

# Gender issues in livestock production systems in Ethiopia: A literature review

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## Abstract

Studies on gender and livestock in Ethiopia are scanty and localized in terms of geographic coverage and gender issues covered. Nevertheless, gender issues in livestock that could potentially influence livestock policy and gender equity have been generated. The gender issues addressed in livestock include gender division of labour; access to, ownership and control over of resources; intrahousehold decision-making; livestock institutions; mobility and the risk of HIV and AIDS; time poverty, perception and agency; women's invisibility; gender capacity; and changes in gender relations. The review suggested some possible gendered investable options to improve the existing gender inequalities in livestock with a potential of far reaching consequences of improving the livestock systems in general and as well as research gaps for future research.

**Keywords:** Livestock; Gender Issues; Ethiopia

## Introduction

In the past decades, research and development interventions have been planned and implemented without sufficient knowledge about the gender dynamics that positively or negatively affect research and development outcomes. Mainstream analysis of poverty, and the policies and strategies that are designed to address it, have often failed to consider gender relations and dynamics that affect their implementations. Those research and development interventions that have been directed at livestock keepers are often based on a poor understanding and appreciation of the gender issues in livestock. The same is true for livestock development context in Ethiopia.

Nevertheless, over the past few years, considerable gender analysis has highlighted the significance of gender relations in livestock production. Assessing gender differences and social dynamics is essential to the design of a gender-sensitive interventions the equitably address the priorities of male and female smallholder farmers and other disadvantaged groups. The contemporary discourse on why gender integration is so important in agricultural research and development interventions centres around three sets of argument — the social justice argument, the economic argument, and the business argument. The social justice perspective argue that both men and women intrinsically hold equal rights to benefit from research and development interventions. The economic argument is based on the evidence that there is a direct link between gender equity and poverty reduction which means improved gender equity leads to higher levels of economic growth and social well-being (Weeratunge et al. 2010). Whereas, the business argument suggests that inefficiency in the allocation of human resources and missed opportunities for innovation is potentially as a result of gender inequality (KIT et al. 2012).

Gender relations in Ethiopia are highly unequal. Women's access to productive resources tends to be controlled by their husbands. It is often argued that women's lack of independent status and their exclusion from leadership are embedded in the socio-culture of the society. Moreover, Flintan (2006) argued that '[g]ender inequality is not only a result of culture and tradition, but also a direct result of planned economic and social change, which is founded on wrong assumptions about gender roles'.

In Ethiopia, a considerable number of research reports reveal that, at national level, significant gender differentials exist in agriculture putting women in a disadvantaged position (Yisehak 2008; Leulseged et al. 2015). Asrat and Getnet (2012) reported that although rural women contribute to the process of agricultural production to a greater or lesser extent, they are generally perceived as marginal players. Literature on intra-household gender analysis with regard to livestock production in Ethiopia is scarcely available. Gender disaggregated data on work sharing, access to resources and benefits in livestock are scanty and what is available is based on headship (Yisehak 2008; Njuki and Sanginga 2013). Existing literature reveals that both men and women farmers in Ethiopia are actively involved in livestock production (Belete 2006; Hulela 2010; Ragasa et al. 2012), although, the types of activities and degree of their involvement is not well studied across the different livestock species.

Although, existing studies on gender and livestock in Ethiopia are scanty and localized in terms of geographic coverage, issues covered and species, important information has been generated on gender issues in livestock that could potentially influence livestock policy and gender equity. Thus, synthesizing what is known so far about gender issues in livestock is quite important to make it available for development practitioners and indicate research gaps for further research for researchers.

## Objectives

The objectives of the literature review/analysis were to document information on gender issues in livestock and thereby identify researchable gaps and possible options that the CGIAR Research Program on Livestock (CRP livestock) research team can work on in the country. Moreover, it also aimed to identify potential opportunities and investable options for female and male livestock keepers that can be taken up as entry points for interventions.

## Methods

### *Literature search*

In searching literature for this study, we followed both manual and electronic searches. The search engines used were African Journals Online, PubMed, Google scholar, Web of Science, and CAB Direct. The key strings used in electronic search were 'livestock', 'cattle', 'small ruminants', 'sheep', 'goats', 'chicken', 'equines' and 'Ethiopia'. Words were rearranged to phrase them as close as possible to gender issues in livestock in Ethiopia. Moreover, using their repositories, search for unpublished manuscripts were made at the International Centre for

Agricultural Research in the Dry Areas (ICARDA) and International Livestock Research Institute (ILRI) in Addis Ababa. Only study reports published in year 2000 or later were included from review.

### *Data management*

A data extraction matrix template was prepared. Using the template, information including type of manuscript (published or unpublished), author name, year of publication, online link, target livestock species, regional states, study population, production systems, sample size, study approach and gender issues discussed were extracted from eligible studies. Quantitative information like sample size was also extracted. Although the focus was to synthesize and document what has been known regarding gender issues in livestock in Ethiopia, researchable areas/gaps and potential investable option for women, men and youth in livestock was given due emphasis as well.

## **Results**

The results of the literature analysis shed light on how gender relations drive social dynamics and how these dynamics can influence the choices and management of livestock innovations and regulate the gendered benefits from livestock development initiatives. The gender issues addressed in the literature include gender division of labour; access to, ownership and control over of resources; intra-household decision-making; livestock institutions; mobility and the risk of HIV and AIDS; time poverty, perception and agency; research approaches and women's invisibility; gender capacity; and changes in gender relations.

