An Overview of Livestock Sub-sector in Kenya

*Perspectives, Opportunities and Innovations for Market Access for Pastoral Producers*
### Acronyms and Abbreviations

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<th>Acronym</th>
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<tr>
<td>ASAL</td>
<td>Arid and Semi Arid Lands</td>
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<tr>
<td>ASCU</td>
<td>Agricultural Sector Coordination Unit</td>
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<tr>
<td>CKDAP</td>
<td>Central Kenya Dry Areas Programme</td>
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<td>DLP</td>
<td>Department of Livestock Production</td>
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<td>DVS</td>
<td>Department of Veterinary Services</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>IPAR</td>
<td>Institute of Policy Analysis and Research</td>
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<td>KMC</td>
<td>Kenya Meat Commission</td>
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<td>PATTEC</td>
<td>Pan-African Tsetse and Trypanosomosis Eradication Campaign Programme</td>
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1.0 Introduction

The importance of the livestock sub sector is positioned at Kenya’s Vision 2030. Vision 2030 specifically aims at planning and implementation of 4-5 Disease Free Zones and livestock processing facilities to enable Kenyan meat, hides and skins to meet international marketing standards. It foresees this leading to more domestic processing of these products for regional and international markets. The vision also highlights the following specific strategies aimed at addressing the needs of the sector: transforming key institutions in agriculture and livestock to promote household and private sector agricultural growth; and increasing productivity of crops and livestock.

Livestock production and marketing is a sub-sector of the main agricultural sector in Kenya. The agricultural sector in Kenya is characterized by a complex structure of institutions and policies. Structurally, the sector is characterized by several ministries, parastatals and several programmes. The ministries are the top organs in agriculture policy formulation and implementation. The agriculture related ministries include; the Ministry of Agriculture, Ministry of Livestock Development, Ministry of Fisheries Development and the Ministry of Cooperative Development and Marketing. Closely related are the Ministry of Water and Irrigation, Ministry of Land, Ministry of Natural Resources and Environment and Ministry of Regional Development. These ministries have different organizational structures but at times have conflicting roles.

Therefore, the agriculture sector in Kenya has faced a number of challenges emanating from conflicting policies and sub-optimal organizational and regulatory frameworks. Although these organizations could be necessary for development, they impact negatively on the development of the sector as they are financed from the exchequer. They are also subject to political manipulation and corruption practices which does not auger well for development.

Established in April 2008, the Ministry of Livestock Development (MoLD) was split from former Ministry of Livestock and Fisheries Development. The mandate of the ministry is “to promote, regulate and facilitate livestock production for socio-economic development and industrialization”. The departments in the ministry include the Department of Veterinary Services (DVS) and the Department of Livestock Production (DLP). In addition, the ministry has a number of special programmes that include; NALEP, the ASAL Based Livestock and Rural Livelihoods Support Project, Central Kenya Dry Areas Programme (CKDAP), Smallholder Dairy Commercialisation Programme, the Pan-African Tsetse and Trypanosomosis Eradication Campaign Programme (PATTEC), the Pan-African Control of Epizootics (PACE), the Kenya Agricultural Productivity Project (KAPP) and the South Nyanza Community Development Project.

Pastoral communities occupy the Area and Semi Arid Lands (ASALS) that occupy 80% of the total land area of Kenya. It extends from the border of Tanzania to the south and the Ethiopian and Sudanese borders to the north, Somali to the east and Uganda to the north western front. In the country, pastoralists population is estimated at 25% with a livelihood predominantly defined as keeping cattle, sheep, goats and camels. Over 50% of the livestock population is based in the ASALs- which are the major meat producing regions in Kenya with a slaughter of 1.6 million tropical livestock units per year.
Sustainable livestock production is yet to be achieved in the ASALs owing to inadequate institutional framework and unsupportive government policies, conflicts and poor governance. As a general trend pastoral livelihoods are caught in a downward poverty spiral, characterized by declining food intake, poor education and health services, degraded and disappearing grasslands and water sources for their herds, and little to no access to commercial market systems. Barriers to market entry are multi-factorial, diffuse, complex and difficult to define, analyse and overcome.

