



## Deteriorating Terms of Trade and Food Security Among Pastoral Livestock Producers in Kenya

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*Over 80% of Kenya's land mass of 58.3 million hectares is classified as arid and semi-arid lands (ASALs). In spite of the unfavorable weather conditions, the ASALs make a significant contribution to the country's agriculturally driven economy, by supporting more than half (52%) of the livestock population geared primarily towards the production of beef. Households practicing pastoral livestock production experience a myriad of problems including drought, poor infrastructure for communication and marketing, low incomes and food insecurity. With changes in lifestyles and decreasing capacity of livestock to provide for their basic needs, these households are increasingly dependent on the market for their non-livestock-based food and non-food needs. Their purchasing power is dependent on income levels, economic conditions and the terms of trade between livestock and cereals, all of which change over time. This study investigated terms of trade for pastoral livestock producers in Kenya, finding that the price of maize has risen much faster (about twice) than that of livestock, diminishing the purchasing power of livestock keeping households, and thereby eroding their terms of trade. The emergence of these unfavorable terms of trade has in turn eroded their capacity to meet basic needs and compromised their food security situation and overall socioeconomic welfare, resulting in significant increases in the demand for relief and food aid at a major cost to government relief funds and development agencies. Through market information systems like LINKS, however, the provision of market information can equip planners and policy-makers with the tools to track price trends and enhance decision-making and the development of appropriate interventions aimed at mitigating the effects of these deteriorating terms of trade.*

### Background

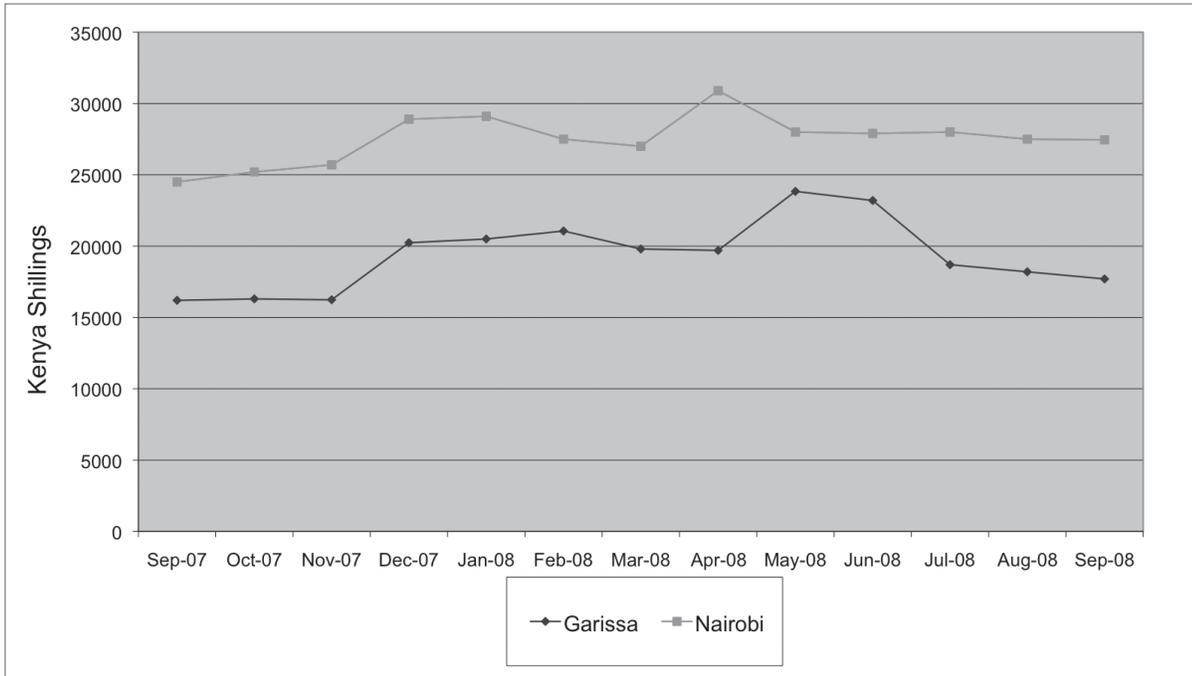
Kenya's livestock sub-sector contributes about 10% of the country's Gross Domestic Product (GDP), accounts for nearly 50% of the agricultural sector's GDP, and is the main source of livelihood for the people in the arid and semi-arid areas (ASALs) of Kenya (Republic of Kenya, 2006). The sub-sector accounts for 90% employment and more than 95% of family incomes in these areas. The ASALs are home to nearly 30% of the country's human population of an estimated 35 million people, and holds over 50% of the country's total livestock, which is estimated at 26.9 million chicken, 9.5 million beef cattle, 3.5 million dairy and dairy crosses, 13.9 million goats, 10 million sheep, 930,000 camels, 716,000 donkeys, and 320,000 pigs. The ASALs are also the major producer of beef, estimated at 320,000 metric tons (Republic of Kenya, 2005). The kinds of animals kept by producers in these areas are comprised of indigenous, exotic and cross breeds.

