

Diagnostic study of live cattle and beef production and marketing

Constraints and opportunities for enhancing the system

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Contributors:

Sintayehu GebreMariam

Consultant to International Livestock Research Institute

Samuel Amare

International Livestock Research Institute

Derek Baker

International Livestock Research Institute

Ayele Solomon

Consultant to International Food Policy Research Institute

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I Executive Summary

LIVESTOCK IN ETHIOPIAN AGRICULTURE

Livestock plays an important role in Ethiopian agriculture. The sector has been the focus of a breadth of analysis by experts, development partners and others that reflect a range of perspectives. This report builds principally on a synthesis of work to date, contributing primary data to fill key gaps, and based on extensive consultation of a wide set of stakeholders, provides some additional perspectives.

Given the wide range of perspectives, the recommendations outlined in this report should be viewed as contributions to the discussion that will result in a set of actionable interventions to drive the sector forward, to accelerate both growth and food security, and achieve PASDEP II targets.

The report reaffirms that livestock continues to be a significant contributor to economic and social development in Ethiopia at the household and national level. On a national level, livestock contributes a significant amount to export earnings in the formal market (10 percent of all formal export earnings, or US\$ 150 million per annum) and the informal market (perhaps US\$ 300 million per annum). Moreover, livestock accounts for 15 to 17 percent of total GDP, and 35 to 49 percent of agricultural GDP.

At the household level, livestock contributes to the livelihood of approximately 70 percent of Ethiopians. Women play a critical role in livestock production, both directly in primary production of smaller ruminants, and indirectly through the contribution of livestock to household assets. Livestock offers a particular package of benefits to pastoralists, for whom few alternative livelihoods exist. In addition to direct income benefits, livestock provide indirect benefits, serving as a means to store assets for those beyond the reach of the banking system, as a source for fuel and fertilizer from manure, and as draught power for farm production.

THE POTENTIAL OF A VIBRANT LIVESTOCK SECTOR

- Livestock's role in smallholder livelihoods and earnings in the market place can be expanded. Low levels of herd productivity and commercialization present opportunities to increase incomes for producers and market participants, and for others in related activities.

CHALLENGES IN THE VALUE CHAIN

A series of constraints span the cattle value chain in production, fattening and trading, and commercialization:

- **Production:** Lowland and highland cattle systems have low reproductive performance and off-take, due to: (i) input constraints of feed and water to pastoral herd size and reproduction; (ii) reluctance of pastoralists to commercialize cattle because of social importance and lack of alternative assets; (iii) limited and periodic access to appropriate animal health services; and (iv) competition of draught power with meat for young males lead to aged and low-quality off-take in highlands.
- **Fattening and trading:** Formal trading is constrained by irregular and variable quality in supply of cattle because: (i) livestock cooperatives are not effective in delivering value added to their members; (ii) a large proportion of sales are on credit and incur late payment; (iii) limited transparency on quality, health, and weight; (iv) the feedlot industry faces severe constraints for feed, water, land, financing, and markets; and (v) formal trade competes with substantial informal cross-border trade due to weak highland-lowland linkages and incentives offered by the informal market;
- **Retail and consumption:** There is significant potential for demand growth in the medium term, on both domestic markets and potential export markets.

RECOMMENDATIONS

- **Clarify government and private sector roles in livestock industry and social development, and empower a single stakeholder-inclusive body with a unified vision:** A coordinated approach to establishing and implementing a shared vision will require substantial and continuous communication with the private sector.
- **Develop highland feedlot sector to stimulate value addition:** A highland fattening sector – anchored by, although not exclusively comprising, commercial feedlots – can play a central role in both pushing supply (e.g. catalyzing greater feed productivity and converting weaker animals to quality products) and pulling demand (e.g. by creating a strong and consistent demand for young male calves). The form taken by feedlots should not be pre-supposed, but rather let develop according to apparent success stories.
- **Drive smallholder herd productivity through dairy-oriented aggregation in high-potential highland woredas:** interventions to enhance dairy productivity and improve marketing of calves and access to foundation stock are mutually reinforcing. GOE should invite investment by existing or new market participants.
- **Experiment with holistic productivity and commercialization interventions in high-potential pastoral woredas:** Increasing pastoral herd productivity and commercialization will require a series of coordinated interventions that may only be viable in high-potential pastoral areas with access to inputs and markets.

- **Address specific constraints that cut across sectors that hinder livestock development:** Alleviating constraints to access to capital, to effective transport, to foreign exchange, and to the import of trucks and cold chain equipment, will improve the effectiveness of the cattle and livestock value chains, and those for other key commodities (e.g. maize, pulses).
- **Implement research and dissemination activities to communicate lessons learned and assist with scaling up:** Successful models are evident in Ethiopia and these need to be identified and characterized. Models with desirable vertical and horizontal linkages, and which generate positive externalities, should be targeted immediately.
- **Coordinate interventions with development partners' low-potential pastoral zones:** A combination of geographical endowments and pastoralist market participation drive the low potential for livestock marketing in some pastoral zones. In low-potential areas, GOE should coordinate with development partners to provide the technical and financial support for the development of alternative livelihoods.
- **Realizing the potential of the livestock value chain cannot be done in isolation:** The potential of the sector relies in part on other components of the agricultural system, including rural finance, extension, infrastructure, and human capacity, inter alia. Other sectoral recommendations are addressed in separate diagnostic reports.

THE WAY FORWARD

With a clear, credible plan of action, and an effective performance management process, Ethiopia will be in a strong position to deliver on this future vision of the livestock value chain. This report outlines a process by which Ethiopia may adopt a series of closely related activities to realize the potential of the cattle value chain, while improving livelihoods of small producers and deliver on macroeconomic objectives.

The recommendations outlined in this report and in the other sub-sector diagnostic reports are not an explicit roadmap of the activities the Bill & Melinda Gates Foundation is best positioned to solely resource; they reflect a set of findings to support MoARD and all donors in the planning and implementing strategies to accelerate growth and food security in the context of Ethiopia's nationally stated objective to achieve middle-income status by 2025.

Implementing the recommendations outlined in this report will undoubtedly require significant human and financial resources. It will also require a level of sequencing and coordination that has in the past been challenging to implement at a national level, not only in Ethiopia but in most countries in similar situations. To achieve these objectives, GOE will need to work closely with all its partners (donors and development community, NGOs, cooperatives and unions, national and international research organizations, private sector and the various organizations working directly with farmers at the local level).

This report provides a preliminary view on the sequencing of activities to strengthen the maize value chain. However, the recommendations and sequencing of activities outlined in this report must also be seen within the context of the overall recommendation provided in the holistic and integrated report, which seeks to find common themes from the various diagnostics requested by the Prime Minister. The integrated report also provides a clear vision on a possible implementation strategy, which would be a critical aspect of realizing the recommendations outlined in this report.

Detailed actions, owners, and prioritization of the recommendations are presented in the main report. A preliminary view of the sequencing of high-priority activities that could strengthen the livestock value chain is as follows:

	Near term (1-2 years)	Medium term (3-5 years)
Private/Public Joint Vision	<ul style="list-style-type: none"> ▪ 1.1 – Clarify livestock responsibility within GOE ▪ 1.2 - Create an over-arching industry association ▪ 1.3 - Develop a joint public/private vision 	
Mid/Highland Feedlot Sector	<ul style="list-style-type: none"> ▪ 2.1 - Define an industry strategy in collaboration with industry associations ▪ 2.2 – Enable access to sufficient production factors, including land, water and finance ▪ 2.3 - Improve the policy environment to attract and enable sustainable growth in feedlots 	<ul style="list-style-type: none"> ▪ 2.3 - Improve the policy environment to attract and enable sustainable growth in feedlots
Dairy-oriented Aggregation	<ul style="list-style-type: none"> ▪ 3.1 - Invite private investors to submit proposals to set up dairy processing and marketing facilities ▪ 3.2 - Invite development partners to submit proposals to build social aggregators ▪ 3.3 - Link livestock DAs to aggregation actors ▪ 3.4 – Support the development of private animal health providers 	<ul style="list-style-type: none"> ▪ 3.1/3.2 – Invite further private and donor investment, building off of successes in years 1 and 2 ▪ 3.4 – Support development of private animal health providers
Holistic Productivity Intervention	<ul style="list-style-type: none"> ▪ 4.1 - Administer bottom-up challenge grant approach to elicit and test interventions 	<ul style="list-style-type: none"> ▪ 4.1 – Monitor challenge grant approach to elicit and test interventions
Cross-cutting Enablers	<ul style="list-style-type: none"> ▪ 5.1 – Improve access to capital and insurance ▪ 5.2 – Improve transport infrastructure, reduce forex and tariff barriers 	<ul style="list-style-type: none"> ▪ 5.2 – Improve transport infrastructure, reduce forex and tariff barriers ▪ 5.3 – Develop holistic land use planning
Coordinate in Low-potential Zones	<ul style="list-style-type: none"> ▪ 6.1 – Seek out and coordinate with development partners engaged in low-potential zones 	<ul style="list-style-type: none"> ▪ 6.1 – Seek out and coordinate with development partners engaged in low-potential zones

II Acknowledgments

Since the livestock sector diagnostic was initiated in November 2009 at the request of H.E. Prime Minister Meles Zenawi, a significant number of collaborators generously participated in the process, from smallholder farmers and rural Development Agents to research institutes and the Ministry of Agriculture and Rural Development.

Since the maize sector diagnostic was initiated in November 2009 at the request of H.E. Prime Minister Meles Zenawi, over one hundred collaborators have generously participated in the process, from smallholder farmers and rural Development Agents to research institutes and the Ministry of Agriculture and Rural Development.

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III Acronyms

ADLI	Agricultural Development-Led Industrialization
AMC	Agricultural Marketing Corporation
BoARD	Bureau of Agriculture and Rural Development
CIA	Central Intelligence Agency
CSA	Central Statistical Agency
CV	Coefficient of Variation
DA	Development Agent
ECX	Ethiopian Commodity Exchange
EIAR	Ethiopian Institute of Agricultural Research
EGTE	Ethiopian Grain Trading Enterprise
ESE	Ethiopian Seed Enterprise
ETB	Ethiopian Birr
FAO	Food and Agriculture Organization of the United Nations
FCI	Food Corporation of India
GDP	Gross Domestic Product
GOE	Government of Ethiopia
MoARD	Ministry of Agriculture and Rural Development
MoFED	Ministry of Finance and Economic Development
NGO	Non-governmental organization
PADETES	Participatory Demonstration and Training Extension System
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PSNP	Productive Safety Net Program
SD	Standard Deviation
SDPRP	Sustainable Development and Poverty Reduction Plan
USAID	United States Agency for International Development
VAT	Value-Added Tax
WFP	World Food Program
WRS	Warehouse Receipt System

IV Background

Ethiopia is a largely rural country with an agrarian economy. Agriculture directly supports 85 percent of the population's livelihoods, provides 46 percent of Gross Domestic Product (GDP), and 80 percent of export revenue. Ethiopia's agricultural sector has witnessed consistent growth since 2003: maize production has expanded at 6 percent per annum, and the aggregate export value across all commodities has grown at 9 percent, underpinning an 8 percent annual growth rate in GDP. Agriculture is therefore an important driver of the nation's growth, as well as its long term food security.