### *Search results and eligible studies*

The search for published and unpublished manuscripts on gender issues in livestock in Ethiopia resulted in 28 publications of which 18 were peer reviewed articles, 2 working papers, 3 technical papers, 2 monographs and 1 unpublished manuscript. Out of 28 publications reviewed, 14 of them were in Journal Metrics by Scopus. For the journal articles in Scopus, their CiteScore metrics<sup>1</sup> (2016) were searched and are presented in Table 1. CiteScore metrics from Scopus are comprehensive, transparent, current and free metrics for serial titles in Scopus<sup>2</sup>. The last search was conducted on 19 January 2017.

### *Gender issues in livestock in Ethiopia*

#### *Gender division of labour*

The gender division of labour between women and men varies according to the enterprise, the farming system, the technology used, and the wealth status of the household (Aregu et al. 2010; Tangka et al. 2000), culture, religion, stage of economic development, species of predominant animals, and population pressure (Tangka et al. 2000) influenced by sociocultural and socio-economic factors (Mulema et al. 2016). Nevertheless, women are dominant in livestock management and husbandry practices compared to men and other household members across locations in Ethiopia. Aspects of animal husbandry such as care of the young, pregnant and sick animals, processing of milk, sale of dairy products and milk in pastoral systems are mainly undertaken by women (Tangka et al. 2000). Similarly, in mixed crop livestock systems, livestock management practices were mainly carried out by women including feeding, cleaning, watering and milking (Tangka et al. 2000; Ali and Neka 2012; Zahra et al. 2014) done in conjunction with other activities whereas men concentrate on a few roles (Kinati and Mulema 2016) and generally involved in herd management, sale of animals, purchase of feed and sale of milk in intensified systems (Tangka et

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<sup>1</sup> CiteScore: an annual value that measures the citation impact of a title (i.e. journal, book series, conference proceeding and trade journal; including special issues). CiteScore Percentile: indicates the relative standing of a title in its subject field, and also corrects for the different sizes of subject fields. CiteScore Rank: indicates the absolute standing of a title in its field. Percentage Cited: is the proportion of the documents considered in the denominator of the CiteScore calculation that have received at least 1 citation in the numerator.

<sup>2</sup> <https://journalmetrics.scopus.com/>

al. 2000). Herding was mainly done by men and boys (Zahra et al. 2014). Girls assist in herding, especially of small ruminants (Tangka et al. 2000).

More specifically, women generally contribute more labour inputs in areas of feeding and grazing of cows, watering, manage vulnerable animals (calves, small ruminants, and sick, injured and pregnant animals), cleaning of barns, dairy-related activities (milking, butter and cheese making), gathering and making dung cakes, transporting farm manure, egg collection, and sale of egg/poultry, than men and children. However, there are cases where both men and women take part in the harvesting and transportation of feed, chaffing of fodder, feeding of animals, cleaning of sheds and sale of milk, cheese and butter. But, storing, processing and adding value to the livestock products (processing of milk), and their marketing is done solely by women while children of both sexes tether and herd animals (Yisehak 2008; Aregu et al. 2010; Ali and Neka, 2012; Mulugeta and Amsalu 2014; Zahra et al. 2014; Mulema et al. 2016). Adult men, on the other hand, mainly do activities considered culturally rewarding and of high status such as barn preparation/construction, feeding the oxen, herding, taking sick animals to veterinary clinic, assisting during delivery, and marketing of large and small ruminants supported by young boys (Yisehak 2008; Ali and Neka 2012; Mulugeta and Amsalu 2014; Kinati and Mulema 2016). It is apparent that livestock activities are also gendered between male and female youths. Young girls share activities of women whereas young boys share those of men (Kinati and Mulema 2016). In dairy cooperatives, where husbands are registered members, women are responsible for milking cows and milk delivery to the cooperative while men collect money (Hebo 2014). As one goes down the livestock ladder, the entire animal husbandry and management activities apart from the control and management of income fall under the responsibility of women and girls. This is evidenced in the case of chicken production (Dessie et al. 2013; Fentie et al. 2013). Although, women are key players in livestock production, they have greater responsibilities compared to men in chicken production than other livestock species.

**Table 1.** Journals CiteScore metrics for the journals in Scopus, 2016

Journal titles	Number of articles	CiteScore 2015 (Scopus)	Highest cite score percentile	Cite score rank	% cited	SNIP	SJR
<i>Science: Multidisciplinary</i>	1	14.39	99%	1/77	64%	7.688	13.535
<i>Preventive Veterinary Medicine: Food Animals</i>	1	2.20	98%	1/27	75%	1.329	1.185
<i>Ambio: Geography, Planning and Development</i>	1	3.19	96%	23/586	82%	1.194	1.221
<i>Agricultural Systems: Animal Science and Zoology</i>	1	2.90	97%	10/3343	81%	1.370	0.965
<i>Journal of Development Studies: Development</i>	3	1.42	77%	44/190	58%	1.212	0.619
<i>European Journal of Development Research: Geography, Planning and Development</i>	1	1.12	72%	162/586	51%	0.969	0.619
<i>Tropical Animal Health and Production: Animal Science and Zoology</i>	1	1.10	63%	123/343	57%	0.911	0.515
<i>Livestock Research for Rural Development: Animal Science and Zoology</i>	2	0.24	12%	299/343	20%	0.371	0.201
<i>Gender and Development: Gender Studies</i>	1	1.03	75%	30/118	55%	1.163	0.679
<i>Acta Agriculture Scandinavica - Section A: Animal Science: Food Animals</i>	1	0.53	31%	19/27	33%	0.373	0.332
<i>Agriculture and Food Security: Agronomy and Crop Science</i>	1	0.59	36%	182/289	33%	0.553	0.206

