

Analysis of the Ethio-Sudan cross-border cattle trade: The case of Amhara Regional State

Improving Productivity and Market Success of Ethiopian Farmers



This working paper series has been established to share knowledge generated through Improving Productivity and Market Success (IPMS) of Ethiopian Farmers project with members of the research and development community in Ethiopia and beyond.

IPMS is a five year Project funded by the Canadian International Development Agency (CIDA) and implemented by the International Livestock Research Institute (ILRI) on behalf of the Ethiopian Ministry of Agriculture and Rural Development (MoARD).

Following the Government of Ethiopia's rural development and food security strategy, the IPMS project aims at contributing to market-oriented agricultural progress, as a means for achieving improved and sustainable livelihoods for the rural population. The project will contribute to this long-term goal by strengthening the effectiveness of the Government's efforts to transform agricultural production and productivity, and rural development in Ethiopia.

IPMS employs an innovation system approach (ISA) as a guiding principle in its research and development activities. Within the context of a market oriented agricultural development, this means bringing together the various public and private actors in the agricultural sector including producers, research, extension, education, agri-businesses, and service providers such as input suppliers and credit institutions. The objective is to increase access to relevant knowledge from multiple sources and use it for socio-economic progress. To enable this, the project is building innovative capacity of public and private partners in the process of planning, implementing and monitoring commodity based research and development programs.

Most of the project's activities are taking place in selected Pilot Learning *Woredas* (PLWs). The smallholder farmers and pastoralists in the PLWs are expected to increase market oriented production and productivity through the project's interventions during the project life. The project staff and partners will study this process through action research and learning. Some complementary focused studies are also undertaken by the project and its partners, which help to understand the context and determine key factors influencing the adoption and impact of the interventions. The results of all these studies and some important concepts, tools, methods and approaches developed will be published in the working paper series and will also be disseminated through other appropriate channels.

The intended users of the research outputs are government, non-governmental and private sector and donor organizations that are involved in market oriented development. They may use these learnings in their efforts to scale out this development process to other *woredas* in the country. Some lessons learned are also expected to be relevant for possible use in market orientated agricultural development efforts in similar contexts outside Ethiopia.

Analysis of the Ethio-Sudan cross-border cattle trade: The case of Amhara Regional State

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Abstract

Both legal and illegal livestock marketing systems are operating at different magnitudes in the Amhara Region's Ethio-Sudan cross-border cattle trade. Small farmer exporters and traders are the major actors in the illegal cattle marketing system while medium- to large-scale licensed exporters are dominantly operating in the legal system. Most cattle sales are related to farm households' cash needs and commercial orientation. However, cattle sales are also induced due to fear of theft and insecurity.

The volume of legal cattle export is estimated to reach close to 40 thousand cattle in 2007. The legal export operates only through the border town of Metema Yohannes. The market share of the illegal cattle export was estimated to be 50% in 2005, but increased to 60% in 2006 and is expected to remain the same in 2007. The total volume of cattle export (through the legal and illegal marketing system) is estimated to be 100 thousand cattle in 2007. If the illegal cattle export could be shifted to the legal system, the total value of cattle export earnings would reach USD 30 million per annum in North Gondar zone alone. The major supply hinterlands to the legal export are the highlands, contributing about 54% of the legal export volume. The lowlands contribute the remaining 46%. Lowland *woredas* are the highest supplying hinterlands to the illegal route contributing about 78% of the total illegal export volume. The highlands contribute the remaining 22%. From the total illegal export volume Berekete Nur, Abrehajira and Abdurafi, and Tiha routes account for 40%, 40%, and 20%, respectively. Among the lowlands Tsegede, Tach Armachiho and Western Armachiho *woredas* contribute about 35% of the total illegal export volume.

In the legal marketing system, the pricing mechanism is open 'eye ball' pricing. In the illegal marketing system, the pricing mechanism is 'Silent Auction System' which is operating in a manner that defies transparency. Generally, importer market power outweighs that of exporters. Cattle prices in the illegal terminal markets are less than those in the legal terminal market.

The existence of the illegal marketing system is highly associated with the behaviour of key actors (temporary nature of export activity and lack of awareness of the importance of international trade) and characteristics of the cross-border livestock trade. The illegal cattle marketing system is often characterized by financial constraint and operates under informal credit market based on friendship and relationship between farmers, and the small farmer exporters and traders. Several factors that contribute to the development of the illegal marketing system have been identified. These include the bureaucratic and extended nature of legal export procedure, inappropriate foreign currency regulation, the

high tariff rate imposed on importers by Sudan, and lack of proper implementation of the trade agreement between the two countries. The tariff rate charged by Sudan authorities for cattle that go through legal route is Ethiopian birr (ETB)¹ 400 per cattle whereas there is no tariff imposed on importers for cattle that go through the illegal route as they are sold inside Sudan. A marketing fee of only ETB 20 per cattle is charged in the Sudan markets. This practice may be encouraging importers to buy cattle from small farmer exporters operating in the illegal system. The lack of requirement for health certification by Sudan authorities in the illegal routes may be another factor contributing to the development of the illegal system. Ethiopia may be losing significant foreign currency revenue due to the illegal cattle export system.

1. In January 2007, USD 1 = Ethiopian birr (ETB) 8.78.

1 Background

Ethiopia takes the lead in livestock population in Africa, with an estimated population of 40.3 million cattle, 20.7 million sheep and 16.3 million goats in 2005 (CSA 2006). The Amhara Region accounts for 25% of cattle, 36% of sheep and 30% of goat population of the country. As such, the Amhara Region has the second largest population of livestock in Ethiopia, next to Oromia. The livestock sector contributes about 33% of the region's GDP and 15% of its agricultural GDP (North Gondar Regional Finance and Plan Bureau 2004). Livestock in the Amhara Region are quite important as sources of household income, traction power, and store of wealth. Livestock are especially important to pro-poor development strategy in the region. In line with this, the regional government has recognized livestock as an important pathway out of poverty and gives much emphasis to improve livestock development in its new strategic plan.

The total area of the Amhara Region is estimated at 48.2 thousand km². There are two ecological divisions, which uniquely characterize and roughly split the Amhara Region livestock production system into two, i.e. highland, and lowland agro-pastoral systems. The highlands account for 68% while the lowlands account for 32% of the total regional area (North Gondar Agricultural and Rural Development Department 2006). Mixed crop–livestock production system, mainly practised in the highland areas, accounts for the majority of livestock production in the region. Livestock are predominantly raised in small-scale household production units in this system. In the lowlands,² livestock production is becoming the primary economic activity and an important source of food for the majority of the population. Agro-pastoral system, predominant in the lowland areas, is the second dominant production system. It involves seasonal mobility of livestock in search of pasture over a large area of rangeland.

Among the 10 zones in the Amhara Region, North Gondar zone, the focus of this study, takes the lead in cattle population accounting for 18% of cattle, 19% of sheep and 18% of goat population of the region. Agro-pastoralism predominates in the lowland *woredas* of Metema, Quara, Tsegede, Tach Armachiho and Western Armachiho. This production system is characterized by its contribution to the rural livelihoods through the cattle trade related activities. Most of the farmers in the lowland areas of the North Gondar zone appear to have significant market orientation in livestock production. In the highlands, most of the livestock producers are subsistence oriented that follow broad production objectives, driven more by their immediate needs rather than profits. In this case, reasons for selling livestock include periodic household cash needs to cover various household level expenses and to fill food deficit due to drought.

2. The lowlands are areas below 1500 meters above sea level (masl). Areas of 1500 masl or above are categorized as highland.

A bilateral trade agreement was signed between Ethiopia and Sudan in 2003. The bilateral trade agreement proclamation (Proclamation No. 318/2003) governing the export market was based on two important pillars:

- 1) eliminating tariff barriers to enhance trade relations, and
- 2) agreement to apply the Common Market for Eastern and Southern Africa (COMESA) Rules of Origin Treaty and Protocol.

The preferential treatment applies to all agricultural products originating from both parties while if either country proves that the importation of particular product is threatening or causing serious injury to its domestic producers, then it shall apply all forms of safeguard and remedial measures provided in the COMESA Rules of Origin Treaty and Protocol.

Before the opening of export market in Sudan in 2004, most of the livestock sales in North Gondar was mainly supplied to Gondar and Bahir Dar markets and the Addis Ababa market. Cattle trade started to grow after the trade agreement made between the two countries in 2003. After livestock trade to Sudan started in December 2004, domestic sales started to increasingly target the export market. The cross-border cattle trade to Sudan has been growing since 2004. Both legal and illegal cattle trade systems are operating. However, there is a dearth of information about the magnitude of the trade and its characteristics, and the factors contributing to the development of the illegal marketing system. This study is aimed at contributing to fill this knowledge gap, and identify interventions to improve the functioning of the cross-border cattle trade. Specifically the study aims to identify export routes and points, and major supply hinterlands (*woredas*); examine the livestock export trade process and how the livestock business operates; assess the role of market actors in marketing, financing, and transporting; examine the regulatory process including foreign currency regulations; identify and evaluate the causes of the illegal trade; and assess the perception and expectation of producers in the export market.

The study focuses exclusively on the Ethio-Sudan cross-border cattle trade along the border between Sudan and the Amhara Region. This study was initiated by the Integrated Livestock Development Project (ILDLP) which operates in the North Gondar Zone of the Amhara Regional State. The study is a collaborative effort between the Amhara Regional State Bureau of Agriculture and Rural Development (BoARD), ILDP, the Improving Livestock Market Opportunities theme of the International Livestock Research Institute (ILRI), and the Improving Productivity and Market Success (IPMS) of Ethiopian farmers project implemented by ILRI on behalf of the Ethiopian Ministry of Agriculture and Rural Development (MoARD). ILDP and IPMS are both working in developing a viable fattening program for the domestic and export markets.