At the request of the Government of Ethiopia (GOE), in 2009, the Bill & Melinda Gates Foundation (BMGF) agreed to facilitate diagnostic reviews of Ethiopia's seed system, soil fertility, irrigation, extension, finance, and markets value chains for maize, livestock (cattle), and pulses. The cattle value chain report contained here is one of eight diagnostics covering agricultural sub-sectors and led by senior fellows with the International Food Policy Research Institute (IFPRI), the Ethiopian Institute for Agricultural Research (EIAR), the International Livestock Research Institute (ILRI), and the International Water Management Institute (IWMI). Jointly, these sub-sector diagnostics inform a separate holistic report with systems-level recommendations across agriculture. This systems-level work captures common themes in the more "siloes" diagnostics, and identifies priority areas to drive food security and growth.

The findings of the sub-sector diagnostics and the system-wide report are complementary to national GOE strategies, namely PASDEP II, along with corollary projects financed by GOE and its development partners. The purpose of the work is to support GOE to help accelerate the achievement of PASDEP II's goals.

V Methodology of Diagnostic Work

In close consultation with the Ministry of Agriculture and Rural Development (MoARD), a number of local and international specialists undertook the cattle value chain diagnostic in Ethiopia between November 2009 and April 2010. A large number of stakeholders, including many small-scale farmers and pastoralists, were consulted in the course of the study at the kebele, woreda, regional, and federal level. An independent Ethiopian expert panel, an international content group, development partners, local institutions, NGOs, and other actors also provided input. These discussions culminated in a wide ranging stakeholder convening held in the beginning of March 2010, where the team's preliminary finding and recommendations were presented. This final report reflects this multi-stakeholder input.

As in the diagnostic for other sub-sectors of Ethiopia's agricultural system facilitated by BMGF, a rigorous multi-step process was followed, including:

- **Extensive review of the relevant literature** – the cattle value chain in Ethiopia has been the subject of extensive investigation. The team conducted a thorough review of published and unpublished work, providing a starting point for the team's work. Further, an analysis of international cases provided a context within which to understand the enabling factors in other economies for successful interventions.
- **In-depth key informant interviews** – over 70 stakeholder consultations were held, including with MoARD, BoARD, woreda and kebele-level government staff, development partners, research institutes, traders, cooperatives, unions, farmers, investors, and others participated in interviews. The interviews brought context to constraints identified in the literature review: they also provided a soundboard for findings and recommendations.
- **Analysis of primary qualitative and quantitative data** – primary data was collected to fill key gaps in the existing data set. This fact-driven analysis allowed teams of consultants to make sectoral projections and modeling around constraints and opportunities in the cattle value chain. These analyses provided the basis for a broad set of systemic recommendations.
- **Multi-stakeholder convenings** – convenings were held toward the end of the study to present, test and further refine the team's initial findings and recommendations. Convenings were attended by regional and federal government officials, private sector representatives, as well as national and international research organizations.
- **Synthesis and validation with expert panels** – three separate expert panels were consulted during the review process: an independent Ethiopian panel; an international content expert group; and a high-level advisory group for cross-sectoral and broad development issues. Input was provided by these panels over several months. During this period, the team also continued to receive feedback from MoARD leadership.

- **Rapid appraisal** – to generate quantitative information about the actors in the live cattle value chain in Ethiopia, the study team conducted a “rapid appraisal” in February and March 2010 to collect primary data using structured interviews and questionnaires. During this process, the study team interviewed over 200 stakeholders including livestock producers (farmers), cooperatives, livestock traders and brokers, slaughter facilities, retailers, commercial operators, as well as local municipal and government agents. The team pursued two livestock delivery routes that span the two main production systems (see below) as well as some important cultural and agro-ecological differences.

1. Current Status and Future Potential for Livestock

1.1 OBJECTIVE OF THE STUDY

The objective of this study is to develop a set of recommendations and interventions to increase producer income from, and enhance export competitiveness for, live cattle and beef, while ensuring environmental sustainability. Part 1 provides context and an overview of key issues facing the livestock sector. The subsequent three sections (parts 2–4) provide an assessment of the cattle value chain, beginning with production, followed by trading and fattening, and finally with commercialization for both domestic and international markets. In view of the findings from the sectoral overview and the value chain analysis, part 5 provides the core set of actionable recommendations emerging from the study, directed primarily at GOE, but also to a range of stakeholders. Part 6 is a preliminary discussion of sequencing and prioritization of interventions, and part 7 presents conclusions.

1.2 ECONOMIC IMPORTANCE OF LIVESTOCK IN ETHIOPIA

Livestock are of economic and social importance both at the household and national levels, and have in the past provided significant export earnings. Livestock contribute 15 to 17 percent of GDP and 35 to 49 percent of agricultural GDP, and 37 to 87 percent of the household incomes¹: the large variations are due directly or indirectly to climatic variation.

Livestock have multiple uses aside from income generation, including cash storage for those beyond the reach of the banking system, draught and pack services, milk and meat for household consumption, and manure for fuel and fertilizer. In addition to these non-market values, a thriving informal export trade in live animals further emphasizes the significance, albeit unrecognized by official statistics, of livestock (and particularly cattle) in the Ethiopian economy. This importance is pronounced in pastoral regions, and women's crucial role is widely acknowledged: both directly in primary production, and indirectly through the contribution of livestock to household assets and food security.

Estimates of the livestock herd size for cattle and other species in Ethiopia vary widely. Table 1 shows Ethiopia's estimated cattle population at approximately 49 million, with 25 million sheep, and nearly 22 million goats. Estimates from the International Livestock Research Institute (ILRI)ⁱⁱ show a similar number of cattle but other sources¹ put the estimate as high as 58 million. The FAO ranks Ethiopia ninth in the world in terms of total number of ruminantsⁱⁱⁱ; however,

¹ CSA estimates for 2006/2007 suggest numbers as high as 58 million cattle.

local experts suggest that comparable statistics for Sudan and Nigeria (both with large herds) are inflated, which would give Ethiopia the largest livestock herd in Africa, with seventh place globally. Table 1 also illustrates the relative importance of different species by region.

Table 1: Livestock Populations and Regional Distribution (in 000 heads)

Regions	Cattle	Sheep	Goats	Equines	Camels
<i>Ethiopia</i>	49,297	25,017	21,884	7,209	759
<i>Tigray</i>	3,103	1,376	3,107	476	32
<i>Afar</i>	473	403	801	26	171
<i>Amhara</i>	12,748	8,987	6,022	2,438	50
<i>Oromia</i>	2,245	9,098	7,439	3,738	255
<i>Somali</i>	620	1,162	283	96	24
<i>Benishangul Gumuz</i>	411	84	321	49	-
<i>SNNPR</i>	9,263	3,838	2,626	732	-

SOURCE: CSA survey (2008/9)

Ethiopia's domestic meat consumption for 2006/07 is estimated at 2.4 kg/capita/year for beef, and 0.7 and 0.4 kg/capita/year for sheep and goat meat, respectively. Total meat consumption was close to 276 MT in 2006/07, of which beef and mutton account for 68 and 21 percent, respectively. Pronounced differences have been identified between rural and urban patterns of meat consumption, particularly for beef (1.7 kg/capita/year versus 7.0 kg/capita/year respectively) and mutton^{iv}.

In 2008, livestock accounted for approximately US\$150 million in formal export earnings, making up 10 percent of formal exports^v. Roughly half of this value comes from live animal and meat exports, the remainder being from hides and skins. Formal live animal exports are predominantly cattle (about 70 percent), meat exports are almost entirely from sheep and goats, and hides and skins are primarily from cattle. Trends over the last 10-20 years show meat and live animals becoming increasingly important to livestock exports relative to hides and skins^{vi}.

Beyond formal sector trade, there is significant informal cross-border trade in live animals, which substantially increases livestock's export importance. Estimates of informal trade volume vary widely (e.g., between 250,000 and 500,000 head of cattle per year^{vii}), but appear to dwarf

formal exports (84,000 head in 2008^{viii}). This study estimates the value of informal livestock exports at US\$150-300 million per year^{2ix}.

The Middle East has been, and remains, the traditional destination for Ethiopia's export of live animals and meat. This applies equally to formal trade, as to informal trade, and many exported cattle transit Djibouti. About two-thirds of informal exports move from Eastern Ethiopia to Somalia, and other destinations include northeast Kenya and Sudan.

1.3 LIVESTOCK PRODUCTION SYSTEMS IN ETHIOPIA

There are two major cattle production systems within Ethiopia: the highland crop-livestock system, and the lowland pastoral systems. It is notable that there are variations within each system, and elements of both systems at many locations. However, the segmentation between the two production systems is crucial in informing the findings and recommendations of this report.

- **Agro-pastoral (highland) system:** With a rural population of about 55 million^x, the highlands account for possibly 80 percent of cattle (about 40 million heads) in small herds (averaging 2-4 cattle and about 4 sheep and/or goats^{xi}). Cattle are used primarily for draught power (oxen are 40-50 percent of the herd) and dairy (dairy cows are 25 percent of the herd)^{xii}. Meat production is secondary, and thought to involve mainly old and unproductive animals such as retired draught oxen. Diminishing pasturelands in highland systems, as a result of expanding croplands, and the heavy reliance of livestock on crop residue and aftermath grazing is an important trend. Average distance to market in the highland system is about 30 kilometers.
- **Pastoral (lowland) livestock system:** This is thought to account for about 20 percent of Ethiopian cattle. The population of 10 million pastoralists spans largely nomadic communities and largely sedentary agro-pastoralists: but nearly all own cattle in herds typically of 10-15 cattle and about 7 sheep and/or goats^{xiii}. Cattle are used primarily for dairy for household consumption, with the result that the majority of the herd is female. The pastoral regions are densely populated by international pastoral standards³, although livestock density is lower than in comparable countries (33, 8 and 7 tropical livestock units per square kilometer in the three main Ethiopian regions, compared to 46, 11, and 18 in South Kenya, North Kenya and Botswana respectively^{xiv}). Average distance to market is about 90 kilometers.

The key interaction between the systems is the sale of male calves from the lowlands to the highlands for draught power and eventually, for fattening.

² Assuming an informal export unit value of 75-100% of formal value

³ There are 26, 14 and 126 people per square kilometer in Oromia, Somali and Afar, *c.f.* 16, 5, and 3 in South Kenya, North Kenya and Botswana, respectively.

