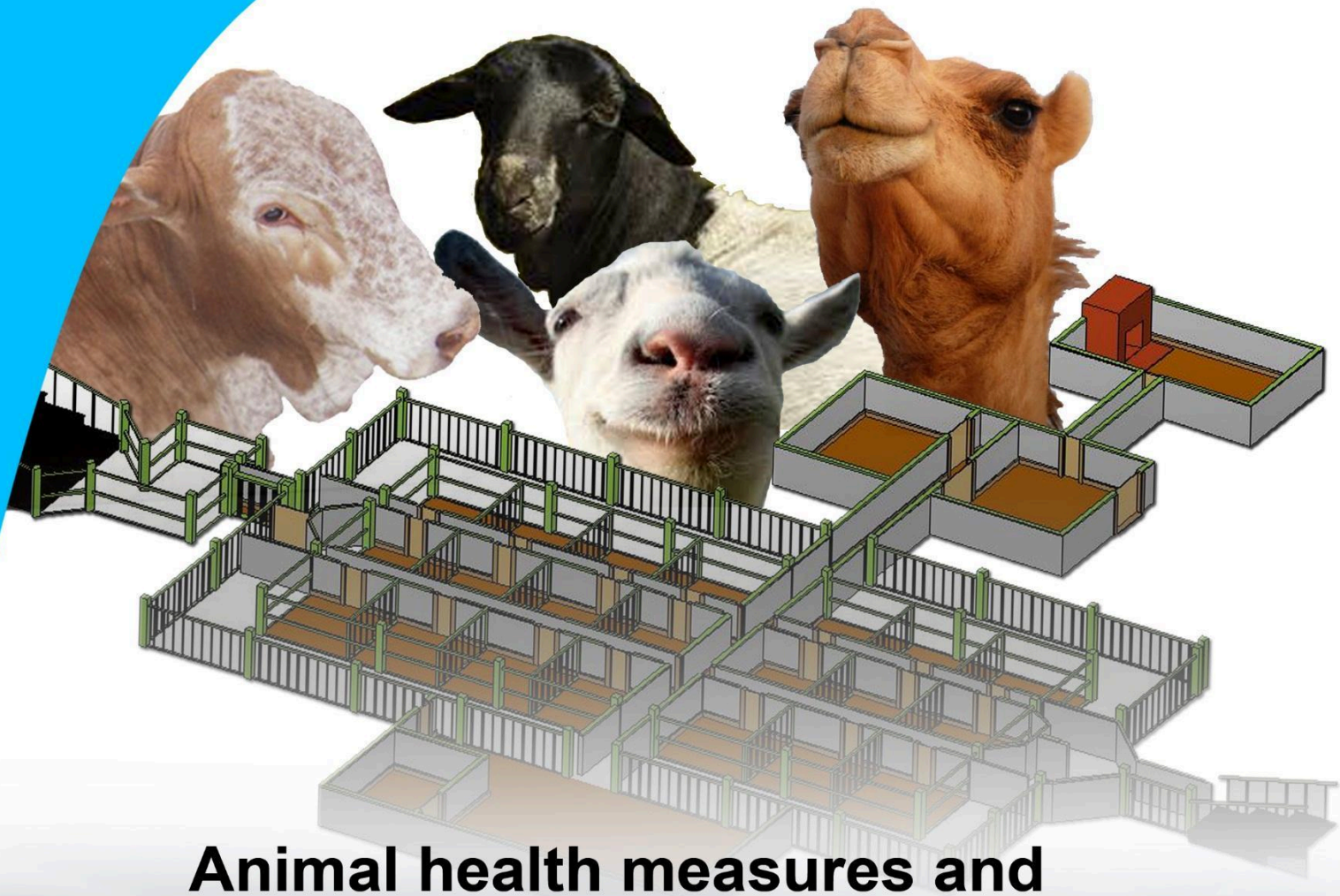
Ministry of Agriculture
Livestock Sectore Development State Ministry
Veterinary Services Directorate



Animal health measures and procedures along the live animal export value chain in Ethiopia

