

Livestock Stakeholders in Ethiopia: Network Connections and Policy Priorities

Introduction

Agriculture is a driving sector in the Ethiopian economy and employs over two-thirds of the total population. Within agriculture, the livestock sector plays an important role in sustaining livelihoods and contributing to the agricultural sector and gross domestic product. The current Growth and Transformation Plan (GTP II), which has guided Ethiopia's policies and investments for economic growth during 2015-20, places a high priority on the development of the agricultural sector¹, and the Livestock Master Plan represents the roadmap for the development of the livestock sector for the same time period.²

This paper presents the network of livestock stakeholders and their most salient issues to promote a better understanding of the institutional context in which these policies are undertaken. Data were obtained through an electronic survey administered to livestock stakeholders in Ethiopia in 2018. This brief is a product of the policy area of inquiry of the Feed the Future Innovation Lab for Livestock Systems at the University of Florida.

Stakeholders' characteristics

Stakeholders can be defined as individuals or organizations who have a stake in a given context or policy process and have sufficient power and interest to influence it.³ Relationships between stakeholders can be represented through a stakeholder mapping approach (Figure 1). This enables one to identify and differentiate between stakeholder categories and analyze their mutual relationships.⁴

Key livestock stakeholders in Ethiopia were identified through a list of in-country contacts already maintained by the Livestock Systems Innovation Lab. Additional contacts were obtained on a rolling basis through recommendations coming from the initial contacts. The electronic survey asked about the stakeholder's organization or the unit's main focus area, the names of up to five organizations that respondents mostly work with, together with areas of collaboration, and the two most pressing issues they perceive as affecting the livestock systems in the country.

The 41 respondents, representing 24 organizations, were from the government (15; 38%), from non-governmental organizations (7; 18%), and the rest were from research institutes, universities and international development agencies. The majority of respondents indicated that they work at the national level (34, 83%), whereas four (10%) work at the

Key Messages:

- The network of livestock actors in Ethiopia is diverse, and there is evidence of collaboration, particularly in the areas of livestock production and animal health. Some stakeholders are more influential in the network than others, as indicated by the measure of network centrality in the survey.
- Low quality/quantity of animal feed and presence of endemic livestock diseases were identified as the two greatest challenges to livestock systems in Ethiopia. Animal feed quality/quantity and livestock for poverty reduction and economic growth were mentioned as the top neglected issues, which could benefit from greater cooperation between stakeholders.
- Half of the organizations mentioned collaborations based on animal health or human nutrition. This could lead to new opportunities to further integrate One Health approaches within the Ethiopian livestock systems and to promote One Health governance at the national level.

¹ Federal Democratic Republic of Ethiopia 2016 Growth and Transformation Plan II. National Planning Commission.

² Shapiro, B.L., Gebru, G., Desta, S., Negassa, A., Nigusie, K., Aboset, G. and Mechal, H. 2015. Ethiopia livestock master plan. ILRI Project Report. Nairobi, Kenya: International Livestock Research Institute.

³ Brugh R, Varvasovszky Z. 2000. Stakeholder Analysis: A Review. Health Policy Plan, 15: 239–46.

⁴ Reed, M.S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., Prell, C., Quinn, C.H., Stringer, L.C. 2009. Who's in and why? Stakeholder analysis as a prerequisite for sustainable natural resource management. J Environ Manage. 90:1933–1949.

regional level, two (5%) at the district/woreda level, and one (2%) indicated other. The strong emphasis on the capital Addis Ababa, and on governmental organizations reflects, on the one hand, the centralized nature of policy processes in the country, and on the other hand, the locations of our collaborators. While this network does not represent the totality of the livestock sector in Ethiopia, the analysis is still useful to depict an important segment of the institutional environment for livestock policies.

Respondents were asked to identify their unit's focal domain. Livestock production/management (23; 15%) and livestock policies (22; 15%) were the top two domains mentioned, followed by animal health and disease prevention (20; 13%). Other focus areas included access to livestock markets (17; 11%), food safety and hygiene (16; 11%), human health and nutrition (13; 9%), environmental issues (13; 9%), and smallholder's income and poverty reduction (13; 9%). The remaining responses indicated other (10; 7%) or not applicable (2; 1%).