1.4 HISTORICAL POLICY TREATMENT OF LIVESTOCK

Many livestock sector actors interviewed in the course of this study suggested a history of under-allocation of financial and human resources to livestock development. Moreover, responsibility for livestock development is diffuse within government, and perhaps not fully coordinated. Selected policy and organizational issues include:

- **The project basis** – over the last 30-40 years, the majority of livestock development projects have been donor-driven, with the associated design and content constraints, and implemented by foreign teams. Although the projects have delivered discrete value, the benefits have been rarely sustained, and domestic ownership was insufficient to motivate scaling up.
- **Oversight of the livestock sector within MoARD** – federal responsibility for livestock development does not lie with a single individual or a directorate. The newly-established Animal and Plant Health Regulatory Division (APHRD) is charged with representing the livestock sector, but does not have embedded technical expertise on marketing and commercialization. The Ethiopian Meat and Dairy Technology Institute (EMDTI) could also be positioned to provide leadership to national livestock development, but capacity issues and the positioning of the Institute also have raised issues on policy implementation. To date, the absence of a directorate in MoARD devoted to the livestock sector is noted by many commentators as a constraint to the sector's development.
- **Livestock development working group** – an ad hoc group concerned with the development of Ethiopia's livestock sector formed in 2009 to share information about ongoing projects and prospective planning. A working outline for a livestock development strategy was prepared by the group and shared with various bilateral donor agencies. The group is comprised of a diverse set of stakeholders representing GOE, the regions, the private sector, and NGOs, and experts have noted that the group could provide a useful forum for discussion and consensus-building.

1.5 FUTURE POTENTIAL OF ETHIOPIAN CATTLE

It is the view of this study that livestock have considerable potential to contribute to Ethiopia's agricultural growth. Low levels of herd productivity and livestock commercialization create significant potential to increase the sector's contribution to producer incomes. This would be based on improved productivity and enhanced marketing efficiency, and changed producer behavior in favor of greater off-take.

These benefits would be magnified by spillovers into the related sheep, goat and camel sub-sectors, although the focus of this report is on cattle.

2. Diagnostic Findings – Production

The value chain analysis focused on understanding opportunities and bottlenecks in the live cattle and beef value chain. Despite substantial meat demand, the livestock system currently struggles to supply quality cattle and generate income from beef marketing.

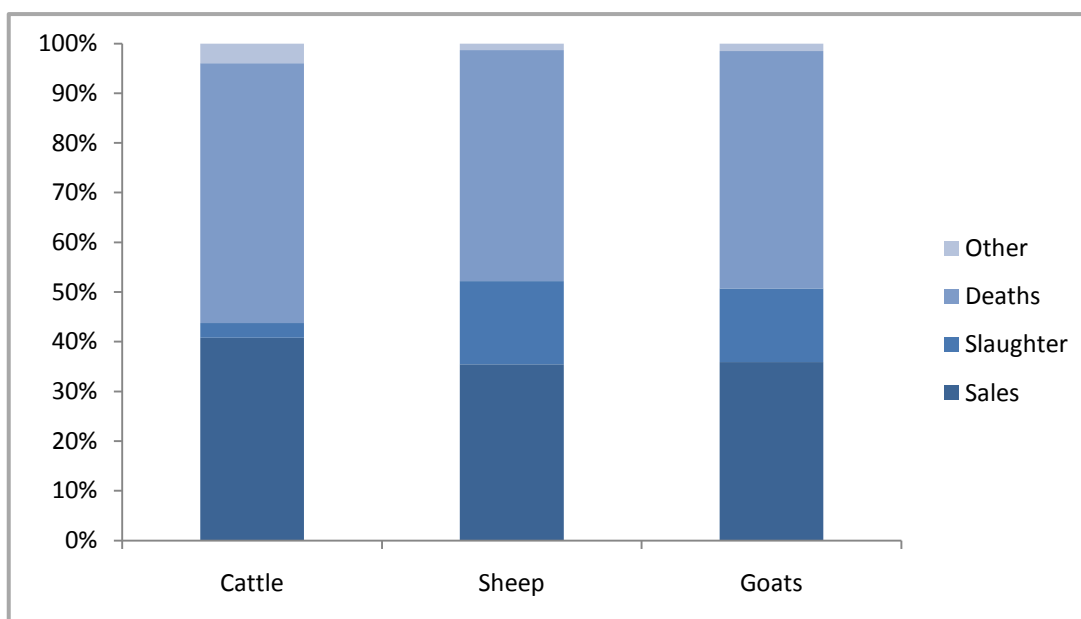
Production is highly fragmented and geographically dispersed, and there are no large commercial operations. Meat production per head of livestock in Ethiopia is low by standards of other significant livestock-producing African countries: just 8.5 kg per head of cattle per year, significantly lower than in Kenya and Senegal (21 and 16 kg respectively)^{xv}. Off-take⁴ in Ethiopia is low compared with that in other East African countries, suggesting that many livestock holders prefer to keep their live cattle for domestic use rather than sell them. It is commonly claimed that inconsistent supply of quality animals is a major constraint to commercialization, and this was repeatedly confirmed in the rapid appraisal.

The analysis of the production system identifies several key causes of low cattle productivity and off-take: (i) small herd size; (ii) poor reproductive performance (iii) limited access to feed and water; (iv) lack of alternative assets in which to store or invest cash surpluses; (v) social factors discouraging sale; (vi) lack of functional animal health services; and (vii) demand for draught power for agro-pastoral systems competes with meat sales for young males, leading to predominant sales of aged, low-quality cattle.

Most analyses of herd dynamics portray mortality as being far higher than sales and as the largest extractor in all species (Figure 1). Notably, cattle for sale are rarely slaughtered at home and hence their sales use the long delivery chains to be discussed further below. These figures are similar for sheep and goats, although with higher slaughter rates.

⁴ Off-take is defined as the animals sold, as a proportion of all animals held within an enterprise.

Figure 1: Reasons for livestock's exit from production systems



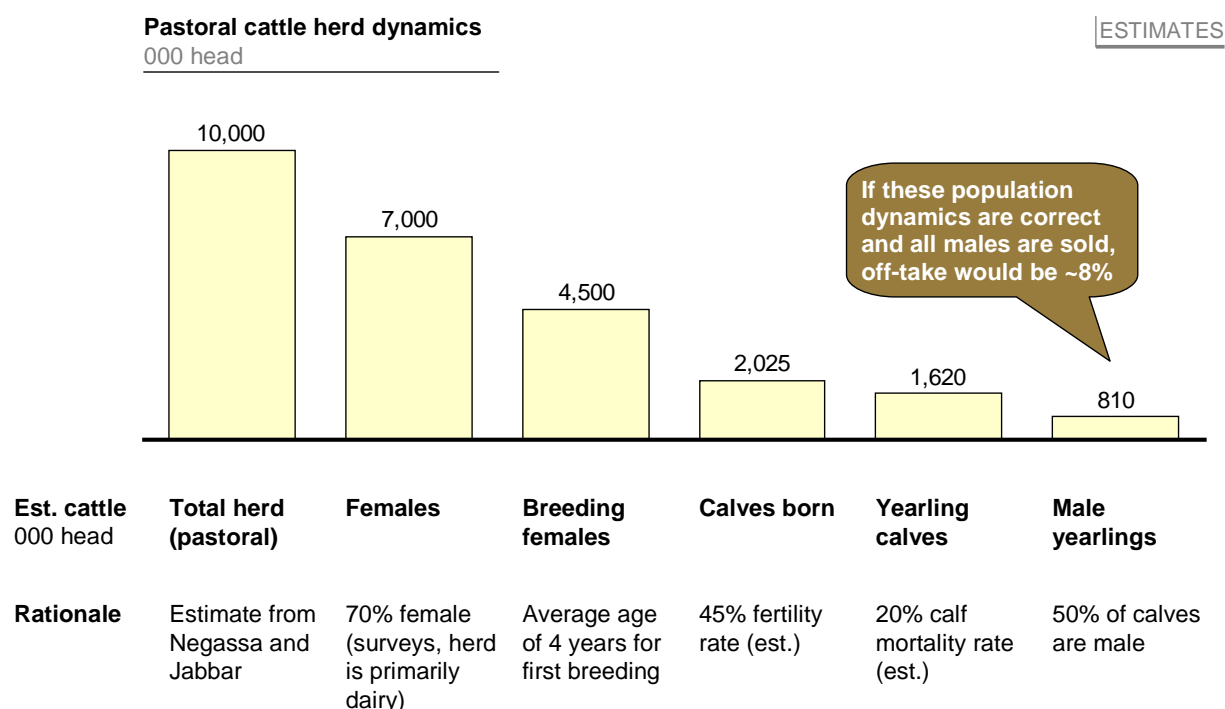
SOURCE: Compiled by Fadiga and Amare (*unpubl.*).

Published estimates report low net⁵ commercial off-take rates for cattle, sheep and goats, with 9, 6 and 7 percent respectively from 2003 to 2005^{xvi}. In comparison, net commercial off-take rates in pastoralist areas in Kenya and Botswana are 10 and 6 percent, respectively, while in Uganda and large ranches in Botswana, off-take rates reach 17 percent^{xvii}.

The research team found that the low off-take in both lowlands and highlands is constrained largely by low herd productivity, in contrast to the widely held view that non-commercial attitudes are the main obstacle to Ethiopia realizing the potential of its livestock system. Figure 2 demonstrates the accumulated factors contributing to low off-take: beginning with the 10 million cattle in pastoralist hands, some 70 percent of which may be female with an 11-year lifespan, and reproductive rate of 45 percent. This presentation provides insight into interventions that can be made to increase off-take, without increasing overall herd size: a key requirement in the country's resource-constrained livestock systems.

⁵ Net off-take subtracts out purchases for replacement, and commercial off-take excludes sales due to age and culling.

Figure 2: Pastoral Herd Dynamics



SOURCE: Negassa and Jabbar (2008); FAO; expert interviews

Estimates of Ethiopian livestock mortality and reproductive performance vary widely. As an example, 8-10 percent mortality for cattle and 14 percent mortality for small stock is widely acknowledged^{xviii}. These numbers are much higher during droughts. In addition, cattle reproductive performance is low^{xix}. This problem is further illustrated by one cattle study in the lowlands indicating conception rates of 50.5 percent, abortion incidence at 8.5 percent, and a survival rate from normal births of just 39 percent^{xx}.