The cost of ignoring and marginalizing pastoralist production is famine, conflict, political unrest and environmental degradation. The main drivers of this decline are generally recognized as being broadly associated with social, economic and political marginalization of pastoralist populations. This marginalization is brought about by policymakers’ misunderstanding and lack of recognition of pastoralist contribution and potential, characterized by under-investment and inappropriate policies, all of which undermines pastoralists continued adaptation to modern conditions. This can usefully be described as a structural trap for system degradation. Working out of this trap will require a degree of structural change.

2.0 Overview of the livestock sub-sector in Kenya

Recent statistics point that the livestock sub-sector in Kenya accounts for approximately 10% of the National Gross Domestic Product (GDP). This is 30% of the agricultural GDP. It employs about 50% of the national agricultural workforce and about 90% of the ASAL workforce. 95% of ASAL household income comes from this sub-sector. This is despite the fact that the sector receives only 1% of the total annual budget allocation.

The livestock resource base is estimated at 60 million units comprising of 29 million indigenous and exotic chicken, 10 million beef cattle, 3 million dairy and dairy crosses, 9 million goats, 7 million sheep, 0.8 million camels, 0.52 million donkeys and 0.3 million pigs. (Strategy for Revitalizing Agriculture (SRA) 2003) Kenya is broadly self-sufficient in most livestock products but is a net importer of red meat mostly of on-the-hoof animals trekked across the porous boundaries of neighbouring countries - Somalia, Ethiopia, Sudan, Uganda and Tanzania.

Livestock supply in Kenya results from a complex set of interactions between Kenya and its neighbours and the traditional Middle East market and their respective livestock populations, demand and market prices. Kenya is part of a regional market where livestock flow according to markets and price differentials in a liberalized system throughout the region as a whole and where Nairobi represents a focus of demand for the region.

Supply of red-meat from domestic cattle, shoats and camels falls short of demand, and is almost permanently augmented by a traditional livestock trade drawn in from neighbouring countries, especially Somalia, Tanzania, Sudan and Ethiopia in varying quantities according to demand, which maintains a supply/demand balance, at a relatively constant price.

The figure below illustrates the value chain from a pastoralists perspective.
Figure 1: Pastoralist livestock and meat value chain

Individual producers

Cattle

Cattle Trade

Slaughter House

Meat Trade

Meat Traders organizations

Wholesale Butchers

Consumers

Large Scale
Retail Consumers
Institutions & Processo’S

Private & public sector actors

$ $ $ $ $
3.0 Livestock Production

The main supply of livestock changes and fluctuates with frequent droughts. These cyclical droughts make it difficult for pastoralists to sell large numbers of cattle, and uncontrolled flows of cattle into Kenya from neighbouring countries aimed at higher prices in Nairobi and Mombasa.

Other factors play a role including political instability, conflicts, disease outbreaks and droughts in these countries, or the countries to which they market livestock or livestock products. Kenya is part of a North East Africa regional production area and market that interacts across national boundaries. Kenya's pastoral supplies stem from an area that is twice the size of that contained within its national boundary. Cattle are trekked or transported considerable distances from neighbouring countries often dominating supplies in Nairobi, which acts as a central market for cattle from the region of six countries as a whole. The overall situation is that Kenya alone cannot supply its demand for red meat.

Developing an export market for Kenya therefore means drawing in imports from neighbouring countries on a large scale. This can be justified as it adds value to a commodity for re-export, provided there is a sufficient price differential through exporting higher quality meat while importing lower quality meat.

