IGAD Regional Pastoral Livelihoods Resilience Project

Livestock Market Information Systems in Ethiopia, Uganda and Kenya

An Assessment to Inform Future opportunities

Technical Report

Submitted to
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1. Introduction

The livelihood of a vast majority of people in IGAD region is highly dependent on income from livestock and livestock products. And thus development of reliable and timely livestock market information is vital for livestock producers and traders to make marketing decisions. Very recently many countries in the region directed institutional focus toward improving livestock market information, infrastructure and efficiency. Given the high dependency of livestock keepers and their livelihoods on cash income from the sale of livestock and livestock products, it is important strengthening such initiatives both at the countries and region levels.

The World Bank funded IGAD RPLRP is mandated to address the issue of market information system at both national and regional levels, by focusing on project participating countries.

The market information systems are a set of integrated and coordinated processes and tools to collect and deliver livestock market information and services to farmers, traders, and food processors, government functionaries and others who may benefit from up-to-date market data. Such system is developed to increase transparency of markets by providing recent price information to small holder farmers who were historically unable to accesses these information because of their isolated rural locations and lack of interaction with other actors along the value chain. This inaccessibility of information by farmers rendered them get less benefit compared to others such as brokers and intermediaries who traditionally used to reap most of the benefit.

In general, market information systems are designed to increase market transparency, introduce standards, open markets, and pave linkages for the interaction of value chain actors. They can also be good tools to combat poverty by shifting the share on income toward small holder farmers or food processors. Access to information about up-to-date prices and price trends supports commercial decision making and thus pastoralist have choice of preferred markets to sell their animal and animal products, and negotiate more effectively with intermediaries. They are also used by Universities, donors, businesses and researchers to track livestock prices and spot demands or supply trends. It will also assist planners to support trade and contribute towards resilience building. Moreover, these systems are always can be packaged and shred through mobile phone technology by including extension advice, weather forecasts and prices of inputs. It could also be integrated into an existing early warning system to be more comprehensive and efficient.

So far there is no attempt to build regional livestock market information system in the IGAD region. However some countries like Ethiopia and Kenya were started livestock market information systems. Currently, both systems are not in its full operation and its coverage is not reaching most cross-border areas. Thus there is need to create a regional framework or platform where countries of the region can collaborate, network and share experiences given the cross border nature of livestock trade. Therefore, this

concept note is prepared for RPLRP project in its operational areas (Ethiopia, Uganda and Kenya) and in order to conduct assessment of the existing livestock marketing information systems at the countries level with possibility of recommending way forward for harmonization and strengthening regional LMIS.

2. Objectives of the assessment:

The overall objective of the assessment is to collect information about any existing livestock market information systems and services at the various levels in Ethiopia, Kenya and Uganda and help identify constraints and opportunities that would contribute towards the development of a successful LMIS both at national and region levels by harmonizing efforts in the three countries.

3. Expected outputs

- Increased understanding about the existing LMISs in the three countries and discus roadmap for the countries and the region
- Develop consensus with countries how to strengthen and or establish harmonized LMIS at countries and region levels; and
- Produce mission report about the state of LMIS in the countries, agreed action plan and recommendation for the regional LMIS.

4. Methodology

The assessment depends mainly on participatory discussion using structured interviews with key concerned stakeholders including those at the key government offices, project/program supporting LMIS and other key actors in the project countries (Kenya, Ethiopia and Uganda). As well the assessment also depended to some extent on some reviewed secondary sources as appropriate and to fill the gaps. Involvement of the private sector was also an asset to be documented and assessed.

The following will be used as check list for group discussion and key informant interviews:

1. What are the existing systems/initiatives and what are their components (hardware, software, human resources and information)?
    - Who is the responsible department / unit on managing, updating the current system.
    - Where the current system is hosted?
    - Who is providing technical assistant to the system, if there is a need to scale up the system?
    - What is the current data collection, and update mechanism in place?
    - Is there a challenge in data collection? If there is, what kind?
    - What is the framework of the system? (is it the tool open sources? Is it built on commercial technologies?)

    - What kind of skill and knowledge required to fully manage the system in a sustainable manner?
    - Dose the system has an application programing interface (API)?
2. Are they donor, private or public supported systems? Is there any public private model?
3. Are they financially sustainable?
4. Who are the main users of these systems?
5. Identify main market coverage in the cross-border areas (Cluster 1, 2 and 3)
6. What opportunities/constraints to have an efficient functioning LMIS?
7. What are the opportunities/constraints to build on these systems to have a regional system?
8. What are the needed information by the pastoralists, i.e complete integrated package or just market information?
9. What level of awareness among the various stakeholders including pastoralists about these systems? Is there further need for awareness?
10. What are the recommendations for improvement at short and long terms?
11. What action plan that can be recommended or informing next steps for the creation of a LMIS at national as well as regional level?
12. How the pastoralist can be able to get information form the system?

The findings of the assessment are expected to help in improving the ongoing efforts in the implementation of an efficient LMIS at the country level. As well, at the regional level the findings are also expected to impact the existing thinking about having one regional LMIS.

The assessment team was comprised from:

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5. Market Information Systems: Definitions and Background Information

Farmers in the developed world consider the provision of market information as a basic and essential requirement for their sustainable business. Farmers in Europe for instance, have access to over 200 Internet sites containing information on prices, contact details for buyers and input providers, market news, yield forecasts, quality and packaging requirements, etc. Additional information is available from specialized journals, government agencies, traders and farmers' unions[1].

[1] Ferris and Robbins, (2004). Developing marketing information services in Eastern Africa, the FOODNET experience, ASARECA Monograph 9. IITA, Ibadan, Nigeria

In Africa in general, lack of accurate and relevant market information has been identified as a main constraint to efforts of improvement of the agricultural sector. However, few countries in the continent have access to such information.