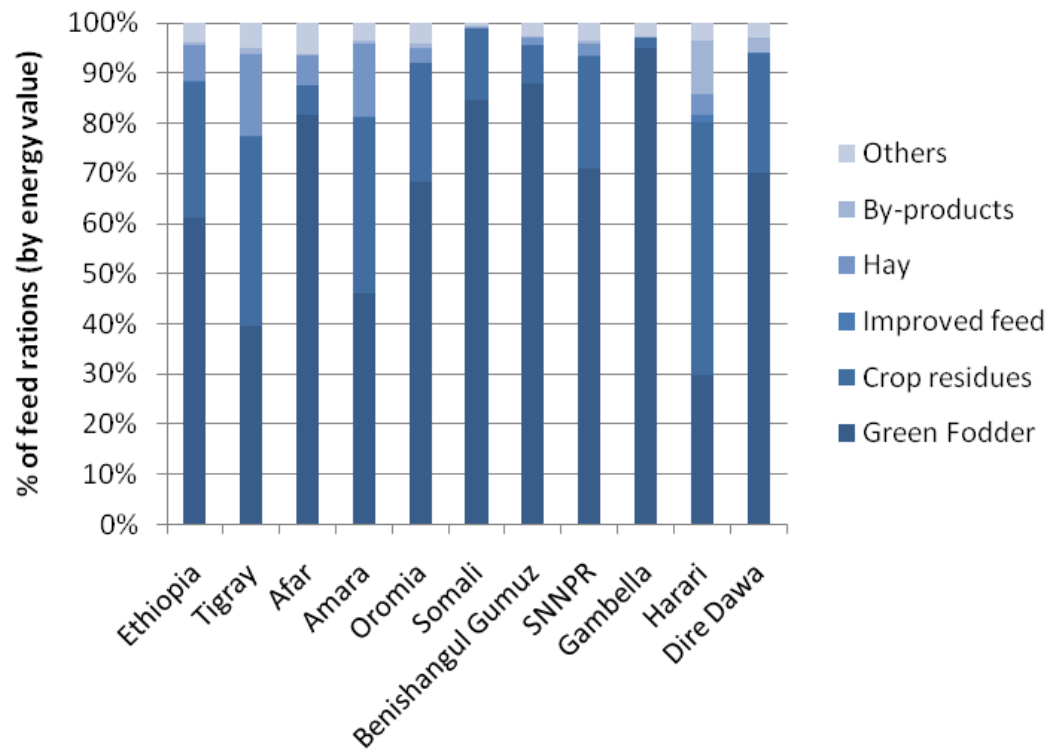
2.1 NUTRITION AND WATER CONSTRAINTS

Feed is the most widespread constraint on herd size and productivity, in both lowlands and highlands. This was revealed during the rapid appraisal interviews, and supports several prior analyses in the sector. The feed problem arises in two related forms: shortage; and high feed prices.

Feed shortages are reported to be pervasive and persistent. Pastoral herd size (including survival and reproduction) is fundamentally constrained by lack of grazing and water and periodically reduced 20-60 percent by chronic drought^{xxi}. In the relatively wet highlands, available livestock feed (including grazing) is estimated to fall 40 percent short of requirement^{xxii}.

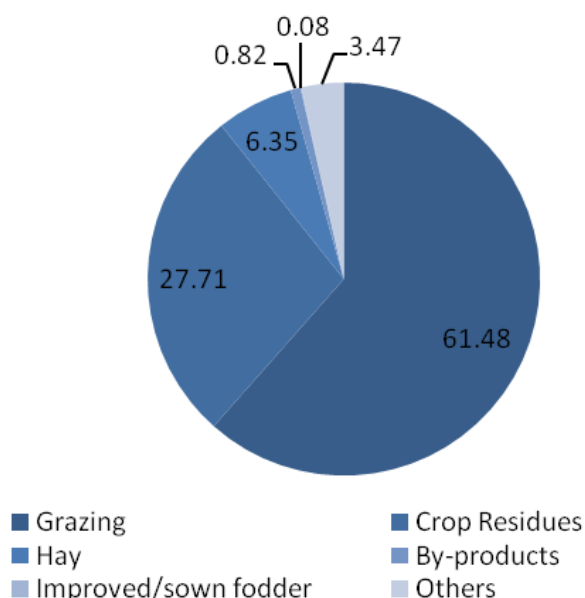
Data adapted from MoARD’s 2008 Livestock Master Plan, complemented by expert interviews, indicate that nationwide, 64 million tons of feed (including forage and dry matter) are required annually to sustain the livestock population in Ethiopia. However, the same sources estimate that only about 37 million tons are currently available, so that the system satisfies just 58 percent of needs. Data from specific pastoral areas shows a similar picture with an estimated feed deficit of 30 percent in Afar Region^{xxiii}.

Figure 3: Regional Livestock Feeding Practices



Compiled by Fadiga and Amare (*unpubl.*)

Figure 4: Sources of Livestock Feed (percent)



SOURCE: CSA (2005/06)

Figure 3 outlines the main sources of livestock feed in Ethiopia, and the considerable regional variation in how these sources are used is presented in Figure 3. Notes on each source gathered from stakeholder interviews include:

- **Grazing** - These feed sources are frequently either communal, or communally administered, with strong seasonality in supply due to rainfall patterns. As indicated in Figure 3, grazing and green fodder as a source of livestock feed are extremely high in several regions, exceeding 80 percent of feed supply in Afar, Somali Lands, Benishangul and Gambella regions. Grazing as a source of livestock feed has begun to decline in recent years, as a result of increased areas of cultivation, and changing patterns of leaving land fallow for regeneration. This is especially evident in the highlands where crop cultivation is increasingly intensive⁶.
- **Hay** - haymaking for commercial sale is practiced in certain high-demand locations, primarily in urban and semi-urban dairy producing areas.
- **Crop residues** –Crop residues are in most cases selectively fed to oxen/bullocks and lactating cows, and sometimes to heifer calves. As shown in Figure 4, crop residues’ share of the national feeding regime accounts for over one quarter of total feed, and are reported to becoming more important over time.

⁶ Findings presented by Fadiga and Amare (unpubl.) show some variance from findings by the SPS-LLM project (2007, 2009); however, the proportional distribution of feed sources follows a similar vein.

- **Grains** - despite the presence of a vibrant grain industry, concentrated livestock feeds from whole grains are rarely used in Ethiopia, possibly due to the lack of any surplus over human consumption. The competition between use of grains to meet human food security versus animal feed is an important issue that is also discussed in the market potential for cereals.⁷.
- **Industrial by-products**– feeds formulated from by-products of flour and oil mills are used, but are not common. These are most commonly used by private commercial and public research animal farms, but quality control, and costs, are reported to have recently reduced their wider use.

The rapid appraisal revealed different feed habits between routes – producers on the northern route report use of a larger variety of feeds (straw, hay, crop by-products, cotton seed, bran and crop residues) than their southern route counterparts who rely on grazing (plus other feeds for feedlots). This reflects different agro-ecological conditions and production systems between the two routes, as well as availability and cost of the various feeds.

Case Study – Feed as a Constraint to Export Competitiveness

Rich et al. (2008) analyzed a scenario where animals are tested, vaccinated, and quarantined over a 21- day period, and then finished in feedlots for consistency and quality – bringing them to an export weight of 400 kg. The objective of the study was to examine the costs and benefits of implementation of an international standard SPS-Certification system, to determine whether the costs of the SPS certification process would make Ethiopian beef non-competitive. Sensitivity analysis showed feed cost to be the major determinant of profitability.

The high cost of feed is not exclusive to Ethiopia - in other developing countries, feedlots have historically been built next to low-cost sources of digestible feeds, like pineapple peel in Thailand, or brewery waste in many countries. There are a number of new and existing sugar plantation and other types of large-scale agriculture investments in Ethiopia that could be used as sources for livestock feed and potential sites for feedlots.

Stakeholder discussions revealed that the average price of animal feed increased by 3.2 times over the last 5 years (see later section) - faster than the rate of increase for prices of food for human consumption, and more quickly than overall inflation. For example, the average price for a bale of hay was about ETB 0.30 in 2004 but rose to ETB 1.2 birr in 2009 (a 400 percent increase in five years)^{xxiv}. Furthermore, feed availability and prices vary considerably by season: the reported typical price rise was 62 percent between seasons^{xxv}.

Seasonal variability of water availability also introduces pressures in both highland and lowland production systems. This is particularly pronounced where water sources are not co-located with feed: a common situation during the dry season and in droughts. For intensive dairy and beef production, water inputs pose constraints for both drinking sources and cleaning purposes.

⁷ See maize in the related value-chain diagnostic

2.2 SOCIAL IMPORTANCE OF LIVESTOCK TO PASTORALISTS AND LACK OF ALTERNATIVE ASSETS

Pastoralists are widely perceived to be “subsistence-oriented” rather than “market-oriented”. Some pastoralists are indeed reluctant to sell livestock (and particularly cattle) beyond that required to meet their immediate cash needs. In addition to widely cited social reasons (e.g. sign of status), there is a sound economic rationale for a pastoralist to build his or her herd:

- **Lack of attractive alternative assets in which to invest** - Savings accounts, which are seldom available, are seen as risky, and where they exist, savings fees erode an already low rate of return. The financial rationality of accumulating livestock in such a context has been observed by researchers^{xxvi}. Moreover, excess cash is often more vulnerable to requests from relatives than is livestock.
- **The importance of herd size to surviving and recovering from recurrent drought** – many livestock producers typically have few animals for sale – small herd size often makes producers reluctant to sell. Producers with large land areas are also inclined retain animals to ensure sufficient draught power^{xxvii}.

For many households with livestock, motivation for sale is incidental household expenses (taxes, loan repayments, social and family obligations) rather than pre-planned commercial gain. This indicates that many livestock holders do not view their animals as commercial entities but rather as household assets that can be sold as needed. Pastoralists are therefore only somewhat responsive to price and timing, and market poorly – for example, there is often a supply glut of poor animals during the dry season.

2.3 LIMITED AVAILABILITY OF MODERN ANIMAL HEALTH SERVICES

2.3.1 Supply of Drugs and Vaccines

Provision of vaccinations and treatment is low (Table 2): just 27 percent of cattle are vaccinated and less than 43 percent of sick cattle receive treatment. These numbers are even lower for other species.

Table 2: Estimated Number of Livestock Vaccinated, Afflicted and Treated (2008/9)

Species	Population (thousand head)	Total vaccinated (thousand head)	Share (%)	Total afflicted (thousand head)	Share (%)	Total treated (thousand head)
Cattle	47,500	12,700	27	9,200	19	4,000
Sheep	26,100	3,400	13	7,900	30	1,900
Goats	21,700	2,800	13	5,600	26	1,100

SOURCE: Fadiga and Amare (*unpubl.*)

Chronic shortages of drugs are reported at animal health centers and pharmacies. To address the major livestock needs would cost, by stakeholder estimates, a total of ETB 400-750 million for cattle and ETB 300-550 million for sheep and goat^{xxviii}. In comparison, the government budget is just ETB 70 million, and supplies are reported accordingly to run out by mid-year. During August to February, about 30-50 percent of pastoralists can buy legal animal drugs, but during April to June, just 10-30 percent are able to do so^{xxix}. For many pastoralists, distance from health centers is a constraint on availability. These factors contribute to a high demand for black market drugs of uncertain quality and purity, and for traditional cures.

There is some private sector involvement in animal health care but it is mostly limited to provision of drugs and treatment for ailments. Government dominates provision of vaccines, anti-parasite treatments and responsibility for disease control. MoARD (2010) reports that the public veterinary infrastructure includes one vaccine producing laboratory, one referral diagnostic laboratory, 14 regional laboratories and 2,573 clinics. Conversely, the private sector operates 62 clinics, 149 pharmacies (2-5 percent penetration) and 239 rural drug retail outlets, while 28 individuals are involved in the import of veterinary drugs^{xxx}.