*Note:* CiteScore metrics calculated using data from 31 May 2017. SNIP (Source-Normalised Impact per Paper) and SJR (SCImago Journal Rank) calculated using data from 30 April 2017

The evidence documented so far shows that animal management and husbandry practices across the various farming systems in Ethiopia is shared among household (HH) members with various degrees of involvement. However, further disaggregation of these practices with detailed probing in order to understand their local meanings, such as by a recent study in small ruminant-based systems, reveals that there are portfolios of sub-activities where distinct gender roles are more clearly exhibited implying that actually men control the political aspects of animal husbandry while women are responsible for all the technical-related roles in animal production (Kinati et al. 2017; Mulema et al. 2016). Although this appears in line with the established knowledge, the further disaggregation of animal management and husbandry practices from the livestock keepers' point of view was a novel contribution to the literature on gender roles in livestock. Nevertheless, further research is needed to establish this fact.

### ***Access, ownership and control of resources***

#### ***Access***

Generally speaking, regardless of region and farming system in Ethiopia, men and women have access to most of the resources perceived by livestock keepers as productive but the concepts/local meanings of 'access' differ within and across locations in Ethiopia (Kinati and Mulema 2016). Nevertheless, emerging evidence suggest that in rural Ethiopia men and women have different levels of access to resources, services and social networks (Yisehak 2008; Aregu et al. 2010; Ali and Neka 2012; Mulugeta and Amsalu 2014; Zahra et al. 2014; Wondmeneh et al. 2014; Mulema et al. 2016). Generally, women have less access to these resources than their men counterparts and the limited access to resources is particularly severe for female-headed households, who have often lost their access to critical resources together with the loss of a male connection.

These resources are interrelated and their accumulation seems sequential – access to one resources enables one's access to the other and vis-à-vis (Torkelsson and Tassew 2008). Women face more constraints to livestock production such as lack of capital and access to institutional credit (Mulema et al. 2016), lack of informal and formal market information system (Aregu et al. 2010; Zahra et al. 2014) competing use of time (Kinati and Mulema 2016), poor technical skills and lack of improved extension services (Mulema et al. 2016; Zahra et al. 2014). Farmers with more social networks have more access to information and are more likely to adopt livestock technologies than other farmers (Wondmeneh et al. 2014). Men and women conceptualize access to resources differently within and across locations (Kinati and Mulema 2016). Demand for livestock services is gender differentiated and mediated by marital status, age and income shares from livestock (Bageant and Barrett 2017).

#### ***Ownership***

In most cases, ownership and managements of livestock was reported as a joint task (Zahra et al. 2014). However, more complex patterns of ownership exist in Ethiopia which is mediated by gender, marital status, age, wealth, ethnicity (Galiè et al. 2015) and social status (Bageant and Barrett 2017). Different understandings of ownership of livestock exist in rural Ethiopia based on five separate domains such as benefiting from the livestock, how livestock was sourced, decision-making, taking care of the animals and knowledge of resources (Galiè et al. 2015). Both men and women are constrained by similar stocks of capitals, but women are more constrained by lower levels of social, financial, human, natural, political, cultural, and physical capitals (Mulema et al. 2016).

Men own most of the livestock species with high values (such as cattle, camels, small ruminants and apiculture) whereas women own a small proportion of the large animals and often their secondary products such as milk and milk products (Mulema et al. 2016; Kinati and Mulema 2016; Aregu et al. 2010; Torkelsson and Tassew 2008). Women (household heads) own more small animals (such as poultry) than men because they lack income from large animals (Wondmeneh et al. 2014). Most of the studies have collected data on 'livestock ownership' in a very generalized manner. With the diverse meaning attached to the term 'ownership' researchers need to generate a proper understanding of this terminology as it may mask the resources individually or jointly owned by spouses.

#### ***Control over resources and benefits***

In Ethiopia, evidence has shown that control over of productive resources, including livestock particularly large animals, tends to be centralized into the hands of the household head even if owned jointly, be it a man or a woman, irrespective of ownership at or after marriage (Fafchamps and Quisumbing 2002). Even if women may independently own small animals such as sheep and goats, men have more control over income from sale of these

animals (Mulema et al. 2016). The right to sell livestock and the management of the income from livestock sale predominantly falls in the hands of the household head (Fafchamps and Quisumbing 2002).

Traditionally, women control income from sale of milk, cheese and butter and in some cases including small animals such as sheep, goats and chicken (Zahra et al. 2014; Kinati and Mulema 2016). However, when the rearing of these animals and their products becomes a more important source of family income, ownership and control turns to men (Zahra et al. 2014). Good examples include cooperative-based milk marketing in Ethiopia (Hebo 2014; Birhanu et al. 2016) where men take over the control of income from milk which traditionally fall under the domain of women. With commercialization of dairying, women may lose ‘control’ over cash incomes to men due to the institutional requirements for household heads, who are mostly men, to register and collect payments from the delivery of milk to the Dairy Development Enterprises in Ethiopia (Tangka et al. 2002). This could bring about stresses on gender relations and family harmony resulting from the scramble to control income earned from selling of milk and livelihoods (Hebo 2014).

Similarly, in poultry production, men come in when the benefit becomes larger and market access increases (Aklilu et al. 2007a). Contrary to what is reported, some findings showed that intensified dairying increased income in the hands of women (Tangka et al. 2002) but such farming systems are more likely controlled by men (Sambo et al. 2014).

