USAID LIVESTOCK MARKET DEVELOPMENT PROJECT

Under Sub Agreement AID-663-C-12-00009 - CNFA

Improving industry competitiveness through the Development and Implementation of an Animal Identification and Traceability System in Ethiopia

Dr. Michael Bradfield

Mr. Jay Truitt

28 February 2014

Submitted to:

CNFA, Inc.
1828 L Street, NW, Suite 710
Washington, DC 20036
202-296-3920 (tel)
202-296-3948 (fax)
www.cnfa.org

DISCLAIMER

This study is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of the author and do not necessarily reflect the views of USAID or the United States Government.

Table of Contents

Definitions Page

CCIA	Canadian Cattle Identification Agency
CEWARN	Conflict Early Warning and Response Mechanism
CFIA	Canadian Food Inspection Agency
CVMA	Canadian Veterinary Medical Association
CVO	Chief Veterinary Officer
DEFRA	Department for Environment, Food and Rural Affairs
DCOP	Deputy Chief of Party
DPI	Department of Primary Industries
DVS	Department of Veterinary Services
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
HACCP	Hazard Analysis and Critical Point
IGAD	Inter-governmental Authority on Development. Countries include Tanzania, Kenya, Ethiopia, Sudan, South Sudan, Djibouti and Somalia
LIT	Livestock Identification Trust
LITS	Livestock Identification and Trace-back System
LMD	The Livestock Market Development program is a CNFA managed USAID funded program in Ethiopia
LTAT	Livestock Tag and Trace
MoA	Ministry of Agriculture
NCIS	National Livestock Identification System

NGO	Non-governmental Organization
OIE	International Organization on Animal Health
RFID	Radio Frequency Identification Device
RVF	Rift Valley Fever
TAD	Trans-Boundary Animal Diseases
UAE	United Arab Emirates
USD	United States of America Dollars
USDA	United States Department of Agriculture
VO	Veterinary Officer
Woreda	Districts or Woredas are the are the smallest unit of local government in Ethiopia
ZCTS	Zimbabwe Cattle Traceability Program

Table of Figures

Executive Summary

Ethiopia has one of the largest livestock populations in the world with an estimated 50 million cattle, 25 million sheep and 20 million goats and ranks in the top 10 in total animal numbers in the world.

The Livestock sector contributes 20% of the National Gross Domestic Product (GDP) and 45% of the total Agricultural GDP. Despite the large number of animals in the country the off-take (i.e. animals marketed in the value chain as a percentage of the population) is very low and estimated between 0-20 percent. Pastoralists represent 15% of Ethiopia's 80 million people and utilize over 60% of the country's land. Their only investment is livestock of which over 90% of their income is derived.

The government has identified the following priorities for the Livestock sector:

- **Enhanced food security**
- **Use livestock as a method to obtain hard currency**
- **Increased exports in the sector**
- **Increase the off-take rate from the national herd**

A Livestock Identification and Traceability System (LITS) can be beneficial to a country looking at competing in the international trade of livestock.

Benefits include:

- **Individual animal identification**
- **Disease control**
- **Improved access to markets**
- **Reduced cattle theft**
- **Data for statistical purposes**
- **Improvements in management and productivity**

To date, because of the cost and logistics involved in running a LITS, few countries have successfully managed to implement *national* programs. Countries that are running national schemes include Australia, New Zealand, Canada and some European countries. The USA has a national traceability system that is implemented through their state and tribal delegates. Africa, Namibia, Botswana, Zimbabwe and Swaziland have implemented national LITS programs with varying degrees of success.

The main drivers for the development of LITS programs in Africa have been access to the lucrative European export markets. These countries have had to prove they have complete control of foot and mouth disease (FMD) and have, in many instances and at significant cost, zoned off areas that are known to have FMD.

The challenge for Ethiopia to implement a LITS system will be to ensure a value addition of the product at each sector of the value chain so the system can be self-funding in the long term. Once a system is implemented, increased demand from new and existing export markets will result in value added to the cattle throughout the chain. Ethiopia should be able to eliminate trade barriers related to traceability concerns and open new markets previously closed due to disease concerns. The challenge is to ensure the "buy-in" of each sector and clearly demonstrate the value to participants in the chain so the chain can and will pay for the costs of the system.

Suggested Strategy for the development of a LITS and Pilot Project

Ethiopia has seen a significant rise in live animal exports. At the same time, international markets are becoming more dicerning and are requesting proof of ownership and that animals be traceble to the source of origin. Countries exporting animals into international markets are faced with the challenge of proving disease status and animals' traceability through the value chain. There is no doubt that Ethiopia will need a LITS system to be able to compete in future markets.

The suggested strategy is for Ethiopia to target the live animal export sector that currently exports over 250,000 live cattle as well asanimal products. The proposed areas for the pilot will cover the three production systems a) the crop-livestock production system b) the pastoralist system and c) the commercialized or specialized system. The ports for export are Djibouti in the East, Berbera in Somaliland, Jijiga in Ethiopia's Somalia region (also in the east), and Metema and Humera in the northwest. The northern pastoralist areas are not as well developed as the southern Borana area or northwest crop area but does have an export abattoir in Makele.

Ethiopia already has a large network of Veterinary Officers (VOs) in the field and ffeedlot operators purchase identification tags. Much of the information necessary for a traceability system is already being captured by VOs at each point of the value chain because animals moving through the cattle value chain are inspected for disease and details of animals are recorded on paper forms. It will be an incremental next step to tag animals using a cost effective, national pre-printed double tamperproof tag at the market and record the details of the seller, who is usually a pastoralist or cattle owner. This information then needs to be captured onto a national database at the feedlot or facility where the infrastucture can support loading data electronically. Export abbatoir owners will transfereach tag to the halved carcass using a cable tie thus ensuring traceability to the source of origin for exported animal products.
A budget provided in the report indicates the system can be commercially viable and that a tag fee of $1.20 per animal can support the database, staff and logistics of running the program. The pilot project will cost approximately US $1.25 to implement.

Once a LITS is implemented, Ethiopia will be able to make the claim that all animals can be traced to a specific owner or producer from whom they were purchased within 48 hours and prove the animal's disease status has been monitored throughout the value chain.

Scope of Work and Methodology

The objective of this project was to conduct on-the-ground research and determine best practices to improve industry competitiveness through development and implementation of a LITS. The authors analyzed the traditional marking/branding system used by pastoralists and identified weaknesses as well as opportunities to build on and improve the system. A thorough examination of livestock identification methods being implemented in Africa, including their respective costs, adoption rates and effectiveness was required.

The project was intended to involve others parties to increase knowledge and verify findings regularly throughout the project. A number of parties outside of the direct consultants involved provided background briefings and input into the final product. Additionally, numerous discussions with Ethiopian officials, outside advisors working on similar or related projects, and a broad range of industry experts from both Ethiopia and across the globe were consulted in the development of the final recommendations.

The project was designed with a number of key objectives in the completion of the assignment:

1. Develop a methodology to undertake the animal identification and registration system design;
2. Based upon on-the-ground research, design a comprehensive system for animal identification and registration to improve animal traceability and increase competitiveness;
3. Develop specific recommendations for an animal identification and registration system that leads to improved traceability and competitiveness; and suggest geographic areas of intervention in both the southern pastoral areas and the highland mixed farming systems to pilot the new system;
4. Include a clear road map for developing the system, including the role of the private sector to supply identification devices, necessary public-private partnerships, etc. *In other words, it is expected that the consultancy report will include all necessary guidance to implement the recommended identification and registration system*;
5. Present findings and recommendations for validation by stakeholders during workshop in Addis Ababa;
6. Present final system specifications and road map to stakeholders in Addis Ababa during launch event.

The methodology and objectives in this report included the following key components:

1. Evaluation: What is currently happening on the ground? Additionally, develop questionnaires for stakeholder meetings and meetings with participants in the value chain.
2. Interventions: What possible interventions would assist all relevant stakeholders?
3. Consider the constraints and proposals for a LITS for each segment of the value chain and the two major production environments.
4. Determine markets being serviced, value of these markets and potential for value addition.
5. Make specific recommendations to appropriate parties for next steps based on the findings.

Acknowledgments

Field visits were conducted in all three production systems and the authors would like to thank Dr. Hadqu Hendefro and Dr. Tesfaye Dargie for accompanying them on their trips.

Dr. Wodwesen Assfaw was previously employed at the Ministry of Agriculture (MoA) and now works for CNFA. He provided valuable insight into the industry and assisted with the report. Mr. Girma Kassa, Deputy Chief of Party (DCOP) of CNFA, setup and accompanied them to very important meetings with the ministry. Dr. Bewket Siraw, Chief Veterinary Officer (CVO) Ethiopia engaged with them on a regular basis and assisting with a solution that will work for Ethiopia. All the staff at CNFA in Addis were extremely helpful.

The main consultant was also able to attend the Inter-governmental Authority on Development (IGAD) regional workshop. A lot of valuable information was learned and all participants deserve thanks.. The stakeholder workshop was very well attended and all participants need to be thanked.

Finally, the day to day activities, reports and pictures have been made available on the web using “evernote.” The authors may be contacted to provide the required link.

Background

International requirements for the movement of animals or animal products across countries have changed markedly over the last decade. The ability to identify and trace back animals through the livestock value chain is increasingly becoming a prerequisite in many importing countries. International markets are becoming more difficult to access if animals are not identified to their source of origin.

The International Organization on Animal Health (OIE) is an intergovernmental organization created by International Agreements representing 178 Member Countries and Territories, including Ethiopia and all countries in the IGAD region

The OIE defines animal traceability as "*The ability to follow an animal or group of animals during all stages of its life"* and defines traceability as "*the inclusion and linking of components such as identification of establishments/ owners, the person(s) responsible for the animal(s), movements and other records with animal identification.*" The recommendations contained in this report meet all the OIE requirements.

Running a national LITS can be very beneficial to a country looking at competing in the international trade of livestock. Benefits include:

- **Individual animal identification**
- **Disease control**
- **Reduced incidences of stock theft**
- **Improved access to markets**
- **Data for statistical purposes**
- **Improved management opportunities for producers**

The main challenge for countries considering establishing a LITS system is balancing the cost of implementation compared to the perceived benefits. Many countries that have established national LITS schemes have had to ensure an increased price is paid for the product at each sector in the value chain so that the LITS system can be self-funding in the long term. Once a LITS system is implemented, however, the value added to the livestock animals is often the result of increased demand from new and existing markets.

Overview of the Ethiopian Livestock Sector

Ethiopia has one of the largest livestock populations in the world with an estimated 50 million cattle, 25 million sheep and 20 million goats and ranks top 10 in animal numbers in the world. The Agriculture sector contributes 45% to the GDP and is the largest contributor to the economy. The Livestock sector alone contributes 15-17% of the National GDP and 45% of the total Agricultural GDP. It also contributes 18-19% of all foreign earnings.

Despite the large number of animals, the off take (i.e. animals marketed in the value chain as a percentage of the population) is very low and estimated to be 0-20%. Pastoralists represent 15% of Ethiopia's 80 million people and occupy over 60% of the country's land. Their only investment is livestock of which over 90% of their income is derived.

The Ethiopian Livestock industry is preparing to face the challenges associated with demands from current and future export customers for traceability within the Livestock sector. For any country with the number of animals as Ethiopia, this is no small task.

Government Strategy and Plan

The Government has identified the following priorities for the Livestock sector:

- **Enhanced food security**
- **Use livestock as a method to obtain hard currency**
- **Increased exports in the sector**
- **Increased off-take rate from the national herd**

Its plan is to increase exports to over 1 billion dollars in the next five year by exporting 110,000 tons of meat with 2.35 million head of animals. Though some observers may consider it somewhat ambitious, Figure 1 below gives the value of increased meat exports since 2001 that shows a marked upward trend.