Private veterinarians must then compete with government-subsidized prices for livestock drugs, although supply reflects the availability of funds. Interviews during the research team's field visits indicated that a typical private rural drug vendor can expect to collect revenues of 8,000 birr per month when not competing with discounted drugs, but only 1,200 birr per month when

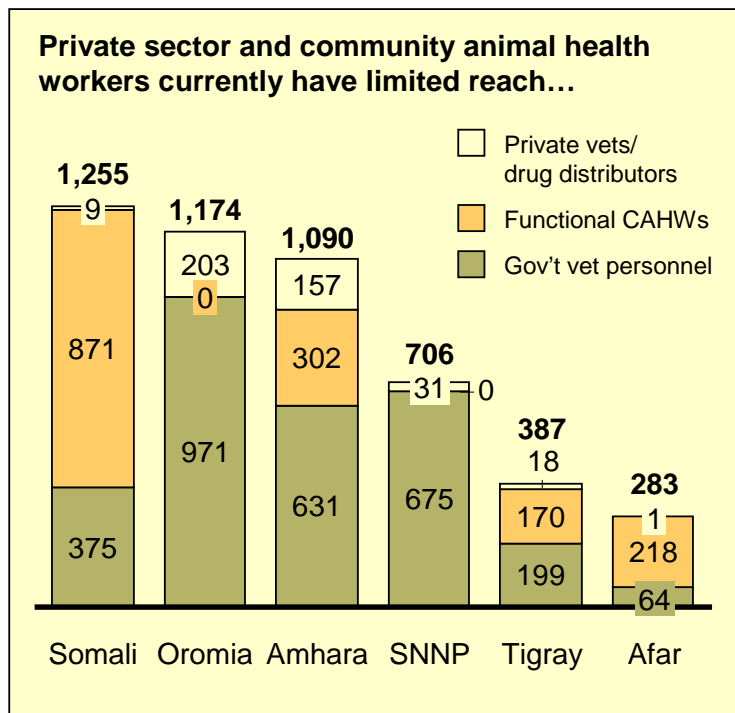
they have to compete with discounted government drugs^{xxxii}. In addition, the study found that penetration of private drug vendors is extremely low in Ethiopia when compared to other countries in the region and that the inconsistent availability of government-supplied drugs prevents private companies from developing effective rural distribution networks. Similar crowding-out appears to occur due to the (periodic) supply of free or discounted drugs from government and humanitarian NGOs. Finally, lack of financing is widely reported as an obstacle to private sector entry.

2.3.2 Trained Health Worker Access

Access to trained health workers is low compared to the livestock population, exacerbated by the high cost and difficulty of serving remote and semi-nomadic populations. Ethiopia has less than 7,000 veterinary personnel in total in 2010, including just 1,500 veterinarians to treat the entire livestock population. This situation is quite variable amongst regions (see 5), but generally falls short of recognized norms^{xxxii}.

Community Animal Health Workers (CAHW) often travel 50 kilometers or more to treat the herd of a single community. The coverage of trained veterinarians is estimated at 10-30 percent of pastoral herds, while CAHWs have wider coverage at 30-80 percent^{xxxiii}. Linkage between CAHWs and the government and/or private pharmacies is often weak.

Figure 5: Regional Distribution of Health Workers



SOURCE: MoARD and other sources

The majority of the government animal health budget goes to salaries (about ETB 4.5 million in a typical region, including per diems, about 70 percent of the total animal health budget)^{xxxiv}. The ratio between salary and non-salary expenditure (drugs, equipment, and transport) for animal health in Ethiopia is currently between 0.2 and 0.8^{xxxv}, while FAO and ILRI recommend a ratio of 1.5. When considered on a per animal basis, total spending (salary and non-salary) is just under ETB 1 per animal, compared to recommended levels of ETB 31⁸.

In addition to treatments used by producers and co-operatives, feedlots administer a substantial number of animal health treatments. This indicates a possible duplication of effort since feedlot management is required to treat all animals, particularly those destined for export. This could remove the incentive for producers' to provide vaccinated and disease-free stock, as the feedlots face the same costs of animal health regardless of producers' husbandry actions.

⁸ At current exchange rate of 13.5 ETB:USD, using GRM estimate of \$2.3 USD/head for total animal health costs

3. Diagnostic Findings – Trading and Fattening

A number of constraints were identified in the middle of the value chain, at the aggregation and trading stage, where the formal trading channel has had mixed success in marketing irregular and variable-quality supply. Key challenges include: (i) ineffective livestock marketing cooperatives; (ii) pervasive sale on credit and late payment; (iii) lack of transparency on quality, health and weight; (iv) a rapidly-growing feedlot industry constrained by feed, water, land and finance; and (v) informal cross-border trade driven by weak highland-lowland linkages and strong cross-border forces.

3.1 LIVESTOCK COOPERATIVES

The value chain study found most livestock cooperatives to be small (30-100 members), and managed either by producers or traders. Few are specialized, and even fewer are specialized in cattle. Cooperatives typically operate fattening, production, purchase and sale operations, and during the rapid appraisal cooperatives on both routes reported a variety of other roles and services, including price negotiation, credit, social safety nets and training for farmer members. At the most fundamental level, cooperatives face three core challenges:

- **Poor member patronage** –many members sell outside the cooperative, resulting in low volume, reduced market power, and perceptions of a “buyer of last resort”;
- **Little demarcation between non-members and members** – cooperatives report buying cattle from non-members, including some traders; and
- **Limited access to production inputs** –including feed (access to grazing), water, credit, and veterinary supplies.

3.2 PERVASIVE SALE ON CREDIT AND LATE PAYMENT

As shown in Table 3, actors in the Ethiopian live cattle value chain report the widespread use of late payment in transactions. Almost all actors report using their own funds as the main source of working capital, although most actors also report both selling and buying with informal credit. The terms entail a delayed payment (one week to three months delay was commonly reported), with no interest paid on outstanding balances. In some cases, cooperatives can provide credit, and feedlots appear not to use credit.

Table 3: Payments through the Value Chain

	Producer	Cooperative	Trader	Feedlot	Butcher
<i>Source of working capital</i>	Own funds	Own funds	Own funds	Own funds	Own funds
<i>Use credit when buying?</i>		Rare	Most	None reported	~50% of purchases
<i>Use credit when selling?</i>	Most	All	All	Almost all	Almost all, but only 1–5% of sales
<i>Timing of repayment</i>	Late	15–30 days	7–90 days	Late	2–10 days
<i>Interest received?</i>	No	No	No	No	No

SOURCE: ILRI Rapid Appraisal

3.3 LACK OF TRANSPARENCY ON QUALITY, HEALTH AND WEIGHT

The rapid appraisal reports a lack of transmission within the marketing system of key information regarding attributes such as quality, health, and weight. Actors along the value chain were asked “what buyers want”. Results indicate a lack of consensus along the value chain – producers and cooperatives emphasized breed and color, brokers and traders emphasized size. Feedlots and butchers were more concerned about condition and health, and none of the actors listed weight in their three most preferred attributes. These disparate expectations have implications for alignment toward market forces.

3.4 BOTTLENECKS IN THE FEEDLOT INDUSTRY

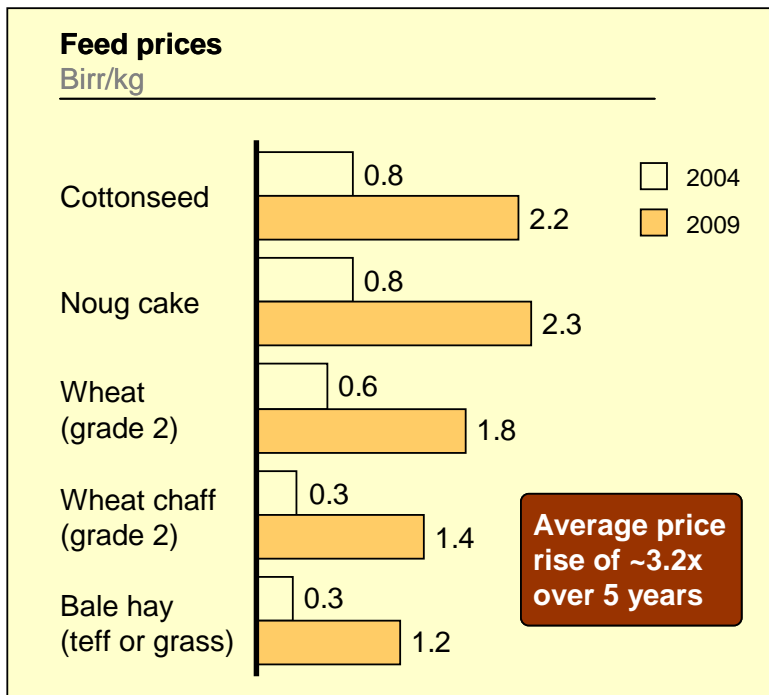
Feedlots tend to purchase livestock for fattening on a somewhat large scale, while household fattening units or “backyard systems” (primarily in highland mixed production systems) fatten small numbers of retired draft oxen, without purchasing in markets. Butchers tend to buy primarily, either directly or via a trader, from household fattening units.

Slaughter houses and fattening facilities have been located at key locations throughout the country. Location is influenced by livestock feed supply, access to air transport, proximity to markets serving domestic meat demand (principally Addis Ababa), and certain locations on trekking routes. As domestic meat demand is centered in Addis Ababa, this heavily influences the flow and marketing of livestock throughout the country.

The feedlot sub-sector, a natural intermediary to coordinate value chain actors and smooth fluctuations in both quality and volumes, grew rapidly in recent years. However, emerging

constraints hinder future growth, such as access to feed, water, land, financing, and export markets. Feed prices have tripled in five years (see Figure 6), and other critical inputs are also scarce, such as quality land with access to water rights, financing, and reliable export markets. During the rapid appraisal, preliminary results suggest that backyard fattening is cheaper than feedlot operation, primarily due to the availability of feeds produced or available on the same farms.

