaenda, A., Chawatama, S. and Muvavarirwa, P. 2008. Gender issues in livestock production: a case study of Zimbabwe. *Tropical Animal Health and Production*, 41(7): 1017-1021.

This journal article assesses the gender roles in smallholder livestock production using data from the Chikomba, Kadoma and Matobo districts of Zimbabwe. Specifically, it examines the effects of gender norms on men's and women's control of resources, decision-making, and division of labor. Men were found to have a higher degree of ownership of livestock and control over livestock production due to traditional customs and historical reasons. However, the legal and social environment of Zimbabwe is changing, and women's ownership of livestock is now allowed both legally and socially. Women were more likely to have ownership over poultry, and poultry projects were found to be more likely to benefit women than men. The study concluded that it is important to take gender into consideration in livestock development projects, and more quantitative data on gender relations and norms are needed to effectively mainstream gender into livestock development programs.

Njuki, J., Kaaria, S., Chamunorwa, A. and Chiuri, W. 2011. Linking smallholder farmers to markets, gender and intra-household dynamics: Does the choice of commodity matter? *European Journal of Development Research* 23(3): 426-443.

Using household survey data from Malawi and Uganda, this article examines the differences in the share of income received by men and women smallholder farmers as well as in intra-household expenditures. Women were found to receive higher shares of income from food crops, such as beans and groundnuts, compared to men receiving a higher share from cash crops, such as soybeans. Women were more likely to control a higher share of the income from smaller livestock such as poultry (53%), whereas men controlled 87% of the income generated by pig holding. The study found that, as the profitability of an activity increased, men were more likely to control the income from that activity. Women were also found to be more likely to spend their share of income on food as compared to men, while men spent a greater portion of their income on assets, including livestock, household furniture, mobile phones and home improvement, as compared to women. The detection of pervasive intra-household inequalities runs against the general assumption that those living within the same household have the same standard of living. These key differences between men and women should be carefully considered in study design to ensure the construction of proper indicators for detecting changes.

Micere Njuki, J., Wyatt, A., Baltenweck, I., Yount, K., Null, C., Ramakrishnan, U., Webb Girard, A. and Sreenath, S. 2016. An exploratory study of dairying intensification, women's decision making, and time use and implications for child nutrition in Kenya. *European Journal of Development Research*, 28(4): 722-740.

This article examines women's time use and decision-making patterns related to dairy income and consumption as associated with the degree of intensification of dairy production. Surveys were conducted with 92 randomly selected households at three sites in the Rift Valley Province of Kenya. Additionally, focus groups were conducted with male and female farmers, as well as with women farmers with a child under five years of age. Based on the results of the surveys, participants were divided into three groups with different intensities of dairy production: low (zero production, those with no milking cows at the time of survey), medium (up to 6 liters per day), and high (more than 6 liters per day). Children in high intensity households were found to consume more milk, and this result was statistically significant. In particular, children 12-23 months of age consumed twice as much cow's milk as compared to those from low intensity households. This case study shows that increased household milk production does not necessarily lead to compromises in household consumption, as sometimes suggested. However, it was noted that women in medium and high intensity households, due to their more time-consuming livestock activities, are more likely to leave their children in the care of alternative caretakers who may provide substandard childcare.

Hertkorn, M.L., Roba, H. and Kaufmann, B. 2015. Caring for livestock: Borana women's perceptions of their changing role in livestock management in Southern Ethiopia. *Nomadic Peoples*, 19(1): 30-52.

This study sheds light on the influence of gender roles on livestock management and on recent changes in the division of labor in Borana pastoral production systems in the Oromia Region of Ethiopia. Interviews were conducted with women between the ages of 30 to 45 and 70 to 80 in the zones of Malbe, Golbo and Dirre, including 82 semi-structured interviews and 30 live-story narratives. In the Borana family-based production system, women are in charge of milking, milk processing, sewing and smoking of milk containers, milk storage and sale, while men are in charge of fencing the livestock, selling livestock, slaughtering and working at satellite camps. Since the introduction of the government's communal labor program, households have experienced labor shortages in three key tasks: herding, watering and fodder collection. Additionally, women have been negatively affected by increasing droughts, which heighten the physical burden of women's tasks, such as fetching water and fodder collection. In order to cope with labor deficits and the burden of work, some tasks are carried out jointly, with men helping women more than previously. The labor cooperation between women and men shows the flexibility of the gendered division of labor in this community. Other multi-level changes affecting the Borana pastoral system are demographic growth, expansion of crop cultivation in rangeland and increased integration into markets.

Galiè, A. and Kantor, P. 2016. From gender analysis to transforming gender norms: Using empowerment pathways to enhance gender equity and food security in Tanzania. In: Njuki, J., Parkins, J. and Kaler, A. (eds), *Transforming Gender and Food Security in the Global South*. London, UK: Routledge.