### *Intra-household decision-making*

It appears that studies in Ethiopia on decision-making in livestock production, marketing and management of income from livestock are consistent. Men are largely the decision makers for livestock production (Mulema et al. 2016), husbandry activities associated with better financial income (Mulugeta and Amsalu 2014), sale of livestock (marketing), collection of money (Hebo 2014), and spending the income earned from livestock (Zahra et al. 2014). On the other hand, women are decision makers on small animals they own such as chicken (Tadelle and Ogle 2001; Aklilu et al. 2007a; Mulema et al. 2016). Empirical evidence suggest that what determines power relations within a HH is the amount of assets brought in through inheritance or at marriage and how the marriage was arranged in addition to the age and level of education. Bringing more livestock gives more say in livestock sales but arranged marriages give less power to married women. Similarly, older and better-educated women participate more in decisions and have more say on livestock sales (Fafchamps and Quisumbing 2002). A recent study in Oromia region reveals that over the past five years women are increasingly participating in making decisions related to sale of livestock, although the final decision remains in the hands of the household head. Women tend to have more bargaining power over livestock that they inherit or purchase using their own money (Mulema et al. 2016).

### *Livestock institutions and structures*

Gender-biased social norms result in exclusion of women from the processes of crafting institutions meant to manage communal pasture. Aregu et al. (2006) reported that women are excluded from the informal institution that defines the access and use rules which guide the management of the communal pasture. In the process of crafting the informal institutions, he argued that, women’s knowledge, preferences, and needs are not taken into account as a result of the existing women exclusive gender norms. This negatively affects the resilience of the communal pasture and women’s access to this resource for their animals and for ‘sifet<sup>3</sup>’ making.

The recent move towards commercialization of the dairy sector through the establishment of milk cooperatives in Ethiopia has resulted in unintended consequences for married women. Female spouses lost their traditional control over the milk and its products because the new milk marketing system offers men control over income from the milk marketing as a result of the institutional arrangements in place, which demand registration of head of the household, who are usually men. Thus, the commercialization of the dairy sector has become a source of conflict within households especially between spouses who are members of the milk cooperative leading to sometimes social crises such as divorce indirectly hampering the performance of the milk value chain itself (Hebo 2014).

The establishment of breeding cooperatives for small ruminants is recently gaining momentum in Ethiopia. The intention of the breeding cooperative is threefold: stronger collective actions, effective breed improvement, and better market participation through strengthening farmers’ bargaining power (Kidoido 2014). A recent study has

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<sup>3</sup> ‘Sifet’ is a locally made handcraft usually by poor women from grasses used for various purposes in rural households.

shown that formal participation of married women in the breeding cooperatives is generally minimal or nil. The low/no membership pattern of married women in the breeding cooperatives is due to various factors such as lack of know-how by the cooperative leadership and facilitators with regards to cooperative principles regarding not preventing couples membership; women lack of registration fees, and their lack of animals (sheep/goats) to meet the membership criterion, lack of women's awareness about cooperative principles; communities wrong perception about women's participation in social groups—in men-headed households, if a woman joins a cooperatives, representing the household, it is often perceived as taking over the role of household leadership which is traditionally considered men's; and women's domestic work burden which constrain them from regularly attending meetings among others hindrances (Kinati 2017).

In rural communities, women in poor male- and female-headed households were found practicing sharing of small but live animals such as chicken as start up for asset accumulation. This informal institution is used to access livestock by the livestock-less women and eventually help them to step up the livestock ladder. In northern Tigray, a study by Aklilu et al. (2007b) reported that poultry sharing is a common practice in this part of the country between women in male-headed and women in female-headed households. This specific livestock sharing model has specific inter-household interaction characteristics that may present an interesting entry point for development interventions geared towards helping rural women step out of poverty.

### *Gender capacity*

One of the main bottlenecks to addressing the gender inequalities in livestock is the low level of gender capacities that exist among livestock research and development practitioners in Ethiopia. A gender capacity assessment of livestock and fish value chain sites in the country found that gender capacities of the research and development partners were low (Mulema et al. 2015) and as a result, although, there is high commitment to gender mainstreaming at different levels of government agencies often gender analysis and strategic planning is a challenge to them. Nevertheless, the study found that, individual gender capacities tended to be higher than organizational gender capacities implying that due to relatively low organizational gender capacities, individuals are unlikely to translate their gender capacities into action (ibid).

Similarly, Zahra et al. (2014) suggested that lack of understanding of men and women's roles and relations, limited consideration of special needs of women that arise from assigned gender roles e.g. lack of gender skills are the main constraining factors to addressing gender issues in the small ruminant value chain in Ethiopia. Coppock et al. (2011) argue that human development is the driver and technology provide the tools. However, what is often observed in research and development is a continued focus on technical solutions assuming that technology is the driver for development to progress.

### *Mobility and the risk of HIV and AIDS*

Livestock market engagement is neither gender nor household neutral. It is influenced by the gender and wealth status of the household and thus differs significantly between women and men livestock keepers. Aregu et al. (2010) reported that men from rich and middle-income households travel to more distant markets to secure higher prices due to the fact that this category of households has the advantage of accessing and affording transportation. However, the authors argue that one major downside of this increased mobility and access to cash income for men is the risk of HIV infection through unprotected sex with infected individuals which has the potential to negatively affect the family in particular and the livestock value chains in general. In contrast, poorer farmers and women tend to accept lower prices at the local markets they can reach on foot and their clients are mostly consumers. Men and more wealthy households tend to often sell to private traders and cooperatives (Aklilu et al. 2007a).