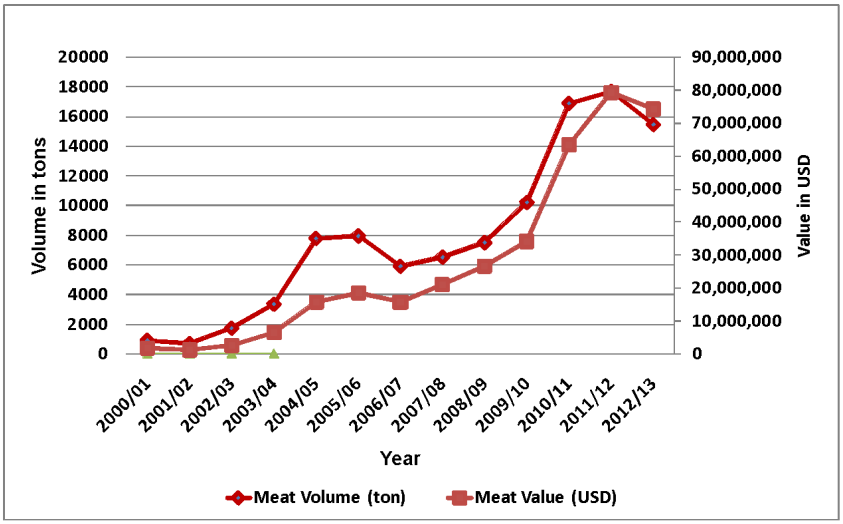


Figure 1: Volume and value of meat exported since 2001

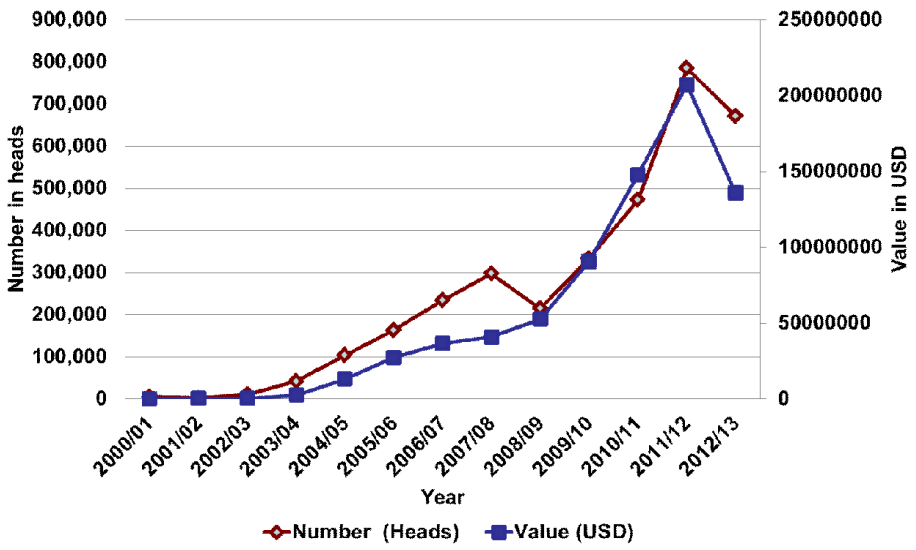


Figure 2: Number and value of live animals exported since 2001

Figure 2 gives the number and value of live animals exported since 2001. The total value of meat exported is thus close to 300 million dollars. In a hyper-competitive global economy that demands instantaneous changes to product design and ever higher standards of quality and supply, gaining and maintaining market share will remain a challenge.

For instance, in order to gain more than the one-tenth of one percent of the world's global meat exports (Ethiopia's current share), the industry and government need to adopt new approaches to the livestock trade (and to its many by-products like leather and dairy). They will need to change old habits and customs that are preventing the industry from taking a significantly larger share of global trade.

By implementing a LITS program, Ethiopia should be able to eliminate trade barriers related to traceability concerns and open new markets previously closed due to disease concerns.

Production Systems

Ethiopia has three main production systems. Annexure B provides a regional map of what is known as the pastoral, highland and interface areas of Ethiopia. Field visit were conducted in all three areas and questionnaires of the visits for all sectors of the value chain are given in Annexure C, Annexure D, Annexure E, Annexure F and Annexure G.

Crop-livestock production system

The crop-livestock production systems are areas that receive adequate rainfall. Livestock systems are integrated with crops. In these areas there is generally a higher proportion of cattle (60-70%) compared to sheep (40-50%) and goats (20-30%). Cattle are mainly used for draught power. Shoats (an acronym for cattle and sheep) are usually sold for immediate cash.

Pastoral/agro production

The pastoral production systems constitute approximately 60% of all land. This production system is characterized by variable or lower rainfall. Livestock is the main form of income. There are generally a higher proportion of goats (60-70%) and sheep (40-50%) while cattle make up less than 25% of the livestock population. The pastoralist areas are the main source of live animals exported (over 90% in

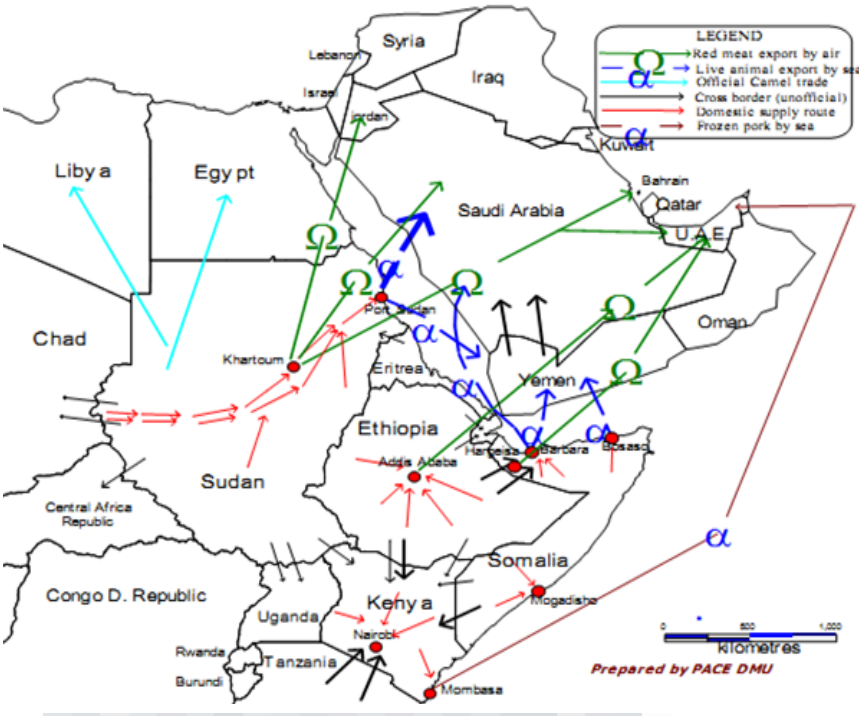
some instances). There is also a marked shift in these areas with more goats being introduced into the pastoralist areas.

Commercialized or specialized production

These areas represent medium to large scale commercial farms and are found mainly around urban or semi-urban areas. There has been a move toward chicken and dairy farming in these areas that now account for 2% and 1% of total production respectively.

Regional Movement of Animals

The whole IGAD region (Annexure A) is seen by many pastoralists as one eco-system. There are hardly any demarcated boundaries in many of the borders and animals simply move from within one country to the other country. Animals are also moved across borders to various ports when required for export as shown in Figure 3. In most instances animals are simply identified from the country of origin when exported. This is usually the country in which the port is located. This practice means that although the product may be Ethiopian it most often identified as a non-Ethiopian product.



The Meat Value Chain

Despite the large number of animals in the country the off-take (i.e. animals marketed in the value chain as a percentage of the population) is very low and estimated to be between 0-20 percent. In the absence of farmers being allowed to own land cattle are essentially the only asset that farmers have. Sheep and goats are more regularly traded. Trading markets can be observed in most areas of the country. Collectors and buyers will purchase animals for local consumption or for export. Figure 4 is a schematic illustration of the value chain for the live animal and animal products exports for cattle. In the sheep and goats value chain feedlots are excluded. VOs are mandated by the government to be at the markets to check the disease status of animals. They also oversee the disease status of animals at feedlots and will be available at the quarantine stations.

Definition: Primary market areas are traditionally all village level markets or bush markets were considered as primary markets and the large trading areas as secondary markets. In the new draft livestock market proclamation primary markets are defined as markets where the first officially recognized transaction happened between producers and producers, traders, feed lotters and exporters. These markets will have basic necessary facilities to operate.

Secondary market are market centers where value added animals (fattened) are supplied by feed operators, breeders, cooperatives and producers as sellers and export abattoirs, exporters, butchers and consumers as buyers. These are very big markets to be organized at bigger towns.

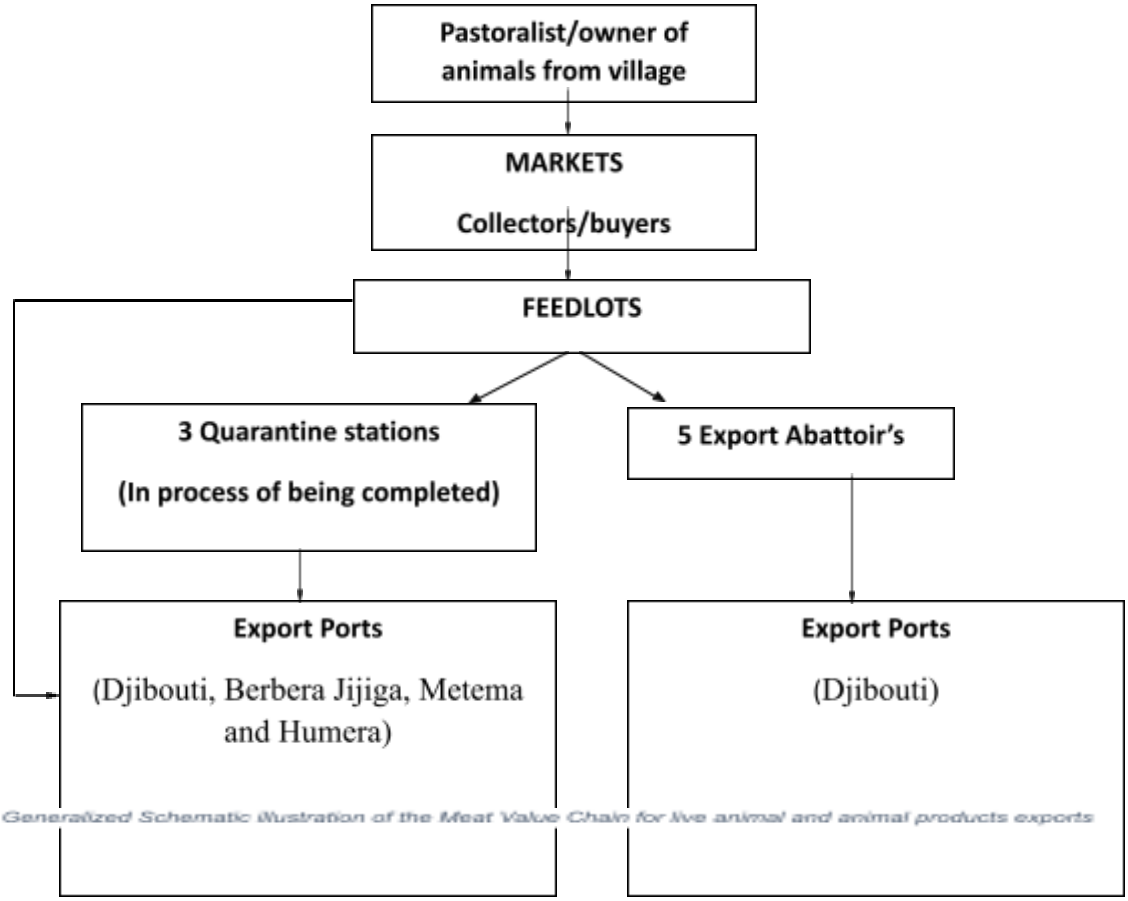


Figure : Generalized Schematic illustration of the Meat Value Chain for live animal and animal products exports (cattle)

Current Identification Systems

Identification systems are a combination of branding, as shown in Figure 5 below, and/or ear incisions and painting by traders and butchers. Identification is done mainly to prove ownership and not for animal health or disease control.

Each owner has his own marking system. Most of the cattle owners interviewed believed they are able to identify their cattle in most instances. However, in cases of cattle theft a major problem is an inability to trace animals back to original owners. Another problem is that the marking system was easily manipulated. A "W" shape can easily be cut to represent a "V," for example. Plastic ear tags are mainly used in the commercial sector, feedlots and for government projects. Ear notching was extensively used in the vaccinations campaigns against Rinderpest.

Figure Branding is a common form of identification in certain areas

Government Support of the Livestock Industry

A new state ministry for the livestock production division was formed in 2013 under the MoA specifically to support this sector. Investments in animal health, production, infrastructure, and facility development are improving throughout the country. Clear goals for exports are being established and are understood throughout the government, supporting entities and generally within the industry. In interviews with producers and other industry participants it was clear that veterinary and other supporting personnel were available in all regions. Infrastructure in the form of quarantine and dedicated export facilities are either coming online or have been updated in recent years. Officials of the agencies responsible for industry oversight were knowledgeable about the needs of the industry and were quick to identify areas of future concern. This includes the need to develop a traceability system to meet the requirements of major trading partners wishing to import meat and to improve animal health systems nationwide. It is clear that the livestock industry will continue to be a focus of the government at all levels.

As Ethiopia faces the challenges of future livestock production and the demands of meeting ever increasing standards in the world meat trade, it will be increasingly important for the various agencies responsible for oversight and support of the industry to work together. Future demands in exporting live animals and meat products will require additional support, coordination, and long term planning to be successful. Changes in customer demands will require updates to the industry's infrastructure and operating systems, which will also place demands on the supporting agencies.

Ethiopia's competitors in the international arena have already moved their industry to boxed beef sales and in most cases are selling product specific orders to fill customer's exact needs, as opposed to whole carcass animals. While there continues to be a strong demand for live animal exports and some demand for whole carcass or primal cuts, those demands will decline over time as customers develop their own domestic industries to satisfy the bulk of their needs. As incomes climb in most potential markets and the demand for meat increases so do the expectations of quality and product consistency.

Veterinary Services and Quarantine Stations

While only one university was educating 55 VOs per annum a decade ago, eleven universities now educate approximately 500 VOs per annum. This means that there is a lot of spare capacity in terms of veterinary capability to run a traceability system and ensure compliance. VOs are expected to attend all markets and establish the presence of disease. Most VOs are in the employ of the government service and are readily available to assist a traceability program.