This chapter evaluates the effects of a dairy goat and root crop production integration program (CGP) on the food, nutrition and income security of smallholder farmers in Tanzania, by focusing the analysis on 112 poor, women-headed households in agro-pastoral communities in Dodoma and Morogoro. The program's projected outcomes were to increase women's participation in value chains and equitable social relationships between men and women. Data for the evaluation was collected through 50 in-depth interviews with livestock keepers focusing on knowledge, attitude and practices and 34 semi-structured interviews centered on gender relations. In the studied communities, dairy goats are predominantly taken care of by women and children; however, most decision-making on goat management and root crop production in the communities is the purview of men. Women's ability to access milk was found to afford them greater independence within the household and reduces their needs for loans. A gender transformative approach is proposed to link up individual empowerment and self-determination with societal change pursued through television and radio station information distribution. The report concludes that in order to see tangible change for gender equity within these communities in Tanzania, there must be action at both the individual level and the societal level.

van den Bold, M., Dillon, A., Olney, D., Ouedraogo, M., Pedehombga, A. and Quisumbing, A. 2015. Can integrated agriculture-nutrition programmes change gender norms on land and asset ownership? Evidence from Burkina Faso. *The Journal of Development Studies*, 51(9): 1155-1174.

This article analyzed the impact of an integrated agriculture-nutrition program in the Gourma Province in eastern Burkina Faso to evaluate whether these types of integrated programs change gender norms and asset ownership concepts. This province was selected because it was an area in which Helen Keller International had prior experience implementing nutrition and health programs. Within this province, 55 villages were selected and assigned to the experimental and control groups. The experimental condition included a small transfer of agriculture and animal assets directly to women, training in agricultural and animal-raising practices, as well as training in optimal health and nutrition practices delivered through a behavior change communication strategy. These activities were targeted toward women to improve maternal and child health and nutrition outcomes. Although men were still found to own and control most assets in both experimental and control villages, women in the treatment areas were found to have greater decision-making power and control over home gardens and their own produce than in the control

areas, and these differences were statistically significant. Additionally, the attitudes towards women owning agricultural assets became more favorable in the treatment areas, as manifested by qualitative interviews. Overall, these results point to the potential of nutrition-integrated agricultural programs targeting smallholder households to positively affect gender norms and increase women's decision-making power.

Quisumbing, A.R. and Roy, S. 2014. Assets, decision-making and time use: The gendered impacts of a dairy value-chain project in rural Bangladesh.

This paper assesses how participation in a dairy value chain project in rural northwest Bangladesh affected the distribution of assets (dairy cows and others), decision-making regarding dairy activities, mobility, and time allocation across household members. The project was implemented by CARE-Bangladesh in nine districts and aimed to improve, through a gender focus, both producer yields, via the creation of dairy farmer groups, and access to markets, via better transport facilities and linkages to service providers. The study applied regression analysis to longitudinal data from two rounds of household surveys conducted in 2008, prior to the start of the project, and in 2012, during the fourth year. Project participation was not found to significantly change ownership of livestock, though it slightly increased joint ownership by husbands and wives of other productive assets. Men continued to dominate decision-making regarding household expenditures and use of milk, although women had more voice in decisions about cattle feed and inputs and enjoyed greater spatial mobility. Project participation also imposed labor burdens on all household members, with women spending proportionately more time caring for livestock and devoting less time feeding and looking after young children. Overall, the study suggests that a dairy value chain project can have impacts in a range of dimensions beyond household production and income, such as improved women's decision-making – but also potentially adverse impacts on child nutrition and health, which should be taken into account in future project designs.

McPeak, J. and Doss, C. 2006. Are household production decisions cooperative? Evidence on pastoral migration and milk sales from Northern Kenya. *American Journal of Agricultural Economics*, 88(3): 525-541.

This article focuses on the various decision-making strategies – joint cooperative, individual, traditional, and contested solutions – for the intra-household allocation of time and labor on various income generating activities. Although household decisions are generally assumed to be cooperative, the authors test the intra-household decision making strategies of pastoralists in northern Kenya. The results of the study show that a contested model of household decision-making dominates in this setting, especially when it comes to decisions about milk. The researchers found that men use migration decisions as means to limit women's ability to market milk. Despite the potential benefits to households from increased commercialization of milk, men were opposed to the normative changes accompanying the transition of milk from the household domain to the market.

Boros, R. and McLeod, A. 2015. Empowering women in Afghanistan: Reducing gender gaps through integrated dairy scheme. Rome, Italy: FAO.

The report reviews four Integrated Dairy Schemes (IDS) in Afghanistan with regard to gender, recommending ways to consolidate gender equitable processes and outcomes. The study schemes were located in Kabul, Balkh, Kunduz and Herat, and a survey was conducted with project beneficiaries. The IDS were developed by FAO to improve food security in Afghanistan through support of the dairy sector. Although not designed specifically with a gender strategy, the approach ensured women's empowerment using FAO guidelines, with women milk producers able to retain, manage, and spend almost 90 percent of proceeds from milk sales. Unions also provided women with opportunities to sell their cow milk at the village level, though these groups were run almost exclusively by men. Among 1,540 women members, making up 28 percent of union membership, only six women participated in the governing body, and only in one IDS studied, Herat. Farmers participating in the dairy schemes produced between 5 and 20 liters of milk per day compared to the average of 3.2 produced by small-scale farmers in Afghanistan. IDS training represented a crucial component of the program for women's empowerment, increasing women's

bargaining power within the household and community. Some women even became involved in politics at the village and district levels, potentially contributing in the long-term to more balanced gender roles and dynamics. Recommendations to improve the IDS model included increasing women's participation across the value chain and increased participation in unions.