Agriculture as industry is always entails to produce for securing food for individuals and households and then the surplus will be sold to pay other expenses. This surplus may be used as food for others or it could generate some earnings through exports or domestic marketing. Stakeholders along the chain need provision of accurate and timely information which enable them to make better decisions regarding what to produce and where to sell the surplus.

In Africa, since the structural adjustment programs in 1970s, there was a provision for market information. These programs recognized that, unlike farmers in developed countries, most African farmers do not have the means to have adequate market information and therefore, such services must be subsidized and provided by a government agency. Unfortunately, most of these state-operated market information services established under these programmes, became over bureaucratic and were unable to provide relevant and timely information for their intended beneficiaries especially small scale producers[2]. In sub-Saharan Africa, in 1990s, the reform efforts were targeted agricultural market liberalization. Market information systems emerged as an accompanying measure to this reform. They were intended to correct the asymmetries created by economic liberalization, giving more bargaining power to farmers, creating a more transparent, open trading environment and fostering more efficient market systems for all stakeholders[3].

In IGAD region in general, and in the countries where livestock play the major role in people's livelihoods, there is a general consensus that the marketing of livestock and livestock products is underdeveloped. This happened despite the well known fact that markets are the viable venues of developing the whole sector and for enhancing and attracting investments to it along the value chain nodes.

The recent development in the agricultural sector of the developing countries from subsistence mode of production to more or less commercialized one necessitates more interaction and exchange between farmers, traders and other actors in both inputs and output markets. This interaction needs an efficient or at least a reasonable flow of information.

A market information system is defined as an organization or group of organizations that (i) collects and transmit data to a processing centre, (ii) processes and analyzes the data to transform it into market information, and (iii) disseminates market information

[2] Ferris and Robbins, Ibid

[3] Tollens, E. F. (2006). Market information systems in sub-Saharan Africa: Challenges and opportunities. Poster paper prepared for presentation at the International Assiociation of Agricultural Economists Conference, Australia

products to different stakeholders via one or more dissemination channels for private and/or public decision making[4]. However, FAO, defines a market information service as a service usually operated by the public sector, which involve the collection on a regular basis of information on prices, and in some cases, quantities of widely traded agricultural products from rural assembly markets, wholesale and retail markets, as appropriate and dissemination of this information on a timely and regular basis through various media to farmers, traders, government officials, policy makers, and others including consumers[5].

The two definitions look expressing two different eras, the first one is recent, comprehensive and broad, the FAO one although focused but it was before the cell phone revolution. Market information products includes: (1) market news (e.g information on prices, quantities, market conditions, regulations, and business contacts for both factor inputs and outputs), (2) market analytical reports (e.g reports that analyze factors that cause changes in market conditions and their effects on stakeholders, including policy analysis), and (3) business reports (e.g providing information that can help stakeholders identify reliable trade partners, including their creditworthiness)[6].

During the field mission, the team realized that there are four main components of the LMIS in for instance Ethiopia. These are: (a) market data collection, which includes what type of data to collect (i.e prices, volumes, ...), from where or which markets, how to collect meaning which format to use, who collect (market mangers) and when to collect this data (weekly, monthly, ..), (b) communication channels (i.e to use mobile, email, hard copy, ..), (c) information dissemination (what dissemination channels, radio, TV, ...) (d) database development. So in brief, market information services usually involve the regular collection of commodity prices from major markets and supply conditions, processing and storing them, and disseminating the information to different stakeholders using one or more channels such as radio, magazines, television, email, internet, telephone, and mobile phone calls. The end users of this information include farmers, traders, consumers, policy makers, governments, development agencies, scholars and researchers.

In most pastoral regions, livestock market price information is not readily available. Market prices are influenced by collusion among traders to fix prices, transfer of data through government channels is slow, and word of mouth is not always timely or reliable. Transfer of information is not always transparent[7]. The issue of lack of access to livestock markets has been raised continuously by pastoralist communities as one of the major contributing factors in livestock deaths during droughts.

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[4] Kizito, A. M, (2011). The structure, conduct and performance of agricultural market information systems in Sub-saharan Africa, MSc thesis, University of Michigan

[5] Shepherd, A. W., (1997) Market Information Services - Theory and Practices. Rome, Food and Agriculture Organization for United Nations

[6] Kizito, ibid

[7] Angerer et al, (2013). Reducing Risk in Pastoral Region: The Role of Early Warning and Livestock Information Systems, Rev. Cient. Prod. Anim., vol15, n1, p 9-21, 2013

Increased access to markets will improve pastoralists' terms of trade but as well helps to destock in drought periods and restock when rainfall becomes available[8]. This clearly showed that it is of utmost importance to have an efficient flow of market information within the country in general and especially in pastoral and cross-border areas to give chances for the pastoralists to gain better prices and hence this will be fair for their welfare and it might help them to creep out from the poverty traps.

5.1 Livestock Market Information Systems in East Africa: Background Information

In late 1990s it became apparently, particularly in Africa, that production-based food security solutions do not lead to growth and therefore a market-led approach was adopted by development practioners. One of these efforts which was using this approach in East Africa was led by the International Centre for Tropical Agriculture through ASARECA[9] project FOODNET[10]. These efforts included three different models of market information services to service traders, processors, and small scale farmers in the agricultural sector. These models were: (i) a national market information service that provides a regular overview of the countrywide market status; (ii) a localized market information service that aims to meet specific needs of small scale farmers and traders at district or cluster of districts level; and (iii) a regional market information service that aims to support the needs of the formal and informal traders involved with cross border trade. As FOODNET is a regional marketing network, the supporting agency, USAID was keen for the FOODNET team to capitalize on the successes of the work that had been undertaken in Uganda and investigate the possibility of developing a market information service to meet the needs of cross border traders and regional market opportunities. The idea to develop a regional sharing of marketing information was first developed in 2000 through a partnership between FOODNET, the Kenyan Agricultural Commodity Exchange (KACE), the Tanzanian Marketing Development Bureau (TMDB) and a project in Rwanda. Information from these partners was compiled by KACE and disseminated to a number of mainly larger traders on a weekly basis, via email. This process was called RECOTIS[11] and it was the first effort to use regional marketing information to foster greater regional trade [12].