To enhance the export of livestock, the national ministry has embarked on a program to create two quarantine stations located at Mile (en route to Djibouti and 80% completed), Jijigar (en route to Berbera in Somaliland and 10% completed). These stations are expected have a holding capacity of 10,000 animals and are specifically designed to separate existing animals destined for export away from local animals in the surrounding area. Being able to prove that the animals are in quarantine should go a long way to ensuring compliance for international markets for the prevention of disease.

Markets and Traders

Market traders, collectors and those that gathered to buy animals at the market were a different type of individual altogether. These individuals were clearly focused on the opportunity to buy and sell animals at a margin of profit and clearly understood who the next person in the value chain beyond them would be. However, they frequently did not have a strong awareness of the step beyond that entity.

Interviews with these individuals were generally short and direct and often limited. They were based on their need to conduct business rather than spend long periods of time discussing the industry structure and challenges. In these interviews, the discussion focused almost exclusively on the price, quality, type and volume of animals involved in the day's trade and the ability to fill needs of other producers needing replacement animals, other traders, feedlots or abattoirs.

Market traders clearly understood the need to create added value in the animals they were purchasing. They were quick to discuss options that included individual identification of animals that had been treated with certain animal health regimens and/or qualified for higher value markets. While most did not have specific recommendations on types of devices throughout the country, they seemed generally supportive on the concept of a government identification device and a system that would allow them to increase value of the animal. It is important to note most did not know specifically what end market their animals would be sent to but did understand that different values were assigned for different uses of these animals. It was clear they worked hard to market animals at their highest possible value.

None of the traders or those buying in the market were using unique individual animal identification devices, but all thought a simple tagging system associated with, and overseen by official veterinarian staff at the market, could be useful in creating additional value. All those interviewed in formal markets also indicated the market would be a good place to assist with tagging animals and acquiring ownership details from pastoralists. Concerns of animal health among the traders were a significant topic of discussion.

Fattening Farms (Feedlots)

In the southern regions selling into live animal export trade, the staff are well trained, owners are knowledgeable and a good level of management and management practices is observed. It was clear that the feeding/finishing sector has a keen awareness of both the individuals they are buying animals from and the needs of the next segments in the market.

The facilities were well maintained and functional. Every animal was individually identified to support their feeding, animal health and yard management programs. Managers seemed to be keenly aware of the

requirements of the export market and clearly focused on meeting the requirements of both the government quarantine officials and the needs of customers.

Those interviewed indicated they source animals from a limited number of traders (2-3) and tend to stay with the same traders over long periods of time, based on the traders' ability to secure cattle that best fit the needs of the yard.

The marketing plan is generally "all in-all out." At one yard, with a capacity of 2,500 head, they can completely empty their facility (through sales) in a two week window and then set aside a period for cleaning and repair and refill the yard in a two week period. This allows them to maximize their capacity and still maintain the standards required for quarantine.

The management agreed they could substitute their current identification tag for an official and unique individual tag as long as the government would support that tag as the requirement for quarantine identification purposes. Management also said they would welcome the opportunity to form relationships deeper into the marketing chain, especially if it meant they could improve the quality and conformation of the animals received. One manager suggested individual animal identification systems could potentially provide a way for feeders to select animals based on origin of suppliers instead of relying on traders and collectors in the marketplace.

Staff interviewed said the number one intervention that would help their business would be the elimination or sharp reduction of informal/illegal trade across borders and saw that an official Ethiopian ID device might aid those types of efforts over time.

Abattoirs

Ethiopia has five export abattoirs and three of these are Hazard Analysis and Critical Control Point (HACCP) accredited. None of the abattoirs are currently exporting any beef carcasses or meat products. Three abattoirs are exporting small- stock carcasses. The export abattoir in Bahir Dar and the one in Mekele are expected to start exporting products once they have addressed their supply problems.

The biggest constraint for the export abattoirs, especially in the large stock sector, has been the inability to penetrate markets which are highly competitive, a negative perception regarding the quality of the product and the absence of a traceable product.

Export abattoir owners that we interviewed want to change the focus to some extent and start supplying the domestic market. The challenge in the domestic market; however, is Ethiopians are not large consumers of meat or meat products, despite having the largest cattle population in Africa. The cattle are essentially the only asset available to pastoralists and cattle keepers and are traded only as replacements or for dowry. In many areas cattle are also used for draught ox purposes. Orthodox Christians make up 40% of the population and do not eat meat or meat products for more than 200 days per year. The off-take in the livestock sector is very poor as mentioned previously.

The price of animals traded sold to export abattoirs is also high by international standards. Cattle keepers expect $3.00 per kg but rarely achieve that price. This leaves very low margins for the abattoirs. Market forces are changing and abattoir owners will also need to move toward boxed beef systems that can supply specific cuts to different markets. There also needs to be a coordinated effort by all stake holders to change the perception of the product. Research, for example, on indigenous breeds in South Africa has shown that indigenous breeds have superior meat quality and tenderness compared to most European breeds. Abattoir owners, together with Non-governmental organizations (NGOs), supported by government, need to have a coordinated effort to market livestock and livestock products internationally.

Overview of Livestock Identification and Traceability in Other Countries

Most countries develop their systems over a period of time through pilot programs that are are species specific and generally last for several years. They consult carefully with recognized standards set by international bodies in the development of their programs to support effective disease management programs and to ensure support for enhanced animal and product trade with other countries.

To date, because of the cost and logistics involved in running a LITS, few countries have successfully managed to implement such national programs. Countries that are running national schemes include Australia, New Zealand, Canada and some European countries. The US has also implemented a national traceability through its individual states and tribes. In Africa, Namibia, Botswana, Zimbabwe and Swaziland have implemented LITS programs with varying degrees of success. All countries that have implemented LITS programs have started in the large stock sector. Very few countries have attempted LITS systems for small stock largely because of the costs in implementing such systems relative to the price paid per carcass and because the small stock sector does not have the same value chain.

United States

The US beef and dairy industry is a herd of nearly 100 million animals and the US spends more than $300 million on animal disease management and control issues—including disease traceability—through the United States Department of Agriculture (USDA) Animal Plant Health Inspection Service. In turn, the agency delegates their authority and much of the available funding to the various state and tribal authorities across the US to execute programs at the state and local level.

In December of 2012, USDA finalized rules establishing general regulations for improving the traceability of US livestock moving interstate—essentially a national system. The current rules in the US are implemented largely through state veterinary service offices under the guidance of USDA. Each US State or Tribe will implement the law independently within the framework established by the federal government. The federal rules require that livestock moved interstate would have to be officially identified and accompanied by an interstate certificate of veterinary inspection or other documentation, such as owner-shipper statements or brand certificates. The current rules were developed only after evaluating a wide range of pilot programs in various states and a series of industry meetings and feedback sessions, including formal comments from industry on the final rule.

The US's primary traceability target is mature animals during the initial implementation of the national strategy and has exempted, to date, all animals under 18 months—except in certain circumstances—from the requirements of the law. The USDA accepts the use of brands, tattoos and brand registration as official identification when accepted by the shipping and receiving States or Tribes. USDA is currently developing rules to address younger animals in the marketing stream.

Livestock moved between states and directly for slaughter is allowed under the existing health certificate requirements. Generally, because most cattle presented at an auction market have the potential for interstate shipment and it is unknown until after the sale of the animal at auction, animals are required to be officially identified and utilize one of the officially approved identification devices. The US allows a wide range of products to be considered official devices ranging from a simple metal tag with official numbers to Radio Frequency Identification Device (RFID) tags that are integrated into other production systems. No subsidy is provided for the purchase of official tags but prices range from as little as a few cents to several dollars based on type and quantity ordered by the producer. Most auction markets order basic tags in sufficient quantity to reduce the prices paid by producers at the market. The cost of the tag is added to the sale and commission rates on the final settlement go to the producer.

Animals destined for slaughter may have to meet age and source requirements. Those requirements are not established within the requirements of the national animal identification system but rather through

official marketing programs coordinated by the USDA Agriculture Marketing Service which oversees Process Verified Programs in the private sector. Dozens of private sector initiatives have been approved by USDA for the purposes of verifying a number of conditions for export ranging from age and source to breed and production practices.

Canada

In 2001, the Canadian Cattle Identification Agency (CCIA) was created to develop an animal identification system that could trace animal age, source (birthplace) and place of slaughter—essentially a bookend system—and later moved to a complete movement data base. Funding for the agency was initially made available through the Canadian government but ongoing support is provided by producer organizations, regional governments and the Canadian Government. The agency Board of Directors is comprised of representatives of 14 different regional cattlemen's association representatives and the Canadian Veterinary Medical Association (CVMA) plus ex-officio membership held by the Canadian Food Inspection Agency (CFIA) and Agri-Food Canada. CCIA developed databases for tag distribution, animal origin and slaughter.

Canada is the 6th largest beef exporter in the world, producing 1.5 billion kilograms of beef annually. The majority of the animals (70%) are produced in only two provinces. Nationally, there are 63,500 farms and ranches with cattle and the average herd size is 61 head. The United States is the largest purchaser of Canadian beef, typically importing high quality retail and foodservice products to the western regions of the country. Canada exports as much as half of their total production annually.

In 2003, the US closed its border to Canadian beef products as a result of finding a number of BSE infected animals. Almost immediately, Japan, South Korea and other valuable markets were also closed. Immediately the Canadian industry dramatically stepped up efforts to provide both traceability and extensive disease surveillance/eradication programs to assure their trade partners of their ability to provide consumers with a safe and wholesome product.

All bovines produced in the country were required to apply a CCIA approved RFID tag (uniquely numbered) prior to leaving the farm and all processing plants were required to report those tags upon removal. Penalties for non-compliance ranged from $500 to $4,000 Canadian dollars. Additionally, the system is utilized as part of the reportable disease database for the country and tracks 16 different diseases.

Africa

Africa has an estimated livestock population of over 800 million animals (FAO 2009). The benefits of running livestock identification and traceability programs for African countries include: individual animal identification, disease control, improved access to markets and data for statistical purposes and improved management. It is for these reasons that most African countries are considering implementing some form of identification and traceability program.

Namibia

A veterinary cordon fence divides the northern communal areas from the southern areas, mostly commercial farming areas. The majority of people and cattle are however found in the northern areas. Efforts (including large vaccination programs against FMD) are underway to move the fence to the border of Angola to allow all cattle to move freely between the northern and southern areas. The Millennium Challenge Account (US funded) has recently funded the rollout of 1.5 million RFID tags to all cattle in the north to enable them to become part of the Namibian traceability system.

For the south, the Namibian Cattle Identification and Traceability System has evolved over a number of decades from simple "Stock Brands," to a tamperproof bar coded identification tag and finally to a RFID tamperproof tag.

The Namibian Identification and Traceability system has continued to meet all the audit requirements of the European Union (EU) that all beef cattle are individually identified to source of origin and all movements be recorded.

The success of the Namibian system is that it started slowly and progressed over time using different technologies that allowed producers to see and experience the benefits of proper animal identification such as increased prices for their livestock and improved management. Barcoded tags however were difficult and impractical to use in the Namibian environment hence the swift move to RFID.

The Meat Board of Namibia manages the system on behalf of the Competent Authority, the Director of Veterinary Services. Since inception, the Namibian traceability system has been a user pay system though government has been responsible for the development and payment of its database. Commercial producers pay $1.50 for a set of RFID and visual tags. The database development and support is funded in part by the sale of tags (20%) and also by a royalty paid on each animal exported (80%). The system has recently been expanded to include the endemic foot and mouth communal areas in the north of the country using funds provided by the Millennium Challenge Account.

The Namibia LITS system is considered one of the most advanced and well managed national systems in the world. Dr. Roger Paskin, who is now the CVO at Primary Industries in Australia, was one of the key developers of the Namibia LITS system and has worked with a team of people at developing a traceability and epidemiology system for South Australia that underlies the national LITS system.

Botswana

The Botswana beef industry accounts for 80% of the country's Agricultural GDP and, like Namibia, is reliant on beef exports to the EU. Botswana launched their cattle identification scheme in 2001 based on a RFID bolus system. The Department of Veterinary Services (DVS) administers the scheme. The reasoning for the DVS to initially promote the use of the bolus was it could be recycled and would thus be more cost effective in the long term, and to a large extent, prevent cattle rustling. The initial budget for the traceability system was $35 million. This included the database and the tags. Each bolus initially cost $2.50 each; however, recent media report claim that up to $60 million has been spent on the Botswana traceability system.

While the system initially worked well it is currently under review. The MoA has decided it will stop using the bolus and is currently piloting a plastic ear tag. The problem with the bolus is they are very difficult to recycle, not well supported by manufacturers and most importantly, not visible on the animal. Some animals have been found with a number of boluses inside the rumen making it impossible to read with a transponder.

Further problems include that the database system used in Botswana is not a "real time" system. Cattle movements were thus not easily tracked and in some instances cattle were slaughtered before their movements could be tracked from the farm. The database system was also not able to assist with recent outbreaks of FMD (Thompson 2011). The recent loss of access to the EU market is largely due to problems with the Botswana traceability and database system. The MoA recently sent a team to evaluate the Australian LITS system in 2013 and has called for proposals for a new database.

