



## Application of Information Communication Technology in Developing a National Livestock Marketing Information System: The Case of Kenya

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Livestock Information Network and Knowledge System  
(LINKS) Project

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*Marketing remains one of the greatest challenges in the development of the livestock industry in Kenya. In spite of the emergence of organized market intelligence particularly in relation to prices at terminal markets, the lack of and need for price information in many of the pastoral areas remains a critical concern by producers, traders and policy makers. The Livestock Information Network and Knowledge System of the Global Livestock Collaborative Research Support Program has responded to this need by developing a livestock marketing information system based on information communication technology that has now been adopted as the basis for developing a national livestock marketing information system for Kenya. The development, testing, implementation and expansion of the system have all been made possible through collaboration among different stakeholders with interest in livestock marketing information. It is expected that provision of such information and improvement of the capacity to communicate the same will have a positive effect on market transactions in terms of improving sales and identifying markets offering better prices.*

### Background

It is estimated that livestock contributes upwards of 10% and about 25% to Kenya's GDP (of US\$ 10.1 million) and agriculture sector respectively. Most of the livestock is produced in the pastoral system and marketed from the arid and semi-arid areas of Kenya which account for about 8% of the country's population and occupy roughly 63% of the total land area (Narman, 1990; Republic of Kenya, 1994). The pastoral production system is one that essentially derives from the exploitation of forage and water to maintain and increase livestock inventory. The system is primarily geared towards meeting the subsistence needs of the pastoralists by providing the major ingredients of their diets and for enhancing social relationships. However livestock has acquired a niche in the national, regional and global livestock trading chains and livestock producers are part of the commercial webs of trade relationships among people and countries in different locales (Kariuki, 2001). In spite of its importance and contribution to the national economy, the development of the livestock industry has faced numerous challenges. Livestock producing areas and by extension livestock producers have to contend with shocks emanating from a host of factors including threats of droughts, poor marketing and communication infrastructure, disease outbreaks, insecurity, and a policy environment that lacks effective institutional support to production and marketing of livestock and livestock products as commodities for trade. The lack of a transparent, timely, and efficient livestock marketing infrastructure is recognized as a major factor hindering the improvement of gains to livestock trade in order to benefit the national economy through derived taxes and

more importantly perhaps to benefit the communities of livestock producers (Aklilu, 2002; GL CRSP, 2003). A reliable livestock market information system is a key element in supporting decision-making of other players such as traders, middlemen and policy makers and contributes to the development of pastoral areas (Barrett and Luseno, 2001; Kaitho et al 2004). Provision of marketing information or the improvement of the capacity to communicate the same will have a positive effect on market transactions in terms of improving sales and identifying markets offering better prices, identifying market hot spots and where to source for animals that meet expected quality and health standards for local and international markets. It is against this background that the Livestock Information Network and Knowledge System (LINKS) project of the Global Livestock Collaborative Research Support Program (GL CRSP) initiated a livestock marketing information system geared towards addressing the needs for timely and reliable information for producers, traders and policy makers in the sub-sector.

### History and Evolution - From LEWS to LINKS

In 1997 the GL-CRSP implemented the Livestock Early Warning System (LEWS) for eastern Africa project which culminated in the development of spatial models for assessing and forecasting forage situation as the basis for providing early warning information for livestock-based production systems. Through a collaboration with the GL-CRSP Pastoral Risk Management (PARIMA) project, LEWS scientists recognized the need to place