In East Africa, irregular and sporadic livestock market data collections have been going on for a long time as components of development projects such as the Arid Land Resource Management Project (ALRMP) in Kenya, the Tanzania Livestock Marketing Project (TLMP) in Tanzania, and in government ministries and by NGOs (Care Ethiopia)

[8] Masih, I. et al. (2014). A Review of droughts on the African Continent: A geospatial and long term prespective. Hydrol. Earth Syst. Sci., 18, 3635 - 3649
[9] Association for Strengthening Agricultural Research in Eastern and Central Africa
[10] Marketing and agro-enterprise regional network (www.foodnet.cgiar.org)
[11] RECOTIS= Regional Commodity Trade Information System
[12] Ferris and Robbins, Ibid

in Ethiopia. The Livestock Information Network and Knowledge System (LINKS) project, implemented by the Texas Agricultural Experiment Station (TAES) at Texas A and M University (TAMU) and the Livestock Market Information System Project of the USAID initiated one of the first attempts at establishing a National Livestock Market Information System in Ethiopia.

5.1.1 LMIS In East Africa: The Original Story

An interview was done by the team with the developers of the earlier LMIS system in East Africa and the following were the main key findings:

- The software was developed from scratch by Texas A&M AgriLife Research/Texas A&M University (under USAID funding) for use in market information systems for Kenya, Ethiopia, Tanzania, Mali, and Mongolia.
- The work on the original software began in 2005 and was written in .NET with some java scripting.
- The general framework of the software is depicted in the figure below:

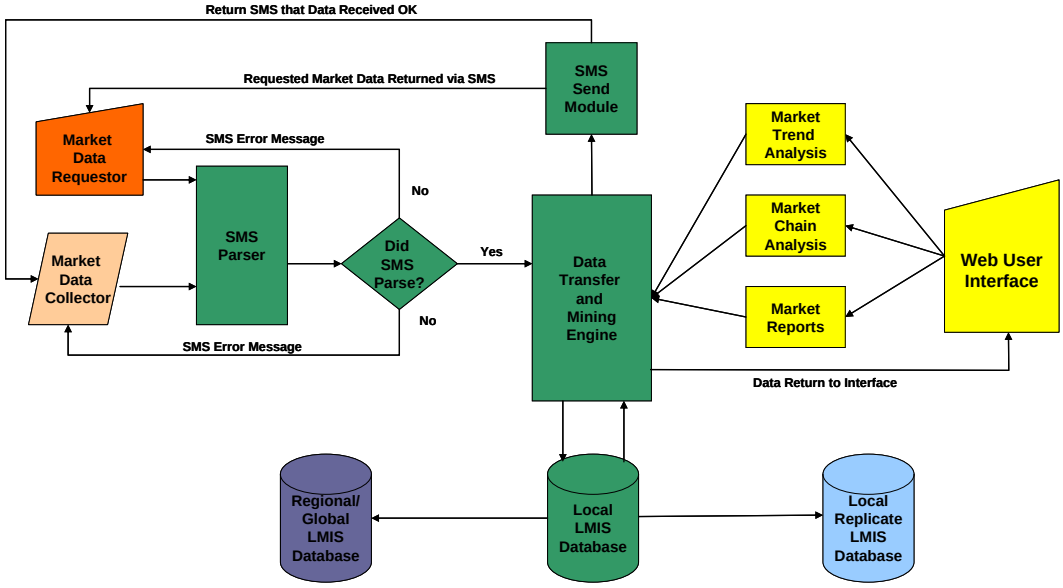

Figure 1. LMIS framework

- For data storage, the system uses the open source PostgeSQL database. The original system has a proprietary SMS interface (Active SMS software produced by Intellisoftware) to allow data to be sent to the server in via SMS messaging. It also allows users can to the system to receive price and volume information for reporting markets using a request SMS message.
- The majority of the countries the developers have worked in are using the .NET version of the software. They have developed a java version of the software that provides more flexibility for cross platform installation and browsers. The new

software also has the open source smslib from Google instead of the proprietary SMS software that the older software had. The new version can be viewed here (http://lmis.tamu.edu/); however, this is demo site and the data have not been updated for a while.

- The developers consider the software open source although it is not posted the software on anything like github. However there is a plan to do that in the near future. At this point, the code can be shared with anyone who is interested. Thre is no licenses fee or charge for the software.
- Texas A&M AgriLife Research/Texas A&M University is currently continue developing and enhancing the software. Since 2008, the interviewed person has served as the principal scientist at Texas A&M who has provided oversight for the software development and received grants/contracts for the LMIS work. The LMIS development falls under Texas A&M's Center for Natural Resource Information Technology (CNRIT), of which he is currently working as the Director. During the assessment is has been also identified that CNRIT has diverse set of projects and decision support systems aimed at providing livestock producers and natural resource managers with software and tools to manage risk and evaluate management alternatives. These projects include livestock early warning systems for East Africa, Mongolia, and portions of the US, livestock nutrition monitoring, production of rainfall and vegetation indices to support US Department of Agriculture Risk Management Agency's rangeland insurance program, rangeland fire risk and spread modeling, decision support tools for invasive plant management, and carbon sequestration. The Center's website (http://cnrit.tamu.edu has information on the projects).
- The Centre (CNRIT) also provides technical support and training to the countries where the team have deployed the LMIS. They have accommodated customization and advanced support when funding has been available to do so. Most recently, through funding from Mercy Corps in Ethiopia under their USAID-funded PRIME project, SNPP protocols were added to system to allow bulk SMS and use of a SMS Short Code number.
- They have an MOU that was signed in 2011 with what was then the Kenya Ministry of Livestock Development and is now the Kenya Ministry of Agriculture, Livestock & Fisheries. We had worked on developing an MOU in Ethiopia, but the Ministry providing oversight of the system has changed 3 times since they began the process, so they have not been able to complete having MoU with Ethiopia.