Zimbabwe

The Livestock Identification Trust (LIT) was established in 1999 specifically to implement the Zimbabwe Cattle Traceability Scheme (ZCTS) to ensure that the Zimbabwean beef industry met the international requirements for continued trade in beef and beef products, primarily to the EU.

The Trust comprises eight trustees representing the Competent Authority (Director of Veterinary Services), farmers unions, auctioneers and processors. Trustees set up a Board of Management that was responsible for designing and implementing a cattle traceability scheme that would meet the requirements of all stakeholders. The Board is responsible for overseeing the day to affairs of the Trust.

The Trust, with a letter of authority from the Competent Authority, launched the ZCTS in September 1999. The ZCTS is voluntary as most of the cattle eligible for export are sourced from the commercial sector which makes up less than 20% of the total herd. The ZCTS is centered on being able to trace livestock movements from the farm of origin to the abattoir. This involves identifying the property where the animal is born and subsequent properties. Under the ZCTS, animals are uniquely identified by tagging with tamperproof tags. Each tag is laser printed with a unique 10-digit number and cattle are tagged with two tags, one in each ear (similar to the system that had been adopted in most of Western Europe).

Animal information (date of birth, sex, breed type, and details of its parents) is captured on a central database maintained at the Trust's offices in Harare. This database tracks the movements of the animal as per the requirements of the ZCTS. The ZCTS passed an EU audit in January 2001 and, up and until suspension of exports in August of 2001 due to an outbreak of FMD, had facilitated the tagging and tracing of one million animals.

Tags were provided to producers on a cost-recovery basis while the ZCTS was funded by a levy on animals slaughtered for export. Producers are first required to complete an Application Form to join the ZCTS which identifies geographic location, and are then issued with a Property Identification Code. After procuring uniquely numbered tags, producers apply tags to the animals and then complete and submit Animal Entry Forms. Producers were encouraged to update their records on a monthly basis with newly tagged animals or births (Animal Entry Forms), arrivals of tagged animals onto their property (Arrivals Forms) and departures (movements off the property, suspected stolen and deaths – Departures Form).

The ZCTS assisted with on-farm management of cattle and on numerous occasions information from the database has identified the rightful owners of strayed cattle as well as provided proof of ownership in stock theft cases.

South Sudan

South Sudan has the 7th largest cattle population in Africa. Direct contribution to GDP is minimal because approximately 3% of cattle are traded in the value chain. Cattle are an important contributor to the livelihoods of of the population who are subsistence pastoralists. Cattle keeping is an integral part of the culture where cattle numbers are important for status and providing dowry. Increasing incidents of cattle rustling are contributing to insecurity, loss of lives, abduction of women and children loss animals and livelihoods.

80%

and

The US has provided funding for a pilot program in the province of Northern Bhar el Ghazal through CNFA in an effort to curb cattle rustling. The program has tagged 15,000 animals and aims to tag 150,000 animals by 2014. A laser printed tamperproof tag, similar to the tag in Zimbabwe is used. The tags are easy to apply and do not require cattle crushes or expensive handling facilities. Efforts are underway to allow the cattle owners to tag their own animals, with the assistance of a community health worker. Details of all cattle owners are recorded on a central database and there are already a number of success stories regarding missing cattle being returned to their owners. The local radio stations are also able to report missing animals using the number on the tag. Tag numbers are successfully "batch loaded" by number, cattle owner and description of the animal onto a sheet of paper.

Early reports indicate that the tags have been very effective in increasing the value of animals by at least 10%. Efforts are underway to expand the program.

The South Sudanese program was implemented to prevent mainly cattle rustling and not necessarily as a traceability system. However, early indications are that the system is practical, cost effective and easy to implement.

Australia

Australia was one of the first countries to develop a national LITS system. Australia is the largest exporter of beef cattle in world and exports 60% of its beef production. National identification is a high priority to ensure food safety, disease control, and continued market access. All beef cattle have been identified using RFID tags since 2000. The National Livestock Identification System (NLIS) system has proven to be extremely robust and is now a mature system.

From 2000-2012 the system has processed 501,000 properties, 118 million tags, 58 million deceased animals and 187 million animal transfers. The central components of the system are that each state is able to maintain a register of its cattle and cattle properties. The expectation is that the system must be able to facilitate trace back of a suspect (i.e. diseased animal) and trace forward all of the companions within 24 hours. This can currently be achieved within two hours.

The system is also well respected by countries importing beef from Australia. The NLIS system is; however, not for sale or licensing to the international market. In the meantime, the Victorian Department of Agriculture has used the core functionality of the identification and trace back system and developed it to become a more modern and scalable platform that can handle a wide range of national and regional requirements. The system is called LTAT (Livestock Tag and Trace). The key difference is every animal movement can be recorded regardless of the electronic device being used. It can also record individual or mob-based movements for multiple species, use web services so third party applications can interact directly with the database support recovered or recycled devices such as a bolus. The Victorian LTAT system has also successfully been installed by the Department of Primary Industries (DPI) for sheep in the United Kingdom.

Europe

The European Union (EU) has very specific and detailed legislation for the registration and identification for livestock and animal products. For inter-country EU trade animals must be accompanied by a health status and passport. EU legislation requires that animals are traced at all stages of the production system and value chain through to retail.

All animal owners are identified, along with the farmer/producer details on which the animals are kept. The owner is legally responsible for compliance.

All animal movements are recorded on a database. Information can be retrieved from a database within a 24 hour period. In the UK, for example, the British Cattle Movement Service (on behalf of Department

for Environment, Food and Rural Affairs -DEFRA, a government agency) runs the database and ensures compliance. By law all cattle must be tagged with a DEFRA approved double tag (i.e. a tag in each ear). A primary and secondary tag must be used. The primary tag is a pre-printed tag issued by DEFRA and the secondary tag contains the same identification number but also allows management information to be recorded. The database is responsible for:

- maintaining a register of births, deaths and imports of cattle used for animal health and subsidy control purposes,
- issuing cattle passports,
- recording individual cattle whereabouts,
- operating a dedicated helpline; and,
- providing online services.

Most European countries use a passport system for cattle movement. The passport includes:

- details of the animal,
- details of where it has been throughout its life; and,
- details of the animal's death.

An individual animal passport system is achievable in Europe where producers generally own few animals in comparison to countries such as Australia or most parts of Africa. Namibia, Botswana and Australia, for example, use a system where animals are processed in "batches" onto the database. The implementation of LITS in most European countries has also been heavily subsidized by local governments. The requirements on cattle identification, registration and trace-back are governed by several pieces of EU legislation.

The IGAD Region

Most countries in the IGAD region are in the process of considering or piloting some type of LITS program. Tanzania is perhaps the most advanced in the development of a LITS system. It has divided its system into two components; a basic system that aims to brand all animals in the country and, a contemporary system that aims to trial RFID tags in animals destined for export and a RFID bolus for livestock in areas that have high incidences of stock theft. More than 1 million pastoralists/producers have also recorded their details on a database. The database is currently being developed by a German firm and should be in production soon.

Exporters in countries such as Djibouti and Somalia are trialing the use of subcutaneous microchips. Microchips are a very effective intervention against cattle theft and are accepted in the importing Middle Eastern Countries. However, because the microchips have the propensity to migrate up to 30cm in the animal, most western countries will not accept a microchip in the food chain.

The implementation of a LITS system in Ethiopia should not be seen in isolation of the efforts being trialed or implemented in other IGAD countries. The outcome of a LITS IGAD workshop attended is given in Annexure J and shows a regional approach is required.

Suggested Strategy for the Development of a Livestock Identification and Tracking System (LITS) and Pilot Project for Ethiopia

Introduction

While many countries in Africa are attempting to implement some form of LITS system, only Namibia can claim to have a fully functional National program. The Namibian industry together with the government has been able to zone off areas that have FMD and now obtain a dollar per kilogram more for exported carcasses. The added value per carcass of almost $300 makes it very easy to implement a National System because the benefits can easily justify the costs. Namibia has been able to use their LITS system to reassure international markets that, if a disease outbreak were to happen, they would be able to trace their product to the source of origin.

A lesson can be learned from Botswana who has also implemented a National System but has had to review the whole system. The use of the bolus that is not visible on the animal, problems with the database and problems with the implementation of a system that has to work "real time" (i.e. the system relies on expensive computers and satellites to function as animals move throughout the value chain), has shown that it is important to implement a practical solution that is easy to implement rather than a high technology solution that is not only impractical for a developing country but also very expensive.

The system implemented in South Sudan uses a normal ear tag, is easy to implement without the need for crushes and is paper based at the point where the information is collected which adds value to the pastoralists and is very cost effective.

The need for a LITS system in Ethiopia

Huge losses occur due to the repeated trade bans due to unmanaged trans-boundary Animal Diseases (TAD) and losses are estimated to be worth many of millions of dollars per annum (personal communication Dr. Wondwosen and Dr. Bewket). For example, the economic loss to Ethiopia associated with the ban by Egypt due to FMD was estimated at 14 million United States Dollars (USD). Major bans on Ethiopian meat and livestock in the past few decades include:

- In 1983, cattle exports from and through Somalia to Saudi Arabia were banned as a result of Rinderpest.
- In 1997/98, following the epidemic of Rift Valley Fever (RVF) in the Horn of Africa, Saudi Arabia, Bahrain, Oman, Qatar, Yemen and the United Arab Emirates (UAE) banned livestock imports from nine African countries including Ethiopia.
- In 2000, an outbreak of RVF in Southern Saudi Arabia and Yemen left dozens of people dead and hundreds infected. As a consequence, six Gulf States - Saudi Arabia, Bahrain, Yemen, and the UAE banned livestock imports from nine African countries, including Ethiopia. The ban was imposed on the expectation that the disease was introduced from the Horn of Africa. Field and laboratory surveillance results indicate that Ethiopia had never experienced an outbreak of RVF within its territories. The challenge was once again negating the perception that these international markets have of Ethiopian animals.
- Following the 2001 outbreak of FMD in the United Kingdom, Saudi Arabia and Indonesia had imposed trade bans on Ethiopia's export meat and pickled sheep and goatskin respectively.
- The 2006, FMD outbreak detected in a shipment of Ethiopian cattle to Egypt also became the major cause of live cattle import ban to the Egyptian markets.
- In January 2007, the UAE imposed a ban on live animals and meat from Ethiopia, Somalia and Kenya as a result of the widespread outbreaks of RVF in Kenya.

- A report by Jibat and Admassu in 2013 showed FMD came at a huge cost to the livelihoods of rural pastoralists in the Borana zone, mainly due to the fact that 31% of total food and income is derived from livestock.

Although quantifying the "added value" per animal with a LITS is a very difficult task and requires a lot of research that is often inconclusive it is known that the overall loss in income for the country due to disease is prohibiting its expansion into new markets. The international markets are also becoming even more demanding in terms of quality of product and disease control.

The added benefits of a LITS system are:

- building consumer confidence for new markets,
- the value of having individual animal identification in the industry,
- the value of reduced cattle theft,
- the value of having data for statistical purposes; and,
- the value of improvements in management and productivity.

For these reasons implementing a LITS is as much government responsibility as it is for the industry that has the most to benefit from implementing such a system.

Incremental next step

Currently over 250,000 cattle are exported from four major ports. If implementing a LITS can coincide with an improved marketing campaign, improved monetary value is highly likely to be added to each animal.

Some Ethiopian markets currently have a VO who oversees the buying and selling of animals and checks the disease status at the same time. A complete record of exported animals is often logged into books by hand and at feedlots by the ministry and a record is also kept of the disease status of each animal in the industry. To tag animals, using an inexpensive tag and recording the information on a national database would be a small, but incremental next step for the industry. Similar proposals came from a stakeholder workshop (Annexure H) held in Addis Ababa that included all actors in the value chain. It was on this premise that the LITS system proposed was developed.

Requirements for a LITS system

The LITS system in Ethiopia should have the following elements (Brett 2003):

- The Federal MoA should be the authority that manages the system.
- A national database should be implemented that collects all the required identification, ownership information and tracks the movements.
- A defined means of physically identifying individuals that is unique to Ethiopia.
- The necessary movement and disease control documents.
- The required legal framework, developed with the input from all sectors of the production chain.
- A program that educates the industry participants.
- Documented monitoring, enforcement and evaluation/audit procedures must be put in place.
- A query system that enables the history and whereabouts of individuals or groups animals.

The ministry in Ethiopia should have one database that is used for both LITS and disease surveillance, and registration of all forms animal identification. The database should keep record of the identification details of all actors in the value chain including the producers/pastoralists, buyers, markets, holding grounds, feedlots, quarantine stations and export abattoirs.

Pilot Project Strategy

Target the cattle sector

To date, because of the cost and logistics involved in running a LITS, few countries have successfully managed to implement national programs in shoats mainly due to the increase in overall cost. For example, the cost of a tag relative to the carcass is far larger in shoats. A $.50 tag from a 30kg carcass is 1.6% of the carcass cost while a $.70 tag from a 200kg carcass is approximately 0.3% of the cost (i.e. the tag cost for a LITS for small stock is approximately 400% more expensive). Running a LITS for shoats should not be the focus for Ethiopia at this point in time. We recommend the pilot program be focused exclusively on live cattle and beef for export. Once the industry and ministry can handle the logistics of a LITS and ensure the costs are manageable it can consider a pilot for a shoats program.