2 Study methodology

2.1 Data

The study followed the rapid market appraisal of commodity sub-sector approach (Holtzman 1995). First, an attempt was made to map out the stages in the market chain of livestock export. This was followed by review of the existing literature and collection of secondary data. Semi-structured interviews with key informants and key observants, and regulators were made. Key informants include cattle producers, small farmer exporters, traders, large-scale cattle exporters, brokers, transporters and drovers. Semi-structured interviews were also conducted with relevant government officials and representative of private institutions. These include regional Bureau of Agriculture and Rural Development (BoARD), Custom Authority, Trade and Industry Bureau, Quarantine Service Station, and private and government owned banks. Personal visits were made to primary, secondary and terminal market places.

Monthly legal export data from December 2004 to September 2006 was collected from the Quarantine Service Station at Metema Yohannes. Other secondary data were collected from institutions such as Custom Authority (on legal cattle export), and the Bureau of Agriculture and Rural Development (BoARD) (on livestock population). Map of the North Gondar zone was obtained from BoARD, which proved to be very important for locating and describing cattle supply hinterlands and export trade routes.

2.2 Method of analysis

Both descriptive and econometric methods were used to analyse the data. Time series econometrics techniques were applied to compute growth rates in legal export volume and make forecasts. Time series data of monthly legal export volume between December 2004 and September 2006 were used. First, we estimated the annual volume of legal export from the monthly data. The legal export volume was low at the end of 2004 and beginning of 2005 but quickly picked up thereafter. Increase in volume of export was especially sharp in 2006.

Time series regression analysis was used to forecast the legal cattle export for the last three months of 2006. Since the intra-annual variation in export volume was quite different between 2005 and 2006, hetroskedasticity could invalidate hypotheses testing. We tried to control for differences in variations of export volume by including dummy variable for year. Hence, the following econometric model is estimated:

$$y(\text{export}) = e^{(a + b d_i + c t)}$$

where a , b , c are parameters to be estimated, d_i is dummy variable taking a value $d_i = 0$ when year = 2005 or $d_i = 1$ when year = 2006.
 t is time in months.

The first research inquiry was to find out the market shares of the legal and illegal export market systems. Determining shares of the legal and illegal trade volumes was made based on discussions with exporters, custom office authorities, and experts of the *woreda* Office of Agriculture and Rural Development (OoARD). Since we have the legal export volume data, we then used the market share of the illegal export system to determine the volume exported through the illegal system. It is expected that a follow up study that focuses on the demand side in the Sudanese market will be conducted to analyse price spread, the final destinations of the exported cattle, and explore alternative strategies to improve the benefit of the Ethiopian producers and exporters.

3 Cross-border livestock trade in other Ethiopian borders

Unofficial cross-border trade is practised in the eastern, western, and southern, and northwestern borderlands of Ethiopia. In addition to the Ethio-Sudan cross-border livestock trade, there are other important cross-border livestock trade operations: Ethio-Somalia, Ethio-Kenya and Ethio-Djibouti. Little (1996) categorized the cross-border trades into: (1) eastern Ethiopia/Somaliland, 2) southeastern Ethiopia/northeastern Kenya/southwestern Somalia 3) eastern Ethiopia/central Somalia and 4) Ethiopia/Djibouti borders. Most of the borders are characterized by arid and semi-arid agro-ecologies where livestock play dominant role in household livelihoods.

Eastern Ethiopian/Somaliland cross-border livestock trade accounts for the largest share among the four borders in terms of the volume and value of export from Ethiopia. Port of Berbera is the main outlet for livestock exports. The majority of animals exported, mainly to Saudi Arabia, are male Somali blackhead or fat-tailed sheep, followed by male goats, male cattle and young male camels. Most of these animals transit through the Ethiopia border towns of Hartishik, Togwajale, Lefeissa, and trekked to Borama, the Somaliland border town between Togwajale and Berbera. From Borama animals are transported using trucks to Berbera Port and finally exported to the Middle East countries.

In 1998, approximately 50–60% of the 850 thousand goats and 1.25 million sheep exported through Berbera Port of Somaliland are said to have originated from Ethiopia (Little 1996). These considerable number of small ruminants are exported annually from the Ethiopian Somali region to Somaliland and then to the Middle East countries. Taking an average price of USD 36 per animal, such export amounts to USD 41.6 million per annum (Nin Pratt et al. 2005).

The second cross-border livestock trade, southeastern Ethiopia/northeastern Kenya/southwestern Somalia market is extremely complex because it is located at the junction of the borders of Kenya, Ethiopia and Somalia at the border town of Mendera (Little 1996). In this market, the main export animals are cattle destined to the large urban markets in Kenya including Nairobi. The origin of these cattle can be from southern Ethiopia or southwestern Somalia (Little 1996). The total number of cattle exported in this route and the proportion of their origin is not known. However, much of these cattle are believed to originate from Afeder and Liben zones, two of the nine zones of Ethiopian Somali region. Cattle from Borana and Moyale are mainly destined to slaughterhouses in Nairobi (FEWS 1998).

The third important cross-border trade goes from the eastern Ethiopian Somali region, originating from Gode and Warder zones to central Somalia. This market route is centred on Belet Weyen, which connects to the interior city of Mogadishu. The final destinations of these animals are the Kenyan markets, especially Nairobi. The total number of cattle exported per annum along this route may exceed 50 thousand (Little et al. 1999). Also small stock and camels are traded along this route and exported through Mogadishu.

The Ethiopia/Djibouti cross-border trade starts from Dire Dawa and is destined to Djibouti. Most of the animals (cattle and shoats) traded in this route are sold in Djibouti for domestic consumption. As such, animals are not re-exported from Djibouti. Livestock, mostly cattle, are also officially exported from Dire Dawa to Djibouti through this route. There is little information available on the flow of animals from Ethiopia to the Sudan border. Various studies in the past did not incorporate Ethio-Sudan cross-border livestock trade. Excluding the Ethio-Sudan cross-border trade, Hurissa and Eshetu (2002) estimated the value of unofficial cross-border trade of cattle, shoats and camel at USD 105 million per annum.

An important socio-economic characteristic of livestock traders in the borders is their engagement in multiple activities, including crop farming, grain trade, retail shopping and other small-scale businesses. Traders' diversification of activities may be due to the risk and seasonality associated with cross-border trade. Long standing social relations based on ethnicity and kinship help to shape the structure of cross-border trade. Ethnic and religious concentrations have substantial influence in the performance of cross-border trade in south and southeastern borderland of Ethiopia (Tegegne et al 1999).

The seasonal nature of cross-border trade and the risk involved from unpredictable drops in demand for livestock due to bans from importing countries characterize the cross-border trades. For instance, when Saudi Arabia authorities imposed ban on livestock export during 1998–2000, Somali Region's GDP was estimated to drop by 25% due to the ban (Nin Pratt et al. 2005). SCF-UK (1998) reported that the February 1998 Saudi Arabia ban on livestock import from the region had a negative impact on livestock producers in Harshin district, Jijiga zone. The impact was estimated to be a 40% reduction in the volume of livestock sales combined with a 30% reduction in prices.

Gebremariam (1976) categorized the cross-border livestock markets in the south and southeastern borderland of Ethiopia into bush, primary, secondary and terminal depending on who is involved in the market. In the bush market, pastoralist and farmers exchange livestock for breeding, draught and slaughtering purpose either on barter or on cash basis. In the cross-border livestock trading from Ethiopia and Kenya, there is a maximum of three ownership changes before the border is crossed (Tegegne et al. 1999).

Transport is the most important element of marketing costs in cross-border livestock trade. Livestock transportation is undertaken by trekking or trucking. Trekking results in quality deterioration of animals due to live weight loss as a result of long distance trekking. Pastoralists are willing dealers with illegal traders because they need to market in remote areas and need consumable goods in return. This has resulted in increasing and exorbitant prices for forage and water along trekking routes, right-of-passage taxes, and bribes to waive holding requirements and obtain health certificates.

One of important characteristic of cross-border trade is the use of multiple legal currencies. For example, in the southeastern Ethiopia/northeastern Kenya/southwestern Somalia cross-border livestock trade, six currencies were/are used: US dollar, Ethiopian birr, Kenyan shilling, Somaliland shilling, Somalia shilling and Djibouti frank.

Many researchers lament that the public budget allocated for livestock sector, including animal health services, is inadequate (Yacob 2002). Despite its significant contributions to the national economies, the livestock sector receives as low as 3% of the recurrent agricultural expenditures in Ethiopia.

4 Results

4.1 Production system

4.1.1 Livestock production potential and constraints

Basically two livestock production systems exist in North Gondar zone: the agro-pastoral system in the lowlands, and the mixed crop–livestock system in the highlands. Traditionally, fattening of animals in both systems concentrates on male animals, and female animals which are either infertile or have finished their reproductive cycle. In the lowland agro-pastoral system, grazing is the most common source of feed, with limited use of crop residues. In the highland system, crop residues are the most important source of animal feed. During the wet season, when crop residues are scarce in the highlands, male animals are taken to the lowland areas for grazing.

Livestock production system in the North Gondar zone is basically household-based. In the highland areas, livestock production is characterized by small-scale subsistence oriented system. In the lowland agro-pastoral system, livestock holdings per household are relatively larger and production has higher market orientation. There is no ranch-based livestock production system in the zone, although conditions might be favourable for ranch-based livestock production, especially in the lowland areas. Further study may be needed to analyse the feasibility and profitability of ranch-based livestock production and design interventions to promote it.

The livestock production system in the North Gondar zone is facing several constraints. The major constraints are:

- Shortage and poor quality of feed: Feed is critical constraints to livestock production in the area. The nature of feed scarcity varies between the highlands and the lowlands. In the lowlands, vast area of pasture land exists. However, the quality of feed in these pasture lands deteriorates significantly during the dry season as the feed becomes too dry. Timely harvesting and using improved methods of feed conservation and use could contribute to the alleviation of the feed shortage in these areas. In the highlands, the important reasons that contribute to feed shortage include shortage of grazing lands, lack of or inefficient management of grazing lands, inefficient use of crop residues and limited use of agro-industrial by-products. Interventions to improve feed availability and quality could contribute to increase in livestock throughput to the market. With increased emphasis on fattening, the dynamics in and between both systems will change, especially since the crop residues (sorghum) in the agro-pastoral system is increasing and offers maintenance feed for fattening in the dry season.