Climate variability is an influential factor in livestock production in Kenya. Livestock production over the past 10 years has been seriously affected by an increasing frequency of natural disasters. Before 1990 droughts occurred on average every 7 – 10 years. Since then two severe droughts occurred in 1992-3 and 1999-2000, and another 2009- 2010, the latter being considered by pastoralists as the worst in living memory during which at least 75% of pastoral cattle were lost leading to acute vulnerability of pastoralists livelihoods.

Insecurity in the ASALS has become an increasingly serious problem. Lack of water and grazing has disrupted pastoral coping mechanisms. Large areas of the abundant forage that followed the El Nino rains in 1998 were unused because of fears of livestock rustling. This forage, upon drying, was consumed in devastating fires. This has been the trend in latter years.

The East African Zebu cattle produce up to 67% of beef marketed, and with their tolerance of disease, poor nutrition, water shortage and climate extremes, are able to survive and grow slowly in the harsh conditions prevailing in those areas.

4.0 Livestock consumption

4.1 Beef

The beef industry has been ranked as one of Kenya’s fast rising economic sectors through exports to overseas countries and is projected to hit Kshs 70 billion mark in the next five years. Beef production is estimated by Ministry of Livestock Development to have grown from 287,000mt in the year 2001 to about 300,000mt by year 2008. This has been a steady trend as reflected in the FAO figures for beef production in Kenya in 2009 and 2010, which were 290,000mt in both years.

4.2 Dairy

Cull consumption relates to an uncertain number of dairy cattle of 3 million with an estimate about 600,000 small-scale dairy households and with an estimated offtake of about 12.7% to give 380,000 head or 48,000mt beef per year. Data from a Truthing Survey in Western and Central Districts indicate that the number of small-scale dairy farmers may be greater and data from a recent ILRI survey of dairy farmers indicate that offtake levels may be greater than normally quoted. With, say, a total of 800,000 dairy farmers with an average of 4 head per HH (2 cows and 2 young stock) and according to a survey of 1,000
households by ILRI, the number of cull cows and others culled or slaughtered for home consumption per household is 0.82 and 0.6 in Central and Western Districts respectively, which represents an average offtake of 17.5%. On this basis, total dairy beef offtake would be 560,000 head, which, at an average dwc of 125 kg (that is between dairy cull cows and male calves ranging in age from 3 to 12 months), would give a total meat production of 70,000mt beef.

4.3 Sheep and goats

Ministry of Livestock Development estimates total population of sheep and goats to be 19 million in the year 2010 and their meat production at about 80,000mt. This means that total number slaughtered is 5.2 million, assuming an average dwc of 15 kg, indicating a 28% offtake rate. However, offtake rates of 8-10% are quoted in another report, which would only generate a total sheep meat production of about 23,000mt. The ministry's data on skins indicate 4 million sheep slaughtered which represents a 21% offtake and at 15 dwc gives total meat production of 60,000mt but the data do not indicate whether the important offal is included. Skins data collected indicate a total number slaughtered of 4.2 million per year, which at 15 kg dwc results in a total meat excluding offal of 63,000mt and with the important offal the total sheep meat consumption becomes 79,000mt which is consistent with the ministry's estimate of production.

4.4 Camels

Camel raising was a preserve of the Rendile, Gabbra and Somali. However, there has been an increase in the ethnic groups that herd camels. Today camels are found amongst the Ariaal, Samburu, Turkana, Gabra, Sukuye, Maasai, Borana, Orma, and the Pokot. This is partly attributed to intensification of land use and the spread of desertification, which has lead these communities especially the Samburu and Maasai to adopt camels as a form of food security when all other traditional species have failed. The camel often plays an important role in social and cultural heritage of many ethnic groups whereby they are regularly trained by pastoralists to carry loads such as their collapsible houses, water, food to and from market, the sick and elderly, and, when on the move other livestock such as kids, lambs and newborn camel calves.

Kenya has three main sub-categories or ‘breeds’ of camels. They are associated with the ethnic groups which traditionally keep camels - the Somalis of North-Eastern Province; the Rendille sub-tribes of Marsabit and the Turkana of Rift Valley. Camels which originate from among the Somalis are referred as Somali breeds and are generally much larger than other breeds in the country with adult females weighing between 500 – 600 kg and males 600 – 800 kg respectively.