Livestock keeping communities rely on their animals for subsistence and cash to buy other food and non-food items. Since pastoral communities do not engage in agricultural production, they need to exchange their livestock in the market to generate the cash needed. The terms of trade between livestock and cereals

have important implications for food security at the household level. Maize is the most commonly traded and consumed cereal grain among many communities in Kenya, and the price is used as an indicator of terms of trade. Pastoral communities have either to buy maize from the market, or access it as relief food provided by government or humanitarian agencies. Understanding markets in pastoral areas is key to addressing food security and development issues in arid and semi arid areas of Kenya (Ochieng, 2006).

**Methodology.** LINKS, in collaboration with the Kenyan Ministry of Livestock Development and Kenya Livestock Marketing Council, has developed a suite of technologies that have been adopted as the national livestock market information system (NLMIS: see Kariuki et al. 2008) for Kenya. The system is now collecting and reporting data on livestock prices from 18 markets. The market monitors collect data on a designated day of the week from a sample of five animals of each kind/breed/age/sex/grade combination, after which they calculate the average figure for that market day. The analysis presented here is for Garissa and Nairobi markets for the period beginning September 2007 to September 2008. Garissa market, located about 400 km to the north of Nairobi,

Figure 1. Price trends for Boran cattle in Garissa and Nairobi markets.



is the largest market for Boran cattle, the dominant breed in northern Kenya. The market is held on Wednesday every week. Nairobi, the capital city and major livestock terminal market, has three markets (Njiru, Dagoretti and Kiamaiko), all of which operate on a daily basis (except Sundays) to supply meat for the large urban population both in the city and the peripheral suburbs. Live animals are transported from Garissa by truck and offloaded at the Nairobi markets, where they are taken directly to slaughter. Njiru market receives mainly Boran cattle from northern Kenya, while Dagoretti receives Zebu and mixed breeds of cattle from the southern and western parts of Kenya, and Kiamaiko receives small stock from throughout Kenya. Prices of maize have been obtained from the Regional Agricultural Trade Intelligence Network (RATIN), which collects and reports monthly prices for maize, beans and rice in Kenya, Uganda, Tanzania and Rwanda. Prices of maize are reported in USD per metric ton, and were converted to Kenya Shillings (KSh) per kilogram using currency exchange rates obtained from the Central Bank of Kenya for the period September 2007 to August 2008.

### Major Findings

Garissa market receives an average of 2,000-3,000 animals per market day, and remains the largest source of animals to the Nairobi Njiru market. The trend in prices for Garissa and Nairobi markets is depicted in Figure 1. On the supply side, the graph shows that livestock prices in pastoral areas tend to peak from April to May, and November to December, when there is quality forage due to prevailing good rainfall conditions and when pastoralists subsequently minimize sale of animals. On the

demand side, livestock prices go up in December and April associated with the festive Christmas and Easter seasons, when the demand for meat rises especially in the urban areas. During the period under consideration (September 2007 to September 2008), there was a general increase in livestock prices with the average price of mature Boran cattle increasing by 9.3% from KSh 16,200 to 17,700 in Garissa, and by 12% from 24,500 to 27,450 in Nairobi. The price in Nairobi was on average 44% higher compared to the price in Garissa. The cost of hiring a 10-ton lorry with the capacity to carry 18-20 cattle has risen by 20% from KSh 25,000 to 30,000, due to the recent increases in fuel prices (an increase of over 30% in eight months during the study). Other costs associated with livestock marketing include movement permits, and loading and storage fees.