6. Livestock Market Information System (LMIS) in Ethiopia

6.1 LMIS in Ethiopia: Background information

Ethiopia has a livestock population of 52 million cattle, 63 million shoats, 3 million camel However, the livestock business has been traditionally managed and not led by market demands.

For the past 20 years, the government gave special attention to foster the sector including establishment of the livestock marketing proclamation 819/2014, regulation 341/2015 and directive 004/2015. To develop efficient and cost effective live animals marketing structure, that is supported by up to date information resulting a proper benefit to market actors .

The Federal Ministry of Trade in collaboration with its development partner, USAID (through its AGP-LMD and PRIME projects) led the joint efforts to implement the National Livestock Market Information System, NLMIS

The system is a continuing and interacting structure of people, equipment and procedures to gather, sort, analyze, evaluate, and distribute pertinent, timely and accurate information for use by producers, traders and marketing decision makers to improve their marketing planning, implementation, and control.

The Objective of NLMIS is to provide nearly a real-time livestock price and volume information to stakeholders that facilitates marketing decisions and early warnings to:-

- Pastoralists/livestock producers
- Traders
- Government
- Non-government organizations
- Research institutions

6.1.1 History of LMIS in Ethiopia

The system used to be managed by EMDTI. However, full ownership and administration was transferred to the Ministry of Trade. Currently the mandated institution to manage and oversee the issues of Livestock Marketing is given to the newly established office called Livestock and Livestock Product and Fisheries Directorate. The system is technically and financially supported by USAID's AGP-LMD and PRIME projects. The system covers 6 regions and 2 administrative cities of Ethiopia with 47 key livestock market centers. The following table shows the number of covered markets per region:

Name of the region	**Number of covered markets**
Oromiya /borena	11
Addis ababa	3
Dire Dawa	1
Somali	9
Afar	9
Amhara	6
SNNP	5

Tigray	3
Total	47

Source: Ministry of Livestock and Fisheries

The key markets are selected based on their potential. 93 data collectors trained to record price and volume information based on the protocol developed. They transfer this information into a short message codes and send it to NLMIS server via SMS from cell phones

Supervisors at regional and zonal levels trained during the national training held in Addis Ababa

6.1.2 Methodology for LMIS Data Collection

- Train Market Monitors and Supervisors
    - Ministry identifies monitors and partners - 2 monitors for each market
    - Supervisors provide initial data quality checks
    - Monitors trained on data collection formats and classification system (species, breed, age, gender, grades 1 -4)
- Recording prices and volume
    - Market observation = animal kind, dominant breeds, proportions of different types of animal categories
    - Price is based on transactions that have been concluded
    - Collect data for 5 representative animals in each category
    - The 5 records collected represent animals in the same species, breed, age class, gender and grade (e.g. cattle, harar, mature, male, grade 1)
    - The price of each animal is recorded on the data collection format
    - The average of the 5 animals is calculated
    - Price and Volume data are transferred to server via SMS

The Frequency of data collection is **weekly. Classifications of animals** for price data includes the following

- **Animal Type**
- **Breed**
- Animal **Age** Group
- **Sex**
- Animal Body condition/**Grade**
- **A coding scheme** is used to send data via SMS

6.1.3 LMIS in Ethiopia: Main findings

1. Despite some challenges, LMIS does exist in Ethiopia, it is functional and covering about 47 markets spread over 6 regions. however, its functionality is not active during this period of re-structuring the Ministry of Agriculture into two separate Ministries and establishing of new Directorate within the new Ministry of Livestock and Fisheries. These regions are: (i) Oromiya /borena (ii) Addis ababa (iii) D.Dawa (iv) Somali (v) Afar (vi) Amhara (vii) Southern Nations, Nationalities and People's region(viii) Tigray (detailed information is annexed).

2. The interviewed experts estimated the LMIS coverage at 80% including pastoral and high lands areas.

3. The main server of the system is hosted within the Ministry of Trade, with another server used as back-up located at ILRI to ensure sustainable use of power and internet connection.4. Historical steps in establishing a LMIS the system in Ethiopia was a collaborative initiative between the government and Texas University with fund from USAID. The project was named the Livestock Information Network and Knowledge System (LINKS) and implemented by The Texas Agricultural Experiment Station (TAES) at Texas A and M University. This was a pilot-based project in the 1990s, with another project led by Mercy Corps took over the initiative

5. The current system had received technical and financial support from two main USAID funded projects, namely Livestock Market development and PRIME projects. PRIME is the Pastoralists Areas Resilience Improvement through Market Expansion. The support includes capacity building, air time for data collection,

6. The collected information includes prices of livestock per grade/species and traded volumes (cattle, sheep, goats, camels and donkeys).

7. The kind of skills and knowledge required for sustainable LMIS includes capacity building in terms of the quality of data, analyzing of it and reporting. As well there is need for IT- specialists and MIS managers. There seem to be some delays in sending of the data from markets to the main server, and generally there is need for a uniform and reliable LMIS to serve the whole country.

8. The current working LMIS has its application programme however, updating is required for more efficient system. Generally speaking a web-based system with mobile integration is recommended.

9. Among the main stakeholders for LMIS are traders, government officials, development partners and to a lesser extent the pastoralists

10. There seem to be disconnection between export and domestic marketing as far as the gathered and shared information is concerned.

11. Opportunities are there, despite the many constraints, only they need coordination between the main actors, some level of awareness with the importance of this system

and good political will. One major opportunity in Ethiopia is the fact that they have an existing system in place compared to other countries in the region.