Kenya has not had a credible camel census since the 1969 Kenya national livestock census; however the country is considered to host approximately 6 per cent of Africa’s camel population. According to Agricultural Sector Coordination Unit (ASCU) 2007 report, the Camel population is estimated at 0.9 million and is projected to increase to 1.09 million by 2014. There is a growing interest for camel health and its products in the world and particularly in Kenya. This is due to various factors that range from the positioning of camel and its products in the face of food insecurity; the medicinal value of camel milk etc. In this regard, the government; NGOs and the private sector are increasingly recognizing the camel sector as indivisible. However, there is growing concern that though there is increasing interest and demand for the camel and its products; the sector lacks a coordinated approach that would ensure its sustained growth.

Total camel meat production is estimated at about 8,250mt for the year 2000 assuming a population of 850,000 and an annual offtake of 3-4% equivalent to 30,000 camels. Data from the Kenya Camel Association confirms the camel population figures (an increase from about 700,000 in 1990 to between 850,000 and 1,560,000 in 2010), but that offtake is variable making an estimate of average camel meat
consumption difficult. Thus offtake in a drought year in rural areas can be as many as 20,000 a year with some five animals slaughtered in the ASAL towns down to very few under good conditions. Estimated offtake based on mainly male offtake plus barren cull females is in the range of 13-18,000 head, or an average offtake for the national herd in the range of 1.4 to 2%. With an average live weight of 600 kg and killing out % of 55%, giving a dcw of 330 kg, this gives a total consumption ranging from 4,300mt to 6,000mt

5 Producer and trader for developing the sub-sector

Institute of Policy Analysis and Research (IPAR) 2004 reports that at a global level, the livestock production sector is growing faster compared to any other agricultural sub-sector, and the growth is linked to significant increases of demand for meat associated with rapid urbanization. For Kenya the challenge is to keep up with this demand and be part of developments that can significantly contribute to these global demands. While the niches to contribute to increased meat demand domestically and globally exist it remains a challenge for Kenya to exploit its chances for increased off-take through marketing

5.1 Producer options

Market dynamics provide producers with the option to compute their likely return, and decide if they will continue producing livestock or diversify into livestock products. The principal limitation is access to the relevant market. The decision options for producers are:

a) Making a strategic decision about the market or business they want to be in and which market to custom. The options are interior markets, secondary markets, terminal markets, regional markets, and international markets. The choice of market will indicate the levels of conditionality and quality standards expected of the producer.

b) The choice of the business also entails establishing marketing relationships, or developing appropriate channels to service the selected market. Optional channels include livestock market, meat market or by-product market. The producers need to acquire the capability to compete in their preferred market segment.

c) Organize the value chain activities to maximize consumer value. These include the production system, processing, settlement (money and produce exchange), marketing and customer service. The producer may establish in-house capability or hire external services, and cooperate to advance common interests.

5.2 Trader options

The present system of private butchers, traders and transporters interact continually and responds to market forces. When domestic supplies decline in relation to market demand, traders and butchers using their own communication system to draw in additional cattle to Kenya from neighbouring countries. When domestic supplies increase in relation to demand, fewer cattle are drawn in from other countries. The market is particularly sensitive to prices such that any attempt to raise or lower meat prices results in a corresponding change in consumption. Meat prices to consumers have therefore been relatively constant. Margins tend to be high partly due to the risks involved, leading to the relatively high cost of meat in the Nairobi market. This and the constant beef prices in Nairobi have given rise to charges of collusion and a butcher’s cartel by some stakeholders. However, there is no evidence of a deliberate price fixing cartel, but there is evidence of restrictive practices by butchers and brokers that effectively inhibits newcomers into the market.
The market is also characterized by deliberate price mis-information and lack of transparency, especially in the meat marketing chains. The system appears to be an example of an oligopoly, namely a market situation in which a limited number of producers is strong enough to influence the market, but not strong enough to disregard the reactions of his competitors.