Network of livestock stakeholders

A social network may be represented as a set of nodes, and these nodes denote the actors and the connecting lines represent the relationships between nodes. Centrality is a key concept of network analysis. It conveys nodes' degree of influence within a network. In this study, actors' influence is proxied by the number of organizations that one collaborates with.

In Figure 1 we focus on a particular type of network centrality, namely that of “betweenness centrality,” which counts the number of times a node acts as a bridge along the shortest path between two other nodes.⁵ This is a useful notion when analyzing policy networks. If some actors cannot communicate, those individuals or organizations that can function as intermediaries between other actors occupy very strategic roles.

In a graphic network representation, a node's degree of centrality is proportional to the node's size. Using the betweenness centrality measure, the top six nodes that respondents collaborate with among livestock stakeholders in Ethiopia were: the Ministry of Agriculture and Livestock (MoAL), the Food and Agriculture Organization of the United Nations (FAO), the Ethiopian Institute of Agricultural Research (EIAR), the United States Agency for International Development (USAID), the National Animal Health and Diagnostic and Investigation Center (NAHDIC), and the International Livestock Research Institute (ILRI).

Evidently, government ministries and international donors are key partners in the Ethiopian livestock sector, but less obvious institutions may also be important players. This can be explored using a different measure of centrality, namely eigenvector centrality.⁶ This measure is built on the notion that the prestige of a node is related to the prestige of its neighbors and yields somewhat different results than betweenness centrality. For instance, Ethiopian and East African universities, when considered together as one actor, appear to be the most central organization within the collaboration network when this alternative measure of network influence is considered, and Ministry of Health has more overall direct and indirect influence than the Ministry of Agriculture and Livestock. The full report of this study, *Policies for Livestock in Ethiopia: Who are the Stakeholders and What are the Main Issues?*, goes into more detail on measuring eigenvector centrality and includes the full network map and is available upon request.

Areas of collaboration and One Health

Respondents to the survey were asked to mention the main area or topic for each identified collaboration. Livestock production and animal health together represented over half of the collaborations that were mentioned, whereas the environment and markets were among the least frequently mentioned (Table 1).

⁵ Bloch, F., Jackson, M.O., and Tebaldi, P. 2015. Centrality Measures in Networks. <https://arxiv.org/pdf/1608.05845.pdf>

⁶ Additionally, eigenvector centrality is computed by assuming that the centrality of a node is proportional to the sum of centrality of node's neighbors. This notion of centrality is closely related to ways in which scientific journals are ranked based on citations, and it relates to influence in social learning (Bloch et al., 2017).