### *Time poverty, perception and agency*

Relatively, Ethiopian rural women are not only resource poor as compared to their men counterparts but are also stricken with time poverty (Torkelssona and Tassew 2008; Zahra et al. 2014). They spend a significant portion of their time on livestock-related activities, particularly carried out around the homestead, that are mainly regarded as women's and girls' tasks and culturally less valued (Kinati and Mulema 2016). They work for longer periods than men do (Dessie et al. 2013) and on average work about four hours more than their men counterparts in a day, and this is worse during peak season and when they lose help from their children when schools open (Kinati and Mulema 2016). One of the constraints to women's participation in activities that are important to sheep and goat production (including decision-making) that could enhance their equitable benefit from sheep and goats production

is wrong beliefs and perceptions (gender stereotypes) embedded in the particular socio-culture (Zahra et al. 2014). For example, beliefs such as if women own animals and take control over of the related benefits, men are likely lose their position as head of the household (Kinati, 2017), discourages women from owning and controlling animals.

Women are also constrained with lower levels of human capital (Mulema et al. 2016). They receive less education than men and their level of functional literacy is generally quite low. Torkelssona and Tassew (2008) reported that ‘[...] On the one hand, ethnography shows that men are more educated and hence are considered to be more appropriate to lead local associations, while on the other hand women are prevented from participating in higher education and this is used to legitimize women’s limited participation in the “outside” [...]’. Women’s low level of human capital is what generally impedes their leadership in organizations and voice in the community to exercise their agency. Interventions mainstreamed with capacity building (improving women’s agency) proved that improving women’s status in social groups helped them become leaders and rapidly changed their communities (Coppock et al. 2011).

### *Research approaches and women’s invisibility*

Coppock et al. (2011) argue that research approaches affect our observations and conclusions. ‘Survey research lacking perturbations describes the status quo. In such studies, men are often identified as pioneers of livelihood diversification with women overlooked’. The argument is that action-oriented research process as opposed to survey research perturbed this social system revealing the potential of women as leaders and entrepreneurs. The experience in pastoralist systems, according to the authors, has shown that action research can trigger rapid changes in gender roles.

### *Changes in gender relations*

Although existing studies on gender and livestock in Ethiopia are scanty and localized in terms of geographic coverage and issues covered, evidence regarding gender issues in livestock is better documented. Important information has been generated that could potentially influence livestock policy and gender equity. Nevertheless, very limited information is available on the positive changes in gender relations that affect livestock development. Hebo (2014) has documented that custom-based gender relations and the associated gender roles in livestock are slowly beginning to change.

According to Hebo, this is happening in the context of changing practices in rural markets—in terms of access and modes of operation, increased political interventions and rights awareness, and general changes in sociocultural settings. Women are also slowly engaging in decision-making, and participating in markets, as in the case of becoming members of cooperatives, and the collection of income based on their contributions to the cooperatives. It is expected that these shifts may come with challenges to the existing social structure, normative settings, and livelihoods.

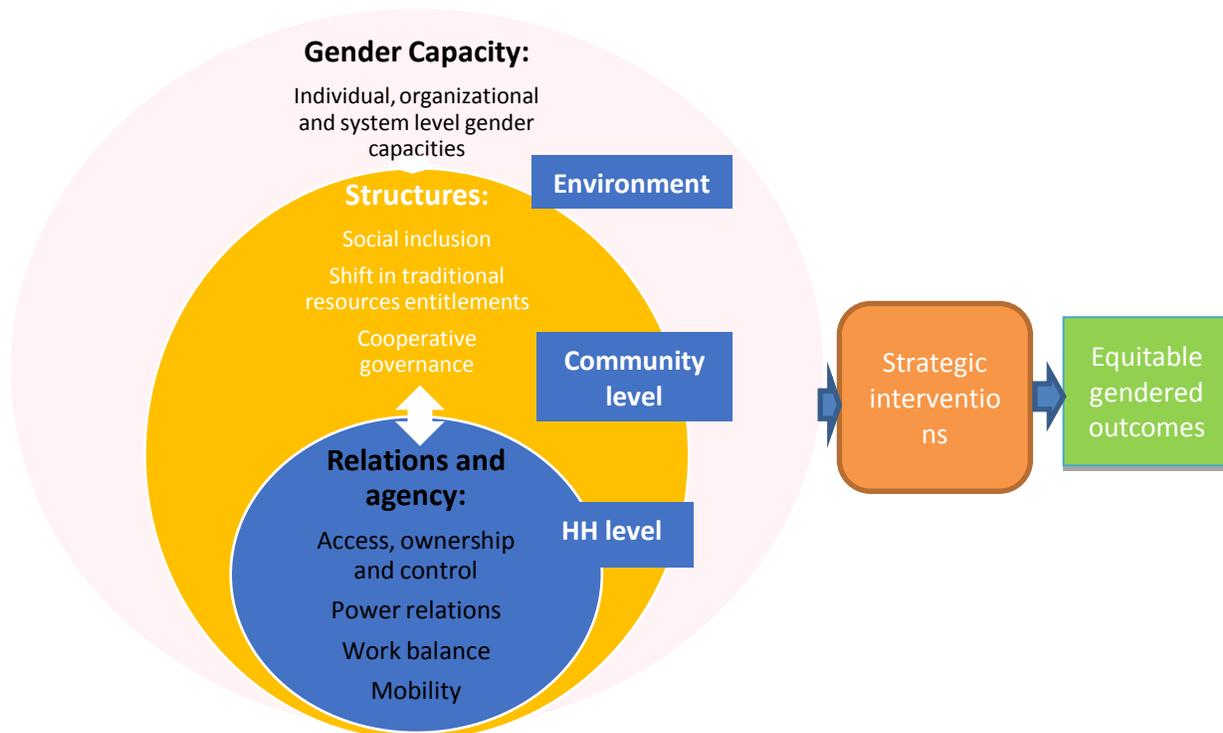
### *Implication for gender research and development interventions*