Section 3.1: Gender and Animal-Source Food Production and Marketing

Zahra, A., Mulema, A., Colverson, K., Odongo, D. and Rischkowsky, B. 2014. A review of Ethiopia small ruminant value chains from a gender perspective. Nairobi: ILRI and Addis Ababa: ICARDA.

This study reviews reports from small ruminant value chain studies conducted in eight sites in Ethiopia. The reports were assessed from a gender perspective, focusing on women's involvement along the value chain to identify opportunities to improve women's participation. Men's and women's roles in small ruminant value chains varied across the study sites along with social, cultural and economic factors. However, a general pattern emerged, whereby women were responsible for small ruminant management tasks, while herding was done by men and boys. In most areas, small ruminants were owned jointly; however, in situations where these animals were a significant source of household income, ownership and control often shifted to men. The review concluded that women are constrained in small ruminant value chains by their limited decision-making power and market participation. Thus, increasing women's access to resources, services and control of the benefits would enhance the income women could derive from small ruminants, which could then improve household nutrition and access to education and health services. The identified gaps provided the basis for a final table of recommendations for development organizations and researchers.

Boogaard, B., Waithanji, E., Poole, E., & Cadilhon, J. 2015. Smallholder goat production and marketing: A gendered baseline study from Inhassoro District Mozambique. *NJAS - Wageningen Journal of Life Sciences*, 74-75, 51-63.

This study offers insights on how to implement gendered quantitative analyses in the context of the livelihoods framework by analyzing gender roles and processes in smallholder goat production and marketing in Inhassoro District, Mozambique. The paper draws on the analysis of sex-disaggregated baseline data from a research for development project, *imGoats*, which was implemented by CARE International to support the commercialization of goat production among smallholders. Gender differences were found not only in livelihood strategies, but also in how concepts of joint ownership were interpreted. Although the majority of respondents in male-headed households reported joint ownership of land and goats, joint control was not egalitarian and women derived fewer benefits from joint ownership. For instance, fewer married women reported being involved in goat sales and/or the consumption of goat meat within the household compared to men. Only women in female-headed households reported owning goats on their own. The circumstance that women were not actively involved in goat marketing casts doubts on the project's attempts to develop market linkages—at least until complementary interventions are implemented to reduce women's barriers to markets.

Dossa, L., Sangaré, M., Buerkert, A., & Schlecht, E. 2015. Production objectives and breeding practices of urban goat and sheep keepers in West Africa: Regional analysis and implications for the development of supportive breeding programs. *Springerplus*, 4(1).

This article on urban goat and sheep keepers in West Africa offers an analysis of the production objectives, trait preferences and breeding practices within the West African cities of Kano (Nigeria), Bobo Dioulasso (Burkina Faso) and Sikasso (Mali). Semi-structured questionnaires were used to collect information from 301 sheep farmers and 306 goat farmers. In contrast to the adjacent rural production systems where women dominate, in these urban study areas men are the main owners of goats and sheep. The study reveals the multi-functionality of goats and sheep in the three urban areas and the important cash income that their sale affords to their keepers. The primacy attributed

by the respondents to the animals' financial functions suggests that the urban small ruminant systems have shifted away from a subsistence mode, often linked to women, to a more commercially viable enterprise, generally directed by men. Milking was not found to be a production objective for urban small ruminants, which can be explained by the bias against milk consumption in the study areas. Out of the three cities observed, Kano appeared to offer the highest potential for improved management practices due to the significantly greater proportion of younger small ruminant owners who are young (average age of 36 years), which, the authors suggest, could make them more receptive to innovations and new technologies.

Wabekbon Development Consultants PLC. 2009. Women's milk and small ruminant marketing in Mandera Triangles (Kenya, Ethiopia and Somalia). Ababa Addis: CARE Ethiopia.

This study examines the role of women and their control over the production and marketing of small ruminants and milk products in the Mandera Triangle (Ethiopia, Kenya and Somalia). In these pastoral societies, women process the animal products but are not involved in the tasks of herding or marketing of the cattle or camels. Additionally, markets are traditionally limited, because milk products are not generally sold for monetary gain, but they are often given as a gesture of goodwill or in exchange for labor. While pastoralist women have exclusive rights to sell milk and milk products, they do not have the incentive to sell at more profitable but distant markets due to low marketable volumes and high transportation and labor costs. Hence, milk marketing systems, albeit existent, are still in the early stages of development. Livestock marketing cooperatives have formed to assist pastoral women in accessing better markets for their dairy and small ruminant activities. Additionally, improved access to education and information as well as new business relationships have helped women earn more income from milk marketing.

Gebeyew, K., Amakelew, S., Eshetu, M., and Animut, G. 2016. Production, processing and handling of cow milk in Dawa Chefa District, Amhara Region, Ethiopia. *Journal of Veterinary Science and Technology* 7:286. doi:10.4172/2157-7579.1000286.