6.1.3.1 Among the main challenges are the following:

- Financial sustainability: this was mentioned by all interviewed persons and they also highlighted the fact of the ownership. It was clear that the system struggle to remain financially sustainable and there is no any effort to run a model that privately or even publically financed. This worth mentioning despite the public good nature of such information.
- Institutional problem: during the mission period it was observed that the system was inactive due to re-structuring of the Ministry of Agriculture. There is also lack of effective coordination and weak working environment among the key players involved in the establishment, development and management of the existing LMIS in Ethiopia.
- Capacity building-related challenges: despite the considerable efforts from the development partners involved in the LMIS, the team observed further need for skill and knowledge development of the main actors including availability of subject matter specialists. For example the issue of who mange the system technically was also raised. in the same regard, the issue of raising awareness at grassroots level was also mentioned.
- Data related problems: the team observed during the discussions, the issue of data need some fine tuning in terms of what type of data to collect, who analyze, what type of analysis and how to report and disseminate the information. The issue of what channels of dissemination was also raised during the discussion. Getting up-to-date information and disseminating the information to the end users, the pastoralists was also mentioned among this group of challenges.
- Language-related problems: especially for information dissemination, the language remain an obstacle as far as outreach is concerned. It may also be an issue during data collection and raising of awareness.
- Data dissemination Channels: Radio, Newspaper, Sms etc.

6.1.3.2 Recommendations:

Despite the challenges mentioned above, it was apparent from the rapid assessment done in Ethiopia, that a LMIS should be an important and worthwhile investment given the increasing demand by all stakeholders for such information. This is also due the need for efficient MIS biased towards the producers against exploitation usually practiced by brokers and outsiders who reap the most of the benefits. This is particularly true in the context of pastoral and cross border areas where pastoralists knowledge has

nothing to do with physical borders. The huge exchanges and trading that is practiced in an informal way is also does not believe in borders. So there is need to look into borders as well resourced institutions that involve all types of assets, namely political, economic, social and physical assets.

- Regarding the issue of sustainability, involvement of all key stakeholders in all steps of establishing LMIS is key for their success and important to ensure their ownership of the service and hence its sustainability. This involvement will also paved the way for different possible contributions from all or some of them to increase the efficiency of the system and its chances of sustainability. The willingness of the government and its political and financial support is however crucial to the success and sustainability of a unified national LMIS. This possible financial support could be trickle down from the budgetary allocations within the regular budget allocated to the ministry mandated to manage the system. at the long run, involvement of the private sector in such public good service is crucial after adding value to it and seeking just reasonable prices.
- In addition to the above point, the team also recommends, in the context of sustainability and the institutional problem, that given the fact that LMIS is something distributed among various government institutions, it will be better if there is a system or a policy framework to guide its harmonization, and coordination among these different institutions within the government body. This will not cancel the fact of mandating one institution/department to lead the process.
- To enhance capacity the mandated Directorate (Livestock and Livestock Product and Fisheries Directorate), there is need for support in terms of human development and equipment at the data collection level (the markets). This will assist in having good quality data that timely and properly communicated along the various nodes of users. recruitment of skilled ICT and MIS managers staff will be crucial in addition to their continuous tailor-made trainings. Committed and well inspired team is also an asset of successful LMIS.
- To have a unified efficient national LMIS, the team recommends to have one form/format for data collection. This will ease comparisons between markets, and will add to the efficiency of the system. Good coverage in data collection with emphasis on pastoral areas is also another variable in the efficiency.
- The issue of the languages is not difficult given the fact that configuration of this into the system is possible and at the dissemination level, this is usually practiced through various channels of dissemination.
- Among the immediate actions, the team recommends that at national level, (i) there is need to undertake study to assess the current status of the existing LMIS in the country as a whole and recommend possible improvements, (ii) awareness

raising among all stakeholders including policy makers. This could be done by the national RPLRP project.

- at the regional level, the discussion revealed the need for: (i) convening a regional workshop involving all key stakeholders to discuss the current status, bottlenecks and the way forward, (ii) undertake a consultancy to develop IGAD Protocol and policy for Data Sharing, and (iii) undertake a pilot action to establish a two-country LMIS using the cross-border approach to be a base for up-scaling.

7. LMIS In Uganda

7.1 LMIS in Uganda: Background information

The livestock sector in Uganda is significant in importance to the agricultural sector and to the wider economy. It contributes 5% to the national GDP and 18% to agricultural GDP. The sector has also continued to deliver steady growth, about 3% per annum. The sector comprises cattle, poultry, pigs, goats and sheep. It was estimated that more than 70% of the households rear at least one kind of livestock.

As part of their partnership, International Institute for Tropical Agriculture (IITA) and FOODNET project in 1999, collaborated, with fund from USAID, to develop low-cost, national market information service that would provide market news to farmers, government ministries, and to the famine early warning agency (FEWSNET). In 1999, a study was commissioned to investigate options for market access in five districts. In this survey, stakeholders identified three key constraints to market access, namely poor roads, lack of market information, and poor means of transport. That report concluded that given the limited impact and lack of sustainability of most centrally organized market information systems, decentralized systems should be developed, involving relevant local stakeholders. A pilot project is required to identify how systems should be set up at district level[13]. Based on this study, a decentralized, flexible information system bringing on board all the main stakeholders was adopted for implementation by the plan for the Modernization of Agriculture (PMA) that time. These efforts showed that MIS in Uganda has a historical development since early 1990s. This emphasis on decentralized system was based on the fact that centralized MIS was failed in Uganda when tried by the government.