This review has presented a summary of the existing knowledge on gender issues in livestock in Ethiopia. While the review has highlighted a number of key gender issues for attention in livestock-related research and development, it has also indicated some gaps in the existing data and signalled some areas for future research. It is apparent that, there is lack of detailed information on some of these issues such as gender and livestock institutions, gender capacity of actors at various levels, mobility and the risk of HIV and AIDS as well as changes in gender relations. Lack of such data and information related to factors shown in Figure1 obstructs gender analysis and strategic gender responsive interventions.

To be specific, at HH level in Ethiopia, there is still limited knowledge about gender roles in livestock husbandry and management practices. The existing knowledge on gender division of labour in livestock is unclear if it follows the case for small ruminants where the distinctive gender division of labour is clearly exhibited at the level of sub-activities within the known husbandry practices. For example, the work of barn cleaning is an activity that includes the daily removal of dung, tethering of animals inside the cleaned barn, and commanding someone to do the task and monitoring in order to make sure that it is cleaned if assigned to someone else (Kinati et al. 2017). There is also limited evidence on the local understanding of ‘access and control of resources’. This is evident from the limited studies on ownership which came up with five separate domains of ownership (Galiè et al. 2015). Likewise, there is limited understanding of the process of crafting livestock-related institutions that result in gendered inclusion or exclusion.

Based on the evidence presented in this study and our understanding of the context, we propose a framework for analysing gender issues in livestock, at least in Ethiopia (Figure 1) which may assist to conduct research and develop gender responsive development interventions. The framework includes the interrelated factors that constrain women's participation in and returns from livestock that have been highlighted by our literature review. The figure also represents how lack of agency and gender norms affect women's outcomes for participation and benefits from livestock at household (HH) level. At the community level, similarly, it presents how structures (either formal or informal) are shaped by or shape gender relations at HH level and their impact on women. Finally, the framework illustrates the effects of lack of gender capacity by livestock-related service providers on gender responsiveness of research and development interventions and how it reinforces the existing gender relations through supporting, creating or working within structures of constraints. Gender analysis in livestock needs to examine the elements presented in the diagram at all the three levels. They reflect the three common dimensions of women's empowerment but add a gender capacity element to the framework.

**Fig 1.** An Integrated framework for gender analysis in livestock production in Ethiopia.



On the other hand, the review of the literature on gender and livestock in Ethiopia suggested some possible investable options to improve the existing gender inequalities in livestock with a potential of far reaching consequences of improving the livestock systems in general.

### **Researchable gaps**

*Gender Roles:* Gender division of labour in livestock is fairly documented. Nevertheless, contemporary findings (Kinati et al. 2018) suggest that further disaggregation of animal management and husbandry practices reveals a different story and challenges the traditional understanding of the gender roles in livestock production. Thus, a closer look into animal management and husbandry practices required that provide detailed context specific evidences.

*Local meanings of Gender Issues:* Understanding how the identified gender concepts/issues (such as access, ownership, control, etc.) are articulated by men, women and youth across the diverse socio-cultural and farming systems in Ethiopia is essential. Men and women conceive differently and attach diverse meanings to these concepts which is an important factor to be further studied and considered in livestock technology/ innovation development, adaptation and dissemination.

*Systems of Control/Resource Governance:* It is apparent that what matters most in ensuring gender equitable benefit within the household is not ownership but the capacity to have control over household resources because ownership does not necessarily translate into control. Further research should focus on a better understanding of systems of control over resources, and to ascertain whether control over assets have an effect on the intra-household distribution of welfare.

*Resources or combinations of resources to help poor household moving out of poverty:* Research has provided insights into the importance of specific resources at the start of asset accumulation. Because resources are interrelated, and their accumulation seems sequential, access to one resource enables access to the other and vice versa. More research is needed to determine which resource or combinations of resources are important to help poor households to move out of poverty in a shorter period.

*Gender Dynamics in Livestock-based Institutions:* Milk market participation involves various intra-household dynamics that put men and women into dialogue, conflict and bargaining, which affect women's bargaining position. Research should identify socio-culturally acceptable and economically viable benefit sharing/income from milk sharing models that could help to overcome the existing gender-based constraints to women milk producers, dairy HHs and the milk value chain in milk-based cooperatives in Ethiopia.

*Change in Gender Relations:* In the face of changing gender relation as a result of various factors, research needs to be done to investigate drivers of change and their positive and negative impacts on men and women livestock keepers as these shifts may come with challenges to the existing social structure, normative settings, and livelihoods. Hence, its understanding through a more focussed research seems vital

### ***Investable options for women livestock keepers***

The literature reviewed on gender and livestock in Ethiopia suggested the following possible investable options to improve the existing gender inequalities in livestock with a potential of far reaching consequences of improving the livestock systems in general,

- Gender capacity building integrated into livestock research and development interventions to strengthen service providers' and women's agency.
- Building on traditional mechanisms for enhancing poor women's access to livestock assets.
- Introduce livestock-based gender transformative approaches to overcome gender-based constraints in livestock-based systems.
- Rethinking the commercialization model of the milk value chain in Ethiopia in order to address its unintended consequences on women's ownership and control of income from the milk business. Documentation of approaches that have worked to mitigate women's loss of control over their business when they become successful could be a stepping stone.
- Strengthening institutional linkages among livestock service providers for better gender responsive service delivery.