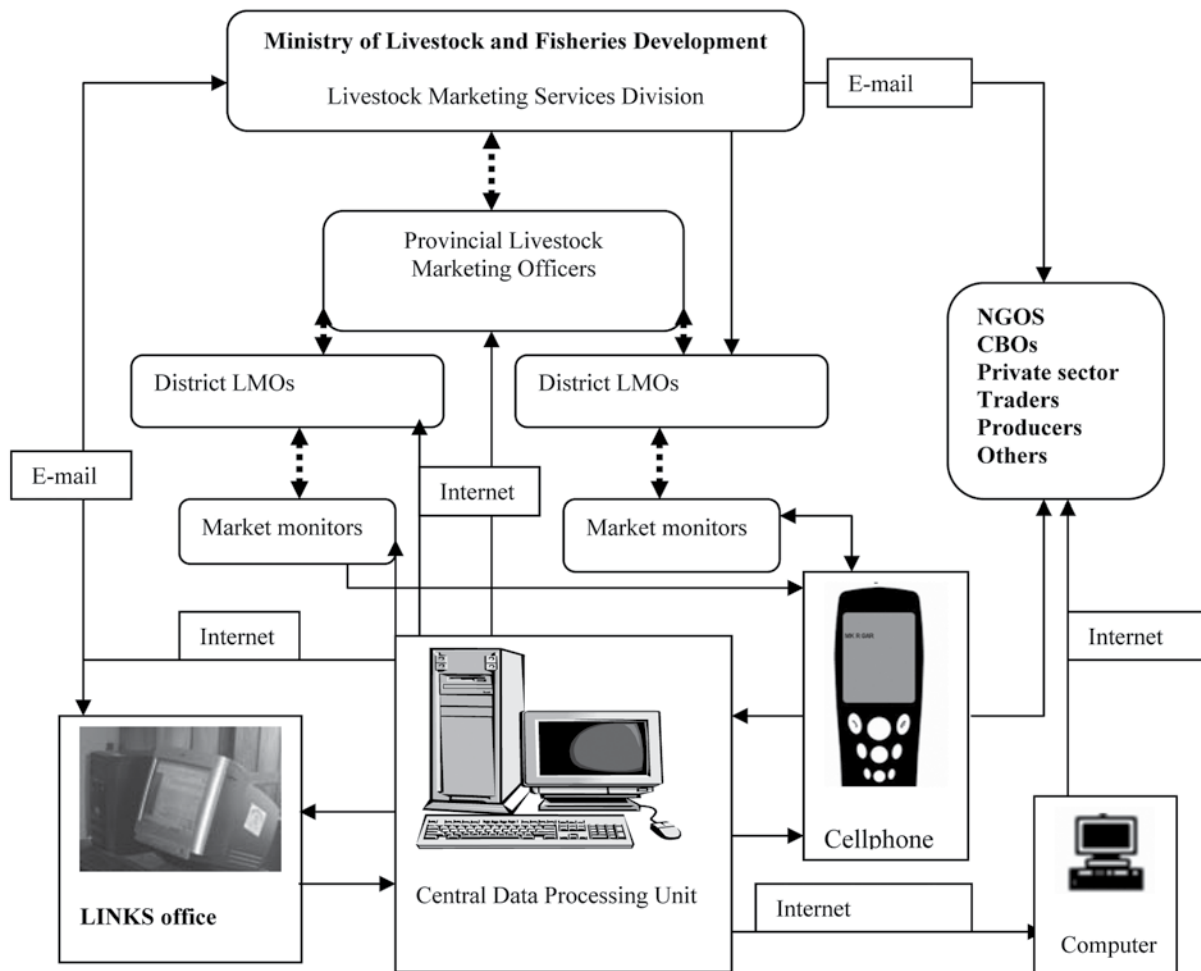
LEWS technology inside a broader livestock information and analysis system that is designed to improve livestock markets and trade. In 2003, the LEWS project evolved into the LINKS project but continues to generate the early warning information updated every ten days and used to produce advisories usable by agencies and communities of livestock producers. The core program of LINKS focuses on information technology development, establishing communications infrastructure and technology, identifying and developing working relationships with key livestock marketing authorities, agencies and livestock marketing associations in Kenya, acquiring livestock market information to support the need for market information and modelling analysis as well as design of potential output products and delivery systems.

### National Livestock Marketing Information System and its Accomplishments

LINKS has responded to the livestock marketing information needs by designing an information communication technology infrastructure for reporting and requesting information on livestock sales and

prices from a network of different markets in Kenya. In partnership with other collaborators, LINKS has been integrated into a livestock marketing information system that facilitates dissemination of information so as to reach end users in the remote livestock producing areas. The idea of integrating the system into the activities of the livestock sub-sector was shared with stakeholders in the sector who, after collective evaluation, agreed to adopt the system for developing a National Livestock Marketing Information System (NLMIS) to cover as many nodes as possible in the network of key and remote livestock markets in Kenya. The objectives of the NLMIS are to avail information through various media to all players in livestock marketing, establish a livestock marketing database for reference in planning, research and monitoring of marketing trends, and to provide early warning information for disaster preparedness. The activities to achieve these include training of field data collectors in the techniques of data collection and reporting and train all stakeholders on the interpretation and use of information available from the NLMIS. There is also training on how to download, analyze and summarize the information for transmission to end users in a form that fits their requirements.

Figure 1. The system is designed to report and disseminate information based on the following model.