To support the traceability goals and disease surveillance needs of Ethiopia, all animals should eventually be identified and traceability implemented nationwide (all species) but at this time we cannot recommend initiating a program directed at the domestic market. To do so would dramatically increase the cost of the system and potentially create a burden on producers without any expectation of a value in return. Current domestic markets generally lack the capability to differentiate products in sufficient quantity to result in an economic incentive that would be equal to or greater than the cost of compliance in a domestic LITS program**.** The opportunity for increased value in the export market remains a driving factor in these recommendations and is the principle reason to target only export animals at this time.

Once the industry and government becomes accustomed to the requirements and value that a LITS system offers the export live cattle and products export industry, it can consider adding other sectors of the value chain. This should be a long term goal. The proposal is thus to target cattle and only animals and animal products destined for export.

Target animals destined for export

The recommended pilot project should demonstrate that all live cattle and beef products destined for export are traceable.

The value chain for the live cattle and beef products export industry was given in Figure 4. The proposed LITS system will work as follows:

- Cattle are currently purchased by exporters at the **primary market**, moved to **holding facilities** or **feedlots,** and then either **exported** as live animals through four main ports or exported as carcasses through Djibouti or by air freight.

- At some points in the value chain there is often a VO to oversee the disease status of the animals. The system proposed would have collectors/buyers purchase a government approved, official tamperproof double tag (i.e. one for each ear) that meets International Organization on Animal Health (OIE) requirements, at a prescribed fee, from a veterinary office. (This intervention can eventually be moved to the private sector after a successful implementation of the system has occurred and the system has matured enough to confidently be run by the private sector).

- An official form with a ministry letterhead will be filled in with details of the purchase, identification number of the tag and the disease status of the animal by the VO at the primary market. The whole batch of animal details will be entered onto a paper form including, where

possible, details of the producer or owner who bred and sold the animal. This intervention point does not require the internet to capture the information.

- It will be legally required for the transporter to transport this paper form with the animals and associated identification numbers to the feedlot or holding point.

- Within 48 hours the feedlot owner will be expected to enter this information onto the national database. Failure to do so would result in a fine. The VO that is currently assigned to oversee the feedlot must ensure compliance.

- When exporting carcasses, a tamperproof tag from each ear will be tied onto the halved carcass using a "cable tie." This is a standard practice in many abattoir facilities. Tags should be cleaned with a solvent to ensure that hygiene standards are maintained.

- At the export facility, or abattoir, the exporter or abattoir owner will be required to "remove" the active status of all exported animals from the database within 48 hours. All animals will then be traced to a specific owner or producer from whom they were purchased and the disease status monitored throughout the value chain. A Schematic representation of the process for both live cattle and export abattoirs (carcasses) is given in Figure 7.

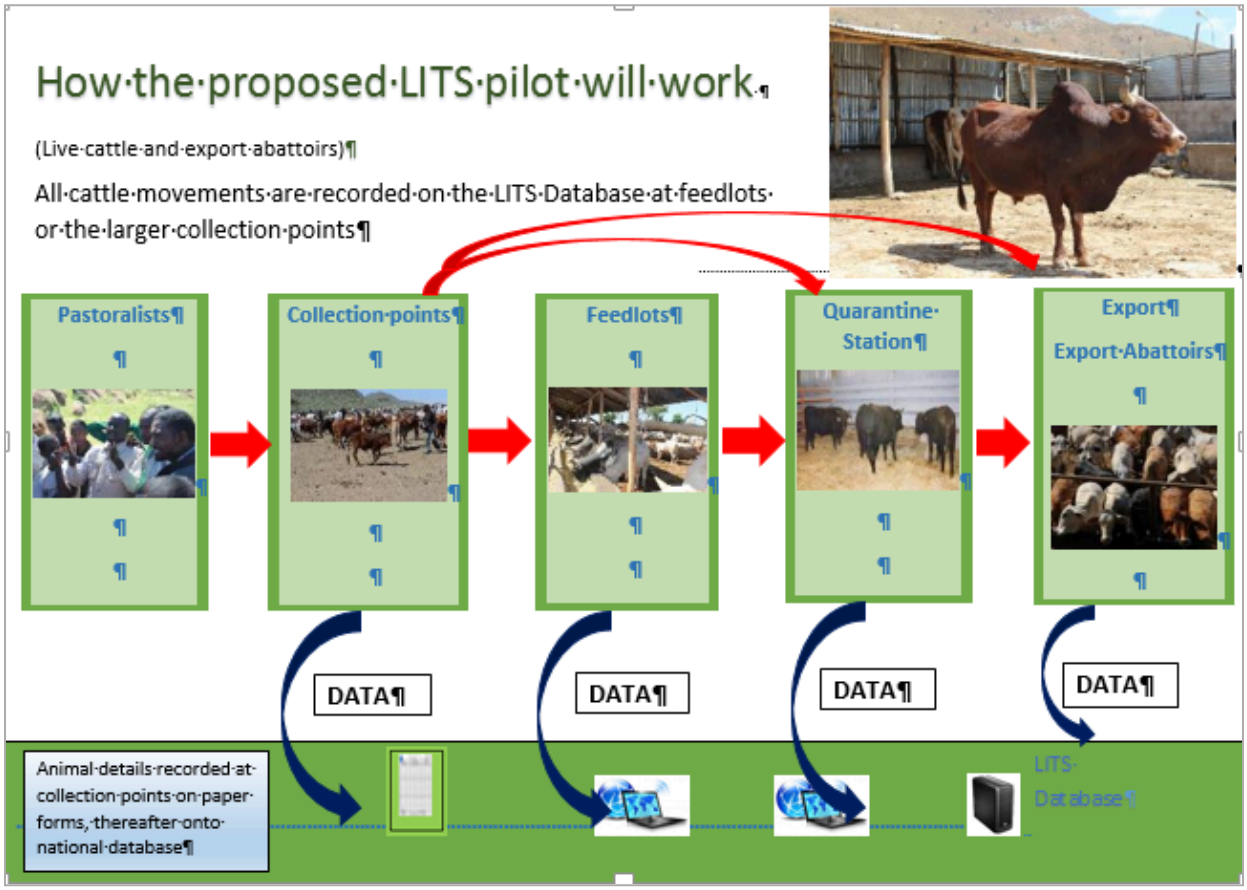


Figure 7: Schematic representation of the proposed LITS system for live cattle destined for export

Proposed areas to pilot the LITS program

The MoA has requested that different production systems from different areas be included in the pilot project. The three production systems are as given previously in the report: a) the crop-livestock production system b) the pastoralist system; and, c) the commercialized or specialized system. The ports for export are Djibouti in the East, from Jijiga in Ethiopia's Somalia region through Berbera in Somaliland, and Metema and Humera in the northwest. The northern pastoralist areas are not as well developed as the southern Borana area or northwest crop area but do have an export abattoir in Makele. The LITS stakeholder workshop reaffirmed the pilot should be conducted in the Borana Pastoralist region, the North West Crop-Livestock system can accommodate the Northern crop/livestock system by including Abergele export abattoir. The value chain for each system is provided in Figure 8z

Linking the program to a disease control program

A VO is often available at many sectors of the value chain (i.e. the primary market, feedlot, abattoir and exporting facility). It makes sense to combine the proposed LITS program with a disease surveillance program. Dr. Gavin Thompson and dr. Andrew Clark both have extensive experience working in disease control and are working in the IGAD region and Ethiopia. Dr. Gavin Thompson is yet to release his report on controlling FMD in Ethiopia. However, in a workshop attended by the consultant it was proposed that certain areas could be "compartmentalized" for disease control (i.e. certain areas would be cordoned off and not allow animal movements from outside), or the alternative would be a commodity based trade approach that targets certain frozen cuts. It is very likely that the areas proposed for the LITS pilot would fall within the scope of Dr. Thompson's report.

Dr. Andrew Clark has developed a very easy, yet practical handbook that illustrates, in pictures, all commonly identifiable diseases. This handbook should be made available to Veterinary Officers or Animal Health workers at each sector of the value chain. Dr. Clark also proposes a "pincer" movement to address disease control within every sector in the value chain (both primary and secondary markets) logging the details onto a national database (Annexure I).

Advantages of the proposed system

The system proposed above has numerous advantages:

- It is practical and manageable
- It is cost effective to implement
- It does not rely on a good internet system to succeed
- All cattle can be traced to producer or at the very least, the woreda
- All exported animals are branded as Ethiopian
- It will allow Ethiopian authorities to make the claim that:

It has implemented complete traceability for all exported cattle and products and that these cattle have been reported as free of disease throughout the value chain.

The vision statement of the LITS program

The LITS program described above must be accompanied by a strong marketing campaign to allow "the value" add to happen. As mentioned previously over 250 000 cattle are exported from four major ports.

VISION STATEMENT

"Within five years all exported cattle and beef products will bear an official Ethiopian Identification device and be traceable to origin within 24 hours"

The following vision statement is proposed for LITS in Ethiopia:

Functionality of the Proposed LITS System

Proposed national Identification Method

The OIE Terrestrial Code has basic recommendations regarding the development of animal identification systems. Those recommendations are found in Article 4.1 and 4.2 of the Code (http://oie.int). A detailed review of different identification devices is given in the CEWARN/ IGAD report by (Ekuam 2009) and a concise review, applicable to developing countries is also given by (Beffa 2013)

Tamperproof, double sided plastic tags are reasonably inexpensive ($0.60-$1.00) and provide an individual identification number for each animal. Tag providers will claim a loss ratio of less than .01% but retention will depend on the environment in which the cattle are kept.

Plastic bar coded tags are used in some countries but many tag manufacturers now actively dissuade developing countries from using these tags because they are not practical for dusty environments such as those found in Ethiopia. Each tag essentially has to be cleaned before they are read using a bar coded reader that needs to be charged or have some form of battery backup or electricity supply.

RFID tags cost approximately $2.00 per tag and make the management of individual identification systems a lot easier in countries that can support real time electronic identification because of a well-established infrastructure. Many countries that have moved to RFID, however, first cut their teeth with normal plastic tags. RFID readers are expensive to purchase and maintain and cost from $200–$1,500 per reader and need to be charged using some form of electricity. Every point in the value chain requires a reader and the Internet making the whole roll-out very expensive.

It is our recommendation that Ethiopia implements a basic, OIE approved, twin plastic tamperproof tag, similar to that used in Zimbabwe and South Sudan. It should be yellow in color with black writing and

pre-printed by the manufacturer. It should also have the country code clearly visible on the tag. The tags should have the caption "illegal to remove" clearly written on them. An illustration of such a tag is shown in Figure 9. This tag should be the government approved National Identification method.

Traceability of animal products

Implementing a traceability system for various meat cuts will add a level of complexity that is not attainable in many western countries. It is essentially only the "high end markets" (for example Japan) that currently requires individual cuts to be traceable to source of origin. Although all exports abattoirs in Ethiopia are currently closed for cattle exports, new orders are forthcoming. The recommendation is that a twin, tamperproof tag is used. Having a twin tag will allow each half carcass at the export abattoirs to be tagged using a cable tie. If a market requires cuts to be traceable the tags can be applied to the boxes exporting the product. This will meet the requirements of most importing countries because source of origin can be verified. Implementing a "cuts based" system should not be attempted in this phase of the project.

Legal Framework

There are many draft animal health laws currently up for review. These include the proclamation to provide for the regulation of animal health, welfare and veterinary public health, and the animal identification, movement control and traceability regulation. These documents are similar to those found in other countries that have implemented an animal identification or traceability system expect for few anomalies mentioned below and that should be discussed and clarified with the ministry.
Part three of the animal health, welfare and veterinary public health refers specifically to individual animal identification but not in the context of a national animal identification where ear tags are used. An animal identification mark is defined as:

- a mark made or placed on the hoof or horn,
- a mark made with paint or other colored material,
- a notch or hole made in the ear of an animal,
- a brand made on the skin of an animal; and,
- a tattoo made in the ear or on any other part of an animal.

As was noted in the discussion about the database, it is important that a "registry will be kept" of all owners and their designation marks. A movement control system is also proposed in the new legislation where the movements of all animals are recorded. It is easier to manage the registry in one database and unless the database can accommodate a LITS, we propose the database logging movements and designation marks should be the LITS database.

The animal identification, movement control and traceability regulation is currently being developed. This regulation makes provision for:

- identification and registration of animals and premises where animals are kept,
- movement of animals and primary animal products,
- maintenance of a recording system of animal identification, animal movements and other information related to traceability of animals and commodities and to support,
- regulation of the import and export of animals and commodities; and,
- regulation of the safety of primary animal products destined for human and animal consumption.

It is clear that the ministry will first need to adopt the recommendations of the LITS program as described in our report to be in a position to finalize the draft regulations, otherwise the regulations will contradict some of the recommendations. For example, Article 7 recommends *"that the owners of abattoirs, slaughter facilities and other primary animal product processing facilities shall be required to introduce a primary animal product identification and traceability system."* In our report we recommend the government introduce the animal identification system that is a tamperproof ear tag. It is standard practice in all countries for government to introduce the traceability device.

Furthermore, it is recommended in the draft that *"each carcass, organ or part of such registered animal, as determined by Directive, shall be individually labelled with the temporary identification mark corresponding to the animal identification mark of that registered animal."* As was described in the heading titled 'Traceability of animal products,' it is currently very difficult to implement a cuts based traceability system and it is essentially only the "high end" markets that require every cut to be traceable. Provision should be made in the proclamations that this be something that can be enforced in the future.