- Livestock diseases: Disease problem is considered as the second critical problem of livestock production in the zone. The problem is especially characterized by internal and external parasites.
- Low genetic potential of indigenous animals: Although the indigenous animals are believed to be well adapted to the environment, their low genetic potential in terms of reproduction and weight gain is considered a critical problem to improve livestock production.

4.1.2 Extension services

Agricultural extension still remains one of the important services delivered as public good by the government. Extension service is crucial for the development of livestock production. Extension service for market oriented livestock production is emerging in the Amhara Region. Extension services on feed development, livestock management and health services are provided by the *woreda* Offices of Agriculture and Rural Development (OoARD). One of the livestock extension service is focused on fattening programs of both small and large ruminants. However, the livestock extension service remains very limited compared with the needs of the sub-sector. The prevalent perception among experts that livestock production is subsidiary to crop production appears to give priority in the extension service to crop production.

In addition to the OoARD, ILDP is providing extension services for livestock production. The unique nature of the extension service provided by ILDP is its focus on marketing extension activities, such as organizing farmers for collective marketing, providing marketing advice and market information, linking farmers with markets of both inputs and outputs. The experiences of the ILDP marketing extension can serve as a model for the extension service in the region as a whole, which does not consider marketing extension as an important component of the agricultural extension service.

Similar approach to that of the ILDP extension service is being followed by the IPMS project, which operates in Metema *woreda* of the North Gondar zone. The project defines extension service as a service of information, knowledge and skill development to enhance adoption of improved agricultural technologies and facilitation of linkages with other institutional support services (input supply, output marketing and credit) (Berhanu et al. 2006). In this regard, it is important that the extension service accords due attention to the development of the knowledge and skills of farmers, and facilitating their linkages with the institutional support services of input and output marketing and financial services. Hence, marketing extension is crucial in the development of market oriented livestock production in Ethiopia in general, and the Amhara Region in particular.

4.1.3 Input supply

The most important livestock production inputs are feed, water, genetic improvement and veterinary service. The most important feed resources in the highland are crop residues from cereals and pulses. In the lowlands natural range vegetations from private and communal grazing lands and aftermath grazing on harvested fields are the most important sources of feed.

There is significant amount of pasture production in the lowland during the rainy season. However, the lack of proper and timely harvesting and conservation of the feed results in the drying out of the feed on the field with its feed value almost completely lost. Since there is shortage of crop residue in the lowland, hay making and straw treatment can make significant contribution as sources of feed in the dry season.

In the highlands, livestock reproduction and fattening is limited mainly because of feed shortage. In areas where fattening is undertaken farmers purchase concentrate feed such as wheat and maize bran and nigger seed cake as supplements. During the rainy season freshly cut and grazing predominate. Agricultural products such as legume leaves and weeds from crop field become progressively more important over the course of the growing season. Due to shortage of grazing land, highlanders also send their animals to the lowlands for grazing during rainy season.

It appears that it may be possible to develop commercial hay production in the lowlands. The natural pasture that grows in the lowland areas can be converted into beneficial feed if harvested in time, baled and marketed to livestock producers. Currently, farmers clear the dried up pasture by fire. However, feasibility study is required to guide the promotion of commercial hay production.

4.1.4 Veterinary services

North Gondar veterinary service is systematically structured through the use of one zonal animal health clinic, 20 *woreda* veterinary clinics and 89 veterinary stations (North Gondar Agricultural and Rural Development Department 2006). There are about 72 animal health assistants and 6 veterinary doctors in the zone. The available manpower and veterinary service sites are, however, way below the requirements of the zone. Moreover, equipping the veterinary service sites is another issue that deserves attention.

Meat export market currently is becoming increasingly more concerned with the sanitary and phytosanitary issues. In this regard, improving animal health service is necessary for a country to develop more effective livestock export marketing system. Improving

veterinary services is also essential to improve productivity of livestock. The majority of livestock producers in the lowland areas usually have no or very limited access to animal health services.

The Ethiopian Government is in the process of privatizing veterinary services (Halderman 2004). Some private veterinaries have established successful private practices and many non-governmental organizations (NGOs) have helped para-veterinarians to establish service association which run their own procurement and distribution schemes. In other cases, private para-veterinarians are linked to private veterinary pharmacies for constant supply of medical supplies.

4.2 Market structure and actors

4.2.1 Type of animals sold

The cross-boarder trade with Sudan involves pre-dominantly male cattle. Few medium to high quality female animals are also exported, which are used for slaughtering in Sudan or for live animals re-export to Egypt, Libya and Yemen. The Ethiopian cattle breed, locally known as Ruthan, are exported as heifers to Sudan for breeding purposes. Uncastrated and fattened oxen are also exported legally.

4.2.2 Reasons for sell

There are several reasons why producers in the zone sell their animals. These include market orientation, cash needs, restocking, feed and water scarcity, and fear of theft and insecurity. Although the livestock producers in the lowlands exhibit significant market orientation, fear of theft contributes to the off take rate significantly. In the highlands, periodic cash needs remain the most important reason for sale.

4.2.3 Types of markets

Cattle markets in North Gondar can be categorized as primary, secondary and terminal market. Primary markets are markets where producers strongly dominate to sell livestock primarily to small-scale farmer exporters and traders at market centres located in rural areas and *woreda* capitals. The main actors of these markets are producers and small farmer exporters, traders and in some cases consumers and local butchers. Primary markets have been identified as village level markets with a supply of less than 500 head of cattle/week (Solomon et al. 2003). The majority of livestock markets in North Gondar cross-border trade belong to this group.

Secondary markets operate with an average volume of 500–1000 head per week consisting of finished export cattle, breeding heifers and old animals, and located mainly in the regional and zonal capitals. Gondar and Bahir Dar are the typical example of secondary markets in the export marketing chain under study. Wholesale traders, exporters, export agents and, to some extent, butchers dominate secondary markets serving the local consumers but mainly supplying the terminal markets. These markets supply live animal to export terminals like the Metema Yohannes market, meat processors in Gondar and Bahir Dar (the Bahir Dar meat processing firm is under construction) and consumers.

The terminal markets are located in the Ethiopian border towns of Metema Yohannes, Abrehajira and Abdurafi, and the Sudanese border towns of Galabat, Berekete Nur and Tiha. In the terminal markets, exporters and importers handle mainly export type animals in the study area. Medium- to large-scale exporters and importers dominate the only legal export terminal market of Metema Yohannes.

Supply of livestock to the primary, secondary and also the terminal markets is mostly done through trekking and trucking routes. The majority of cattle are trekked through villages and small towns. Mostly smallholder farmer exporters use the traditional trekking routes to reach the illegal terminal markets. All primary, secondary and terminal markets are not fenced, have no scales and no feeds and watering facilities throughout the study area.

Figure 1 shows the livestock trade market channels. There are three types of exporters who sell livestock in the Ethio-Sudan cross-border export points: small farmer exporters, medium- and large-scale exporters. Small farmer exporters are farmers whose trading activity is temporary, who usually trade in small quantity, not exceeding 10 cattle at a time. These exporters usually prefer the illegal export routes. Medium- to large-scale exporters trade in large quantity and frequently operate in legal export route, even though a few of them may at times use the illegal route, as well. Many large-scale exporters have their own export agents who collect cattle from primary and secondary livestock markets and supply for export in the terminal markets. There are also cattle traders who are involved in both export and domestic cattle trade. These traders do not usually have export license but sell cattle to importers in the illegal export route.

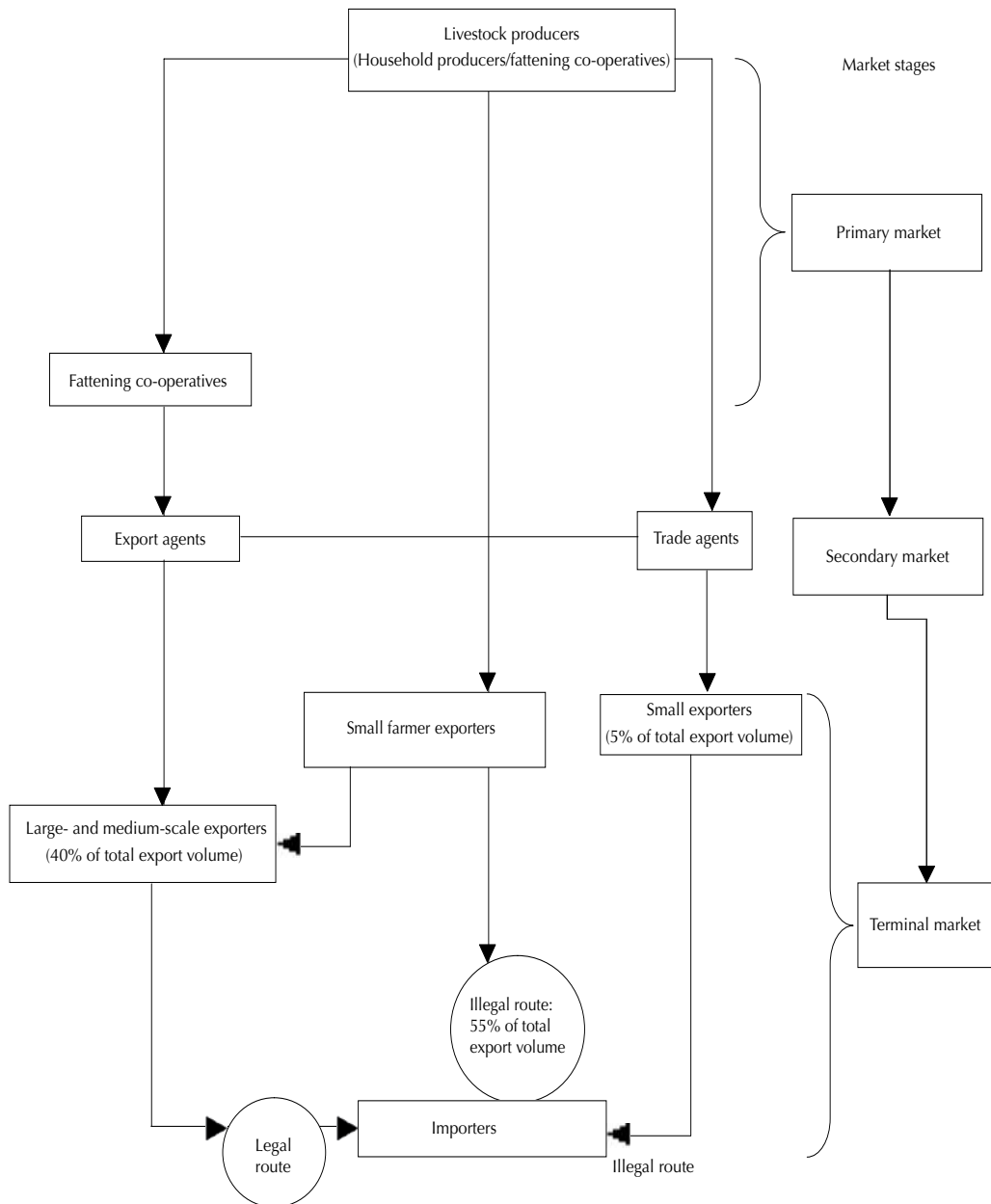


Figure 1. Market channels of the cross-border livestock trade.