The present system of traders and middlemen is relatively price inefficient due to the number of middlemen involved and the relatively high risks they incur. These include the large distances involved, animal mortality en-route, high transport costs, local charges en-route, insecurity costs and theft of stock, delayed or non-payment of credit giving rise to considerable debt problems and the inordinate time devoted to debt collection, lack of economic refrigeration at wholesale and retail levels forcing low price sales by end of day and theft of meat. There is scope for cost reduction through rationalization and efficiency improvements in the system to enable meat prices to be reduced and stimulate demand.

The present situation can be described as that of inefficiency of the marketing chains due to the low productivity in the sector as a result of the high number of agents that have to apply high net margins to cover the relatively high costs of transactions and processing, as well as the high levels of risk to generate acceptable profit levels.

Abattoir and slaughter facilities are generally poor from a hygiene and environmental perspective, indicating the need for training in operation and management, enforcement of hygiene regulations and investment in wastewater/effluent facilities. Hygiene in most meat handling facilities is poor and acts as a deterrent to some consumers, indicating the need for training. In addition, the present system of brokers buying and selling meat should be replaced by the establishment of a hygienic central wholesale meat market for the private (under stakeholder cooperative operation) and public sectors (the reopened Kenya Meat Commission (KMC) in Nairobi using the idle KMC depot in order to encourage competition, reduce unnecessary margins and stimulate demand further.

There are extensive regulations on meat hygiene prepared by the Kenya Bureau of Standards to be enforced by the Veterinary Service Department (VSD) and public health departments, but enforcement is very weak at present. It is understood that government intends to enforce parts of the Meat Control Act. Whilst this should be used to improve hygiene, there is concern amongst stakeholders that these measures will be used to close down informal slaughter places to justify that re-opening KMC would not lead to over-capacity of slaughter facilities and displace local slaughter facilities/lose jobs.

6.0 Strategic issues affecting the sub-sector

The availability and accessibility to food for most Kenyan households is influenced by the ability of individuals to generate incomes, produce own food in sufficient quantity, effectiveness of the food distribution systems particularly markets; and affordability of food prices. Other factors include access to and control of productive resources by women, governance, gender dynamics, HIV/AIDS and environmental management.

Trade in agricultural commodities is a major determinant of national food security and domestic food production. However, for the Kenyan economy, livestock marketing information and infrastructure are poorly organized.

Building effective markets for livestock and livestock products is of utmost importance. Apart from helping the movement of food from surplus to deficit areas, it also helps improve producer incomes and to protect them from the negative impact of volatile prices.

The development of effective markets has however not been successful in most African countries. One reason is that the private sector in these countries is small and underdeveloped. Moreover, past attempts by governments to intervene directly in the market have failed. This is because the state-owned marketing
bodies through which government intervention was made have been roundly inefficient and unable to deliver.

7.0 Barriers to livestock production and marketing

In summary these constraints are:

- Inability of government to institute effective disease control measures
- Limited animal genetic resources for quality breeding
- Inadequate research on livestock and researcher – extension – farmer links
- Poor marketing infrastructure, poor market organization and information
- Physical insecurity resulting from cattle rustling and banditry
- Poor public-private sector partnership in policy formulation.
- Unreliable data on national herd numbers, productivity, slaughter numbers and prices, livestock weights and consumption levels per capita.
- Inefficiency in the marketing chains. Too many middlemen, traders and brokers earning relatively high margins, overpriced products.
- Inaccessibility to affordable credit facilities for traders and producers.
- Low Purchasing power for consumers.
- Lack Inadequate and or enforcement of standards and quality control.
- High cost of production.
- Limited access to lucrative international markets.