Figure 6: Feed Prices Over Time



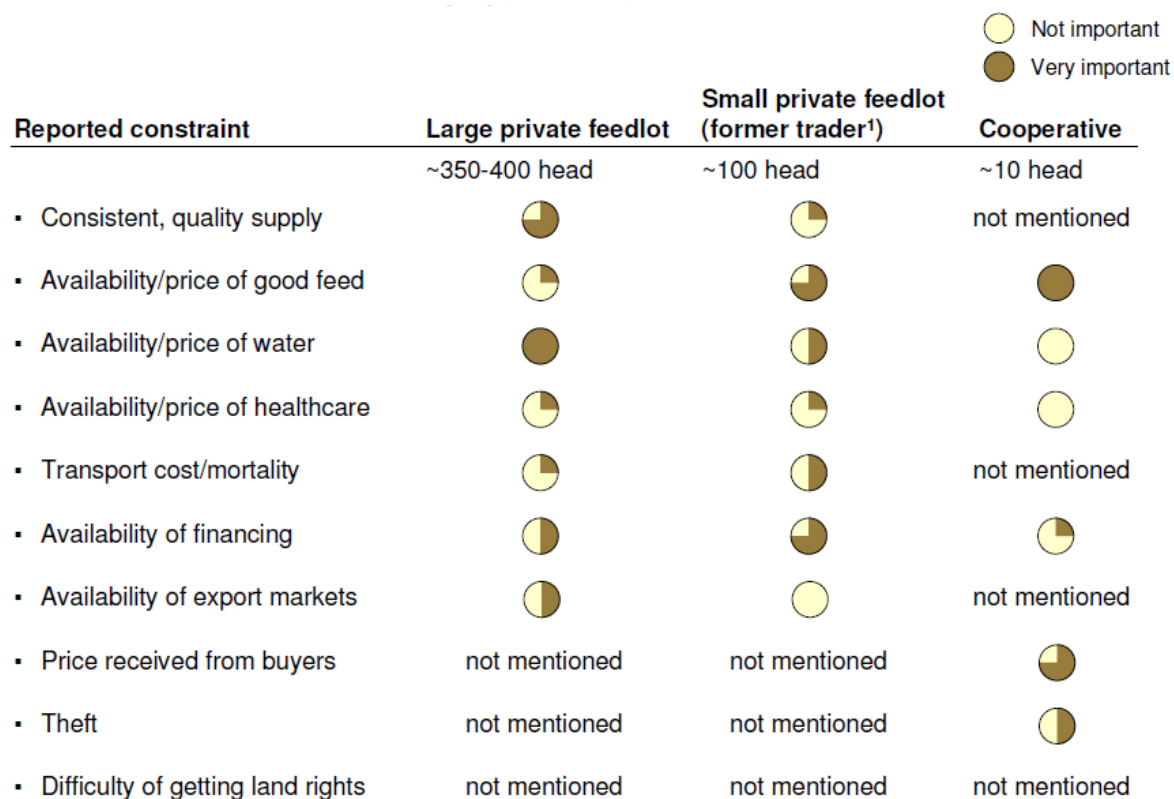
SOURCE: SPS-LMM surveys

A small fraction of Ethiopian beef is raised in feedlots – the vast majority is fattened in backyard systems. Despite this prevalence, feedlot fattened cattle are apparently perceived as producing higher quality meat than are backyard fattened ones. These, and cost-based, comparisons are distorted by the fact that most cattle fattened by smallholders are aged (8 years or older) draught oxen fed near-to-zero opportunity cost feeds available in small quantities locally, while most cattle fed in feedlots are 50-60 month-old Boran bulls targeted to the higher value export market. Feedlot operators reported to this study team that they cannot sell to local butcher shops as they cannot compete with the lower prices of backyard fattening. This indicates that there are different sales “niches” for fattening operators of different types.

A notable finding from the rapid appraisal is that fattening, uniquely amongst value chain stages, is characterized by inward investment from other value chain agents, as well as from actors unrelated to agri-food industries.

The precise constraints experienced by feedlots vary based on the scale of operation. Figure 7, below, places in context the comparative advantages, to date, of different aggregators for off-take and commercialization, along with the relative value of production constraints. Findings are based on the rapid appraisal, and reinforce the basic notion of market niches: the demand and the ability to supply high value export markets require a different set of inputs, than small producer-driven feedlots targeting domestic markets.

Figure 7: Feedlot Constraints by Type of Operation



SOURCE: Field visits

3.5 Informal Cross-Border Trade

Analysis of Ethiopian trade in cattle faces the contradiction that domestic prices are higher than international prices, but animals flow away from the highlands to contribute to substantial informal cross-border trade in live cattle. This attests to some underlying competitiveness of Ethiopian livestock but also highlights inefficiencies in formal export channels and poor economic linkages between highland and lowland systems.

Ethiopia borders half a dozen countries, with many cultural, linguistic, clan and family links spanning (and pre-dating) the frontiers. These connections employ physical and organizational trading arrangements that have long served Middle Eastern markets. Challenges such as health and SPS standards, feed and other costs of fattening, monopolistic quarantine provision in

Djibouti, and lack of established relationships and branding all limit the potential for beneficial entry to formal export markets. Export abattoirs operate at 20-50 percent utilization, and unanimously cite insufficient, unreliable and low-quality supply as their most important constraint.

Informal exports of live animals are difficult to quantify, but (see Table 4) estimates indicate that over 300,000 heads of cattle and over 1 million sheep and goats were exported in 2001. Estimates of the ratio of informal to formal trade range from four to six times by volume and two times by value.

Table 4: Estimates of Informal Livestock Exports

Source of data	Reference period	Cattle (head)	Sheep and goats (head)	Camel (head)
Concerned Ministries, 1983	1981/82	225,450	758,200	Na
AACM 1984	1983/84	55,000	330,000	Na
Min. of For. Trade 1987 (unpub data)	1985/86	260,000	1,200,000	Na
FAO 1993	1987/88	150,000	300,000	Na
World Bank 1987	1987	225,000	750,000	100,000
MEDaC 1988	1998	260,000	1,200,000	Na
Belachew and Jemberu 2002	2001	325,000	1,150,000	16,000

SOURCE: Ayele Solomon *et al.* (2003)

Reported factors contributing to large volumes of informal livestock trade and exports include:

- Onerous procedures required to export formally including export licenses, quarantine, banking clearance for remitting foreign exchange, minimum weight restrictions, and informal minimum price requirements.
- Better prices and more reliable market across the border;
- Poor market linkages, featuring high transportation and transaction costs;
- Consumer goods (food, clothes, electronics) can be traded for livestock and are readily available from across borders;
- Bans on Ethiopian livestock and meat;
- Financial and non-financial advantages to informality, including taxation, black market foreign exchange rates, lack of bureaucratic delay and clan and linguistic ties.

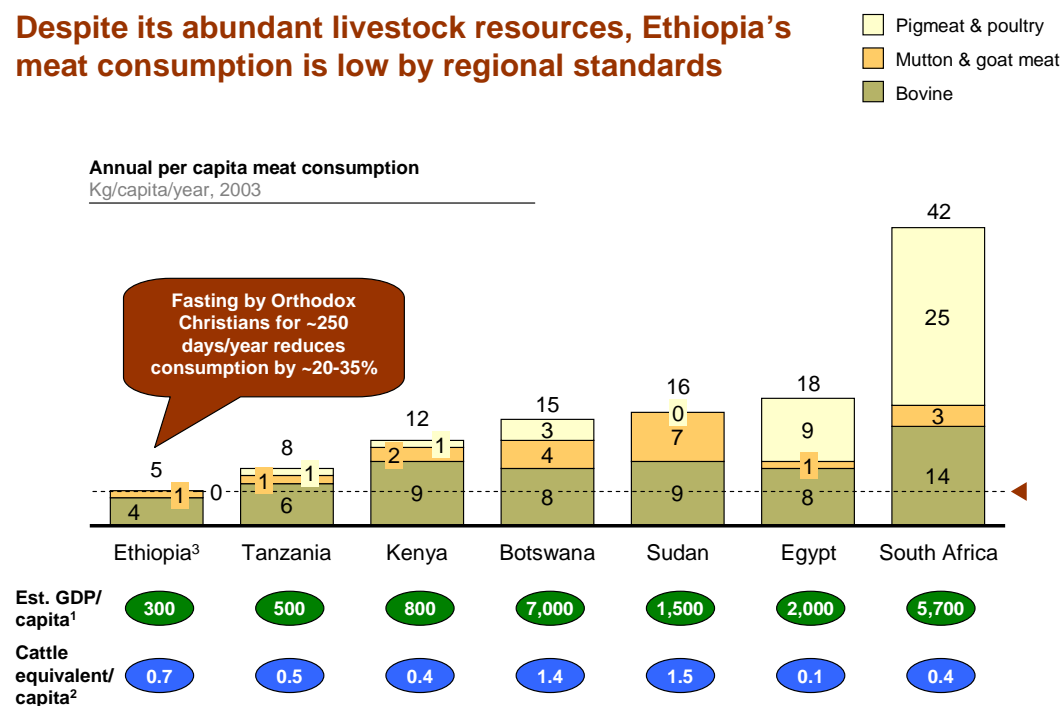
4. Diagnostic Findings – Commercialization

4.1 DOMESTIC DEMAND

Numerous studies identify substantial domestic demand for Ethiopian meat, centered on Addis Ababa. However, (see Figure 8) Ethiopia’s meat consumption per capita (~5 kg/year^{xxxvi}) is low by regional standards. This is perhaps in part due to high domestic prices, but is also due to Orthodox Christians’ (around 40 percent of the population) fasting. Fasting prevails for about 250 days per year, reducing aggregate domestic consumption by about 20-35 percent. Most demand projections, however, are positive in light of income and population growth even if prices remain above international levels. On these assumptions,⁹ domestic demand could increase about 35 percent by 2015 as population and incomes grow, and varying qualities and price points appear.

Figure 8: Ethiopian Meat Consumption versus Neighbors

Despite its abundant livestock resources, Ethiopia’s meat consumption is low by regional standards



1 At market exchange rates
 2 Assumes 5 sheep or goats equivalent to one cow; does not include pigs or poultry
 3 CSA data from Negassa/Jabbar (2007) gives 2.5 kg beef and 1.1 kg mutton and goat meat per year

SOURCE: FAOStat; World Bank; IMF; Negassa and Jabbar (2008)

⁹ 3% per annum population and 3% per annum income growth, and an income elasticity of demand of 0.7

4.2 INTERNATIONAL DEMAND

Recent export of live animals and meat through formal channels is presented in Table 5. As seen above, these figures are dwarfed by informal trade. Major markets in the Middle East are also growing in terms of population and income, providing a range of niches for targeting by Ethiopian exporters.

Table 5: Ethiopian Live Animal and Meat Exports through Formal Channels (thousand head)

	2005–06	2006–07	2007–08	2008–09
Live animals				
<i>Cattle</i>	143	156	83	84
<i>Camels</i>	3	19	39	25
<i>Sheep</i>	12	33	140	97
<i>Goats</i>	3	11	31	5
<i>Others</i>	<1	12	2	2
Total Numbers	163	233	297	214
Meat				
<i>Volume (000 MT)</i>	7.9	5.9	6.5	7.4
<i>Value (000 US\$)</i>	18,488	15,471	20,887	26,581

SOURCE: SPS-LMM (*unpubl.*)

It is interesting to note that cattle export and meat volume has declined since 2006–07, due to periodic interruptions from bans imposed by importing countries due to disease outbreaks: some sources estimate that this occurred a total of seven times during the last three decades. Many live animal exporters are small businesses - 88 known exporters sent an average of just 2,400 animals abroad in 2008–09 - this adds to the instability of the export sector, due to their lack of working capital, which in turn constrains expansion.

Despite these constraints, there is substantial regional demand for cattle and beef, which Ethiopia could further exploit.

5. Recommendations and Suggested Implementation

The study team envisions a livestock value chain that:

- is efficient;
- is equitable along the chain and productive in pursuit of development objectives for poverty reduction and gender;
- features innovative aggregation models;
- accommodates fattening systems for the export and domestic market; and
- Accommodates a role for dairy in the supply of stock for fattening.

Attaining this vision will require both “supply push” and “demand pull”. On the supply side, the suggested interventions target nutrition (pasture, feed), water, younger off-take, animal health, commercial aggregation and fattening, and efficient trading and logistics; while the demand interventions address elements of demand within the value chain and beyond.