4.2.4 Quarantine services

Quarantine stations are located in Gondar town and Metema Yohannes. Quarantine services are required to control different animal disease outbreaks, ensure healthy animals export, and certify animals for export as per world trade regulations. Types

of service provided in the quarantine station include treatment, laboratory diagnosis, vaccination and certification. Cattle for export need to be vaccinated against contagious bovine pleuropneumonia (CBPP), anthrax, black-leg and foot-and-mouth disease (FMD). We found that lack of equipment and materials in the quarantine stations is the major problem of providing efficient service for the legal livestock marketing system. Some of the facilities required in the quarantine service include road access, electric power, communication services, offices and holding area.

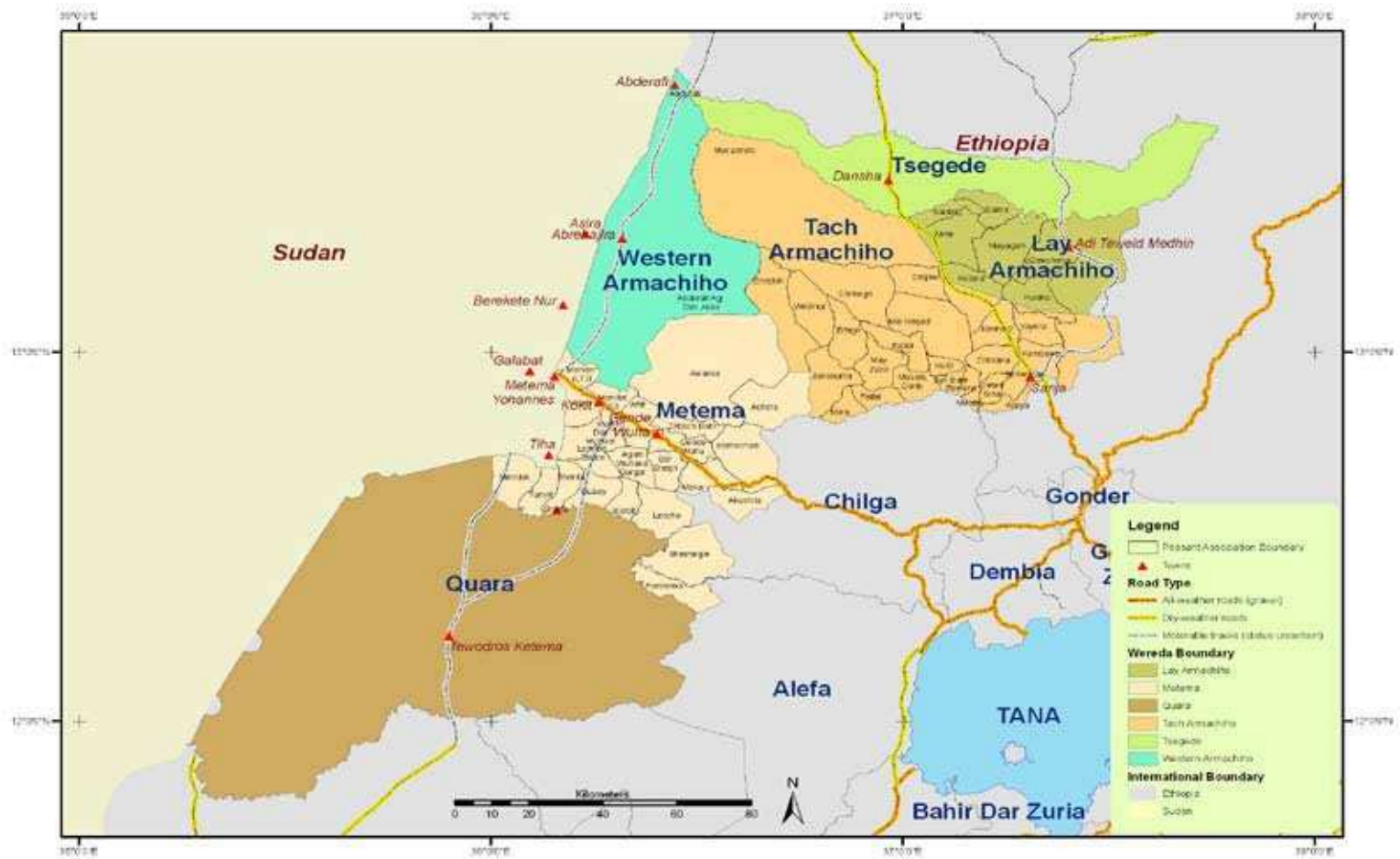
The holding areas in the quarantine stations have facilities for unloading animals, and crashes for vaccination and treatment, and feed storage. In any quarantine station, in addition to administrative staffs, there must be animal health doctors, animal health assistants, animal health technicians, and lab-technicians. Shortage of manpower is a serious problem confronting the quarantine stations in North Gondar and Metema Yohannes. The Metema Yohannes Quarantine Service Station is operating with only one staff at veterinary doctor level.

4.3 Cattle trade marketing system

4.3.1 Supply routes

The Ethio-Sudan cross-border covers a long distance, as Sudan shares boundary with the five Ethiopian regional states of Southern Nations, Nationalities and Peoples (SNNP) in the south and around Omo River, Gambella and Benishangul Gumuz in the west, Amhara in the northwest and Tigray in the north. This study covers only the cross-border trade along the Amhara Region's Ethio-Sudan border. This Ethio-Sudan cross-border cattle trade has five important cattle export outlets in the North Gondar zone. These are Metema Yohannes, Tiha, Berekete Nur, Abrehajira and Abdurafi export points (see Map 1). The major livestock types in these marketing systems are dominated by bullock, bulls and steers, mostly supplied from the lowlands of North Gondar Zone which, according to exporters, eventually end up in large urban markets in Sudan including the Khartoum market. Importers buy cattle in bulk and take them for slaughter either to slaughterhouses, processing plants in Khartoum or re-export them through Port of Sudan.

Currently, there are two different kinds of cattle marketing systems operating in Amhara Region's Ethio-Sudanese border: the legal and illegal systems. The legal system has started operation on December 2004 upon the signing of the bilateral trade agreement between Ethiopia and Sudan. Parallel to the legal system, there exists an active illegal cattle marketing system, which operates independent of the legal system. It is not clear how long the illegal trading system has been operational. The two systems operate at different magnitudes. Some exporters use both the legal and the illegal systems at the same time or at different times.



4.3.1.1 Legal export route

There is only one legal cattle export outlet in the entire marketing chain in North Gondar zone, which is the border town of Metema Yohannes. Metema *woreda* is located in the western part of the Amhara Region and has boundaries with Sudan on the west, the *woredas* of Quara and Alefa in the south, Tach Armachiho and Western Armachiho in the north, and Chillga in the eastern interior part towards Gondar. Cattle are more dominant than shoats in Metema. Cattle are the most abundant livestock, followed by goats. The majority of the population in Metema is agro-pastoral. The livestock production shows significant market orientation and is closely linked to the Sudanese large urban towns through the border trade. Urbanization is at infant stage of development in the *woreda*. Gende Wuha, the capital town of the *woreda*, is the largest commercial town in Metema. There are other small towns on the way to Metema Yohannes. These include: Kokit and Negade Bahir (in Metema) (see Map 1).

Gende Wuha³ livestock market is operating everyday although the major market day is Saturday. Most of the transactions in this market take place mainly on wholesale basis between exporters and wholesale traders. In this town, export service organizations such as Custom Authority and banks are operating to serve the legal export system. Export cattle are then transferred to Metema Yohannes where the Quarantine Service Station is located. Gende Wuha and Metema Yohannes are 40 km apart. Metema Yohannes terminal market serves principally as the outlet of legal livestock marketing system. Almost the entire export volume that passes through this route is legal. Exporters and importers usually negotiate and fix export price in Metema Yohannes after the cattle has completed quarantine period.

The town of Gondar is the largest town in North Gondar Zone. It is the only secondary market in the zone and connects the area with the interior cities of Bahir Dar (the regional capital) and Addis Ababa. Gende Wuha and Gondar are about 160 km apart. The Gondar–Sudan road connects Negade Bahir and Kokit (primary livestock markets) in the lowland and Iykel (in Chillga *woreda*) in the highland areas. Cattle from Gondar should pass through Gende Wuha for a while for custom clearance before they reach Metema Yohannes.

4.3.1.2 Illegal export routes

There are five illegal but important cattle export routes in the Amhara Region's Ethio-Sudan border. The study attempted to analyse the operation of all these illegal export routes. The export points of these illegal routes are the Sudanese small towns of Berekete

3. The previous name of Gende Wuha was Shekhedin.

Nur, Tiha, Galabat, and the Ethiopian towns of Abrehajira and Abdurafi. Galabat is the town sharing border with the Ethiopian town of Metema Yohannes (see map). It functions as terminal market for some illegal exporters, and as a route to the interior Sudan for the legally exported animals at Metema Yohannes.