8.0 Market macro-trends providing opportunities for change

This project coincides with several trends favouring the creation of incentives that will lead to pastoralist production systems that are better adapted to modern conditions:

1. **Accelerating national, regional, continental and global demand for red meat.** By 2020 livestock will produce about 30% of the value of global agricultural output and, directly or indirectly, use 80% of the world’s agricultural land. In Africa the livestock sector is growing faster than any other agricultural sector; the next 20 years will see an additional half a billion consumers of meat and milk in Africa, many of whom will be urban consumers with rising incomes, with estimates that meat consumption will grow by 50% per coming decade.

At national level, data demonstrate that per capita meat consumption has increased nearly 10% in Kenya during the last six years, and stood at 10.8 kgs. per capita in 2003, 75% of which was beef and the remainder ‘shoats’ (sheep and goats). The combination of rising population, rising per capita consumption and urbanisation means Africa will require an additional 100 million tonnes of meat and milk over the next 20 years.

The accelerating migration of rural populations into urban centres both within Kenya and other parts of East Africa mirrors this trend. Both real and projected growth can be seen in the context of the larger, global ‘Livestock Revolution’ described by Delgado et al whereby developing country meat consumption is predicted to profoundly impact livelihoods, human health, and the environment via the rise in livestock product consumption.

2. **Increased political will.** There is currently significant increased political will to improve livestock marketing as a strategy for poverty eradication, globally and in East Africa; compounded by recent increased government investments in market infrastructure particularly in Kenya. There is an opportunity to therefore inform governments on pastoralists contribution and needs.

3. **Untapped local/regional markets.** In the central market of Kenya, most commercial attention and most supply chain development efforts have focused on the high-income market for premium cuts. This market constitutes only 10-15% of the urban domestic market of 6 million. Only 40% of the remaining lower income Kenyan domestic market is currently supplied with food safe quality meat. Thus a very large market potential remains untapped.
At the same time pastoralist producers incur very large transaction costs. They are able to collect only 40-50% of gross livestock sale value and to realize only 5% net returns on their marketing and herding investments (see next section). This “dead weight cost” is the result of inefficient supply chain structures and serves to keep a large proportion of producers out of the market. There appears to be considerable untapped potential to therefore connect poor producers with poor consumers, to the benefit of both.

4. **Comparative advantage.** It is now accepted wisdom that pastoralists has the ability to out-produce commercial ranching on a per acre basis by up to a factor of three in terms of productivity (not taking account of associated employment / social benefits). This is mainly due to much lower production costs, which translates into lower cost of supply, other things being equal (which they not, since pastoralists tend to face high transaction barriers as discussed earlier).

However, it is possible that production costs may increase as pastoralists increasingly engage in market-based production, but there appears to be a large margin of cost advantage and hence flexibility for cost increases.

5. **The incentive of the market.** From various district reports as well as needs expressed by communities themselves, it is clear that the pastoral producers have entered into the cash economy and increasingly require better prices for their produce to enable them purchase other services for their families. With these increasing household needs, they also see the need to improve productivity and marketing facilities in order to realise increased returns. The key point is that these producers are undergoing a transition from producing animals to sell in time of need, to a desire to produce animals for best return. Thus production will increasingly be driven by market signals. They are hampered in doing this to the extent that current market signals are not clearly evident due to inefficiencies described below. Central to this is a basic lack of supply chain “know-how” and “know-who”.

It is believed the opportunity is ripe to support East African ‘transition pastoralists’ to make the transition to semi-intensive management that remains within culturally and environmentally sustainable parameters, enabling improved livelihoods where income options are limited and allowing participation in the economic mainstream. The need for connection to markets is a central theme that resonates throughout the region and this connection can come only be reengineering multiple links of the livestock value chain so that they become competitively efficient, adaptable and agile.