This study provides an overview of dairy production, processing and handling of cow milk in the Dawa Chefa District in the Amhara region. Data was collected through semi-structured surveys of 90 households selected from five kebeles. Women were found to be primarily responsible for the tasks of milk processing, cleaning of the barn and marketing of the milk, and almost solely responsible for manual milking. In the mixed crop-livestock system prevailing in the study area, cows are not specialized in milk production but are instead reared to produce oxen for draught power. Milk production in this system is further limited by feed availability, capital and disease control. Nonetheless, milk produced in mixed crop-livestock production systems accounts for 98% of total milk production in the district, with the remaining 2% derived from urban and peri-urban production systems.

Kebede, A.B. Bahir Dar University, Bahir Dar (Ethiopia). 2009. Characterization of milk production systems, marketing and on-farm evaluation of the effect of feed supplementation on milk yield and milk composition of cows at Bure District, Ethiopia. MSc thesis (Animal Production). 112p. Bahir Dar (Ethiopia): Bahir Dar University.

This study characterized the milk production and marketing systems in the Bure District of the Amhara region in Ethiopia, as well as evaluated the effect of feed supplementation on milk yield and milk composition. Data for the characterization of the production systems was collected through 181 interviews with milk-producing households from three different typologies: rural smallholder, peri-urban and urban. In the study area, most livestock income is generated from dairy activities (86.6%), followed by small ruminant production (11.6%) and poultry production (2.3%). Hired labor was found to be mostly responsible for the herding and feeding of the cows across all three production systems. In terms of gender differences, the majority of milking (52.6%), sale of animals and breeding decisions (95.4%) was done by men, while women were mainly responsible for milk processing (88.8%) and marketing (71.9%). In addition, women were primarily responsible for determining the quality of the curd during processing. The majority of the respondents (61.7%) reported that men contribute the most to milk production,

while slightly more than a quarter thought that men and women made equal contributions, with the remaining 12.8% reporting that women make the largest contribution.

Sintayehu Y., Fekadu B., Azage T. and Berhanu G. 2008. Dairy production, processing and marketing systems of Shashemene–Dilla area, South Ethiopia. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 9. ILRI (International Livestock Research Institute), Nairobi, Kenya. 62 pp.

To study dairy production, processing and marketing systems in the Shashemene-Dilla area of Southern Ethiopia, the authors selected 240 dairy producers in the four main towns in the area and conducted 55 interviews with producers in either the mixed crop-livestock or urban systems. Family labor, primarily from women, was identified as the main labor source for dairy related tasks. Three-quarters of the respondents reported that the tasks of milking, milk handling, processing and marketing were performed by women. When examining differences in women's levels of decision-making in the two production systems, the researchers noted that a higher percentage of women in the urban systems reported managing the cows (26.3%) compared to women in the mixed crop-livestock system (7.7%). There were also differences between production systems regarding men's involvement in dairy activities. For example, in the mixed-crop livestock system a higher percentage of men were involved in purchasing (89.8%) and selling of cows (87.4%) compared to the urban system, where these percentages were 71.2% and 66.4%, respectively.

Dossa, L., Rischkowsky, B., Birner, R., & Wollny, C. 2008. Socio-economic determinants of keeping goats and sheep by rural people in southern Benin. *Agriculture and Human Values*, 25(4), 581-592.

This study on small ruminant production in the Mono, Kouffo and Atlantique districts in southern Benin offers insight into the socioeconomic determinants affecting the decision by individual household members to keep a particular species of small ruminants, such as goats or sheep. Out of a total of 358 individuals interviewed from 228 small-ruminant-owning households in twelve randomly selected villages, 222 individuals owned at least one goat or sheep, while 136 were non-owners. Of these 222 individuals, 91% owned goats and 35% owned sheep; 71% of goat owners were women whereas 64% of sheep owners were male. Within the individuals who owned small ruminants, younger women were more likely to own small ruminants than men and older women. The results from logistic regressions show that the differences in the ownership of different types of ruminants depend on risk and return considerations, as well as religious and ethnic factors. Overall, while sheep are perceived to be more lucrative, they can run away more easily. Goat ownership is more widespread, since it is affected by fewer religious or cultural restrictions. For example, in one of the study areas, the presence of sheep in a household was thought to adversely affect a women's fertility.

Zekeri, M., Makarfi, A. and Ahmed, A. 2015. Economic analysis of small holder sheep production among women in Gwarzo, Tofa and Gabasawa Local Government Areas of Kano State, Nigeria. *International Journal of Agriculture Innovations and Research*, 3(5).

This study analyzes women's small-scale production of sheep in Kano State, Nigeria. Specifically, the researchers examined the socio-economic characteristics of sheep producers, analyzed the profitability of their activities, and identified the constraints. Data were collected from 130 women sheep keepers using structured questionnaires. Sheep production was found to be profitable despite the most common constraint of lack of capital. Other constraints identified by participants included disease, lack of feed, and low access to information and technology. Based on the responses, the researchers recommended greater access to information and education through women-producer cooperatives as well as the creation of linkages with financial institutions to increase women's access to capital.

Legesse, G., Siegmund-Schultze, M., Abebe, G., & Valle Zárate, A. 2013. Determinants of the adoption of small ruminant related technologies in the highlands of Ethiopia. *Tropical and Subtropical Agroecosystems*, 16, 13-23.