Two of the illegal export points, Tiha and Berekete Nur, are also around Metema Yohannes. Berekete Nur is the most important illegal export outlet, and is located north of Metema Yohannes. The Berekete Nur and Tiha routes mainly work for Metema and Quara *woredas*, but farmers from as far as Tach Armachiho and Western Armachiho *woredas* also use these illegal routes.

The Berekete Nur route has no seasonal or all weather road. The marketing system of Berekete Nur becomes a little bit complex as different agents such as small exporters, importers, consumers, and drovers are involved. There is no market in the Ethiopian side close to Berekete Nur. Livestock market day in Berekete Nur is Friday. Illegal livestock exporters need to cross the Ethiopian Sinar mountain and the Guange river to reach Berekete Nur. It was reported that a bridge that existed before has now been broken and the illegal exporters have to travel long distances for an alternative crossing route.

The second alternative illegal export route around Metema Yohannes is Tiha, located to the south of Metema Yohannes. Tiha is close to Shinfa, an Ethiopian terminal market for the illegal route. Shinfa is located in Quara *woreda* of Ethiopia. Shinfa is very close to the border and is located on the border line between Metema and Quara. Quara relatively covers a longer boundary with Sudan than does Metema. The majority of cattle exported in Tiha are believed to be supplied from Quara. An all weather road connects Gende Wuha and Shinfa, which are 60 km apart. Cattle are cheaper in Shinfa than Gende Wuha or Metema Yohannes. Shinfa mainly serves as the main outlet for Quara rather than Metema *woreda* because of its proximity to the area. Metema livestock producers that are close to the Shinfa town do also use this market as an alternative outlet.

There is strong evidence in the area that Shinfa livestock market has increased its market size every year since the last three years after the legal cattle trade started. Shinfa's market day is Saturday. Every Saturday Shinfa is supplied with more than 300 cattle from Quara and close by *woredas*. The market size may decline after November when farmers receive cash from crop sales. However, during the main rainy season, July to September, the supply could reach up to 1000 cattle per market day.

Local marketing opportunities for meat and cattle in Shinfa are poor, due to the lack of significant urban settlements in the area. Hence, livestock marketing at Quara is very much linked to illegal export market at Tiha. The majority of sellers in Tiha are small farmer exporters whose cattle trade is temporary activity and who try to benefit from trade

opportunity created in Sudan. It was reported that there were only 20–30 permanent small exporters in the surrounding.

The markets at the Ethiopian towns of Abrehajira and Abdurafi serve the widest area along the border, supplying to the illegal export points in Sudan. The Sudanese town of Asira is the export point for the illegal market cattle sold at Abrehajira. Asira and Abrehajira are 30 km (6 hours trekking distance) apart. Asira is the famous livestock market in the surrounding and the mode of exchange is mainly bartering rather than cash. The export point for the cattle illegally exported through Abdurafi is not known. There is no customs office either at Abrehajira or Abdurafi, nor are there bank facilities. Implementing trade regulation in these areas is very difficult because infrastructure is very poor and only seasonal road exist to Abrehajira and Abdurafi.

Cattle supply to Abrehajira and Abdurafi comes mainly from the high potential areas of Tsegede, Tach Armachiho and Western Armachiho.⁴ Cattle trekking routes from Tach Armachiho areas such as Ashere and Chirkegn to Abrehajira can take more than four days (see Map 1). Areas in Western Armachiho such as Zemene Merik settlement camp only need about two hours of trekking to reach Abrehajira.

Local marketing opportunities for meat and live animals are poor in Western Armachiho, Tsegede and Tach Armachiho due to the remoteness and insignificant urban settlements in the area. The main domestic market for these *woredas* is the Tigrayan town of Dansha (see Map 1). The marketing of livestock in Tsegede Armachiho is very much linked to the market in Dansha town. Significant number of livestock from these *woredas* are sold at Dansha town. Dansha livestock market is categorized as secondary market. It serves as a main cattle supply market to Abrehajira and Abdurafi export points. It does also supply livestock to Gondar, Tigray, as well as Eritrea. Dansha is about 150 km from Gondar. The capacity of Dansha livestock market is relatively large, some times exceeding 2000 cattle per week. Livestock is also supplied to Dansha from Humera and Mar Zeneb lowlands in Tigray region.

4.3.2 Volume of cattle export

Cattle export began in December 2004 and annual volume of export was very low in the beginning. Only 4600 cattle were exported legally in 2005. Prior to 2005, there was not any significant livestock trade activity along the border. The market share of the legal cattle trade system was estimated to be 50% of the total export volume in 2005 (see Table 1). This share declined to 40% in 2006. However, the absolute volume of the legal export has been increasing throughout the study period.

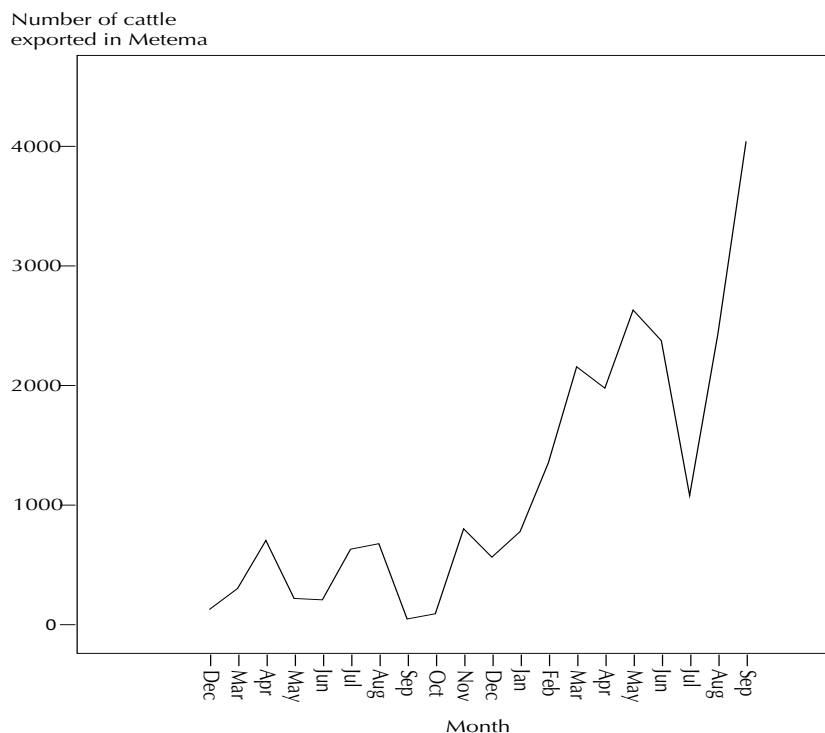
4. These three *woredas* were previously included as one *woreda* known as Tsegede Armachiho.

Table 1. *Volume and market share of the legal and illegal export systems*

Year	Legal export	Illegal export	Total export	Market share of legal export (%)
2005	4600	4600	9200	50
2006 (for 9 month)	19,000	28,500	47,500	40
2006 forecast (3 months)	12,000	18,000	30,000	40
2006 (full year)	31,000	46,500	77,500	40
2007 forecast	40,000	60,000	100,000	40

Source: Metema Yohannes Quarantine Service (2006).

We applied regression methods to forecast livestock export for the last three months in 2006 and for the 2007 year. Data on legal export was only available for nine months in 2006. The highest monthly legal export was 4060 cattle, which was achieved in September 2006 (see Figure 2). Adding the remaining forecasted three months volume of legal export, the volume of the legal export is estimated to reach 31 thousand cattle in 2006. Based on the expert opinions of small farmer exporters', traders and quarantine service and custom authority officials, the market share of illegal export is estimated to be higher by 20% compared with the legal export trade (i.e. the legal and illegal export systems account for 40% and 60% of the market share, respectively). Based on this, the total volume of export in 2006 is estimated to be 77,500 cattle.

**Figure 2.** *Volume of legal cattle export through Metema Yohannes (2005–06).*

As shown in the graph, monthly legal cattle export in 2005 has been varying below 1000, with the trend essentially remaining flat. Legal export showed an increasing trend in 2006. Fluctuation in the volume of legal export was also observed in 2006. The drop in export from about 2600 heads in May to about 1000 heads in July is especially noteworthy.

The forecasting regression for legal cattle export is:

$$\ln(\text{Export}) = 5.2 + 1.2 d_i + 0.06 t$$

$$(0.389) \quad (0.629) \quad (0.054)$$

where t is time in month, $d = 0$ when year = 2005 and $d = 1$ when year = 2006. Standard error is in the parentheses. R^2 is 0.81.

The above fitted regression has been used for forecasting. Based on the fitted regression, monthly cattle export has a growth rate of about 6% per month during December 2004 to September 2006. Such growth rate may not be sustainable in the long run but can be a reasonable approximation in the short run. Supply increases during the rainy season (August to October) and the maximum is observed in September to October, after which sales volume gradually declines in the dry season after November. Therefore, we used the estimated trend coefficients for forecasting. Using the regression parameters and assuming a maximum supply of 4000 cattle per month, the legal export will be close to 40 thousand cattle in 2007. Assuming constant price of USD 300 per cattle, the value of legal cattle export may reach up to USD 12 million.

Based on the parameters that the legal system contributes about 40% of the total export volume and the remaining (60%) is the contribution of illegal system in 2007, the total export volume in the Amhara Region's Ethio-Sudan cross-border trade is estimated at 100 thousand cattle in 2007. If the illegal cattle export could be shifted to the legal system, the total value of export earnings in 2007 is estimated to be USD 30 million in the North Gondar Zone alone.

From the total illegal export volume Berekete Nur, Tiha, and Abrehajira and Abdurafi routes together contribute 40, 20 and 40%, respectively. The five lowland *woredas* in the North Gondar zone—Metema, Quara, Tsegede, Tach Armachiho, and Western Armachiho are the highest supplying hinterland lowlands to the illegal system and contribute about 78% of the total illegal export volume. Among these *woredas*, Tsegede, Western Armachiho and Tach Armachiho contribute about 52% of the total illegal export volume. Metema and Quara contribute 13% each of the illegal export volume. The highland *woredas* of the zone contribute the remaining 22% of the illegal export volume.