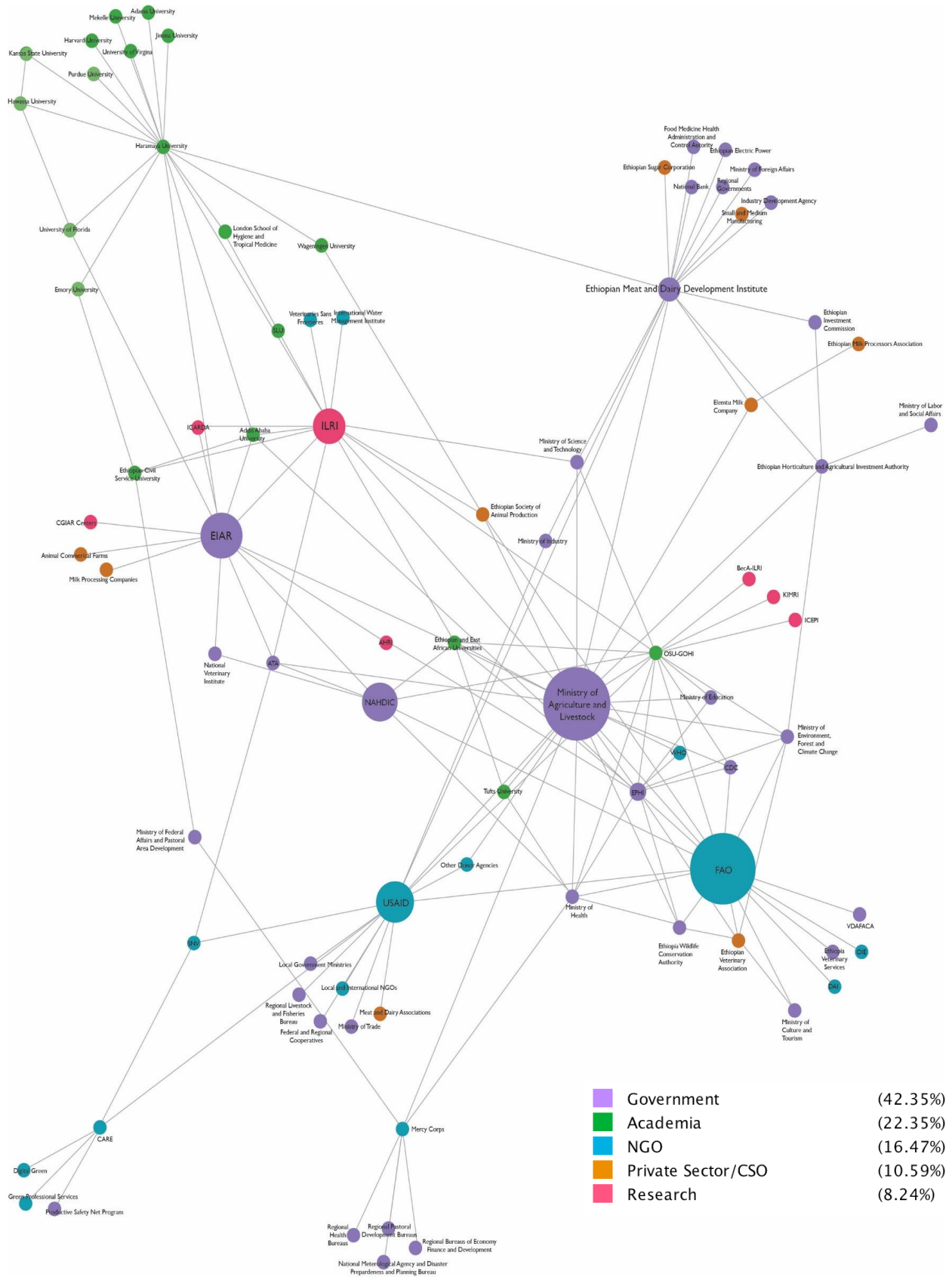


Figure 1. Ethiopia Livestock Stakeholder Map – Betweenness Centrality

Table 1. Primary and Secondary Areas of Collaboration among Livestock Stakeholders

Area of Collaboration	Percent Primary Collaboration	Percent Primary and Secondary Collaboration
Livestock Production	31%	39%
Animal Health	25%	41%
Nutrition	21%	31%
Policy	11%	24%
Food Safety	11%	33%
Poverty Reduction	10%	19%
Environment	5%	6%
Markets	2%	13%

When a secondary area of collaboration was included, topic representation was more inclusive and even. Food safety, which was scarcely indicated as a first focus of collaboration, overall appears as relatively more important than animal nutrition and policy. Respondents were further asked what the concept of One Health meant to them and then to specify whether any of the collaborations they had mentioned could be characterized by a One Health framework. Out of the 41 survey respondents, 31 (76%) reported that they were familiar with the concept of One Health. This was evidenced by their responses in a follow-up short answer question, where they explained the concept of One Health in their own words. Responses generally emphasized the collaborative nature of One Health work across disciplines and referenced the three components of One Health: animal, human and environmental health.