9.0 **Pastoralist innovations in the livestock market chain**

The livestock market chain consists of two chains: the ‘live animal chain’ (before processing) and the ‘meat chain’ (after processing). Figures show that for the live animal market producers (generally poor pastoralists) receive on average 40-50% of the final sale price (40% for shoats, 50% for cattle) - estimated as a 5% return on production, with traders receiving the remaining portion. In the meat market, producers receive 25-30% of the final meat price in Nairobi (Ksh. 60-70/kg versus 220/kg), and 50% if sold to major local markets (for example, Isiolo).

A link by link assessment of the legacy supply chains that currently operate between herdsmen and traditional markets provides an initial assessment of where large improvements in transaction costs likely lie. Figure 2 illustrates the links that form the livestock chain, the magnitude of efficiency constraints for each link, and the types of constraints involved. The live animal and meat chains are depicted in yellow and orange respectively, and current inefficient practices (i.e. market transaction costs) depicted above each segment of the chain. Proposed interventions are shown under each segment, with breadth of each intervention’s impact depicted by its width across the segments. Finally, current sources and extent of
potential gain (i.e. reflecting market inefficiencies) are shown in green; whilst the distribution of investment needs – based on need and cost – is shown in red.

Overall, the most significant constraint is the lack of market disclosure in the livestock market. This is for two main reasons: first, the market is relatively undeveloped in terms of consumers articulating demand for a range of products - or stated another way, lack of sensitivity to consumer preferences; and second, market inefficiencies (light blue boxes) mean that producers receive relatively 'faint' signals from those markets that do exist. This results in producers, particularly pastoralist producers in areas remote from the consumer base, being largely unaware of market opportunities; whilst the traditional marketing and processing chain has not developed sufficiently in the past in order to create and fill new market niches.

By the estimates shown here (which are based on informal market analysis by livestock chain operators based in Nairobi), the largest source of investment need is in processing facilities/ability (40%). A critical factor is that, due to perceived prohibitive transaction costs, processors do not take possession (ownership) of livestock: they merely perform the processing service. Yet they are in the best position to discern and supply market preference. This is a significant factor in disconnecting producer and trader from consumer. An estimated 20% of investment is required into consumer markets, specifically research, training and alteration of practice based on a much deeper understanding of consumer preference.

Currently the capacity to improve animal productivity is poor, due to lack of available grazing – which in turn is mainly due to a lack of planned grazing whereby plants are given sufficient time to reach optimum productivity.

The proposed innovations are summarized in Figure 2: Pastoralist livestock chain links, current constraints, bottleneck magnitudes, proposed interventions and sources of potential gain.
Figure 2: Pastoralist livestock and meat value chain – proposed and on going innovations

**Sustainable Pastoralist Livestock Value Chain**

**Current practice**

- Livestock production
  - Natural resource management
- Livestock transport
- Trade
- Slaughter
- Processing
- Transport truck/bike
- Butcheries
- Consumers

**Proposed practice**

- Unarticulated demand for diversified products
- Lack of price information
- Lack of processing skills
- Lack of processing facilities
- Lack of hygiene
- Lack of product diversity
- Lack of market segmentation
- Prices incorporate costs of market inefficiencies

**Issues and Challenges**

- Open access grazing
- Low grass productivity
- Sale for cash needs
- Livestock-wildlife conflict
- Insecure resources
- Resource expropriation
- Lack of transport yields unfair prices
- Lack of credit to market
- Loss of condition through trekking
- Unarticulated demand for diversified products
- Visual assessment
- No means to store proceeds
- Lack of holding facilities
- Unscrupulous buyers
- Improvement in handling and transport
- Improved slaughter
- Meeting food safety standards
- Safe working conditions
- Supermarkets
- Conservancies
- Safari lodges
- Poor urban consumers

**Investment Needs**

- Gain Sources: 25% 25% 50%
- Investment Needs: 25% 15% 40% 20%

**Innovations**

- Holistic grazing planning
- Increased grass cover
- Working water cycle
- Better wildlife habitat
- Secured resources
- Clustered herds
- Franchise contracts with actors across the chain
- Price TeleCentres
- Community-owned and managed abattoirs
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