In terms of contribution to the legal export volume, Metema *woreda* takes the highest share at 20% of the legal volume, followed by Quara (16%). The remaining three lowland *woredas* (Tsegede, Tach Armachiho and Western Armachiho) together contribute about 10% of the legal export volume. The highland *woredas* of the zone contribute the remaining 54% of the legal volume. Of these highland *woredas*, Gondar Zuria *woreda* and Gondar town contribute about 12% of the legal export volume, followed by Alefa (11.5%), Chillga (10%) and Dembia (8%).

It is observed that the illegal export points are close to the high livestock potential areas. For instance, Berekete Nur is located close to high livestock potential areas known as Awassa, Achera and Meshaha in Metema. In Eastern Armachiho, areas known as Felfel, Massa, and Masero and Sanja also supply cattle for export to Berekete Nur (see Map 1). The high potential livestock areas of Tach Armachiho *woreda* known as Chirkegn, Bifegn, Janesuma, Gabella, Mai Negad and Ashera supply to the illegal route to Asira through Abrehajira.

The volume of cattle exported in Berekete Nur alone may be 18.6 thousand cattle per year in 2006, close to 40% of the entire illegal export volume. The total volume of cattle exported at Abrehajira and Abdurafi is estimated at 18.6 thousand cattle per year in 2006. The illegal volume of export at Abrehajira and Abdurafi account for about 69% of the total Tsegede Armachiho's cattle supply. Around 24 thousand cattle per year could be exported at Abrehajira and Abdurafi in 2007.

Table 2 shows percentage of supply hinterlands (*woredas*) to the legal export at Metema Yohannes, number of fattening co-operatives and cattle population.

Cattle export off take rate⁵ of the lowland areas of North Gondar is estimated to be more than 15% (Table 3). Nevertheless, the off take rate for the whole region is lower, estimated to be about 5.2%. Lowlands have higher cattle export off take rate than the highlands, the highest export off take rate being for Quara at 17%. The share of export from Gondar town and Gondar Zuria through the legal system seems relatively high as compared to other highlands (see Table 3). This is because cattle are brought from Chillga, Alefa, Tsegede, Tach Armachiho, and fattened and sold in Gondar town and Gondar Zuria.

5. Export off take rate is calculated as cattle export as a percentage of total cattle population.

Table 2. *Fattening co-operatives, contributions to the legal cattle export, and cattle population of supply hinterlands (2006)*

Supply hinterlands/ <i>woredas</i>	Number of fattening co- operatives	Contribution to the legal cattle export (%)	Cattle population	
			Cattle population	Proportion of zonal cattle population (%)
Lowlands				
Metema	0	20.0	103,756	5.4
Quara	0	16.0	85,173	4.4
Tsegede, Tach and Western Armachiho	0	10.0	232,312	12.0
Highlands				
Gondar town and Gondar Zuria	3	12.0	140,287	7.2
Chillga	2	10.0	218,038	11.3
Alefa	0	11.5	227,582	11.8
Dembia	2	8.0	166,046	8.6
Lay Armachiho	1	0.0	100,297	5.2
Wogera	1	0.0	112,497	5.8
Others	0	12.5	550,555	28.4
Total	9	100	1,936,543	100.0

Source: ILDP (2006).

Table 3. *Estimated contributions to the illegal export, and cattle export and off take rate by supply hinterlands (2007)*

Supply hinterlands	Contribution to illegal export (%)			Cattle export (heads)			Export off take rate (%)
	Berekete Nur	Tiha	Abdurafi and Abrehajira	Legal export	Illegal export	Total export	
Lowlands							
Metema	29.2	8.3	0.0	8000	8000	16,000	15.4
Quara	4.2	58.3	0.0	6400	8000	14,400	16.9
Tsegede, Tach and Western Armachiho	29.2	0.0	100.0	4000	31000	35,000	15.1
Highlands							
Gondar town and Gondar Zuria	16.7	8.3	0.0	4800	5000	9800	7.0
Chillga	8.3	8.3	0.0	4000	3000	7000	3.2
Dembia	4.2	8.3	0.0	3200	2000	5200	3.1
Alefa	4.2	8.3	0.0	4600	2000	6600	2.9
Others	4.2	0.0	0.0	5000	1000	6000	N/A
Total	100.0	100.0	100.0	40,000	60,000	100,000	5.2

4.3.3 Major supply hinterlands (*woredas*)

The highland *woredas* of the North Gondar zone contribute 54% to the total legal export volume. Among the highland *woredas*, the main supply *woredas* are Gondar town and Gondar Zuria (12%), Alefa (11.5%), Chillga (10%) and Dembia (8%). The fattening activity is undergoing with support from the government. Gondar town, Gondar Zuria, Alefa, Chillga and Dembia *woredas* contain the largest concentration of cattle population and fattening co-operatives in the highlands. During the rainy season only minimal numbers of cattle exports have been observed from highlands because most of the cattle in the highlands are draught power oxen used for crop cultivation.

The lowland *woredas* of the zone contribute about 46% of the total legal export volume of cattle. These lowland *woredas* are Metema, Quara, Tsegede, Tach Armachiho and Western Armachiho.⁶ The lowlands of the North Gondar zone are extremely suitable for livestock keeping. For instance, livestock keeping becomes primary activity in Quara and Metema for majority of the farmers. Rich farmers can keep 400–500 cattle per household in Tach Armachiho and Western Armachiho *woredas*. Most of the farmers in the lowland *woredas* are categorized as agro-pastoralists.

When feed is scarce in the lowland areas during the dry season, cattle for export are supplied even from very far highland areas such as Dejen and South Wello. Tsegede, Tach Armachiho and Western Armachiho are among the highest potential *woredas* for livestock keeping in North Gondar. About 12% of the total cattle population of the zone exists in these three *woredas*. Livestock is the main source of income and primary activity of households in these areas.

The major supply hinterland *woredas* to Berekete Nur export outlet are the agro-pastoral lowland areas (Table 3). Cattle from the lowland *woredas* contribute almost 63% of the entire supply to this illegal route. Metema, and the three *woredas* of Tsegede, West Armachiho and Tach Armachiho together, contribute 29% of the supply each to Berekete Nur. The other major supply hinterlands to Berekete Nur are highlands, which contribute 37% of the entire supply to this illegal route. The highest suppliers among the highlands are Gondar town and Gondar Zuria, contributing about 17% (Table 3).

The total volume of illegal cattle exported through Tiha is estimated to be 9300 cattle in 2006. The major supply hinterland *woredas* to Tiha illegal export route are the lowlands, contributing more than 67% of the total cattle export. The major supply hinterland among the lowlands is Quara which contributes 58% of the total supply. The highlands contribute the remaining 33% of the supply to this illegal route. Quara stands first,

6. Lay Armachiho is a very highland *woreda* and its contribution to the cross-border trade is very low.

followed by Alefa in supplying cattle to this illegal export route. Moreover, Metema and Dembia are also important suppliers to this route (Table 3).

The Berekete Nur and Tiha illegal routes are very much closer to the legal route. The forecasted volume of export through Berekete Nur and Tiha combined may reach 36 thousand cattle in 2007. These export volume is close to 60% of the total illegal export volume estimated for the year. Berekete Nur accounts for the lion share of this volume, accounting for nearly 67%, while the remaining goes through Tiha.

The supply hinterlands to Abrehajira and Abdurafi are Western Armachiho, Tach Armachiho and Tsegede *woredas* (Table 3). Since these three *woredas* were one before, we are not able to get desegregated data regarding the proportional share of each of these *woredas* to the illegal route through Abrehajira and Abdurafi. However, the proportion of cattle supply from Western Armachiho to Abrehajira is much greater than that from Tach Armachiho. The important supply villages in Western Armachiho include areas known as Wedinur, Abrehajira, Abdurafi and Zemene Merik (see Map 1). The second major supply to the Abrehajira and Abdurafi route is Tach Armachiho. The major supply villages in Tach Armachiho are areas known as Wedinur, Degaw, Zemene Merik (settlement camp), Chirkegn, Bifegn, Janesuma, Abrehajira and Abdurafi areas. Abdurafi is relatively far from most of the *woredas* and mainly serve Tigray Region rather than Amhara Region.

4.3.4 Alternative domestic cattle market

Gondar town has two livestock market places: Azezo and Gondar. The Gondar market is much larger than the Azezo market. The majority of cattle supplied to Gondar town come from the lowland and close by highland areas. The main supply hinterlands from lowlands to Gondar town are Tsegede and Tach Armachiho *woredas*. The major supply *woredas* from highlands are Chillga, Dembia and Alefa.

Two abattoirs were operating in Gondar, of which only one is currently operational. The municipality abattoir is now closed down. The town is, therefore, being served by the abattoir owned by the private company ELFORA. The slaughtering capacity of ELFORA is 1050 cattle per day and is currently operating under capacity. One abattoir is under construction in Bahir Dar. The abattoir is owned by Ashraf, a Sudanese meat exporting company and is expected to start operation in 2007 with a slaughtering capacity of 400 cattle and 400 shoats per day. The price of meat is observed to be about ETB 20 per kg in most small towns/villages butcheries, whereas in large towns it may exceed ETB 30 per kg.

4.3.5 Prices, pricing and mode of payment

4.3.5.1 Cattle prices

We find that there is significant border cattle price differential at different illegal terminal markets. There is at least ETB 1100 price difference per cattle for quality bulls and steers between Abrehajira and Metema Yohannes. While cattle are sold for ETB 3100 at Metema Yohannes, the same cattle is sold for ETB 2000 at Abrehajira. Cattle traded at Abrehajira are exported through the Sudanese town of Asira. Information on cattle prices at Asira was not available to make comparisons with the export price at Metema Yohannes.