As the policies progress through the development and adoption process it is essential they consider our recommendations so key components are included to ensure success of the pilot program and the transition to a national program.

It is also essential that the appropriate authorities implement a mandate for all animals destined for export to be individually identified with an official Ethiopian tag in the regulations, and that removal of that tag carries a penalty adequate to ensure the tags remain on the animals throughout the export process as described above. Without eventual implementation of a mandate, the commercialization aspects of the timeline will likely be inaccurate.

Clear definitions and descriptions of the various points of the marketing chain must be established to allow all participants in the marketing chain to clearly understand the implementation requirements of the LITS. There should remain the flexibility within the legal framework to allow the MoA to broaden the LITS system in the future to address domestic concerns and to utilize the system as needed for disease surveillance and other purposes. Formal documentation must be developed and recognized as the documentation required for any and all animals designated for export.

Movement Control Documentation

Movement documents, initiated by VO at market locations designated under the legal framework, would be required for all animals moving toward the export market. The document should be a duplicate form with one copy maintained at the start of the process and another copy accompanying the animals throughout their movement in the country that includes the following information to be recorded on every animal moving through the system:

1. Date
2. Market location
3. Veterinary Official Initiating the Documentation
4. Identification Number on the Tag applied at the time of sale
5. Description of Animal (species, gender and other information deemed appropriate)
6. Disease status of the animal
7. Seller information (identification number or phone number and location/origin source)
8. Transport Information (means of transport and identification)
9. Destination (location, departure and arrival day)
10. Destination Arrival Verification
11. Database Completion and official verification

The purpose of the documentation process is to build the record that would accompany the animal and provide a means for auditing the process to ensure compliance. The date, market information, initiating official information and the verification of database completion would be provided in the header of the document and would be completed only by approved officials as designated by the MoA.

A sample document is provided in Annexure K to demonstrate possible designs but the multipurpose use of the document, health and movement, dictates that the final design meets the needs of the respective users of the system. OIE and other formal certificates can be used as model documents to reduce overall development time and expense.

Database

One of the most important components of the LITS system will be the database system. Our recommendation is that a tender for database providers be developed that at a minimum include the following criteria:

1. The provider should be able to demonstrate existing and available software that has been in operation providing identification and traceability for livestock for at least 2 years of operation.
2. The system must be capable of meeting the demands of the Export Pilot Program (250,000 head) and a full Ethiopian National LITS system (90,000,000 head) in the future.
3. The user interface and data fields must be customizable without significant cost or development expense. The system should allow for batch entry of animals and the web services interface should utilize Microsoft .NET Framework. The database must be capable of operating with internet access from multiple devices and sources simultaneously.
4. User access of the system should be available through all common browsers and mobile devices (smart phone).
5. The user interface should be intuitive and user friendly with a minimal amount of training needed to interface with the system.
6. The database must be scalable preferably built on the Microsoft SQL Server or equivalent platform.
7. A Cloud storage and interface system is required.
8. The demonstrated capacity to interface with other Biosecurity systems including Surveillance and Epidemiology systems and Emergency Response Management.
9. The support and providing of Audit capabilities to officials overseeing the LITS program.

Capacity Building, System Ownership and Support Role of the Public and Private Sectors

One of the failures of the Botswana system was that the whole system was completely controlled by the Ministry, including the insertion of the bolus and the movement of animals. The private sector was not allowed to take ownership of any of the parts of the system. At the same time, a LITS system should be a government mandated authority and government should manage the system, but allow industry to build the required capacity to run the day to day tagging and movements of animals to allow the smooth flow of animals throughout the value chain. Table 1 below gives an outline of what we consider should be government/NGO and private support roles.

Duty statement	Role
Be the competent authority	Government
Runs the national database	Government
Creates the necessary documents	Government
Develops the required legal framework	Government
Tag the animals	Private sector
Educates industry participants	Government/private
Capture required information onto forms	Private sector
Capture required information onto database	Private sector
Monitoring and evaluation	Government/NGO
Procure tags	Government

Table 1: System ownership and support roles

While it would appear from the above table that the government is doing most of the work, the reality is this is far from true. The bulk of the work is being done by industry who are tagging animals and adding the information to the database. The government's role is essentially to manage, oversee and ensure compliance.

Support that should be provided by the Livestock Market Development project (LMD)

As mentioned previously, few countries have successfully implemented a traceability system and the problem is often because of a lack of experience. We are of the opinion that LMD should partner with the Ministry to implement the program for at least the first three years while the program is piloted in the different regions. An employee with experience running a LITS system should be considered with the assistance of at least three Ministry personnel. The LMD employee will oversee the LITS implementation. The three ministry staff, to be paid by LMD, should assist with:

- running the database,
- creating and print the required documents,
- training veterinary officers to ensure compliance,
- assisting the veterinary officers to train the buyers/collectors on how to tag animals,
- ensuring that all actors are able to input data into the national database; and,
- assisting with the monitoring and evaluation.

Many countries in Africa have received funding to assist with the development of a database, training and procuring the pilot phase of the program. The program in South Sudan, for example, is USAID funded and is a success because an experienced staff member manages the program. The budget given will show that less than $1.5 million is required to fund the whole program.

Building capacity

By assisting the ministry during the pilot phase capacity will be built into the ministry to be able to successfully manage the program after three years. The staff employed by the LMD-Ministry partnership will be on hand to train the different actors to manage the tagging and capturing of data onto the database. One staff member will be required to administer the database while the other two staff should work on training the VOs.

The pastoralists, collectors and feedlots owners/role players will be trained on the value of implementing a LITS system and have the capacity to manage and tag the animals and enter data into the database. Some IT training will be required.

Budget

A budget for both the pilot and commercial program is attached as Annexure L and Annexure M. The pilot phase, which will be completed in 3.5 years as given in the timeline below, will cost an estimated $1.25 million. The budget calls for four (4) staff members, a database, 90,000 tags, $90,000 in marketing expenses and operational expenses to run the pilot.

Once the MoA is confident the program is working it should be implemented commercially for all export cattle and beef in the third year of the program. The cost of a tag, per our recommended design, will be approximately $0.70 per animal, if ordered from the suppliers in bulk.

Once the system moves into commercial production, a cost of $1.20 per animal should provide adequate funds for the operation of the system moving forward. Feedlot owners currently pay $.35 for a very small, plastic tag that has no pre-printed identification and is not tamperproof. It is recommended that the MoA meet the industry half-way (i.e. subsidize the tag to the value of $0.43 (8 birr) from the export levee). The cost to the collectors/buyers would thus be $0.77 (15.4 birr). The cost born for the tag by the feed lotters would simply be borne by the collectors/buyers. It will be very important that the Ministry educates the industry on the value of implementing a LITS system and gets the “buy in” from the industry.

If the program is approved by LMD, the next few months should be used to:

- ensure the required legal framework is put in place,
- procure funding for a database,
- ensure an office at the ministry is procured,
- install the database,
- create and print the necessary movement forms,
- employ the necessary personnel; and,
- create the necessary marketing material

The tags purchased for the pilot project will be used as follows (Table 2):

Borena Pastoral Area	70,000
Highland Livestock Corridors	20,000

Table 2: Quantity of tags purchased for pilot study

$90, 000 has been allocated for marketing the project. Marketing should be a combination of within country and international exposure of the program.

Monitoring and Evaluation

For Ethiopia to make the claim that all animals are traceable to origin within 24 hours a very strict monitoring and evaluation system is required. As per the budget, four staff members will be employed in the program. It will be the role of these staff members to visit all actors in the value chain and to ensure that all actors are fully trained and to ensure compliance.

The attached budget has also allocated funding for an international consultant to assist with the monitoring and evaluation of the program through the value chain, and also to assist with the movement documents and changes in legislation.

Monitoring animals for disease surveillance will require a complete action plan. It is suggested that for diseases such as FMD, RVF and other serious veterinary diseases as defined by the Health ACT, it should be require that within 24 hours the ministry will need to be notified of suspected serious veterinary diseased animals at any sector of the value chain. It must be also possible to determine the location(s) where these animals resided concurrently or subsequently on any of the points in the value chain on which a specified animal has resided in the last 30 days.

Because the system is not a national system, it will be impossible to identify all the other animals that were in contact with the infected animal(s). Dr. Gavin Thompson's soon to be published recommendation on FMD, and probable "compartmentalization" recommendation will need to be adhered to and become part of the monitoring and evaluation program.

Pilot Project Timeline

Figure 10 gives an outline and the timeline of the pilot study in the value chain for each area in the pilot program.

The timeline has been designed for the project to be piloted in the three production areas but will also allow the commercial program to be phased in at in year 3 so that an NGO can assist with this phase of the project to ensure that a smooth roll out occurs.

Pilot Phase I: Planning (6 months)

- Finalize detailed implementation plan based on feedback from stakeholder, including upcoming validation workshop.
- Initiate development of required legal framework.
- Ensure adequate LMD staffing, resources and operational capacity to implement pilot.
- Develop implementation tools required for a functioning traceability system such as database, procedural manual, forms, training materials, etc.
- Identify veterinary officers and stakeholders participating in Phase 1 of the pilot.

Pilot Phase II: Supply Chain Corridors from Borena Pastoral Area to Abbatoirs in Modjo and Debre Zeit (12 months)

- Train government officials, veterinary officers and other value chain stakeholders on overview of the system and their respective roles in implementing an effective traceability system.
- Identify and priortize Woredas and feedlots in the Borena pastoral area participating in the pilot traceability system.
- Tag 20,000 animals in the targeted Wordeas and feedlots.
- Identify abbatoirs to participate in the traceability pilot, in Modjo and Debre Zeit, that are linked to Borena traceability participants.
- Tag carcases at the Modjo, Debrezei export abbatoirs.

Pilot Phase III: Expand Pilot into Supply Chain Corridors Originating from Highland Areas (18 months)

- Identify areas of focus for expanded pilot activities in highland livestock corridors based on ongoing and planned development of livestock value chains.
- Provide training to new veterinary officers and value chain stakeholders as required on overview of system and their respective roles related to implementation of the system.
- Provide refresher training for Phase I participants as required.
- Identify and priortize Woredas and feedlots in the expanded pilot areas participating in the pilot traceability system.
- Tag 20,000 animals in the newly expanded Wordeas and feedlots in the highland areas.
- Identify abbatoirs to participate in the traceability pilot that are linked to the new Woredas and feedlots in the highland areas.
- Tag carcases at the newly identified export abbatoirs.
- Tag an additional 50,000 animals in the Borena livestock corridor developed under Phase I.
- Initiate international marketing campaign promoting Ethiopia's new traceability system for exported animals and carcasses.

Table 3: Timeline for proposed pilot study

Expected Outcomes

The expected outcomes of this program would be:

1. Demonstrating feasibility of implementing a demand-driven livestock traceability system in Ethiopia.
2. Piloting a traceability system that will open opportunities for Ethiopia to better support its livestock industry production and to create new value in the marketplace through increased demand for exported products.
3. Development of a tool for the Ethiopian livestock industry to better approach new trading partners.
4. A system to evaluate opportunities to better integrate the livestock value chain vertically and horizontally.
5. An important step in the development of a nation-wide livestock traceability system.

Conclusion

Ethiopia has seen a significant rise in live animal exports. At the same time huge losses occur due to the repeated trade bans due to unmanaged Trans-boundary Animal Diseases (TAD) and the losses are estimated to be worth many of millions of dollars per annum. International markets are becoming more discerning and are requesting proof of ownership, identification of animals and are requesting that animals be traceble to source of origin. Countries exporting animals into international markets are faced with the challenge of proving disease status and to show that animals can be traced through the value chain. There is no doubt that Ethiopia will need a LITS system to be able to compete in future markets. The challenge for Ethiopia is to “add value” to the product and in this proposal we found a mechanism to implement a cost effective system.

Namibian and Botswana were able to justify the implementation of a LITS system because of the added value of almost a dollar per kilogram per exported carcass. The FMD status in Ethiopia exludes Ethiopia from the European market but at the same time if Ethiopia is able to put in place a cost effective LITS system, it would lead the way for exports to new markets and also be an example to other African countries that a cost effective, practical solution for LITS is available. The whole region will then be able to more freely export live animals and animal products.

Ethiopia already has a large network of VO’s in the field. Animals moving through the cattle value chain are inspected for disease and details of animals recorded on paper forms. It will be an incremental next step to tag animals using a normal tamper proof tag at the market and record the details of the seller, who is usually a pastoralist or cattle owner. This information then needs to be captured onto a National database.

Implementing this proposal will allow Ethiopia to make the claim that all animals can be traced to a specific owner or producer from whom they were purchased and the animal’s disease status has been monitored throughout the value chain.

Bibliography

Beffa, M and Bradfield. M.J. 2013. "ATTS South Sudan Livestock Identification."

Brett, A.G. Bell,C.M. Evers, K. Paskin. R. 2003. "Linking live Animals and Products: Traceability." (Rev. Sci. tech. Off. Epiz) 32.

