

INTEGRATING GENDER CONSIDERATIONS INTO LIVESTOCK GENETIC IMPROVEMENT PROGRAMS IN LOW TO MIDDLE INCOME COUNTRIES

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SUMMARY

Adoption of new or improved animal breeds by resource-poor farms is likely to increase when these breeds provide tangible benefits for the women and men involved in their production, consumption, and marketing. Yet, little consideration is often given by genetic programs to how gender dynamics and norms affect women's and men's preferences for species breeds, and traits, as well as women's and men's ability to participate in, and benefit from, livestock genetic improvement programs. Gender dynamics and norms refer to the ways in which women, men, boys and girls interact based on socio-cultural perceptions of what is considered appropriate behaviour for each group (e.g. roles, jobs, control over resources, decision-making etc.). Here we begin to fill the gap on where and how gender matters in the implementation of livestock genetic improvement programs in low to middle income countries by providing a conceptual framework. This framework stresses that gender considerations are relevant at all stages of implementation of a genetic improvement strategy, from targeting to ensuring equitable benefits.

INTRODUCTION

Adoption of new or improved animal breeds by resource-poor farms is likely to increase when these breeds provide tangible benefits for the women and men involved in their production, consumption, and marketing. Understanding how new breeds can benefit both women and men all livestock keepers is therefore important for two mutually supporting goals: to increase adoption, and to ensure equitable benefits from this. Gender dynamics affect both. Gender dynamics are the ways in which boys, girls, women, and men relate and interact. Gender dynamics are informed by socio-cultural ideas about what it means to be a 'man' or a 'woman', a 'boy' or a 'girl'; what are considered to be appropriate behaviours for each group; and the power relationships that define these groups. Gender dynamics affect all aspects of life, for example, who can own or claim property; who is considered to be in charge of providing for the family or child care; who is more likely to access opportunities for work or migration; and who is supposed to take decisions in a household. These gender dynamics also depend on other social factors such as ethnicity, wealth, marital status, or age. Such gender interactions, when persistent over time, become informal, unspoken and 'normative' rules of behaviour (or gender norms) that regulate what men and women, boys and girls can do at different stages of their life.

Gender norms and dynamics matter in livestock research for development because they affect, for example, who is considered to be a livestock keeper by communities and development programs, and is therefore involved as a participant; the financial resources women and men may access and control when investing in livestock improvement or the information they may access; and who can sell livestock or livestock products and decide how to utilize the money earned. These gender dynamics have strong implications for development goals such as improved nutrition. Evidence shows, for example, that rural women tend to invest agricultural revenues on child nutrition more than men, yet men need to be involved in supporting nutrition goals, in their traditional roles of decision-makers and family providers, for women to be able to allocate agricultural revenues to household nutrition (Galiè *et al.* 2019).

To-date there has been little attention to where and how gender matters in the implementation of

livestock genetic improvement programs in low to middle income countries (LMICs). Here we begin to address this by providing a conceptual framework to this end. The focus of the framework is on women and men livestock keepers, as key beneficiaries of improved livestock genetics. This conceptual framework is intended to be used by researchers and practitioners involved in the implementation of livestock genetic improvement strategies in LMICs, to ensure that gender considerations are appropriately considered and acted on for maximal and equitable benefit from the livestock genetic technologies.

THE CONCEPTUAL FRAMEWORK (see also Figure 1).

Targeting of genetic improvement strategies. Targeting of genetic improvement strategies is an important issue to consider in LMIC contexts due to the large number of livestock systems that would benefit from genetic improvement and the limited resources available to support them. Strategic choices need to be made on where, with and for whom, and the species and breed focus. Here it is important to consider that women and men livestock-keepers can differ in their reasons for keeping, preferences around, aspirations for, and benefits from, different livestock species, breeds, and traits. For example, a study on gendered preferences for chicken in Ethiopia shows that women valued traits such as behaviour and feathers and that their preferences for these traits affected whether a breed was adopted by a household or not (Ramasawmy *et al.* 2018). Traits valued by males focused on productivity, health, and marketing of chickens with a view to scaling up their poultry keeping to an intensive system of production for business. In contrast, women responders aspired to increase the scale of their poultry keeping within their household level only, and thus valued traits that allowed chickens to be kept in an extensive system while increasing productivity. Women were not interested in making poultry into a business because of: the related high labour requirements (mostly their responsibility); their lack of land to keep chickens intensively or assets to make financial investments needed for intensification; and their loss of control over the benefits provided by chickens when, with intensification, men took on the marketing of the birds. Another example is from a study in Somaliland on the livestock keeping objectives of male and female pastoralists for goat, sheep, cattle and camel (Marshall *et al.* 2014). This study showed that each of these species were kept for multiple (up to 14) and gender differentiated reasons. For example, the livestock keeping objectives of ‘savings and insurance’ and ‘sale of breeding animals’ were more important to female and male pastoralists, respectively. The same study also showed trait preferences to be gender differentiated, for example the camel trait of ‘good quality and tasty meat’ was more important to men, reflecting men being the main consumers of camel meat (Marshall *et al.* 2016). This makes it vital to include both women and men in determining the genetic improvement priorities, both in terms of the livestock system targeted as well as type of genetically improved animal produced (influenced by the choice of breeding objective). Livestock breeds that better respond to local and gendered needs are more likely to be adopted and contribute to gender-equitable livestock development.