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**Annex**

Table. Eligible study reports used in meta-analysis on gender and livestock in Ethiopia

Author	Target species	Regional states	Study population	Production systems	Sample size	Study approach	Gender issues
Aregu et al. 2006	Communal pasture: cattle and small ruminants	Amhara region, Ethiopia	Burie District communal pasture	Ethiopia Highlands: Mixed farming system	11 FGDs comprised 6–10 villagers with men, women and other social groups separately + 21 KIIs	Qualitative case study approach Unit of analysis: HH	Gender relations in the management of communal pasture
Zahra et al. 2014	Small ruminants (Sheep and goats)	Four main regions of Ethiopia (Abergelle, T/Abergelle, Atsbi, Horro, Doyogena, Menz, Yabello and Shinelle)	Small Ruminant keepers in Livestock and Fish target sites	Ethiopian highlands mixed crop-livestock and lowland pastoral system	Desk review complemented with 9 research assistants involved in SR VC assessments.	Qualitative approach: Desk review, individual in-depth interviews Unit of analysis: HH	Gender roles and relations within the sheep and goat value chain Gendered access to and control of resources and benefits Gender-based constraints and opportunities or enabling environment.
Wondmeh et al. 2015	Exotic chicken	Horro and Ada districts, Oromia Region	Districts having prior experience in exotic chicken production	Ethiopia Highlands: Mixed farming system	240 HHs using systematic random sampling + 3FGDs	Qualitative and quantitative approaches Unit of analysis: HH	Gender dynamics in: Exotic chicken technology adoption
Bageant and Barrett. 2017	Livestock	Borana Zone, Southern Ethiopia	Pastoralist	Pastoral system	456 HHs through a random stratified approach + 15 KIIs and review of administrative records	Quantitative with complementary qualitative approach Unit of analysis: HH	Gender and demand for index-based livestock insurance (IBLI) among pastoralists in southern Ethiopia.
Flintan. 2006	Livestock	Borana Zone, Southern Ethiopia	Borana Pastoralist	Pastoral system	-	Participatory learning and action	Gender relations (and other divisions in communities) in pastoralist communities.
Fafchamps and Quisumbing. 2002	Rural Assets	Rural Ethiopia	Rural Ethiopia	Mixed crop-livestock and pastoral systems	1500 HHs randomly selected + 15 villages rapid assessments	Quantitative HH Survey + Qualitative: rapid assessments techniques Unit of analysis: HH	Gender dynamics and its determinants Control and ownership of assets during marriage, and the rules regarding asset devolution upon divorce or death.
Galiè et al. 2015	Livestock	Northern and Southern Ethiopia	Agro-pastoralist and Pastoralist communities in Borana and Atsbi	Mixed crop-livestock and pastoral systems	A total of 18 livestock keepers were interviewed, including 8 women and 10 men	Qualitative exploratory study Unit of analysis: Intra HH	Systems of ownership in livestock-based systems
Mulema et al. 2016	Small ruminants: Sheep and goats	Four main regions of Ethiopia (Abergelle, T/Abergelle, Atsbi, Horro, Doyogena, Menz, Yabello and Shinelle)	Small ruminant keepers	Mixed crop-livestock and pastoral systems	20–40 key informants from each of 6 woredas + 2 groups mixed (8 to 15 participants) from each of 6 the woredas	Qualitative approach Unit of analysis: Intra HH	Gender based constraints and opportunities women's access to, and control over, the resources required to participate in, and benefit from, small ruminant value chain activities.
Yisehak 2008	Livestock	Jimma Zone, South Western Ethiopia	HHs having at least one ruminant and monogastric livestock	Mixed crop-livest prodn systems of Jimma zone, South West Ethiopia	119 HHs	Qualitative and quantitative approaches Unit of analysis: Intra HH	Gender roles, access to resources and benefits and gender-based constraints to women's participation in livestock production.
Aregu et al. 2010	Livestock	10 pilot learning	Rural HHs, in major	Mixed crop-	FGDs with separate	Qualitative studies	Gender roles, Decision-making gender