7.2 LMIS In Uganda: Main Findings

- There is an starting initiative awaiting further implementation for about 8 month since its establishment via fund support from USAID. The

[13] Kleih, U, Odwongo, W and Ndyashangaki, C (1999). Community access to marketing opportunities - Options for remote areas, Uganda case study

system in now in place with lots of challenges and it is now idle. The team was trying to know the details about this server but no one knows

- The team found that there has been some efforts to avail such service of MIS, not necessarily pure LMIS, sometimes MIS plus other services as well. One of the initiatives was led by a regional organization (COMESA), some scattered across development partners projects and few (Farmgain and Infotrade) are originally donors supported projects that when phased out the private sector take the ownership and made them sustainable and successful stories.
- One of the initiatives was the one led by COMESA, where the server is hosted in Lusaka, Zambia with an objective of monitoring food security through availing commodity prices in the COMESA region. It was actually a project coordinated by COMESA (2008 - 2014). the name of the project is COMESA Agricultural Marketing Promotion and Regional Integration Project (http://famis.comesa.int/). The system is called COMESA food and agricultural marketing information system (FAMIS). It is a web-based agricultural marketing information system designed and implemented under this project and financed by the AfDb.
- FAMIS web portal is a wide network of national and regional database of agricultural marketing information of COMESA member states linked and accessed through the internet. It is designed to generate accurate and timely information on marketing, food security and on the sanitary and phyto-sanitary in COMESA region as well as in all the member states.
- Among the challenges, they mentioned lack of skills, capacity to manage, weak technical knowhow, difficulties in gaining data, lack of facilitation support, very weak awareness and some socio-cultural barriers.
- Among the lessons learnt from the implementation of COMESA system: before its starting, COMESA did an assessment for existing market information systems in the region where the results and recommendations of that assessment were used in the design of the system, intra- and inter-trade in food and agricultural commodities have been promoted, at national level, the project implemented by Ministries of Agriculture, collaborating closely with Ministries of Trade, Health, Environment, Bureaus of Statistics, as well as the private sector including farmers 'unions, the project took note of the issue of language (i.e in Djibouti the used language is French, in Sudan, Egypt Arabic, and so on), and also the issue of capacity building is considered by availing trainings to all stakeholders and the data collectors personnel. It is actually capacity building accompanied by awareness creation about the importance of marketing information systems. One of the lessons also, the system has been conceived out of the COMESA Common Agricultural Policy, which is the regional framework for agricultural development. Two points worth mentioning are; that prior to establishing the system, there was a regional workshop involving all stakeholders for

sensitization, dialogue facilitation, information sharing and creation of mutual cooperation among stakeholders. The other point is the fact that involvement of the private sector has been very strategic during implementation.

- At the national level, interviewed revealed that during project design, some measures were considered to ensure sustainability, but these measures had not been taken seriously at country level after the phasing out of the project.

- Discussions revealed that there are some private sector initiatives doing some work on marketing information as business models, two examples were given, one is farmgain Africa (www.farmgainafrica.org), the other is infotrade (infotrade@fituganda.com).
- Farmgain Africa Ltd was established in 2007 by mainly the former staff of FOODNET which was a post harvest and marketing research network of ASARECA and was housed by the international Institute of Tropical Agriculture (IITA). Farmgain Africa Ltd. took over the roles and functions of FOODNET when funding support from donors came to an end. Much of the expertise that Farmgain Africa boasts of today is as a result of the wealth of experience accrued by its staff while working with FOODNET for over 10 years. They are specialized in areas of market information systems, value chains development, and projects monitoring and evaluation. They are currently running an agricultural market information service for commodities produced in Uganda and this system is linked to market intelligence networks within the region. They had started this service in 1999 with funding support from ACDI-VOCA and USAID. Now this national MIS grew to cover 37 crop and livestock commodities from 20 districts of Uganda. The data collected included wholesale and retail prices, major concurrencies in the market (i.e excess supply or scarcity and why), and some information regarding quality of produce available on the market. Farmgains very advantaged in the arena of market information both locally and within the region.
- Infotrade in 2008 as a project undertaken by FIT Uganda Ltd in partnership with Agricultural Sector Programme Support (ASPS/DANIDA) to set up and manage a self sustainable agricultural market information system. Infotrade has since built platforms that allow one access real time agricultural market data through the internet and mobile phone. In 2008, Infotrade covered only 6 markets located in only 3 districts neighbouring Kampala. By 2011, it had expanded to cover 18 districts allover Uganda. Infotrade is a platform built to integrate collection, analysis and dissemination of agricultural and other market information in Uganda. Their coverage is about 23 markets and they collect food prices three time a week using field officers who collect prices and other data and enter it into

a secured online database. Then on weekly basis, an analysis report released. This report involves average food prices for the week per market, offers received for selling and buying commodities, adverts for upcoming events, featured commodity, weather forecasts, fuel prices and narrative analysis. At the end of the year, the Infotrade Market Analysis Report for the whole year is also produced. today, Infotrade continues to work with farmers and agricultural stakeholders in providing relevant market information through the most convenient and most affordable avenues available. Infotrade is partnering with radio stations to disseminate food prices. Farmers and producers can advertise their produce by simply writing on a blackboard which can be found at markets in districts where Infotrade is operational at no cost.

- The team has also visited Uganda Central Bureau of Statistics and found that they also within their mandate, collect data on agricultural products including prices using the traditional techniques of structured questionnaires. Among the indicators they calculate from these prices is the consumer price indices and other macro-level indicators. So they do not related their data and information to market information systems per se. However, they said they can support the idea of having such systems either at national or regional levels.

7.2.1 Recommendations:

According to the interviewed officials, it was clear that there is a lack of awareness about the importance of LMIS. The implementers of the existing system did not do any subsequent steps after establishing it.

- Building on the asset they have, the interviewed officials recommend to take the initiative through their national RPRLP project and concentrate on the 12 districts covered by the project. This initiative could be up-scaled to cover wider area after evaluation.
- They also recommend a national workshop at each country level to foresee possible ways of establishing/strengthening LMIS.