This study examines the factors affecting the adoption of small ruminant related technologies at two sites, Adilo and Kofele, in the southern Ethiopian highlands. Semi-structured questionnaires were used to collect data from 155 randomly selected small ruminant keepers. The researchers found that in both sites land holding and numbers of livestock were significantly, positively correlated with increased adoption of new practices, such as small ruminant fattening and management of a household veterinary kit. In the Adilo site, which is more densely populated, women farmers, young farmers and young-household heads were more likely to adopt and use commercial concentrates. In the Kofele site, which is relatively resource rich, treating small ruminants with the veterinary kit increased with the number of livestock, but only up to a point. The study concludes that options for adoption are affected by location and production systems.

Lok Nath Paudel, U ter Meulen, C Wollny, H Dahal, & M Gauly. 2009. Gender aspects in livestock farming: pertinent issues for sustainable livestock development in Nepal. *Livestock Research for Rural Development*, 21 (3).

This study on sustainable livestock development in Nepal examines gender-disaggregated data on gender roles, participation and opportunities in livestock farming in three districts in the Western Development Region of Nepal. Data were collected through structured questionnaires from 107 randomly selected livestock farmers and 30 key-informant interviews. Within daily livestock activities, women were found to be predominately responsible for some of the most difficult tasks, such as forage collection, cleaning and feeding the animals, while men undertake cash-earning activities like the milking of animals and selling of milk. Although women carry out 92% of the forage collection, only 36% of women participated in improved forage farming groups, which, the authors suggest, might be one reason for low productivity in the areas. Participation in overall livestock organizations is skewed towards men: women make up 25% of members on average and only 5% of those in executive positions. Women's participation in training programs and seminars and demonstration tours launched by the Department of Livestock Services varied from 8% to 45% compared to men's 55% to 92%—even when the topic of the training appeared to be highly relevant to women's roles. Lack of gender sensitivity of trainers, teaching materials and time and venue selection criteria represent some of the obstacles preventing extension activities from attaining a gender equitable participation and impact.

Devkota, D., Devkota N.R. and Joshi, N.P. 2015. Gender role and buffalo rearing decisions in Nepal. *Nepalese Journal of Agricultural Sciences*, 13: 176-193.

This study on buffalo production in Nepal examines gender roles and decision-making among buffalo producing farmers. Baseline data were collected from 98 households in the districts of Chitwan, Gorkha and Tanahun in 2012, and three focus group discussions of men and women together were carried out within the studied areas. Additionally, 57 households were surveyed in Chitwan in 2014. In all three sites, women dominate in the grazing and cleaning activities while men mainly worked on the construction of sheds and sold milk. Despite male-dominance over the selling of milk, women were found to decide how much milk to keep for household consumption and how much for sale. The study identifies a shift in gender decision norms over time in favor of joint efforts between men and women, possibly due to social mobilization efforts in rural communities. There are also spatial differences in gender roles; for instance, men in Gorkha were exclusively involved in securing veterinarian care of animals, while in Chitwan women were in charge of this responsibility. Due to the variations in the gender division of labor among the studied areas, the study points at the need to take into account contextual gender roles before the planning and implementation of development projects for the promotion of buffalo production.

Yisehak, K. 2008. Gender responsibility in smallholder mixed crop–livestock production systems of Jimma zone, South West Ethiopia. *Livestock Research for Rural Development*. Volume 20, Article #11.

This study examined the gender roles in mixed crop–livestock production systems in southwestern Ethiopia through the analysis of data from semi-structured interviews with 119 livestock-keeping households in the Jimma Zone. Distinct gender patterns of labor division for livestock emerged, but men remained the main decision-makers for livestock, even in cases where women were the legal owners. Both men and women took part in the harvesting and transportation of feed, chaffing of fodder, feeding of animals, cleaning of sheds and sale of milk, cheese and butter. However, women generally contributed more labor than men and children in the feeding, managing young or sick animals, cleaning of barns, dairy production (i.e. milking, butter and cheese making), transportation of farm manure, and sale of milk and its products. The division of tasks within the household also depends on factors such as age or marital status. For example, the wife of the household head was reported to do simpler tasks such as separation of milk, processing and sale of butter and cheese, while daughters-in-law did the more difficult tasks of caring for small ruminants, milking, watering stock, feeding and tethering of animals. The study also noted that, due to time conflict with reproductive tasks, in some cases women cut back on time-consuming or labor intensive activities, even when they had received training in these improved management strategies. Several areas where greater gender integration needs to occur were identified; for example, extension programs and educational materials were mainly found to be designed by, and oriented towards, men, because men almost exclusively deal with cooperatives and veterinary services. Even though women provide labor for livestock production, they may not control the process of decision-making, particularly over the disposal of animals and animal products.

Abebe, W., & Galmesse, U. 2011. Gender role in peri urban dairy production system of Ambo town, Ethiopia. *Journal of Agricultural Extension And Rural Development*, 3(13), 224-228.

This study examined the gender roles in dairy production systems in Ambo town, West Shewa Ethiopia through interviews and observations of 80 dairy-keeping households. The majority of respondents reported that women and girls were mainly responsible for barn cleaning (90%), milk selling (90%), milk processing (95%), and animal feeding (75%). Men and boys were considered primarily responsible for shed construction (75%), feed storage (86%), and animal health treatments (63%). These findings suggest that it is important to consider the typical roles of both genders in dairy production activities when designing projects with the aim of improving smallholder dairy production in Ambo town Ethiopia.