The trucking cost to Metema Yohannes from villages that are as far as 280 km could be ETB 285 per cattle. To reduce the transportation cost, sellers prefer to trek their animals. Some of the trekking routes take 3–4 days to reach Kokit, the small town located between Metema Yohannes and Gende Wuha about 20 km from Metema Yohannes. After Kokit truck transportation is available and it costs about ETB 40 per cattle to reach Metema Yohannes.

There exists also significant price differential for quality bulls and steers between Shinfa and Metema Yohannes: the price in Shinfa is ETB 2600, less by ETB 500 compared to Metema Yohannes. However, costs of transportation, quarantine services and others need to be considered to make comparison of the prices. Cattle prices at Shinfa are currently higher by about 33% compared to 2005. It is also interesting to note that due to the increase in export, the rent of oxen for cultivation in Metema *woreda* has increased significantly.

Cattle traded at Shinfa are exported illegally at the Sudanese town of Tiha. Accurate information on cattle prices at Tiha is not available, and we are not able to compare it with the legal export price at Metema Yohannes. However, we can safely state that since Tiha is illegal route, the price received there is usually lower than legal route.

The lowland *woredas* of Tsegede, Western Armachiho and Tach Armachiho have no adequate local market demand to sell their animals. The supply of cattle by far exceeds the demand. Mostly markets in the villages do not clear and farmer exporters are obliged to trek their cattle to terminal markets. High livestock potential areas known as Chirkegn, Janesuma, Bifegn, Mai Negad, Wedinur and Abrehajira often lack proper livestock market and farmers sell cattle at low price or on credit at Asira illegal terminal market in Sudan. Credit payments are risky and highly uncertain. We have observed many cases when farmers trekked unsold cattle back home. The price of quality bulls and steers in Abrehajira is the lowest in the Amhara Region.

The analysis showed that most of the illegal livestock export to Sudan is done mostly by farmers themselves. It is estimated that about 90% of the illegal export is handled by livestock producers themselves. The major reason for this is the lack of markets faced by the producers. Hence, interventions to reduce the illegal livestock export should revolve around developing domestic cattle markets.

Cattle theft in Abrehajira and Abdurafi is very high. According to the report by local development agents in the Armachiho areas, farmers sometimes sell their entire herd and relocate their residence because of theft and insecurity. Cattle price here is the lowest among all places covered in the study region. The maximum price offered for quality bulls and steers in Abrehajira and Abdurafi does not exceed ETB 2000 (the same type of cattle sold for about ETB 3100 in Metema Yohannes), although one has to consider marketing costs to make price comparisons.

The price variation is very high for the same type of cattle traded at different markets. The absence of spatial market integration and wide inter market margins imply that any intervention in one market will not induce significant changes in other markets. Poor access to market information is also a major aspect associated with the illegal cattle trade. The absence of market information services contributes to the significant variation in prices across the terminal markets. Expansion of trade infrastructure in the area may increase integration of cattle price and eventually enhance the legal export system.

4.5.3.2 Pricing mechanism

In the legal Ethiopian terminal market, livestock are generally priced through 'eye-ball' pricing. In the legal marketing system, the Sudanese importers cross the border to Ethiopia to buy cattle. Here, exporters sell their cattle in hard currency.

The Sudanese terminal markets that are close to the Ethiopian border mainly serve cattle that come through the illegal marketing routes. Pricing mechanism in these markets can be described as 'Silent Auction System' operating in a manner that defies transparency. Ethiopian smallholder cattle exporters usually go to Sudan to sell cattle in an illegal market. Here small exporters sell their cattle in Ethiopian birr. Under this pricing mechanism, buyers and sellers communicate only through third party, a broker. A seller tells a broker his price range for the cattle he intends to sell. The broker sits with the buyer and negotiates the price in secret. A deal is closed when the broker manages to negotiate successfully with the seller within the price range offered by the buyer. The purchase price will only be known to the buyer and the broker and kept secret from other parties. In these markets, the exporters appear to have less bargaining power than the Sudanese importers.

In Sudan pricing mechanism in cattle market is highly broker dominated. And some of these brokers may work as independent traders and some as commission agents of importers or subagents for big traders. Agents or subagents manage the trekking of cattle to the terminal markets for the big trader. Cattle are said to change hands a minimum of two and a maximum of six times between points of purchase and the final points of sale. The terminal market price may be at least twice, and in extreme cases, four times as much as that of the producers' price.

4.3.5.3 Mode of payment

The Ethio-Sudanese cross-border livestock trade⁷ uses three legal currencies: US dollar, Ethiopian birr and Sudanese dinar. The use of the Sudanese dinar is rare. Legal exporters sell cattle in USD and exchange the hard currency to ETB at the Ethiopian banks. Ethiopian birr is the currency that is used most in the illegal cattle trade.

The exchange rate between the Ethiopian birr and the Sudanese dinar at the border is influenced by the trade balance between the two countries. When more cattle are exported out of Ethiopia, the ETB tends to appreciate and vice versa.⁸ Cattle trade in Abrehajira and Abdurafi terminal markets is reported to be conducted primarily through barter system.

4.3.6 Regulatory/institutional framework

4.3.6.1 Legal export requirement

In order to export cattle in the legal system exporters should fulfil three requirements after a license has been issued. These include: hiring a transitor, advance payment of hard currency for bank permit and secure health certificate from the quarantine service stations. Transitors undertake custom clearance. There are four transitor organizations in Gondar: Express, Kalab, HA and Fanna Transitors. An exporter needs to hire one from these organizations. To get a bank permit, exporters have to deposit USD 180 per cattle. The bank in return pays the dollar value in terms of local currency. This advance foreign currency deposit ensures that the government earns foreign currency.

7. Although livestock are the major export commodity, many other agricultural products are exported through Metema Yohannes legally, among which garlic, beans, oil seed and ginger are the main export crop commodities. We have also observed that tree products, relatively new agricultural export commodity, are being exported through this point. The major commodity imported to Ethiopia from Sudan is petroleum. Only a small and insignificant amount of soap and plastic products are imported. This is probably because of the availability of similar and cheaper Asian consumer products, particularly from China.

8. Two years ago, ETB 100 note was exchanged for 320 Sudanese dinar, which is now exchanged for 240 Sudanese dinar. This may be due to the effect of increasing petroleum import from Sudan to Ethiopia.

Cattle have to undergo at least 30 days of quarantine period for health certification at quarantine service station. The quarantine service can be given in Gondar town or Metema Yohannes. Exporters have to pay all expenses related to feed and watering during this period. They may take fattening activity after the quarantine service to get better price. There appears to be low awareness of the importance of quarantine services among the small exporters. They consider this process as time taking and unnecessary because Sudanese importers do not require health certificate for cattle exported through the illegal route. The lack of requirement for health certification in the illegal routes may be contributing factor to the development of the illegal system. Many of the key informants reported that the bureaucratic nature of custom clearance also discourages exporters from operating in the legal system.

Small farmer exporters could not legally export cattle through Metema Yohannes route because they do not have licenses. Smallholder farmers sometimes use licensed exporters to export their cattle legally. The licensed exporters charge small exporters about ETB 120 per cattle for this service. Many exporters do not have export license even though getting export license is quite simple.

4.3.6.2 Currency regulation

At least three currency regulation methods can be identified: Letter of Credit, Advance Payment and Cash Against Document. The currency regulation procedure currently operating in the Ethio-Sudan cross-border cattle trade is advance payment. In order to get bank permit to export, exporters should deposit an advance payment of USD 180 per cattle before the export is made. This regulation may be encouraging parallel black market for foreign currency because it increases the demand for foreign currency outside the legal market. Cash Against Document system requires a significant amount of working capital before export is made which is often a constraint for small farmer exporters.

Exporters buy the dollar from the Sudanese markets, usually at ETB 0.15 higher price per one USD relative to the official exchange rate. Exporters also buy the hard currency in local black markets, in which case the system encourages the development of local black markets for foreign currency.

Hence, although the main goal of currency regulation is to raise foreign currency earnings, the advance payment currency regulation system, does not, in general, appear to be consistent with this goal. The country's foreign currency earnings in the study region is much below what it could be. The country may be losing significant foreign currency revenue due to the illegal cattle export system.

One challenge is to select and implement an alternative and more appropriate foreign currency regulation system. Further study is needed to determine what type of currency regulation system best suits the cross-border trade in order to optimize foreign currency earnings to the country. Such a study needs to be done by a team of bankers, economists, trade specialists and others as appropriate.

It was reported that there was no export tax on cattle in the legal export route through Metema Yohannes. On the contrary, Sudan applies the most excessive taxation system on cattle in the Eastern Africa region (Yacob 2002), as it relies heavily on livestock taxes as its primary source of revenue.

4.3.6.3 Source of finance

It was reported that the legal exporters use their own sources of finance for the business. On the other hand, those that operate in the illegal system use funds borrowed from relatives, friends, and informal money lenders. Key informants reported that very few financial institutions are willing to finance the illegal activities of the Ethio-Sudanese cross-border trade. The illegal cattle marketing routes operate through the help of informal credit markets facilitated by trust based relationship. For example, in Quara *woreda*, small farmer exporters buy cattle on credit and pay back upon sale. Limited amount of interest free credit is available from relatives and friends. Communities provide social insurance to compensate farmer exporters who face the risk of partial or complete confiscation of cattle in the illegal trade. Small farmer exporters rely on members of their own clan and relatives to export cattle in the illegal route, thus discouraging others from entering the business.

5 Conclusion and recommendations

Both legal and illegal cross-border livestock trade systems operate along the Amhara Region's Ethio-Sudan border. In 2005, the legal and illegal trade systems contributed 50% each of the total export volume. In 2006, the legal system accounts only for about 40% of the trade volume. The legal livestock cross-border trade started in December 2004, after the cross-border trade agreement between Ethiopia and Sudan was signed. Although the trade volume was low in 2005 (under 1000 heads per month), trade showed significant increase in 2006. The total volume of the legal export in 2005 was 4600 heads. The corresponding figure for the first three quarters of 2006 was 19 thousand heads. Based on forecasts for the last quarter, the annual legal export volume is estimated to be 31 thousand heads. Legal export volume is expected to reach 40 thousand heads in 2007.