8. LMIS IN Kenya

8.1 LMIS in Kenya: Background information

In Kenya, the livestock sector contributes about 12% to the GDP and 40% to the agricultural GDP and employs 50% of agricultural labour force. Most of Kenya's livestock herd is found in arid and semi-arid lands (ASALs), which constitute about 80% of the country. Livestock play important role in Kenya's socio-economic development and contributes towards household food and nutritional security.

Beginning 2003, the Livestock Information Network and Knowledge System (LINKS), in collaboration with the Ministry of Livestock and Fisheries Development, designed and piloted an information communication technology module for reporting livestock prices, mainly focusing on markets in pastoral areas. The initial pilot markets were Garissa and Isiolo as secondary markets and Nairobi as the major destination market for the live animals. The ministry nominated members of its staff that were trained on how to sample animals and interview and record data from respondents at the market level. These trained staff were also provided with cell phones for use in reporting the data collected. They would record the data on paper, after which they were taken through the process of coding the data to fit the Short Message Service (SMS) reporting protocol. They would then convert the data to coded alphanumeric message that are fed into the cell phone and sent to a number that communicates with and delivers the messages to the server. Trainings were also offered to livestock market monitors, their supervisors, and representatives of relevant non-government and community based organizations on how to download, analyze and summarize the information for transmission to the end users. Information is shared using a combination of channels, which include radio, print media, SMS, Email, Wolrspace and Internet. For local users, information is printed and posted at strategic offices and on billboards erected in the markets with regular updates[14].

8.2 LMIS In Kenya: Major Findings

1. In Kenya, the server inherited from LINKS project is hosted at the State Department of Livestock Headquarters, Hill Plaza Building, 7th Floor, Room 18. It is the responsibility of the Division of Livestock Marketing Development and Agribusiness.
2. An officer from the Director of Livestock Production`s office is responsible besides other duties for overseeing the server`s operation. Till now the server is idle, no technical assistance is provided in scaling up server processing capacity, information uploaded, repairs and maintenance.
3. Currently, data is collected manually by the data monitors, processed and selected information entered into a Smartphone and transmitted to the server at the National Livestock Market Information System. The server then processes it further and makes it available through regular market bulletins, brochures, via sort text messages (SMS), and local vernacular FM stations. There is no update mechanism available at all. This puts it`s reliability at stake.
4. The kind of skills and knowledge required for sustainable LMIS includes an elaborate training on data capturing, cleaning, processing and uploading to the

[14] Kariuki *et al*, (2008). The National Livestock Market Information System Comes of Age in Kenya, LINKS Project Research Brief

server, trainings on operations of modern market information system, development of versatile tool that can be applied in any market situation.

5. Among the institutions supported the system when it was operating include FEWSNET, FAO, ILRI, ALLPRO. During that period, the system was very efficient.
6. In terms of sustainability, interviews revealed that, it could be sustainable if for example, the market data monitors are hired or seconded by national or county governments on permanent basis. The server should have at least two officers permanently assigned to man it.
7. The main users of the information serviced by this system include livestock traders, middlemen, livestock keepers, livestock service providers.
8. In terms of coverage, the system had covered counties of Turkana, wajir, Isiolo, Marsabit, Mandera, Garissa, Tana River. Kajiado, Lamu, Mombasa, taita Taveta counties
9. Among the opportunities to have an efficient functioning LMIS are existence of operational livestock markets, existence of a moribund National Livestock Market Information System, presence of a vibrant private sector marketing act
10. Among the constraints to have an efficient functioning LMIS are Lack of financial resources to support the system, inadequate skills, lack of ICT equipment, lack of skilled data monitors, server with small processing capacity and lack of personnel permanently assigned to man the server, inadequate feedback to livestock keepers.
11. Among the opportunities to build on these already established LMIS are NLMIS structures in place (server, some data monitors), traders and livestock owners are aware of the system, existence of secondary livestock markets linked to the system, presence of an operational server.
12. Regarding the constraints to build on these already established LMIS, we should consider building on its initial successes and upscale its scope in terms of parameters and coverage.

13. The pastoralists always need information on prices of various livestock species and classes, volumes of livestock by species, livestock diseases situation, security situation, kind and number of livestock traders and middlemen, etc

14. Regarding the level of awareness among the various stakeholders of LMIS, it was mentioned that awareness about the system is very low particularly on the site of livestock producers(20%) compared to traders and middlemen(50%). Success of the system depends on intensive capacity building and awareness creation to all actors along the market value chain- producers, traders, middlemen, livestock transporters, livestock development promoters and development partners.

15. Pastoralists can be able to get information from the system through use of SMS short text messages, regular release of livestock bulletins, use of local vernacular fm radios.

8.2.1 Among the main challenges are the following:

- Only few markets are manned by trained data monitors
- Data monitors are not adequately facilitated by resources for airtime, transport and lunch allowances
- Some data monitors are volunteers from the private sector and since they are irregularly facilitated, they may abdicate their responsibilities
- Sometimes the national server refuses to upload market information and this discourages data monitors from regularly submitting information to the processor.
- There is no permanent staff specifically assigned to oversee operations of the server
- Data monitors do not have sufficient ICT tools for gathering data, data processing and transmitting it to the national server
- Awareness creation is skewed in favour of the livestock traders and middlemen rather than livestock producers. An insignificant number of livestock producers use the system generated market information to make key market decisions.
- Irregular and lateness in uploading market information resulted into release of outdated market information
- The quality and volume of market information processed by the server if limited in scope- mainly on numbers, animal species, lowest and highest prices. Other key parameters such as disease situation, security and livestock movement trends not captured.
- It`s coverage is limited to the arid and semiarid lands` livestock markets. Markets from the high rainfall areas are not accommodated in this system.