Specific recommendations are to:

- (1) develop the highland feedlot sector to stimulate demand-pull and value addition;
- (2) drive smallholder herd productivity through (possibly dairy-oriented) aggregation in high-potential highland woredas;
- (3) experiment with holistic productivity and commercialization interventions in high-potential pastoral woredas;
- (4) formalize a joint vision and development program between government and an overarching industry association;
- (5) address specific constraints that cut across sectors; and
- (6) coordinate interventions with development partners in lowland urban areas and low-potential pastoral zones.

5.1 FORMALIZE A JOINT VISION AND DEVELOPMENT PROGRAM BETWEEN GOVERNMENT AND AN OVERARCHING INDUSTRY ASSOCIATION TO ENABLE EXPORTS AND DOMESTIC MARKET EFFICIENCY

Consolidation across government agencies and various livestock industry associations (e.g. EMPEA, ELTPA, etc.) is required, and should be implemented as part of an industry-level vision.

Key recommended activities include:

- Clarify responsibility for livestock, and for livestock-related social development issues, within government
- Create and enable an over-arching industry association from existing groups
- Develop a joint public/private vision and development plan for the sector, founded on mutual interests.

This development program would formalize the expectations and commitments each side will make towards the sector, and could consist of several key components:

- Sector vision and objectives (i.e. a blueprint for the next 5 years)
- Clearly defined roadmap, roles, responsibilities and realistic production targets for all key public and private actors and how they will be reached
- Code of conduct on business ethics (potentially contractually binding in some way, e.g. a private company might lose certain rights if they fail to meet their targets)
- Joint governance and coordination, potentially through annual reviews by a third party to help ensure adherence to the plan.
- Discussion forum for all stakeholders (this can also help to jointly highlight and address issues in the sector)
- Government intervention on specific enablers for the sector (as outlined above), including support mechanisms and incentives for private sector growth (e.g. risk sharing, land leasing, planning permission, tax incentives, financing with favorable terms, technical assistance).

Such a program could also define and undertake actions that would improve domestic marketing efficiency (and thus international competitiveness), such as facilitating coordination among value chain actors, clarifying and enforcing regulatory standards, promoting auctions and weighing scales, broadcasting prices by radio, and investigating and addressing alleged cases of collusion.

Key activities to initiate this process would be as follows:

1. Call for and process expressions of interest and purpose, and for indicators of success and progress
2. Set-up a joint task force, to be chaired by head of ESE or state minister
3. Select key participants in the livestock sector and agree on representatives, purpose, agenda and timing of meetings.
4. Convene first meeting and draft code of conduct that encompasses commitments to regulations, business ethics and producer ethics
5. Continue to convene meetings to revisit agenda and update agreements
6. Measure progress against agreed indicators

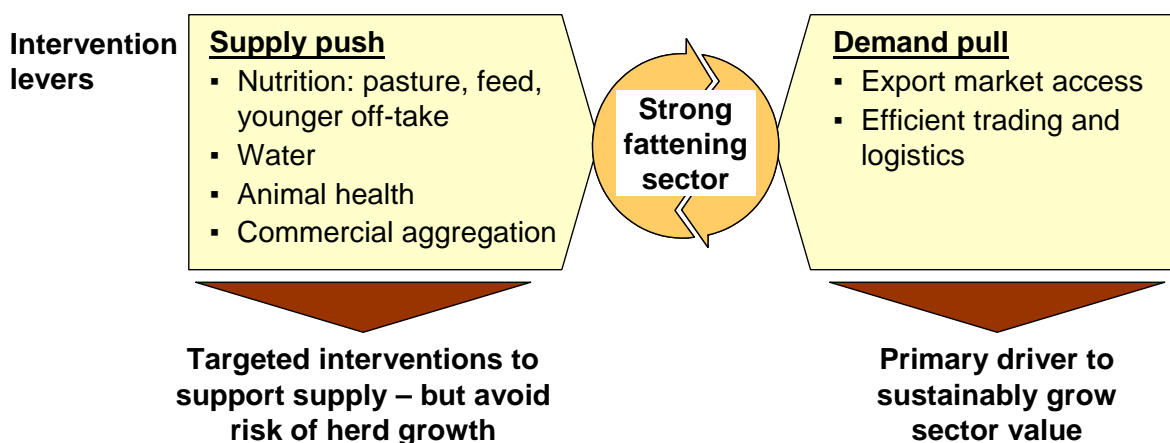
Table 6: Implementation Actions to Formalize a Joint Vision and Development Program between the Government and an Overarching Industry Association

	Actions	Potential Owners
1.1	Clarify livestock responsibility within the government	MoARD, private sector
1.2	Create an over-arching industry association	MoARD, livestock industry associations (e.g. EMPEA, ELTPA)
1.3	Develop a joint public/private vision and development plan for the sector to credibly address obstacles to exports and domestic marketing efficiency	MoARD, livestock industry associations (e.g. EMPEA, ELTPA)

5.2 DEVELOP HIGHLAND FEEDLOT SECTOR TO STIMULATE DEMAND-PULL AND VALUE ADDITION

The research team sees fattening— specifically commercial feedlots – as playing an important role in both pushing supply (e.g. catalyzing greater feed productivity and converting weaker animals to quality products) and pulling demand (e.g. by creating a strong and consistent demand for young male calves) (see Figure 9). Notably, these feedlots need not conform to foreign models, nor to extant Ethiopian models. Highland systems are seen to feature multiple sources of feed and flexible systems for recruitment of livestock from other uses, but their scale and mode of operation would be decided by localized conditions and operators’ skills. Research into these topics (see below) would assist with scaling up the wining models.

Figure 9: Fattening Sector as an Anchor to Supply and Demand



It is also envisaged that feedlots will deliver benefits beyond their immediate participants:

- as aggregators for nearby smallholder farmers, largely by economies of scale and associated reduced transaction costs;
- as a focus for local businesses such as private animal health provision and forage seed distribution;
- provision of a stable and consistent source of demand for animals to be fattened, thus enhancing demand transmission;
- demonstration of high-productivity feed crop cultivation and provision of stable demand for feed crops and crop residues grown by smallholders.

Specific actions to build up a strong and effective feedlot sector include:

- Define an industry strategy in collaboration with appropriate industry associations or groups to plan and implement activities to facilitate live animal and meat marketing. This will entail:
 - selection of target markets (including export markets);
 - coordination of brand-building for products at the Ethiopian national level, for regional attributes or for those attributes demanded by niches of consumers and ;
 - improvement in price transparency by promoting auctions, weighing of animals and price information dissemination; and
 - addressing logistic or organizational bottlenecks (e.g. the Djibouti quarantine).
- Catalyze feedlot establishment by trialing new land tenure and use mechanisms to ensure private investors' access to water and land.
- Finance incentives applied nationally or locally to encourage feedlot establishment, particularly where new operators participate in research and knowledge dissemination, information transmission, innovation in manure disposal or resource management; or support of local smallholder livestock in a pro-poor or gender-promoting manner
- Improve the policy environment to attract and enable sustainable growth in feedlots
 - Clarify and enforce regulatory standards for animal and meat quality and safety, feed, health, and market conduct;
 - Improve health and SPS standards to international levels, including cost-effective and timely quarantine
- Active monitoring of environmental and social impacts, particularly those related to anti-poverty and gender.
 - Investigate alleged cases of collusion (e.g. Kera brokers, butchers)

Table 7: Implementation actions to create a mid/highland feedlot sector

	Actions	Potential Owners
2.1	Define an industry strategy in collaboration with industry associations to plan and implement activities to facilitate live animal and meat exports	MoARD, industry associations
2.2	Enable access to sufficient production factors, including land, water and finance	MoARD
2.3	Improve the policy environment to attract and enable sustainable growth in feedlots	MoARD

5.3 DRIVE SMALLHOLDER HERD PRODUCTIVITY THROUGH DAIRY-ORIENTED AGGREGATION IN HIGH-POTENTIAL HIGHLAND WOREDAS

Actions required for raising the number of calves available for marketing coincide largely with those required to improve dairy productivity, which has substantial nutritional and livelihood benefits of its own. Both private investors and dairy cooperatives are viable aggregation actors who can both improve the productivity of smallholder herds from which they source milk (e.g. by leveraging extension to teach feed production, crop residue utilization and herd management) and aggregate male calves for marketing. Four key government actions are required by this recommendation:

- Invite investment in dairy processing and marketing either by extant cooperatives or by new private agents. Favorable treatment might target investors sourcing from smallholders and assisting in support of animal feeding by various means including animal health or feed provision.
- Assist in aggregation initiatives across a variety of agents, particularly in aggregation of cooperatives in pursuit of scale, diversification and management flexibility. This might also extend to partnerships between existing firms or co-operatives and new investors.
- Link extension and knowledge dissemination agents to aggregation actors (e.g. cooperatives) to ensure effective extension training for smallholders, on topics such as dairy cow management, feed and forage production, crop residue utilization and cattle fattening practices
- Support the development of private animal health providers, by offering financing, business management training, and streamlined registration to veterinarians wishing to establish a private practice. Better enforce regulations controlling illegal drug and health service providers. A pre-requisite for this development would be the cessation of government routine health care programs, which, by free provision, currently crowd out private involvement.

Alternative models, such as franchises, will need to be piloted, as will approaches to disease control programs.

These efforts should initially concentrate on high-potential areas, and can be expanded once successful models are proven.

Table 8: Implementation Actions to Drive Smallholder Herd Productivity through Dairy-Oriented Aggregation

	Actions	Potential Owners
3.1	Invite investors (including co-operatives) to submit proposals to improve or set up dairy processing and marketing facilities under favorable conditions	MoARD
3.2	Invite development partners to submit proposals to build social aggregators in specific woredas	MoARD
3.3	Link livestock DAs to aggregation actors (e.g. co-operatives) to ensure effective extension training for smallholders	MoARD, cooperatives, federal/regional extension system
3.4	Support the development of private animal health providers	MoARD

5.4 EXPERIMENT WITH HOLISTIC PRODUCTIVITY AND COMMERCIALIZATION INTERVENTIONS IN HIGH-POTENTIAL PASTORAL WOREDAS

Coordination of interventions will yield the best results, and high-potential areas will need to be identified for initial implementation. Experimentation and demonstration will be vital in promoting change, and will be most successful amongst qualified participants in resource-endowed areas.

The bottom-up challenge grant approach administered by the GOE (e.g. the PCDP) can elicit and test interventions to improve resource utilization, create viable commercial aggregators, improve access to animal health services and create attractive alternative wealth accumulation mechanisms. Thus, for monitoring purposes, only site-specific interventions that result in higher incomes from livestock marketing, stable herd sizes, and investment of proceeds in non-livestock assets should be considered successful and scaled up. Further qualifications should be made, concerning poverty reduction and gender.

Addressing each of these areas of intervention in turn:

- **Natural resources utilization (rangeland, water)** - interventions must be linked with commercialization to avoid overstocking. Promising themes include: strengthening of

traditional management systems, community-based joint venture approach, forage cultivation and improved integration and use of livestock species.