Those respondents that were familiar with the One Health concept were additionally asked to state if their organizations worked within a One Health framework. Out of 31 respondents, 77% reported that they thought their organizations worked within a One Health framework. However, there was also heterogeneity in the ways in which they described working within the One Health concept. Among the respondents who were familiar with One Health, but reported that their organizations did not work within a One Health framework, reasons ranged from budgetary issues to a lack of understanding of the concept of One Health, to lack of coordination between actors in the different sectors of human, animal and environmental health. Actors also drew a distinction between formally adopting a One Health approach versus implicitly working on One Health due to working with livestock.

Emerging livestock policy issues

The final part of the survey asked respondents to share their perceptions about the main challenges affecting the Ethiopian livestock systems and the priorities for future cooperation. Low quality and quantity of animal feed (33%) and presence of endemic livestock diseases (17%) were identified as the two greatest challenges. Other challenges included: livestock for poverty reduction and economic growth (14%), availability and access to animal-source foods (14%), emerging pathogens (13%), and climate change adaptation and resilience (6%) (Table 2, column 1). When asked to mention one or two issues that had been neglected thus far, but that could benefit from greater cooperation between stakeholders, the responses exhibited less dispersion. Animal feed quality and quantity was identified as the most neglected issue by almost a quarter of respondents (23%), followed closely by livestock for poverty reduction and economic growth (22%), endemic livestock diseases (19%), availability and access to animal source foods (17%), emerging pathogens (14%), and climate change adaptation and resilience (3%) (Table 2, column 2).

Table 2. Responses on Livestock Sector Challenges and Future Priorities

Categories	Challenges to Livestock Systems*	Benefit from Greater Cooperation^
	Frequency (Percentage)	Frequency (Percentage)
Animal feed quality and quantity	21 (33%)	15 (23%)
Endemic livestock diseases	11 (17%)	12 (19%)
Availability/access to animal-source food	9 (14%)	11 (17%)
Poverty reduction and economic growth	9 (14%)	14 (22%)
Emerging pathogens	8 (13%)	9 (14%)
Climate change adaptation and resilience	4 (6%)	2 (3%)
Other	2 (3%)	1 (2%)

* “Which two of the following livestock policy issues will represent, according to you, the greatest challenges to livestock systems in Ethiopia in the near future?”

^ “Which two of the following livestock policy issues have received the least attention, according to you, and could benefit from greater cooperation between stakeholders in Ethiopia?”

Conclusions

Livestock systems in Ethiopia are characterized by a multiplicity of actors with a considerable degree of collaboration among them, as shown by the dense links in the network map. Livestock production and management are the main areas of current focus, but there is also collaboration among actors in many other, complementary aspects of livestock systems, such as animal diseases, markets, and policies. Access to and quality of feed was highlighted as the paramount challenge to livestock systems—not only destined to become more urgent in the future but also one that lacks sufficient attention and on which stakeholders should cooperate further. Furthermore, livestock’s contribution to poverty reduction and economic growth, as well as household access to animal-source food, were recognized as important topics and challenges. Yet they do not appear to represent, at least from the data collected for this research, the main focus in current work.

While the data sets from this study provide valuable information, data are affected by some limitations that future efforts should overcome. First, the number of respondents was quite low, considering the large number of Ethiopian livestock actors and organizations. Future surveys should cast a deeper and wider net and achieve higher response rates. Second, the online survey did not ask about the respondents’ gender—a limitation that should be addressed in the future. Nonetheless, it appears on the basis of follow-up with many of the respondents that over 90% of the actors making up the network studied were men. Institutions in the livestock sectors may want to improve the gender balance of their workforce and involve both male and female experts on equal footing. Third, future engagement with livestock stakeholders should look for ways to strengthen policy collaboration among them, particularly within the framework of One Health. For example, very few stakeholders are currently connected to the Ministry of Environment, Forest and Climate Change, but future policies could encourage further collaboration between livestock production actors and environmental organizations. Many organizations already mentioned collaborations based on animal health or human nutrition. This could allow opportunities to further integrate One Health into their activities, or to integrate organizations working on such topics into One Health governance at the national level. As the COVID-19 pandemic spreads across Africa as we write, the understanding and appreciation of One Health may well increase and contribute to a greater reliance on system-wide perspectives.

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