Carlberg, J.G. 2013. *Can enhanced traceability generate extra value added for cattle at auction?* Orlando, Florida: Southern Agricultural Economics Association, Proceedings Annual Meeting.

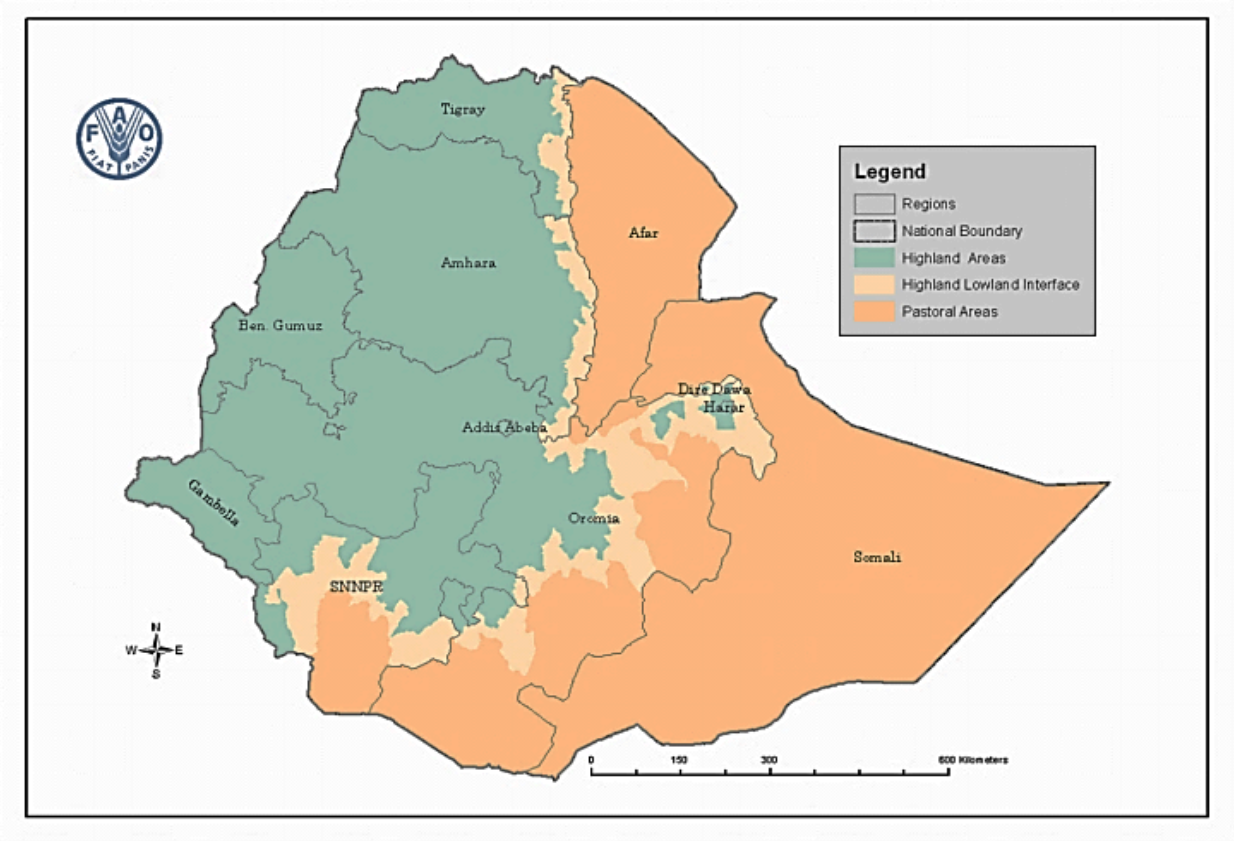
Ekuam, D.E. 2009. *Livestock Identification, Traceability and Tracking: Its role in Enhancing Human Security and Livesock Marketing in IGAD Region.* CEWARN/ISS.

Jibat, T, and B, Rufael,T, Maximilian P, Baumann, O and Carsten J Admassu. 2013. "Impacts of foot-and-mouth disease on livelihoods in the Borena Plateau of Ethiopia." *Pastoralism: Research, Policy and Practice* (Pastoralism: Research, Policy and Practice 2013, 3:5).

Thompson, M.L. & Penrith,G. 2011. *Animal Health Policy, Legislation and Trade in Beef in the five Participating States of the Kavango-Zambezi Transformation area,.* Technical Report to the Wildlive Conservation Society.

Annexure A: Regional map and countries in the IGAD region

Annexure B: The Crop-livestock and Agro-Pastoralist production regions



Ethiopia Cattle Project (Identification and Traceability)

Questionnaire, At least seven Pastoralists, November-December 2013

Stopped on side of road to interview numerous pastoralists in the North (Mekele Region) and South (Borana region);

- Many older animals simply traded for younger ones
- Animals are their "gold"
- Very few animals are marketed
- Daughters are married for an animal
- Most identify animals by cutting the ears
- Some branding occurs
- High incidences of theft in certain areas
- Prices of adult cattle varies between 6000 and 8000 Birr
- 7/10 pastoralists have a phone
- Reality is that producers in the North are one drought away from starvation

Opportunities

- Thinks it would be good idea if all animals were tagged with an official government tag and would welcome such an intervention if it adds value to their cattle
- If cost effective, traders and "collectors" would be prepared to pay for the tag
- Link program to an insurance scheme
- Producers enjoy new technology (Mobile phone is an example)

Constraints

- Producers do not see the value in the export market and have no idea where markets are located
- Animals are diseased and little vaccination happens in the field
- Very little grazing available
- Threat of drought and disease

Northern (Mekele region)

Southern (Borana Region) "Dika Obda"
+- 30 cattle + 4 bulls
Identification is tear in the ear
No vaccinations are done
Animals are diseased
Does not have a phone
Sold 2 animals this year
Yearlings of 1-1/5 years old weight approximately 100-130kg's
Has 10 children + wife
Wants to know more about the drought disaster management insurance scheme run by ILRI
Animals also used as draught animals

Interview Mr Ottesa (Borana region)
Has 80 cows and 20 bulls Mostly 2- 6 year olds
Identification, cutting the ears
Producers have no idea where animals are sold are marketed to for export.
Sold an average of 4 animals this year. Old ones replaced with young animals
Disease is a big threat
Vaccinates 1x per year if vaccinations are available
Will look after 15-30 family members on average

Interview with Mr Bunga Northern crop/livestock system
Has 4 cows, 1 calf and 1 bull
Has 8 children
Cattle are his "gold"
No identification system. Producers know their cattle
Welcomes any government interventions
Cattle are vaccinated by government

Questionnaire, Trader, December 2013

Stopped on side of road to interview trader. Name not provided

- Animals going to Adama feedlot
- Takes 20 cattle per week
- Exporting through Djibouti
- Not sure of the country that animals are exported to from Djibouti
- Identifies animals with Marks

Opportunities

- Thinks it would be good idea if all animals were tagged with an official government tag and would welcome such an intervention
- If cost effective, traders and "collectors" would be prepared to pay for the tag

Constraints

- Producers do not see the value in the export market

Annexure E: Interviews with feedlots

Ethiopia Cattle Project (Identification and Traceability)

Questionnaire, Three Feedlots, December 2013

Interview Vet Dr Isak Hammad (Government Vet), Mr Gezahegme feedlot owner and Mr Gezahegn Kebede (Feedlot owner)

Farm collectors are both collectors and producers

All feedlotters would welcome an official government traceability tag

Vaccination should happen at the feedlot and tags implemented at the collection points.

There are at least 150 feedlots in Ethiopia and at least 120 in Adama region

Average size 1ha

Average 150-2500 animals per feedlot

+- 75000 animals fed per year

Exporting approximately 120 000 animals per year

In rain season hardly any animals are being fed

Most have all in/all out systems

Average of 3 months on feed

Come in at 200-250kg. Fed up to 320 kg for export

Most feedlots tag animals and on tag is the premise ID and lot

Opportunities

- An "Ethiopian" tamper proof tag will assist to promote quality. Will also enhance the perception regarding quality
- An "Ethiopian" tamper proof tag would be seen as a legitimate tag.
- Needs to go hand in hand with dept of trade interventions. Outside world needs to understand that all animal's that have a tag are vaccinated and properly dewormed.
- Collectors should pay for the tag. They have the money and it is in their interest to do so.
- Boran has excellent meat quality. This needs to be promoted.
- Tag has many uses including management including identification and health status. Feedlots already tagging animals

Constraints

- Ethiopia will need to control the smugglers. Nobody can tell how many animals are being illegally exported but could be between 100 000- 1 million
- 2-3 importers control the whole import industry. It is thus a monopoly
- A trader at Djibouti essentially controls the market. The perception is that Ethiopian animals are diseased. Saudi Arabia has this trader re-vaccinate every animal. They stay in this feedlot for a day or two and are then exported.

Mr Gezahegme feedlot

- Holds 800 cattle but now has between 400-500
- All animals tagged and weighed every 50 days

- Six vaccinations are given. All animals de-wormed with Ivomac

Ethiopia Cattle Project (Identification and Traceability)

Questionnaire, Abergele (beef and shoats) and Mojo (shoats) Abattoirs, November 2013

Note; ALL Beef export abattoirs are closed for export.

Ethiopia has 7 export abattoirs. Three are HACCP approved.

Every city or town essentially has an abattoir

No beef products are currently being exported. The reality is that it would appear that all exports have ceased.

Abergilla Abattoir…Used to exports carcasses to various countries

Manager Mulugeta Brame

- Staffing ……141 staff employed
- Equipment is Banns from Germany
- Slaughtered 1000 shoats per day, and 240 Beef cattle
- Challenge is that it only operates when it has a market. At moment Oman and other markets are closed. Hopes to resume it with China
- No of Vets checking quality: 2 vets and 4 health workers
- Has visited China. They will import if quality and traceability is in place. Would appear that quality is the main reason that animal products are not being exported.
- China wants official government systems in place. Its thus largely up to government to open these markets
- Eating patterns for younger generation are changing towards more meat

Cattle Identification

- Types of branding producer; Shoats = none , only on breed type
- At abattoir; - no identification of animals
- No branding

Current Markets

- 100% export market, product rejected sold for local
- Exported to 16 countries, 90% is Anglola (49%) and Egypt (30%), Angola has stopped because of quality and transport
- Angola are not interested in Traceability but are interested in quality
- Traceability must be included with HASAP

Perceived constraints

- In highland areas animals are used as draught animals, so old and poor quality
- Produce has very few animals
- Animals move continuously from markets to markets as people try to get a better price. Animals lose energy
- No supply
- Very little Meat consumed. All is exported
- Lack of quality product and HACCP approval
- Pricing determinants depends on market.
- Producer expects $3 per kilogram

- Internet Access is available
- Secretary trained to do administration
- Not all animals held in fattening facility

Perceived constraints implementing traceability

- Is chicken/egg situation. Will implement if they know that market is secure
- Who will absorb the costs. Already financially very difficult
- Needs to be an industry event
- The word traceability must be defined.
- We need to know the benefits
- Meat is already a high price

Solutions to implementing traceability

- Explain the benefits
- See and know the benefits for the whole industry
- If you know that it will improve your markets
- Give subsidies to get it going
- Needs to fit the production environment
- It must be easy to use
- Traceability will force producers to sell cattle earlier because you will know the age

Opportunities

- We are close to our markets
- China prepared to pay $4.20 per kg but for special cuts and also offal
- Opportunity to grow meat consumption in Ethiopia

Transport

- Goes with cold storage to Djibouti for export

INTERVIEW WITH TADELLE DEMO AT MODJO EXPORT ABBATOIR

- Confirms that no abattoir is exporting beef products
- Modjo exports sheep and goats and Offals to UAE
- 70% of exports to UAE, 30% to Saudi Arabia (80-90% are goats)
- Has a good order book
- None of the importers enquire about a traceable product
- Uses ink marker to identify quality
- Uses outside government laboratory to test product
- Perception that product is “natural and organic”

Annexure G Interview with head of quarantine station

Ethiopia Cattle Project (Identification and Traceability)

Questionnaire, Heat of vet and quarantine station, November 2013

Dr Kimeaa

- Cannot identify origin or area that animals come from. Can only identify region
- Do the animal identification at the market. Do the vaccinations at the market.
- **EXPORTERS BUY ONLY TAGGED ANIMALS (THIS CREATES THE VALUE)**
- **COLLECTORS TAG ANIMAL THAT ARE ELIGIBLE AND THIS IS DONE BEFORE THE TIME (CAN BE ANY DAY).**
- **REGIONAL VET OFFICER SUPPLIES THE TAGS AND VACCINATES**
- **Would affect over 100 000 export animals**
- Feedlot only buys from 1 or 2 markets. Is thus easy to manage
- Producer pays for the vaccine. Costs about 2 birr
- Markets under control of regional governments. Legislation needed to change this.
- Ethiopia has 5 quarantine stations and approximately 150 Feedlots (120 in one region)
- Are in feedlot for 90 days
- Program must be under control of federal market. Regions are under Federal control.
- There is a Vet officer at the market as overseers.

Cattle Identification

- Cattle Identification starts at feedlot. Is a tag.
- Types of branding generally done. None
- At feedlot; - identification of animals Own tag with feedlot number

Current Markets

- 100% export market

Annexure H: Minutes of the industry Ethiopia identification and traceability stakeholder workshop

HELD AT THE OFFICES OF THE MINISTRY OF AGRICULTURE

TUESDAY, 10 DECEMBER 2013 AT 09:00

Dr Bewket, CVO opened the meeting.