About 46% of the legal export volume comes from the lowland *woredas* of the North Gondar zone, with the remaining 56% coming from the highlands. On the other hand, the lowlands contribute about 78% of the illegal export volume. About 90% of the illegal trade is undertaken by small farmer exporters.

In order to identify major constraints, identify important intervention areas and improve profitability of the fattening business to small holders, the nature of market imperfections and their causes need to be clearly understood. Considering the evidence provided in the previous sections, two main observations can be made with regard to the Ethio-Sudan cross-border livestock trade: (1) the presence of a considerable illegal market system, and (2) a considerable price differential between the various market places.

The existence of illegal marketing is highly associated with the behaviour of small farmer exporters (temporary nature of business), lack of alternative domestic market, the nature of the export commodity (mobility), long duration of legal export procedure, discriminatory 'trade tariffs'⁹ on the Sudanese side, inappropriate currency regulations, and bureaucratic custom clearance service. Hence, the main factors contributing to the development of the illegal trade include: the temporary nature of farmers' cattle trade activity, lack of proper implementation of trade agreement between the two countries, lack of physical infrastructure (especially roads), insufficient legal exporters, lack of adequate livestock markets (especially for the high livestock potential areas), and the length of the Ethio-Sudan border that makes controlling illegal cattle market more difficult. Exporters often complain that legal channel is often bureaucratic and lengthy. The lack of requirement for health certificate by the Sudanese importers also contributes

9. While there is an import tariff of ETB 400 per cattle for the legally exported cattle, only market fee of ETB 20 is charged for cattle smuggled illegally to Sudan and sold in the Sudanese market.

to the development of the illegal market. Highest cattle price was observed at Metema Yohannes. However, high price advantage of the legal system failed to attract exporters to the legal system. Costs of transportation and other costs (real and hidden) associated with the legal export system need to be considered to offer explanation why the high sale price in the legal route failed to attract traders.

Recommendations

Based on the analysis and results of this rapid market appraisal, the following recommendations are made to improve the benefit to Ethiopia from the cross-border livestock trade:

1. Establishing exporters associations

The livestock traders and exporters along the Ethio-Sudan border are not organized in associations. Traders and exporters associations could facilitate communication with government authorities regarding the difficulties being encountered by the exporters. Associations could also help in building capacity of traders and exporters, thereby increasing their bargaining power in the trade.

2. Establishing cattle export co-operatives

The marketing and transaction cost of cattle trade could be reduced significantly if small farmer exporters could organize themselves and collectively market their animals. Economies of scale as well as improved bargaining power could result in higher benefits to exporters, in addition to contributing to reduce illegal trade.

3. Streamlining the lengthy and bureaucratic export process and custom clearance system

According to the legal exporters, the livestock export process is too lengthy and the custom clearance system is bureaucratic. It is recommended that these issues received due attention by concerned bodies and streamline the process to shorten export time to the extent possible.

4. Developing alternative markets and infrastructure

One of the major reasons why the lowlanders use the illegal marketing route is the lack of alternative market outlets. In the high livestock potential lowland areas, supply is usually higher than local demand. Developing market centres appropriately chosen to cater for the high potential livestock producing areas could reduce the use of illegal trade routes.

The development of market centres should, however, be accompanied with developing infrastructure, especially road networks. Establishing abattoirs and slaughter houses can also contribute to the development of alternative local markets, if found to be feasible and profitable.

5. Proper implementation of the trade agreement between the two countries

One of the reasons why the illegal trade system is developing is because of the differential 'tariff' imposed on cattle imported through the legal and illegal routes. Cattle imported through the legal routes are charged tariff of ETB 400/head, whereas those illegally smuggled and sold in Sudan are charged marketing fee of only ETB 20 per cattle.

6. Improving law enforcement and security

Risk due to theft and insecurity remains to be an important reason for forced livestock sales. Farmers are usually forced to sell cattle at low prices when confronted with the risk of losing their animals due to theft. Improving law enforcement and the security situation could contribute to the reduction of the illegal trade routes.

7. Currency regulation

The current currency regulation system is advance payment system, which requires exporters to deposit foreign currency before they sell the animals. This system appears to encourage the development of local black market for foreign currencies. It also makes exporters pay higher prices for the foreign currencies than the official exchange rate. As such, it also contributes to the development of the illegal trade routes. We recommend that a study be made by appropriate professionals to evaluate the system and develop appropriate currency regulation system that best fits the export market situation.

8. Supplying market information

One of the reasons for the higher price differences across terminal markets could be lack of market information. Supplying market information contributes to the integration of markets. We recommend development and implementation of appropriate market information supply system.

References

- Berhanu Gebremedhin, Hoekstra D and Azage Tegegne A. 2006. *Commercialization of Ethiopian agriculture: Extension service from input supplier to knowledge broker and facilitator*. IPMS (Improving Productivity and Market Success) of Ethiopian farmers project Working Paper 1. ILRI (International Livestock Research Institute), Nairobi, Kenya. 36 pp.
- CSA (Central Statistical Authority). 2006. *Agricultural sample survey 2005–06. Report on livestock and livestock characteristics (Livestock inventory data). Volume II*. Statistical Bulletin 361. CSA, Addis Ababa, Ethiopia.
- FEWS (Famine Early Warning System). 1998. Livelihoods and food security in Ethiopia's Somali Region. Special Report. www.fews.net.
- Gebremariam A. 1976. Livestock marketing in Ethiopia with special reference to Jijiga and southern rangelands. ILCA (International livestock Centre for Africa), Addis Ababa, Ethiopia. (unpublished report).
- Halderman M. 2004. *The political economy of pro-poor livestock policy-making in Ethiopia*. Pro Poor Livestock Policy Initiative (PPLPI) Working Paper 19. FAO (Food and Agricultural Organization of the United Nations), Rome, Italy.
- Holtzman J. 1995. *Rapid appraisal of commodity subsections. The guide to developing agricultural markets and agro enterprises*.
- Hurissa Belachew and Eshetu Jemberu. 2002. Challenges and opportunities of livestock marketing in Ethiopia. Paper prepared for the 10th annual conference of the Ethiopian Society of Animal Production (EASP), Addis Ababa, Ethiopia, 22–24 August 2002. Livestock Marketing Authority, Addis Ababa, Ethiopia.
- Little P. 1996. *Livestock trade and food security in the Kenya/Somalia borderlands*. Institute for Development Anthropology, Binghamton, New York, USA.
- Little P, Teka T, Azeze A and Gebremariam A. 1999. Cross-border livestock trade and food security in southern and southeastern borderlands of Ethiopia. OSSREA (Organization for Social Science Research in Eastern and Southern Africa) Development Research Report 1. Addis Ababa, Ethiopia. <http://ossrea.net/development/odrr>.
- Metema Yohannes Quarantine Service Station. 2006. Cattle export in 2005–2006. Metema Yohannes, Ethiopia.
- Negaret Gazetta. 2003. Proclamation No. 318/2003.
- Nin Pratt A, Bonnet P, Jabbar M, Ehui S and de Haan C. 2005. *Benefits and costs of compliance of sanitary regulations in livestock markets: The case of Rift Valley fever in the Somali Region of Ethiopia*. ILRI (International Livestock Research Institute), Nairobi, Kenya. 70 pp.
- North Gondar Regional Finance and Plan Bureau. 2004. Rural households socio-economic baseline survey of 15 *woredas* in Amhara Region. Report of Regional Finance and Plan Bureau, Bahir Dar, Ethiopia.
- North Gondar Agricultural and Rural Development Department. 2006. Livestock population of North Gondar. Gondar, Ethiopia.
- North Gondar Agricultural and Rural Development. 2006. North Gondar Agricultural and Rural Development annual report, Gondar, Ethiopia.
- SCF-UK (Save the Children Fund-UK). 1998. Household food economy analysis baseline report: Pastoralist food economy area, Harshin district, SE Jijiga zone, Region 5. With an analysis of the possible effects of the livestock export problems.
- Solomon A, Workalemahu A, Jabbar M, Ahmed M and Hurissa B. 2003. *Livestock marketing in Ethiopia: A review of structure, performance and development initiatives*. Socio-economics and

Policy Research Working Paper 52. ILRI (International Livestock Research Institute), Nairobi, Kenya. 35 pp.

Tegegne Teka, Alemayehu Azeze and Ayele Gebremariam. 1999. Cross-border livestock trade and food security in the southern and southeastern Ethiopia borderlands. OSSREA Development Research Report Series 1. OSSREA, Addis Ababa, Ethiopia.

Yacob A. 2002. *An audit of the livestock marketing status in Kenya, Ethiopia and Sudan*. Volume I. Community-based Animal Health and Participatory Epidemiology Unit, Pan African Programme for the Control of Epizootics. Organization of African Union/Interafrican Bureau for Animal Resources, Nairobi, Kenya.

Annex Legal cattle export data (December 2004–September 2006)

Month	Year	Cattle export
December	2004	149
March	2005	325
April	2005	727
May	2005	242
June	2005	230
July	2005	654
August	2005	700
September	2005	70
October	2005	114
November	2005	824
December	2005	587
January	2006	801
February	2006	1375
March	2006	2179
April	2006	2000
May	2006	2653
June	2006	2398
July	2006	1103
August	2006	2453
September	2006	4064

Source: Quarantine Service Station, Metema Yohannes, 2006.

Improving Productivity and Market Success (IPMS) of Ethiopian farmers project Working Papers

1. Berhanu Gebremedhin, Hoekstra D and Azage Tegegne. 2006. *Commercialization of Ethiopian agriculture: Extension service from input supplier to knowledge broker and facilitator.*
2. Gordon A, Sewmehon Demissie Tegegne and Melaku Tadesse. 2007. *Marketing systems for fish from Lake Tana, Ethiopia: Opportunities for improved marketing and livelihoods.*
3. Shiferaw B, Jones R, Silim S, Tekelewold H and Gwata E. 2007. *Analysis of production costs, market opportunities and competitiveness of Desi and Kabuli chickpeas in Ethiopia.*

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