The cost of beef in major urban centres has increased by 37.5% from KSh 160 to 220 per kilogram. The average price of Somali goats has increased by 30% from KSh 2,360 to 3,060 in the Garissa market. The cost of transportation has increased faster than the increase in livestock prices, implying reduced margins for traders. During the same period, the national average price of maize increased by 61% from KSh 13.50 to 21.70 per kilogram (RATIN, 2008), while current prices vary from KSh 21.70 in Nairobi and 25.40 in the Busia market, located at the border with Uganda. The fact that maize has to be transported to pastoral areas resulting in a considerable time lag means that the price of maize will be much higher in those areas. In addition, maize may not be available at the place and time it is required, given the vast expanse covered by the pastoral areas and the lack of adequate infrastructure to facilitate the smooth and fast flow of goods.

## Practical Implications

Pastoral households do not produce their own maize. Therefore, structurally poor households are heavily dependent on food donations. For those who depend on the market, they require purchasing power and food availability, a difficult reality given the logistical complexities of supplying food at the right time, price and quantity in local markets. This study shows that the price of maize has risen much faster (about twice) than that of livestock, diminishing the purchasing power of livestock keeping households, and thereby eroding their terms of trade. The effect on pastoral households is severe: a household may need to sell twice as many goats as they used to sell to buy the same amount of food. This situation is compounded by the fact that during the dry seasons, livestock prices tend to fall, while cereal prices rise. This leads to increased food insecurity for livestock keeping households and at such times, the delivery of relief supplies and food; a mass mobilization of resources expended by government and humanitarian organizations.

The logistics of distributing this relief food are demanding and expensive. In addition, the demand for energy (kerosene) to cook the food (primarily maize) increases,

driving up fuel prices and resulting in increased pressure on environmental resources to provide water, fuel wood and charcoal; pressures leading to further land degradation.

The provision of market information such as practiced by LINKS and RATIN equips planners and policy makers with the tools to track price trends that can help to improve decision-making and devise appropriate interventions that mitigate the effects of deteriorating terms of trade for pastoral households. A marketing information system can also lead to changes in marketing behaviour, while understanding market signals can play an effective role in orienting producers towards markets. Such a system serves to inform producers so that they can negotiate for better prices for their livestock. If producers get better returns, the cash generated meets expenditures for goods and services that they cannot produce at home, including non-animal source foods, along with the opportunity to improve their skewed terms of trade. This not only helps them to improve the livelihood and health of their households, but also creates demand for other goods and services in the local and national market arenas, thus promoting trade and economic growth.



*A mother and her two children stand outside their hut in Ngambo, Kenya. Pastoral households like these do not produce their own cereals, and therefore are heavily dependent on external markets for maize, as well as food donations in time of stress. This dependency leaves pastoral households vulnerable to cereal grain price increases and jeopardizes their overall food security. Photo by Christopher Barrett.*

*A group of malnourished children rest in the shade near Marigat, Kenya. Deteriorating terms of trade for pastoralists undermine efforts to enhance child nutrition, livelihood, and health. A household today may need to sell twice as many goats as they used to sell to buy the same amount of food. Photo by Christopher Barrett.*



## Further Reading

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The GL-CRSP Livestock Information Network and Knowledge System (LINKS) project developed from the GL-CRSP Livestock Early Warning System (LEWS) project established in 1997. The LEWS project developed and applied a suite of information communication technology to provide a regional decision-support framework for livestock early warning. The LINKS project is placing LEWS technology inside a broader livestock information and analysis system that is designed to improve livestock markets and trade, thereby enhancing the well-being of pastoralists in eastern Africa. The project was led by Dr. Jerry W. Stuth, Texas A&M University until his death in April 2006. The project is now led by Dr. Paul Dyke, Texas A&M University. Email: [dyke@brc.tamus.edu](mailto:dyke@brc.tamus.edu).



The Global Livestock CRSP is comprised of multidisciplinary, collaborative projects focused on human nutrition, economic growth, environment and policy related to animal agriculture and linked by a global theme of risk in a changing environment. The program is active in East and West Africa, Central Asia and Latin America.

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