		woredas (PLWs) located in 4 regions of Ethiopia	regions of Ethiopia	livestock production systems of Ethiopia	men and women (10 to 26 people) groups in 34 communities	Unit of analysis: Intra HH	based constraints to participation in market-led development initiatives and technology adoption
Ali and Neka. 2012	Livestock	West Gojjam region, Ethiopia	Livestock keepers in West Gojjam region	Mixed crop-livestock production systems	240 HHs selected through systematic (random) sampling	Quantitative Approaches Unit of analysis: Intra HH	gender dynamics in livestock allied activities
Dessie et al. 2013	Chicken	Horro and Ada'a woredas, central and western highlands of Ethiopia	Chicken keepers Horro and Ada'a woredas	Mixed crop-livestock production systems	10 to 15 people per FGDs in 4 villages + KIIs	Qualitative Approaches: PRA technique Unit of analysis: Intra HH	Gender roles Gender-based constraints and opportunities
Torkelsson and Tassew 2008	Household Resources including Livestock	Western Shoa, Ethiopia	Farming women and men	Mixed crop-livestock production systems	604 farming women and men + complemented by Ethnographic survey	Quantitative Approaches Unit of analysis: Intra HH	Gender asset gap assessment
Fentie et al. 2013	Chicken	North Gondar, northwest Ethiopia	Poultry households	Mixed crop-livestock production systems	180 HHs through a multi-stage simple random sampling + complemented by Ethnographic survey	Quantitative Approaches Unit of analysis: HH	Gender roles
Birhanu et al. 2016	Dairy castles	Selale, Oromia state, Ethiopia	Members of dairy cooperative farmers	Mixed crop-livestock production systems	300 HHs for HH survey through stratified sampling + 168 HHs randomly selected for the resource sharing game	quasi-experimental games, a HH survey and qualitative information collected from KIIs and post-game interviews Unit of analysis: Intra HH	Intrahousehold gender relations Women's intrahousehold bargaining position.
Aklilu et al. 2007a	Village poultry	3 woredas (Enderta, Hintalo and Alaje), Tigray region, northern Ethiopia	Poultry producers	Mixed crop-livestock production systems	928 producer-sellers and 225 intermediaries monitored (market data) + 93 semi-structured interviews with 58 producer-sellers and 35 intermediaries and 12 FGDs	Qualitative and quantitative approaches Unit of analysis: mainly based on HH (headship)	Participation by gender in poultry marketing.
Tangka et al. 2002	Dairy cattle	Holeta, Oromia Region	Dairy producers	Mixed crop-livestock production systems	Panel data collected from 56 HHs	Qualitative and quantitative approaches Unit of analysis: mainly based on HH (headship)	Access to and control over/of resources (income from dairy) Decision-making and impact on food consumption
Aklilu et al. 2007b	Village poultry	Tigray, Ethiopia	Dairy producers	Mixed crop-livestock production systems	Cross-sectional stratified random survey of 180 HHs + 12 FGDs, 33KIIs and farm recording of 131 HHs.	Qualitative and quantitative approaches Unit of analysis: HH	Ownership of poultry and related technology.
Samboa et al. 2014	Chicken	Debre Zeit, Oromia	Chicken producers	Mixed crop-	8 mixed FGDs (5-6	Qualitative Approaches	Explore farmers perceptions of disease

		Region, Ethiopia		livestock production systems	participants) + 71 individual interview with poultry keepers and 3 KIIs (with veterinary service providers.	(PRA) Unit of analysis: HH	prioritise and disease risk factors and biosecurity measures.
Kinati and Mulema. 2016	livestock	Four main regions of Ethiopia (Abergelle, T/Abergelle, Atsbi, Horro, Doyogena, Menz, Yabello and Shinelle)	Livestock keepers	Mixed crop-livestock and pastoralist production systems	FGDs with different groups (137 men, 114 women, 115 youth (73 male and 42 female)	Qualitative approaches (PRA) Unit of analysis: Intra HH	Gender roles in small ruminants; access to and control over of productive resources; and decision-making.
Mulugeta and Amsalu 2014	Livestock	Yilmana District, Amhara region	Livestock keepers	Mixed crop-livestock production systems	90 women respondents + FGDs with separate men and women groups	Quantitative and qualitative (PRA) approaches Unit of analysis: Intra HH	Role of rural women in livestock and Rural women participation in decision-making
Tefera 2007	Goats	Haramaya District, eastern Ethiopia	Women goat keepers	Mixed crop-livestock production systems	35 randomly selected women farmers	Quantitative and qualitative (PRA) Approaches Unit of analysis: HH	Effect of the goat credit project on women farmers' welfare.
Hebo 2014	Livestock	Kofale District of West Arsi, Ethiopia.	Livestock keepers	Mixed crop-livestock and agro-pastoral production systems	2 FGDs + 18 KIIs + 5 case studies	Qualitative and Exploratory Approaches Unit of analysis: HH	gender relations in the evolving milk marketing
Mulema et al. 2015	Small ruminant	Doyogena, Yabello and Horro districts, Ethiopia	Research and development partners	Mixed crop-livestock and agro-pastoral production systems	6 FGDs + KIIs + panel discussion	Qualitative approaches Unit of analysis: Enabling environment, organization and staff	Gender capacities at environmental, organizational and individual levels of research and development partners.
Tadelle and Ogle 2001	Chicken	Central Highlands of Ethiopia	Small Scale Chicken producers	Mixed crop-livestock production systems	PRA + case studies + year-round data from HHs	Quantitative and qualitative (PRA) Approaches Unit of analysis: intra-HH	Gender roles, ownership and control of income from chicken
Coppock et al 2011	Livestock	Borana Pastoralist, southern Ethiopia	Pastoralist	Pastoral production systems	Data from action-oriented research	Action-oriented participatory approach	Improve agency through capacity enhancement among pastoralists
Tangka et al. 2000	Dual purpose cows	Central Highlands of Ethiopia	Livestock keepers	Mixed crop-livestock production systems	Case study: observation of 14 farmers, followed by anthropological survey	Qualitative Approaches Unit of analysis: Intra HH	Gender roles in livestock production
Kinati 2017	Small Ruminant	Four main regions of Ethiopia	Small ruminant keepers	Mixed crop-livestock production systems	FGDs with farmers + KIIs with DAs and Woreda experts	Qualitative Approaches Unit of analysis: Intra HH	Gender roles in breeding coops Women's status of participation in breeding coops Gender based constraints and opportunities