Section 3.2: Gender and Livestock Disease Management

Wieland B., Kinati W. and Mulema A. 2016. “Sheep are like fast-growing cabbage”: Gender dimensions of small ruminant health in Ethiopia. *Gender-integrated health, genetics and feed and forages research*. International Livestock Research Institute (ILRI), 2 International Center for Agricultural Research in the Dry Areas (ICARDA).

This study on small ruminant health in Ethiopia examines how gender relations in the farming household affect the disease incidence of goat and sheep in the mixed crop–livestock and in the agropastoral production systems. A total of 92 focus groups covering 23 villages from the regions of Oromia, Amhara, Tigray and the Southern Nations, Nationalities and Peoples Region were conducted with adult women, adult men, young women and young men, separately and jointly. Overall, there was general consensus that small-ruminant diseases affected women more than men. Men and women saw each other's involvement in managing animal health differently, due to their distinct responsibilities in terms of livestock production and household income. Although men are responsible for calling the vet and paying for treatment, women spend more time in the barns cleaning, feeding and looking after young animals and those that are unfit to go out to graze, thus they are more likely to notice changes in health. For example, some women mentioned they would notice respiratory diseases due to changes in the animal's breath. Many types

of diseases may go untreated because women are not taken seriously in the managing of animal health. Women's aptitude to recognize certain diseases due to their different tasks within livestock production should position them to serve as community animal health workers for small ruminants. Initiatives to improve animal health and reduce the risk of zoonotic diseases should also include sensitizing men on gender issues and allowing women to play a bigger role, for instance, in calling a veterinarian.

Wieland B., Alemu B., Desta H., Kinati W., and Mulema A.A. 2016. Participatory epidemiology and gender analysis to address small ruminant disease constraints in livestock and fish and Africa RISING project sites in Ethiopia. ILRI, Nairobi, Kenya.

This participatory study gives insights into the main livestock disease constraints in Ethiopia, how they affect different household members, and the ability of men and women to identify these diseases. Semi-structured interviews, and focus group discussions with men and women-only groups, using simple scoring and proportional piling participatory methods, were carried out in 14 woredas through the Amhara, Oromia, Tigray and Southern Nations, Nationalities Peoples' Regions (target areas for the Africa RISING project). Among livestock species, small ruminants earned the highest score in terms of importance for livelihoods, especially for women and young men, because of their fast reproduction rates, low feed requirements, and ability to provide an immediate source of income through meat sale. Cattle was identified as the most important species by men, but ranked second among women and youth. It was thus generally agreed that diseases of small ruminants affect women the most, because they are in charge of selling milk and feeding the children. Moreover, due to gendered tasks, women were more exposed to zoonotic diseases than other family members in the small ruminant production system. In terms of the importance of different disease categories, women ranked respiratory diseases slightly higher than men, due to their higher chance to detect suffocation in the barn during their barn cleaning activities, while men scored neurological diseases higher than women. Respiratory diseases, which are caused by suffocation and improper barn sanitation, could be better addressed by targeting not only men but also women in advisory and extension services. Farmers were found to have generally good knowledge about the seasonality of diseases and disease transmission.

Section 3.3: Gender and Livestock Feed

Wamatu, J., Tucho, T.A., Tadesse, E., Abate, D., Debele, G., Semman, U., Kinati, W., Mulema, A.A. and Duncan, A.J. 2015. A gender perspective into the potential to enhance livestock productivity through improved feeding in Haleku, Adami Tullu District, East Shewa, Ethiopia. Addis Ababa: ICARDA.

This study examined the perceptions of men and women smallholder farmers in regard to major livestock production challenges, as well as the opportunities and potential interventions for improving livestock production and productivity, with special emphasis on livestock feed and related aspects. The Feed Assessment Tool was used as a systematic and rapid methodology to collect data on local feed resource availability and use in the Adami Tulu district in East Shewa, Ethiopia. Focus group discussions were conducted separately with a total of 12 men and 10 women participants, followed by 18 interviews with individual farmers (9 men and 9 women). The study found that men and women have similar perceptions regarding the relative contribution of grazing, crop residues and naturally occurring and collected fodder in animal nutrition. Regarding challenges in livestock production, men mentioned lack of bulls and feed shortage as critical, while women mentioned feed shortage and shortage of water as the pressing problems. To address the feed shortage issue, men suggested that the government and researchers should make forage seeds available, while women thought that the palatability of crop residues should be improved and that forage should be planted on the borders of irrigated farms.

Gebremedhin, B.; Hirpa, A.; Berhe, K. 2009. Feed marketing in Ethiopia: Results of rapid market appraisal. IPMS Working Paper 15. ILRI, Addis Ababa, Ethiopia.