- **Commercial aggregation** – currently fragmented producers lack bargaining power, and co-operatives fail to exercise marketing advantages. Potential models include public share companies (e.g. Borena public share company for livestock marketing), or enhanced co-operatives focused on livestock marketing.
- **Alternative wealth accumulation** – smallholders, and particularly pastoralists, require alternative savings facilities.

Table 9: Implementation Actions to Experiment with Productivity and Commercialization Interventions

	Actions	Potential Owners
4.1	Administer bottom-up challenge grant approach to elicit and test interventions to: improve resource utilization; create viable commercial aggregators; improve access to animal health services, and; create attractive alternative wealth accumulation mechanisms	MoARD

5.5 ADDRESS SPECIFIC CONSTRAINTS THAT CUT ACROSS SECTORS THAT HINDER LIVESTOCK DEVELOPMENT

These include:

- **Access to capital** – entry of private capital providers should be facilitated by local and national governments. In addition, encouragement should be given to providers of financial instruments and products enabling accelerated and improved payment systems for smallholder livestock producers, traders that buy from them, and providers of services to them in seasons when payment is not enabled by sales.
- **Transportation** – actions to include roads and other infrastructure are welcome, but more immediate steps might be taken in tariff reduction on equipment and vehicles.
- **Land use** – holistic land use planning led by the regional government is also critical to protect the rights of pastoralists, and ensure that economic, social and environmental concerns are taken into account in land use decisions.

Table 9: Implementation Actions to Put in Place Enablers of Livestock Development

	Actions	Potential Owners
5.1	Improve access to capital for businesses and improve availability of trade finance/insurance for exporters	MoARD, Banking regulatory authorities
5.2	Improve transportation infrastructure, and reduce foreign exchange and tariff barriers on import of equipment	MoARD, BoARD, Transport Ministry, Trade Ministry
5.3	Develop holistic land use planning	MoARD, BoARD

5.6 COORDINATE INTERVENTIONS WITH DEVELOPMENT PARTNERS IN LOWLAND URBAN AREAS AND LOW-POTENTIAL PASTORAL ZONES

In pastoral regions in general, but particularly in low-potential areas, government should coordinate with development partners to provide technical and financial support for development of alternative livelihoods, provide financial services (e.g. savings, credit) and innovate models for delivering child education to pastoralists. This intervention does not directly relate to livestock, but it is important in the context of a comprehensive development strategy as livestock marketing alone cannot provide a pathway out of poverty in more marginal areas.

Table 10: Implementation Actions to Coordinate Interventions with Development Partners

	Actions	Potential Owners
6.1	Seek out development partners engaged in lowland urban areas and low-potential pastoral zones to understand areas of alignment in the development of alternative livelihoods; minimize overlap between interventions	MoARD, Ministry of Education, Ministry of Employment/Labor,

6. Sequencing and Prioritization

Fully implementing the above recommendation will require considerable planning and prioritizing. Accordingly, a carefully sequenced two phase process over five years is envisioned.

During Phase 1, activities in year one would center on establishing contractual programs and incentivizing participation. Core interventions illustrative of activities would include:

- Facilitate a series of workshops and convenings to bring together all relevant stakeholders to agree on a way forward (including public sector, private sector, development partners and civil society)
- Begin research programs to identify and demonstrate successful production, fattening, finance and market models;
- Conduct gender-based analyses in each area of recommendations prioritized by stakeholders for implementation; these should be integrated as a core set of activities to the implementation planning for years 2-5.
- Design feedlot packages and establishment mechanisms, and allocate (possibly by auction) initial lots.
- Establish a joint government industry group responsible for market-enabling policies. The model provided by floriculture may be promoted this regard
- Establish rules for new investments in the dairy sector, and implement 2-3 targeted investments.
- Select development partners to support dairy coop development and re-development in 3-5 areas.
- Establish a challenge grant program for holistic pastoral interventions and select initial recipients.

Ensuring a cohesive vision around growth potential in the sector will require:

- Monitoring and evaluation activities across investment actions
 - Key elements of M&E will be environmental and land-related risks, pro-poor and gender-sensitive development and public-private demarcation of responsibilities and roles.
- Promotion of the joint industry association.
- Design of scaling-up activities.

During the second horizon of Years 3-5, activities will be increasingly sustainable and assessed in the framework of their contributions to national development strategies, namely, their

contributions to accelerating the cattle and dairy-related benchmarks contained in the PASDEP II. Activities will include:

- Broaden feedlot establishment procedures to include non-traditional investors based on M&E activities related to the feed-lots. Evaluation will also examine the pro-poor impact of feedlots on poverty reduction and livelihoods of the small producers in these areas; outcomes of this will be a pre-requisite to scale.
- Invite further investment in dairy collection and processing; viability of the piloted models in earlier years, particularly with the cooperatives and other partners, will affect the levels of investment.
- Continue M&E activities across all areas, and facilitate alignment of this with ongoing donor and GOE strategies in the sector.

Figure 10: Summary of Implementation Modality

	Near term (1-2 years)	Medium term (3-5 years)
Private/Public Joint Vision	<ul style="list-style-type: none"> ▪ 1.1 – Clarify livestock responsibility within GOE ▪ 1.2 - Create an over-arching industry association ▪ 1.3 - Develop a joint public/private vision 	
Mid/Highland Feedlot Sector	<ul style="list-style-type: none"> ▪ 2.1 - Define an industry strategy in collaboration with industry associations ▪ 2.2 – Enable access to sufficient production factors, including land, water and finance ▪ 2.3 - Improve the policy environment to attract and enable sustainable growth in feedlots 	<ul style="list-style-type: none"> ▪ 2.3 - Improve the policy environment to attract and enable sustainable growth in feedlots
Dairy-oriented Aggregation	<ul style="list-style-type: none"> ▪ 3.1 - Invite private investors to submit proposals to set up dairy processing and marketing facilities ▪ 3.2 - Invite development partners to submit proposals to build social aggregators ▪ 3.3 - Link livestock DAs to aggregation actors ▪ 3.4 – Support the development of private animal health providers 	<ul style="list-style-type: none"> ▪ 3.1/3.2 – Invite further private and donor investment, building off of successes in years 1 and 2 ▪ 3.4 – Support development of private animal health providers
Holistic Productivity Intervention	<ul style="list-style-type: none"> ▪ 4.1 - Administer bottom-up challenge grant approach to elicit and test interventions 	<ul style="list-style-type: none"> ▪ 4.1 – Monitor challenge grant approach to elicit and test interventions
Cross-cutting Enablers	<ul style="list-style-type: none"> ▪ 5.1 – Improve access to capital and insurance ▪ 5.2 – Improve transport infrastructure, reduce forex and tariff barriers 	<ul style="list-style-type: none"> ▪ 5.2 – Improve transport infrastructure, reduce forex and tariff barriers ▪ 5.3 – Develop holistic land use planning
Coordinate in Low-potential Zones	<ul style="list-style-type: none"> ▪ 6.1 – Seek out and coordinate with development partners engaged in low-potential zones 	<ul style="list-style-type: none"> ▪ 6.1 – Seek out and coordinate with development partners engaged in low-potential zones

7. Conclusion

7.1 OVERVIEW

This report demonstrates the importance of livestock as a significant contributor to the economic and social development of Ethiopia – with a particular focus on live cattle and beef.

Livestock directly contributes to the livelihoods of over 70 percent of Ethiopians, and at a national level, it accounts for 10 percent of all formal exports or \$150 million USD per annum, and an annual informal export market of perhaps \$300 million USD. The sector accounts for 15-17 percent of total GDP. Livestock is one of few livelihood options for pastoralists, and is the one that enables their way of life and sustains their social structures. Livestock also offers a gender-positive anti-poverty set of development tools.

Realizing the full potential of livestock as a component of Ethiopia's long-term food security and growth requires clear direction from GOE and a number of stakeholders.

7.2 FIVE-YEAR SECTORAL VISION

The next five years offer a window to address critical bottlenecks and lay the foundation for the accelerated development of the cattle value chain as an integral part of Ethiopia's livestock sector. With dedicated focus on this issue, at the close of this period, livelihoods of pastoralists could be set on a path towards increased income and more stable earning while the economy as a whole benefits from improved products and improved export competitiveness. This can increase smallholder and pastoralist incomes, as well as benefit value chain actors and their employees and service providers. With a strong and functioning value chain beginning with production, then fattening and trading, and finally with retail and consumption, GOE and its development partners, along with the private sector are in a position to place Ethiopia on a strong trajectory over the next five years to fully develop the livestock sector.

7.3 THE WAY FORWARD

The recommendations outlined in this report and in the other sub-sector diagnostic reports are not an explicit roadmap of the activities the BMGF is best positioned to solely resource; they reflect a set of findings to support MoARD and all donors in the planning and implementing strategies to accelerate growth and food security in the context of Ethiopia's nationally stated objective to achieve middle-income status by 2025.

Embarking on the five-year vision contained in this report will require significant human and financial resources. It will require a level of sequencing and coordination that has in the past been challenging to implement at a national level, not only in Ethiopia, but in success cases

globally, from Latin America to East Asia. To achieve these objectives, GOE will need to work closely with all its partners, ranging from the development community to the private sector. The recommendations contained in this report offer a preliminary view on the sequencing of various activities to strengthen the live cattle and beef value chain.

In addition, these recommendations are complementary to the findings and recommendations outlined in the other diagnostics facilitated by the Gates Foundation from April 2009 to March 2010. The five-year sectoral vision for live cattle and beef relies on a set of factors contained in accompanying diagnostic reports, including a robust system of agricultural extension and animal health, and access by small-scale producers to resources such as land and water.

A set of enabling factors will deepen the impact of these recommendations, including financial services, rural infrastructure, and information and communication technologies. At every stage of the value chain gender must be prioritized.

As each of these sectors is mutually dependent, the recommendations and sequencing of activities for the live cattle and beef value chain, as part of the broader livestock sector, must be seen within the context of the overall recommendations provided in the holistic and integrated report provided to the Prime Minister. With livestock as a key driver for Ethiopia's growth and food security, particularly for pastoral communities, the steps outlined in this report as well as the other diagnostics and the integrated summary report will be critical to accelerating the path towards achievement of Ethiopia's long-term vision of achieving middle-income status by 2025.

Appendix 1: Other References

See end notes for references from text.

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End Notes

- ⁱ MOFED (2009), World Bank (2002)
- ⁱⁱ Fadiga and Amare, *unpubl.*; CSA (2006/2007)
- ⁱⁱⁱ FAOStat
- ^{iv} Negassa and Jabbar (2008)
- ^v FAO Livestock Sector Brief Ethiopia
- ^{vi} NBE (2005)
- ^{vii} Expert interviews
- ^{viii} SPS-LMM project (*unpubl.*)
- ^{ix} FAO Livestock Sector Brief Ethiopia; expert interviews
- ^x Atlas of the Ethiopian Rural Economy (CSA, IFPRI, 2006)
- ^{xi} Field visits; expert interviews
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- ^{xiii} Field visits; expert interviews
- ^{xiv} Negassa and Jabbar (2008)
- ^{xv} DeHaan (2002).
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