He mentioned that livestock product demand has increased globally due to an increasing population and change in diet. What this means for Ethiopia with large numbers of livestock it is an opportunity to enhance the country's economy and to curb poverty at National level and improve the livelihood at the producer level. The government has done a lot for crop production and productivity has increased but is now reaching a limit and will start to decline. Livestock in now the alternative and this is the reason that government is putting a greater emphasis on this sector.

The government has organised this sector to be led by the State Minister level. The importing countries are requiring the following criteria namely, residual monitoring and control system and also animal identification and traceability. This workshop will address animal identification and traceability. This is the right time to establish this system.

1. AN OVERVIEW OF THE LIVESTOCK INDUSTRY IN ETHIOPIA

Dr Getachew gives an overview of the livestock sector in Ethiopia mostly focusing on the livestock population and the potential the country has in terms of livestock. He also presented the export trends that show the export volume is markedly increasing in the country.

2. IDENTIFICATION AND TRACEABILITY IN AFRICA

Dr Bradfield gives an overview of traceability in Namibia, Botswana, Zimbabwe and South Sudan.

He summarised his presentation as follows:

- All countries have a ministry that oversees a traceability program
- Database is run by the ministry/NGO
  - Importance of capacity building
- Traceability systems ARE effective but MUST add value to every sector of the value chain (In Southern Africa it is access to the European market, in South Sudan the reduction of cattle rustling)
- Needs to be supported by legislative framework
- All started as pilot projects

3. BREAKOUT SESSION FEEDBACK; Coordinated by Mr Jay Truitt

<u>Group B feedback</u>

a) Animal identification is necessary
b) Where should it start: Should start in market places where the animal gets sold
c) What device should be used: The Normal Tamperproof ear tag
d) Where should the project be piloted: One from Lowland (Borona) and one from Highland (Tigray)
e) Who should pay for tag; Group says that Buyer/Trader should pay for ear tag

<u>Group A feedback</u>

a) Advantages
   a. Will decrease cattle rustling
   b. Will decrease tribal conflicts

c. Will increase livelihood income
d. Will increase disease notification and control
e. Will decrease illegal or informal livestock market

b) Devices. Normal Tamperproof ear tag because of cost and logistics and is easily applicable
c) Where should tagging start: At the export market
d) What are the constraints; costs and willingness to new technology
e) Who will pay: There were two opinions, either the trader or producer

Definition Primary market areas: traditionally all village level markets or bush markets were considered as primary markets and the large trading areas as secondary markets. In the new draft livestock market proclamation primary markets are defined as markets where the first officially recognized transaction happened between producers and producers, traders, feedlotters and exporters. These markets will have basic necessary facilities to operate.

Secondary market are market centres where value added animals (fattened) animals are supplied by feed operators, breeders, cooperatives and producers as sellers and export abattoirs, exporters, butchers and consumers as buyers. These are very big markets to be organized at bigger towns.

Consensus reached at workshop

Device: Basic Ear Tag similar to South Sudan and Zimbabwe. (On the advice of Allflex, the largest tag manufacturer in the world. Only move to electronic once the system has stabilised and running properly, also do not use barcoded tags in Africa)

Database: Government

Target: The Export market

Tagging location: At primary market areas according to the definitions given by the new draft proclamation.

Up for Discussion

Do we tag before, at, or after the sale?

Do we start tagging from the producers/pastoralists or traders

General discussion

- Opinion1 Ear tag is not just about trading. Is also about Disease Control and other aspects
- Opinion 2 Pilot project should start from the market. After we have good experience we move to pastoralist's.
- Opinion 3. The normal tag will be easy to use in pastoralists areas and will add value to the pastoralist's.
- Opinion 4 Producer should pay for the tag
- Opinion 5 Only the animals brought to the market should be tagged
- Opinion 6; It should start from pastoralists so that it can up-skill the community
- Opinion 7 You can simply put tag in for feedlot to export BUT you have lost opportunity to add value for producer
- Opinion 8 This is a pilot project which is going to show that either our method is functional at the ground level or not. The project should start from the pastoralists and then we will see the merits and demerits of the pilot project, then it will be implemented nationally.

Final comments

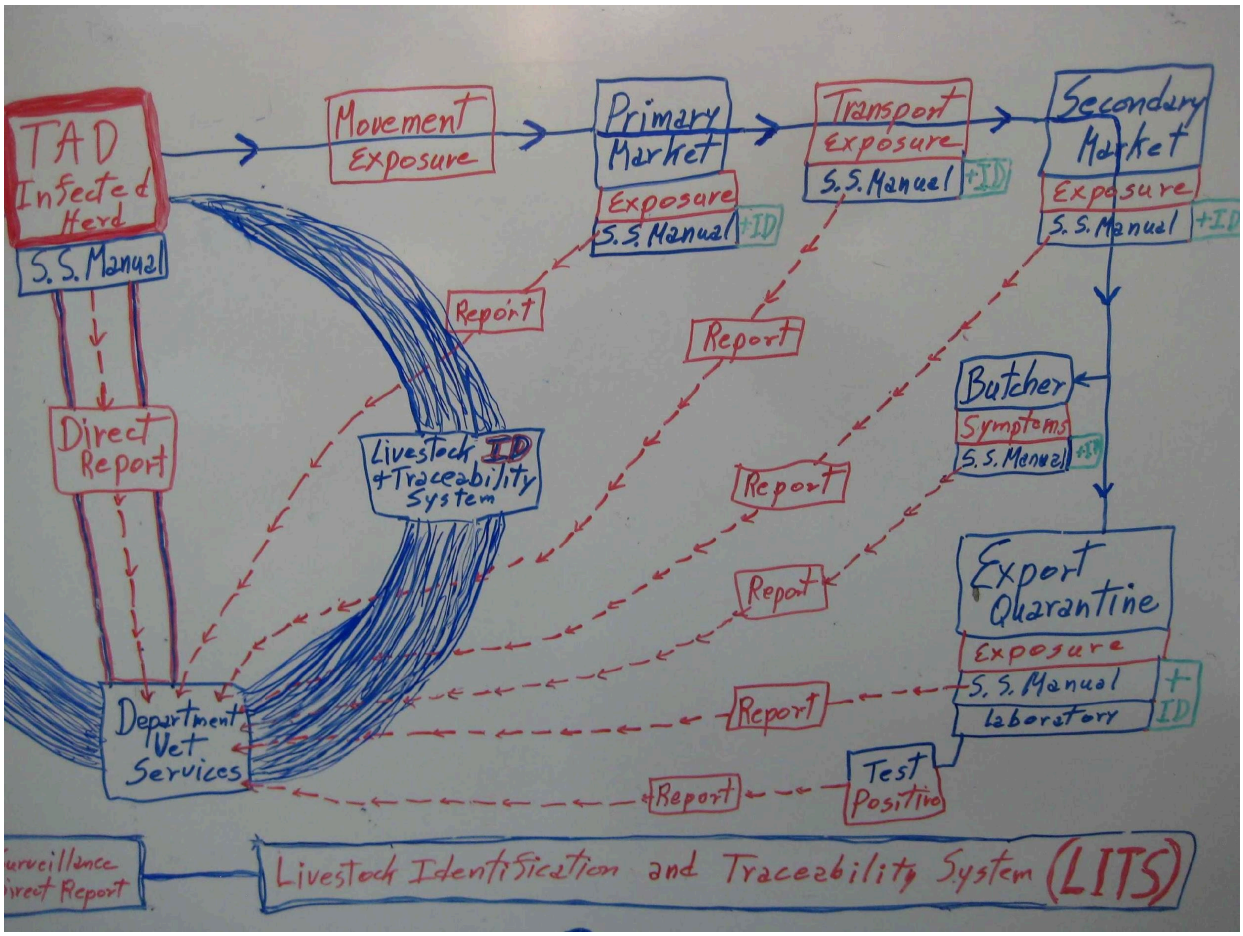
Mr Jay Truitt; value + cost happens at the same time

Dr Bewket mentions two goals; animal disease and add value for export market. **Also adds that usually the person who benefits the most is the person who puts in the tag**

4. **CLOSING REMARKS (Dr Bewket)**

Dr Bewket is very pleased to see the attendance of the workshop by the pastoralists. Mentions that a pilot project is meant to test various options and many of the opinions raised can be tested in a pilot project. Thanks everyone for attending and also the consultants.

Annexure I: Schematic of proposed Disease Surveillance system proposed by Dr Andrew Clark



Annexure J: IGAD region workshop outcomes

The IGAD delegates have been tasked to:

- Develop a pilot project on LITS for the IGAD region based on the following criteria:
    - Area with identified target market and export facilities (quarantine and abattoirs for example);
    - Area with confirmed security concerns;
    - Area with cross border movement;
    - Areas with fairly advanced LITS system;
    - Areas with confirmed animal health concerns;
    - Areas with major livestock trade routes;

Members are encouraged to work closely with the already on-going initiatives that are already happening in each country for the design and implementation of the proposed pilot study. In this case the proposal by the consultants for Ethiopia will thus become part of a regional pilot. The delegates have also been tasked to:

- Develop an IGAD umbrella body that would oversee the implementation of LITS in the region
- The umbrella body would develop guidelines, procedures and regional coordination mechanisms in conjunction with states that have current and proposed LIT activities
- Encourage international/regional organizations e.g. FAO, AU IBAR, OIE to fast track the development/finalization/dissemination of guidelines on LITS in developing countries
- Encourage the member states to establish/strengthen their LITS as an important tool for trade and disease control
- AU IBAR and IGAD should organize exposure visits to areas with reasonably advanced LITS

Annexure K; Example of a basic movement and animal health certificate

Federal Democratic Republic of Ethiopia

Movement - Health Certificate

Form No.

Ministry of Agriculture
PO Box 62347
Addis Ababa,. Ethiopia

Date:		Veterinary Officer Name:		Phone:	
Location:		Veterinary Officer Signature:		ID#:	

	Animal ID Number	Producer Name	Producer ID	Phone	Origin	Destination	Truck ID	Date Arrived	Feedlot ID	Disease Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										

Official Notes			
Date Entered in Database:		Text descriptions of the purpose of the document and appropriate legal authority or references	Buyer Name (Printed):
Database Entry By:			Buyer Signature:

Annexure L: Proposed budget for pilot

Budget for Ethiopian Animal Identification and Traceability Program (Pilot)					
Prices quoted in US Dollar					
	2014	2015	2016	2017	
Year 1 (Planning phase)	Year 1	Year2	Year3	Year 4	
Office at Ministry					
CNFA Oversight Staff	$ 21,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	
Travel/Air	$ 5,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	
Accomodations	$ 5,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	
M&IE	$ -	$ 10,000.00	$ 10,000.00	$ 10,000.00	
MoA Employees (3 staff members)	$ -	$ 30,000.00	$ 30,000.00	$ 30,000.00	
Accomodations	$ -	$ 3,000.00	$ 3,000.00	$ 3,000.00	
M&IE	$ -	$ 3,000.00	$ 3,000.00	$ 3,000.00	
Vehide (1)	$ -	$ 40,000.00	$ -	$ -	
Fuel and Sundries	$ -	$ 10,000.00	$ 10,000.00	$ 10,000.00	
Office Expenses					
Running costs (gen, UPS, consumables)	$ -	$ 30,000.00	$ 30,000.00	$ 30,000.00	
Printer	$ 1,500.00				
Laptop	$ 3,000.00				
Printing Forms+health certificates ($10*4*100)	$ 5,000.00		$ 5,000.00	$ 5,000.00	
Marketing program to announce that Ethiopia has	$ 10,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	
implemented LITS					
Consultant (1 Consultant 45 day/ training and audit programs)	$ 40,000.00	$ 40,000.00	$ 40,000.00	$ 80,000.00	
Tags					
Southern Pilot Feedlot		$ 25,000.00	$ 62,500.00	"Commercial"	
Northern Pilot Abergelie			$ 12,250.00	"Commercial"	
Northern Pilot Gonder/Gojam				$ 12,250.00	
Database support		$ 20,000.00	$ 30,000.00	$ 30,000.00	
Yearly Totals	$ 90,500.00	$ 371,000.00	$ 395,750.00	$ 373,250.00	
Project Total Cost					$ 1,230,500.00
Price Breakdown					
Price per tag paid by feedlotters	$ 0.35				
Price per tag for Official Ministry Tag*	$ 0.70				
Shipping costs	$ 0.20				
Admin fee	$ 0.15				
Database Fee	$ 0.15				
Per tag Fee when commercialised	$ 1.20				
*(Double, Tamperproof) procured in bulk					

Annexure M: Proposed budget when in commercial production

Budget for Ethiopian Animal Identification and Traceability Program (Pilot)

Prices quoted in US Dollar

		Income	Expenses
	300000		
Tag sold at $1.30 (26Birr)			
Number of Tags Total		390,000.00	
Tags purchased @.70			$ 210,000.00
Shipping expenses @ .20			$ 60,000.00
Administration fee @ .15			$ 45,000.00
Database fee @ .15			$ 58,500.00
		$ 390,000.00	$ 373,500.00