The NLMIS is run by a committee drawing its members from stakeholders with interest in livestock marketing information and a technical arm headed by the Livestock Marketing Services Division of the Ministry of Livestock and Fisheries Development. The division is charged with coordination and administration of the system among the network of livestock marketing officers and data monitors. The District livestock marketing officers supervise data collection and reporting to ensure consistency, accuracy, and timely reporting by the data monitors and also keep custody of the hard copies of the data sheets. The data monitors code the data to text messages that they send via cellphones to the central data unit which processes the incoming data, decodes it and submits the output into a central database (<http://www.lmiske.net> ). Using a pre-paid card, the market monitors can also enter data directly into the internet through Postasurf, a facility provided by the Postal Corporation of Kenya and which is now available at all district headquarters (Jama, et al., 2004). The LINKS office checks on data accuracy and timeliness and provides training and technical back up to the network of supervisors and monitors. There are also a number of Non-Governmental Organizations (NGOs) that provide complementary support to improve data collection and information dissemination. The information is available to a wide range of users including policy makers, NGOs, community-based livestock traders and producer associations and individuals, middlemen and the private sector. The information is downloaded and could be saved into a computer so that national institutions can in turn print it and share it with other users and communities of livestock producers. The information is also available if requested through SMS and is also shared by e-mail and posted on billboards at the market places where both producers and traders can access the same (Kaitho et al., 2004).

With support from the Kenya Livestock Marketing Council (KLMC) and the Netherlands Development Organization (SNV-Kenya), the system has expanded to cover fifteen major markets. The approach to implementation involves intensifying awareness on the utility of the system among potential users and adopting dissemination and training approaches that reach a wide clientele while keeping the costs of achieving this to a minimum. Involving collaborators in this process ensures a larger multiplier effect and helps to build confidence in the use and adoption of the technology. The system has incorporated a number of attributes to ensure the effectiveness of livestock market in terms of its usefulness for producers and traders and also consumers to make timely informed decisions. These include regular and consistent reporting on a weekly basis, development of a grading system based on defined animal characteristics, a system that transfers data to a central processing unit and accessing the information through different media. The system also has the potential to provide information on lag time involved in transporting animals from one market to

another, the estimated cost involved and ability to forecast how the markets are likely to perform in the future. LINKS has made significant contributions in developing a livestock marketing information system that is acceptable to a wide array of partners in Kenya. This has been through training of monitors and end-users of the information, participating in livestock stakeholders meetings, presenting LINKS protocols at different fora, developing training and dissemination materials, and organizing demonstrations on the use of the short message service to send and query data. Over 61 representatives from government, NGOs, private consultants, and traders have participated in these trainings. Three presentations have been made at local meetings of livestock stakeholders and collaborators involving over 70 participants representing 20 different institutions. A field day demonstrating the use of the system to traders, government, county council and NGOs staff was held at Garissa market where over 500 posters and information flyers were distributed. This was complemented with a training session of 14 users with access to the internet. The institutions involved in implementing the NLMIS now include Ministry of Livestock and Fisheries Development, Kenya Livestock Marketing Council, FARM-Africa, Food and Agriculture Organization Veterinaires Sans Frontiers (VSF-Suisse), Food for the Hungry International (FHI), and Terra Nuova Kenya.

Through the Nairobi Support to Emergency Preparedness and Response office, FAO has made a major contribution to the NLMIS by supporting workshops to sensitize a wide array of stakeholders at the district level. The workshops were conducted in 14 districts of Isiolo, Marsabit, Moyale, Mandera, Wajir, Garissa, Samburu, Baringo, Wets Pokot, Turkana, Kilifi, Kajiado, Narok, and Laikipia, involving a total of 308 participants representing different organizations. The major objective of these workshops was to mobilize stakeholders in the different markets and districts to expand the NLMIS and solicit further support for this expansion and sustainability of the system. During the workshops, a total of 31 other markets were identified for inclusion in to the monitoring network. Following the successful district workshops, the stakeholders identified and nominated persons to be trained as monitors to facilitate inclusion of the additional markets into the NLMIS. A total of 20 supervisors based at the Provincial or District headquarters and 52 other staff drawn from 35 markets in 19 districts within four provinces were trained in two consecutive workshops held in Nairobi. The coordinating committee of the NLMIS has also developed a proposal for implementation and expansion of the system.

## **Conclusion**

Basic information communication technology can play a major role in improving connectivity among markets and this can help communities of livestock producers identify markets for their livestock and have improved knowledge

on prices in those markets. Developing the technical and human capacity to meet market information needs and decision support for livestock producers helps to bridge the gap between markets on the one hand and producers on the other. This means that producers can make better choices on where to sell their animals and creates leeway to have better bargaining power with traders. To make this a reality requires support by government in terms of development and adoption of a policy that guarantees access to information communication technology to a wide clientele especially in the more remote areas where marketing of livestock is a major activity.

## 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 which was 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 contact: [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 Africa, Central Asia and Latin America.

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