This article assesses the feed marketing in Ethiopia using a rapid market appraisal methodology and data from group and key informant interviews in 24 towns in Tigray, Amhara, Oromia and SNNP Region, in addition to secondary sources. Within the study areas, the most marketable roughage feeds were hay and crop residues like teff, barley, wheat, and millet straws and sorghum stover. Teff straw was the most widely marketed, and generally sold by women, as in Alaba, but also by young men, as in the town of Woreta. In towns where barley and wheat straw were very important, like in Tigray, marketing was exclusively done by men, but in the town of Shashemene women were involved in the retail of wheat straw. Gender involvement in the marketing of sorghum stover also varied across the studied areas. For example, in Mieso only women were involved in sorghum stover retail sale, but in Metema, men were in charge of its sale. Both women and men were involved in hay sale. Lastly, the authors note how the lack of designated feed market places forced sellers to roam around town to sell their feed, contributing to the inefficiency of the system as whole.

Aregu L., Darnhofer I., Tegegne A., Hoekstra D. and Wurzinger M., 2016. The impact of gender-blindness on social-ecological resilience: The case of a communal pasture in the highlands of Ethiopia. *Ambio* 45 (3): 287-296.

This case study looks at the impact of gender-blindness on livestock management in the communal pasture in Kuwalla village, Amhara region, Ethiopia. Data was collected in 2012 and 2013 through a total of 11 focus group discussions that addressed gender relations in communal pasture management. The study found that women were excluded from the informal institutions that defined the access and use rules, which guided the management of the communal pasture. Small ruminants, which are a key livelihood for poor households with no cattle and for the most part (63%) headed by women, were not allowed to graze on the pasture. The exclusion of women from negotiation platforms meant that women's preferences and needs remained unheard. Women wanted more equal balance of grazing opportunities between oxen and lactating cows, and access to feed for sheep. However, oxen were systematically privileged, being in men's domain, while dairy cows received less protein-rich feed, thus reducing milk yield. Similarly, sidelining women's knowledge of plant species reduced the adaptiveness of the village's management rules. This was particularly observed during the ranking of plant species found on the pasture: women ranked protein-rich plants that increase milk production higher than men, who ranked these as less important. Overall, the case study notes that the exclusion of women's knowledge in informal institutions weakens social learning and leads to future adaptation options being overlooked.

Section 3.4: Gender and Animal-Source Food Safety

Haile T. and Mulema A. 2014. Gender perspectives on food safety and nutrition in informal small ruminant value chains in Ethiopia. Nairobi, Kenya: ILRI.

This report examines the gender implications of food safety, nutrition and market dynamics in small ruminant value chains by reviewing some of the literature on animal source food consumption (ASF) and, in particular, by assessing from a gender perspective a report published by ILRI in 2013 on 'Safe Food, Fair Food rapid integrated assessment of nutrition and health risks in informal small ruminant value chains in Ethiopia'. The literature provides information on how gender norms and cultural factors affect women's consumption of ASF, with one example being the cultural taboos against women's access to, and consumption of, whole milk in Abergelle, Ethiopia. However, the variation in the perceptions of men and women on such restriction was not addressed, which is instead a crucial issue to be investigated, as it helps to inform gender-sensitive interventions. Similarly, the SFFF report indicates that men were preferentially given high-quality cuts in Amhara and Tigray, but it did not look at the differences in perceptions among men and women. The assessment also found that, while the SFFF report and other literature focused on gender gaps in terms of availability of, and accessibility to, ASF within the home, there

was not sufficient attention to questions of accessibility of ASF through the market and its gender aspects. The latter vary according to household type, family size and situations of market availability of milk and other ASF products.

Section 3.5: Gender and Animal-Source Food Consumption and Nutrition

Rawlins, R., Pimkina, S., Barrett, C., Pedersen, S., & Wydick, B. 2014. Got milk? The impact of Heifer International's livestock donation programs in Rwanda on nutritional outcomes. *Food Policy*, 44, 202-213. doi: 10.1016/j.foodpol.2013.12.003.

This study evaluates the impact of Heifer International's dairy cow and goat donation program in Rwanda. This program identifies applicants who can benefit from a donated animal and accompanying training and other support. The study analyzed data from 406 surveys of households participating in the dairy cow program and 182 surveys of households participating in the meat goat program. Households were selected into the program through requirements such as owning a hectare of land and lacking a dairy cow. The study found that dairy and meat consumption increased among the participating households. In households that received dairy cows, monthly dairy consumption increased on average by 9.34 liters per person. Among households that received a goat, average monthly meat consumption increased by 0.20 kg per person. In addition, weight-for-height and weight-for-age z-scores for children under five years of age improved by 0.4 standard deviations in households that received a goat, and by 0.5 standard deviations among households that received dairy cows. The researchers concluded that livestock ownership increase consumption of animal-source foods and lead to improved nutritional outcomes.

Lenjiso, B., Smits, J., & Ruben, R. 2016. Smallholder milk market participation, dietary diversity and nutritional status among young children in Ethiopia. *Journal of Gender, Agriculture and Food Security*, 1(2), 129-147.

This study examined the effects of smallholder milk market participation on household and intra-household dietary diversity and on the nutritional status of young children in Ethiopia. Using the FAO dietary diversity questionnaire, 164 households were followed for two consecutive days, and all food items consumed by five household members were recorded. Households participating in dairy markets had a higher dietary diversity score than non-market participating households, even though there was not a significant difference between the market and non-market households in the amount of milk consumed daily at the household level. At the individual level, wives, boys, girls and children under five have significantly higher dietary diversity in the market households compared to the non-market households. Men's dietary diversity was high in both household types and did not differ significantly between the two types of households.