8.2.2 Some Recommendations from Kenya Interviews:

- Within each country it is good if the national unit of RPRLP undertake a situational analysis and assessment including identification of markets, existing facilities, and what are the challenges and how to overcome them.
- It could also be of importance if at the national level, all key stakeholders invited to a workshop by the national RPRLP to discuss and agree on the roles and responsibilities and how to improve building on the existing facilities.
- At regional level, and after strengthening/establishing of the national systems, RPRLP can convene a regional workshop involving all key stakeholders to discuss and agree on a road map for establishing the regional system.
- When establishing or strengthening the existing NLMIS, it is recommended to consider both livestock traders, livestock farmers and livestock keepers in terms of awareness and training on how to benefit from the system.

Data monitors when recruited should be well educated, well equipped with appropriate equipments and appropriate capacity building should be given to them. As well they should be recruited on permanent basis.

9. LMIS in the Three Countries: A synthesis of Findings

Pastoralism in the Horn of Africa represents a significant livelihood for more than 30 million people with more than half of the pastoralists' incomes derived from trading in livestock and livestock products.

Along the different nodes of the chain, livestock marketing is driven by the private sector and managed by a vast network of producers, traders, those who deal with financial issues, and transporters. Evidence showed that mostly traders and the richest pastoralists reap out the benefit of trade leaving out the poorest livestock keepers. The main market actors include livestock producers, brokers, small scale local traders, exporters, micro-traders/brokers, and veterinary and port authorities. On the other hand, borders and borderlands represent potential political, social, and economic resources for their countries. They are the points where pastoralists recognize no barriers to freely move and cross looking for pasture, water and exchange of benefits. For instance considering the three studied countries, cross border trade represent an important feature of the economies, particularly for Ethiopia, and Uganda, the two land-locked countries. In this region, diversity is a norm, societies are divided along ethnic and religious lines and the border areas are populated with shared ethnicities, cultures and trading benefits.

As elsewhere in the developing world, in the targeted countries, agriculture, whether crop or animal, has failed to benefit the rural famers due to a range of constraints, one important constraint among them is an inefficient information and knowledge flow. This failure is accompanied with fragmented and imperfect marketing situations in non-competitive environment of price formation and inadequate policy support. Due to lack of market access and market information, agriculture is characterized by low returns especially for small scale producers. Accessing markets by livestock producers will lead to increased incomes, food security, more employment opportunities and sustained sector and overall growth.

Based on the analysis of findings from the field work in Ethiopia, Uganda and Kenya the following conclusions in general, could be drawn:

- In the studied countries despite many constraints, MIS/LMIS exist. In two countries (Ethiopia and Kenya) these systems are public owned, while they are privately owned in Uganda. All of them are donor funded and therefore, their sustainability is questionable after the withdrawal of the donors. In Uganda, the efforts were earlier (1990s) compared to those in Ethiopia and Kenya. However, they led by the private sector after phasing out of the projects and they still functioning sustainably.

- All previous donor driven initiatives were presumed to start at national level with potential linkages to a regional platform to share information regionally.
- The emerging MIS during the period of 1990 - 2000 concentrate on price reporting and they led by the public sector. Then since mid 2000s, different MIS models were practiced including governmental projects, private efforts or public private partnerships.
- Private operated models offer the promise of financial sustainability through the sale of information to users beside other fee-based services. In Uganda, assessment of the government-led efforts revealed that financial sustainability hindered its continuity.
- The way to build on these historical efforts is paved, with a lot of lessons and best practices, of course challenges are also there, but they could be managed.
- In general, for the three countries challenges include; data/staff related challenges, sustainability and institutional set up, capacity building-related , coverage and awareness related challenges.
- Among the opportunities are: at least in two countries there are already existing initiatives, the involvement of private sector is possible with some signs of success as in the case of Uganda, and to some extent good knowledge about the importance of these systems in accessing markets efficiently.
- Some important considerations to be noticed when establishing a LMIS: to train field staff on how to collect accurate prices, to create linkages with broadcasting, media and TV channels, to link LMIS with the existing extension services available or to activate what is known as marketing extension, to consider standards and grades, and use of ICT technologies.
- For implementation of either national or regional LMIS we need to think about the following key processes:
    - ✓ The key targeted clients may include small scale farmers, farmers associations, village/district traders, travelling traders, trade associations, non-governmental organizations, policy advisors, food security analysts, disaster mitigation agencies, food relief agencies and consultants.
    - ✓ Staff at the main office should be equipped with offices, computers, vehicle, internet, motorbikes, mobile phones, access to radio and media.
    - ✓ Field staff should have mobile phones, knowledge of standards and grades, computer facilities, and access to email or fax
    - ✓ Each LMIS may need one analyst, one marketing officer and a number of field staff according to the number of markets covered.
    - ✓ Evaluate and improve the services and also consider the capacity building of stakeholders
    - ✓ In the case of the regional LMIS the main actors may include international traders, regional traders, large processors, urban traders, large/small

formal and informal exporters, village traders/farmers groups and small famers.

- Among the immediate actions, the team recommends that at national level, (i) there is need to undertake study to assess the current status of the existing LMIS in the country as a whole and recommend possible improvements, by identifying additional requirements from the key stakeholders. (ii) Awareness raising among all stakeholders including policy makers. This could be done by the national RPLRP project.
- at the regional level, the discussion revealed the need for: (i) convening a regional workshop involving all key stakeholders to discuss the current status, bottlenecks and the way forward to come up with a regional LMIS(ii) undertake a consultancy to develop IGAD Protocol and policy for Data Sharing (this is now in progress by KM Unit of IDDRSI), and (iii) undertake a pilot action to establish a two-country LMIS or even for the three countries together if consensus is there, using the cross-border approach to be a base for up-scaling. (iv): establish a direct linkages between IGAD and University of Texas by signing an memorandum of understanding (MOU), which will support the development of the Regional LMIS. Consider same Platform when re-designing the LMIS for regional and National to enable compatibility with existing platform.

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Annexes:

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