Choice of the type of genetic improvement strategy. The choice of genetic improvement strategy (whether breed substitution, within-breed improvement, cross-breeding etc.) to be implemented should be taken jointly by all stakeholders. Gender considerations here include who can participate in the genetic improvement program, the required investment level by household and individuals including on labour and financial resources, and the expected benefit. All of these are likely to be affected by gender dynamics and norms that influence intra-household sharing of resources, decision-making and opportunities. For example, the choice of focusing a breeding program on local versus exotic breeds may enhance the participation of women versus men, respectively, if women are the main controllers of local breeds and men the exotic (Njuki and Sanginga 2013). A study in Tanzania found that the introduction of new exotic breeds of goats shifted livestock labour from men to women because the goats were to be kept in the courtyard, a space assigned to women (Galiè and Kantor 2016). While

women enjoyed increased access to goat milk, the overall decision-making on the new breed stayed with the men. More productive breeds also often entail higher financial investments to procure livestock inputs, in comparison to local breeds. This may exclude poorer farmers, of which rural women are the majority, from participating. These gender considerations need to be included when selecting a genetic improvement strategy to help ensure its effectiveness, sustainability and equity.

Implementation of the genetic improvement strategy. During implementation of participatory breeding programs, data is captured from, and shared back with, farmers. Incentives for continued farmer participation in the program are key to sustainability, and these may differ depending on whether women, men or both are involved. For example, incentives around the provision of feedback information for improved farm management, via mobile devices, are currently being tested, and the more relevant information to women or men livestock keepers may depend on how they are involved in the household livestock enterprise in terms of decision making, provision of labour, payment of costs and control of benefits. As an example of this, for some households keeping dairy cattle in Senegal, men are the main decision makers and providers of labour for cattle husbandry aspects (feeding, watering etc.), as well as well as control the income from animal sale, whereas women are the main decision makers, labourers and income controllers for sale of milk (Marshall *et al.* 2017). Here information that helps improve animal husbandry practices is likely to be more appreciated by the men, whilst information on milk quality and milk sale price is likely to be more appreciated by the women. Another related concern is who within the household can access the mobile devices and information, as this will not necessarily be shared within a household (FAO 2018). A further example that may affect who meaningfully participates in a genetic improvement program is simple logistical choices around program meetings (such as location, timing, and group composition). This can be affected by, for example, the spaces women and men can frequent, their availability for a meeting vis-a-vis other commitments, and their ability to speak out in groups where social hierarchies often establish who this is acceptable for, etc. Participation in meetings affects participation in decision-making.

Adoption and use of the improved genetics. In LMICs livestock keepers often cite the inability to access improved genetics (whether via artificial insemination, sire service, or live animal purchase), either because it is unavailable or unaffordable, as a key constraint to their livestock enterprise. In addition to being able to access the improved genetics, the livestock keepers also need to manage them appropriately (feeding, health care etc.) and market the animal or its products, to maximise benefit. To ensure that those who wish to adopt the improved livestock genetics can do so and enjoy benefits, access to the improved livestock genetics, as well as the resources need to maximize benefit, should be gender equitable. Here issues of gendered control over the household livestock enterprises may need to be addressed. These include on gendered constraints in decision-making over household investments and engagement with genetic technologies, access to information, access to credit, mobility, interaction with service providers, and market access for the products. Women's reduced mobility as compared to men is well documented in the literature, and affects, for example, access to genetic material, animal services and markets (Galiè *et al.* 2017). Further, many studies have shown that women in LMICs commonly do not have the same access to technologies, information, and service providers, including on credit, as men (Fletschner and Mesbah 2011).

Ensuring equitable benefit from the improved genetics. Finally, it should be ensured that the intrahousehold benefits from use of the improved genetics are equitable. Here a key concern is the shift in benefits between intrahousehold members associated with adoption of the genetic technology. Many studies have shown that as household enterprises that benefit women become increasingly commercially oriented, there is a shift in the control of benefits from women to men (Galiè and de Haan 2019). This was demonstrated to be the case for smallhold dairy cattle enterprises in Senegal, where higher levels of market orientation were associated with the keeping of cross-breed indigenous

by exotic dairy cattle (as opposed to the traditional indigenous breeds) and a shift in the control of the income from milk sales from women to men (Marshall *et al.* 2017).



Figure 1. Key stages for integration of gender considerations into livestock genetic improvement strategies

CONCLUDING COMMENTS

The framework presented serves to highlight key gender issues around livestock genetic improvement strategies that need to be acted upon to ensure maximal and equitable benefit from genetic technologies and therefore increased adoption. Approaches that can be applied include accommodative or transformative approaches. Accommodative approaches recognize and respond to the specific needs and realities of men and women, based on their existing roles and responsibilities shaped by existing social and economic structures. Accommodative approaches do not question the barriers put up by the context they live in (Cornwall & Edwards, 2010). Transformative approaches aim to deeper social change by addressing some of the norms that constrict a particular group (Galiè and Kantor, 2016).

Whilst the focus of our analysis is gender, we recognise that men and women are not homogenous groups and that other social markers (such as age, social status, ethnicity, caste etc.) intersect with gender and affect interaction with, and benefit from, livestock genetic technologies. Future versions of this framework will be extended to include consideration of these.

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