Section 3.6: Gender and Livestock Development Programming and Policy

Gebre-medhin, B., Tesema, E., Tegegne, A., Hoekstra, D. and Nicola, S. 2016. Value chain opportunities for women and young people in livestock production in Ethiopia: Lessons learned. LIVES Working Paper 24. Nairobi, Kenya: ILRI.

This paper summarizes the lessons learned from the Improving Productivity and Market Success for Ethiopian Smallholders (IPMS) and the Irrigation Value Chains for Ethiopian Smallholders (LIVES) projects, both of which have key livestock components. It is argued that, since agricultural development projects targeted at male-headed households do not trickle down, addressing directly the challenges, opportunities, and experiences of women and young people is a key first step to making value chains more inclusive and extending benefits to all. Based on the reviews of the challenges to ensure proper participation and representation, the list of recommendations included: conducting a thorough needs assessment for women and youth prior to project planning, creating inclusion goals

based on empirical evidence, incorporating education on the important roles women and youth play within the value chains, using explicit incentives for including women and youth in development projects, and being mindful of women's time constraints when planning project activities. Furthermore, interventions that start women-held businesses should also accommodate young people, as well as become aware of the contextual nature of development by providing skill development that is context-specific for the given agricultural enterprises.

Umuzigambeho, J.F. 2017. Gender assessment of dairy value chains: Evidence from Rwanda. Rome, FAO.

This study of the dairy value chain in Rwanda assesses the opportunities, challenges and roles of women, men, boys and girls at different stages of the value chain. Data was collected from four districts (Kigali, Nyagatare, Nyanza and Gicumbi) through focus group discussions, individual and household interviews and field observations. Although the formal policy, legal and institutional environment of Rwanda was found to be supportive of gender equity, such a goal is far from being fully achieved within the dairy value chain. Men remain primarily involved in all key productive and market activities, including milking, milk transport and decision-making regarding milk sales. Furthermore, men are more likely to participate in dairy cooperatives and hold leadership positions within cooperatives when compared to women. Stronger implementation at the local level of gender equality policies articulated at the national level through the Government of Rwanda's National Dairy Strategy are thus required to increase women's involvement in, and benefits from, the dairy value chain.

Kayigema, V., and Rugege, D. 2014. Women's perceptions of the Girinka (one cow per poor family) programme, poverty alleviation and climate resilience in Rwanda. *Agenda*, 28(3), 53-64.

This study examined the effects of the Girinka program in the Bugesera District to see whether the program contributed to increased climate resilience among women. Primary data was collected through 133 individual interviews with women project beneficiaries and four focus group discussions. One of the main environmental aspects of the program was the use of the donated cows to produce fertilizer and biogas for energy. However, the women in the program reported that the biogesters needed to create the biogas were not sufficiently affordable. There were other, more positive reported effects of the program, such as increased crop production and income, which in turn could contribute to greater climate resilience. The data seem to suggest that the program resulted in expanded land use, improved household nutrition and food security, yet these positive impacts could be further expanded by removing barriers that currently limit resource ownership and economic advancement, especially among women smallholders.

FAO. 2010. Dairy sector study of Nepal. Pulchowk, Nepal.

This study reviews the progress and challenges of the Nepalese dairy sector through an overview of the programs implemented and their effects for women and low caste groups. The Dairy Development Policy, which was approved by the government of Nepal in 2009, guides the development of the dairy sector. A challenge of this policy is to facilitate a more explicit participation of women in the dairy sector, because data from the government shows that women comprise only 28% of milk cooperative members. In order to promote income generation through the dairy sector of Nepal, the authors recommend group-based collateral-free and low-interest loans as well as technical services to be made available to women and disadvantaged groups.

Katothya, G. 2017. Gender assessment of dairy value chains: Evidence from Kenya. Rome, FAO.

This report, which is part of a series of FAO country assessments, presents the results of a study conducted in three sites located in the Kiambu, Nandi, and Bungoma counties of Kenya. The study sought to assess the extent to which gender equality is built into the development of dairy value chains in these areas and to make recommendations accordingly, so as to promote gender-inclusive dairy development programs. The analysis is based upon a literature review of relevant studies and reports, on interviews with key informants at national and

micro levels, and focus groups and household surveys. Kenya's dairy value chains are very short and are categorized into cold or pasteurized (formal) and warm and unpasteurized (informal) supply chains. The informal chain accounts for 70% of the milk markets. While women are highly represented among actors at the production node, at the traders' node, they operate on a smaller scale compared to men and face more severe challenges related to access to technology, capital and mobility. While women's membership in Milk Collection Centers (MCCs) ranges from 51% to 75%, they make up less than one-third of board membership. Based on the analysis of the value chains, key recommendations include: to target producer organizations to transform community and household gender norms, to focus on labor-saving technologies and tools, to strengthen capacity of gender-inclusive value chain enablers and to sell the business merit of gender-inclusive supply chains to milk producers. Additionally, future programs are recommended to target value chain partners beyond the milk producers' node, and to strengthen the farm to "milk collective center" transportation system to make markets more accessible to all.