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1. Introduction

The presence of livestock diseases is the main impediment for the export of livestock and products from Ethiopia. In 1983, cattle exports from and through Somalia to Saudi Arabia were banned as a result of Rinderpest and it had indirectly affected Ethiopian cattle export. Following the epidemic of Rift Valley fever in the Horn of Africa in 1997/98, the disease had left dozens of people dead and hundreds infected in southern Saudi Arabia and Yemen in September and October 2000. As a consequence, Saudi Arabia, Bahrain, Oman, Qatar, Yemen and the United Arab Emirates had banned livestock imports from nine African countries including Ethiopia. In 2006, FMD outbreak detected in a shipment of Ethiopian cattle to Egypt became the major cause of live cattle import ban to the Egyptian markets. In January 2007, the United Arab Emirates (UAE) has imposed a ban on live animals from Ethiopia, Somalia and Kenya as a result of the widespread outbreaks of the disease in Kenya.

In the near future, it is more likely that the Middle East and North African (MENA) countries' SPS standards might rise to the level of international standards. The livestock and meat export competitors for these markets including Australia, New Zealand, South American and EU countries are already meeting the international SPS standards. As a result, if Ethiopia intends to expand its market share in the existing destinations and/or expand to new export prime markets, it needs to meet SPS standards of these countries. This may raise the cost of compliance for SPS requirements. However, the price of lack of compliance could be much higher than the cost of compliance as a result of loss of foreign exchange earnings, income, employment and the opportunity for development.

As a result, there is a growing interest on the part of the Government of Ethiopia to provide an animal health assurance system to our trading partners. The assurance system to be provided need to attest that live animals and meat exported are not carriers of communicable diseases which can affect the economy or public health in the importing countries. To facilitate the existing livestock and livestock products trade of Ethiopia and prevent future bans, the country needs to establish a reliable and effective inspection, quarantine and certification procedures in order to provide importing countries the required guarantee over the health and safety status of export commodities.

To this end, although there is significant variation in the animal health requirements of importing countries, Ethiopia needs to have working procedures that meets international standards. The Veterinary Services Directorate (VSD) under Ministry of Agriculture, Livestock Sector Development State Ministry is strengthening its SPS certification system so that it assures veterinary authorities in importing countries that the risk of introducing diseases of specific concern is negligible. The totality of the risk reduction measures applied within the system would reduce the risk of exporting TADs to a low or negligible levels.

The SPS certification system involves quarantine, inspection, testing, vaccination and certification of animals, as appropriate, at different times and in different places along the livestock value chain, as they move from their sources to their port of embarkation. In addition, animals will be individually identified under the Livestock Identification and Traceability System (LITS) to enable trace back and forth and ensuring integrity of the whole system. The system involves pre-purchase inspection, pre-quarantine and proper quarantine systems. Pre-quarantine facilities are those where observation, vaccination, treatment and testing (as required) are needed for a range of diseases to reduce the likelihood of transmission of diseases to the proper quarantine facilities. Proper quarantine stations are those used for continued surveillance, testing (as required) and addressing residual risks posed by one or more diseases after animals are released from pre-quarantine facilities and ultimately certified for export.

The main objective of this manual is, therefore, to lay out technical, operational, procedural and basic infrastructural requirements that need to be implemented to facilitate live animal export trade.

2. Objective and Scope

The main objective of this animal health procedure is to assist inspectors to effectively perform their duties and responsibilities, promote uniform application of animal quarantine procedures for cattle, sheep, goats and camels along the livestock value chain. Details of application procedures can be referred to the country's quarantine regulation and available guidelines and SOPs and animal handling practices.

The document contains specific risk mitigation measures that will be applied along the live animal export value chain to reduce the risk of diseases to an acceptable level. The document is based on the principle that cattle, sheep, goat and camels from Ethiopia can be inspected, purchased, identified, vaccinated and tested (as required), quarantined and certified along the livestock value chain so that it is possible to certify individual animals as free from trade sensitive livestock diseases.

As risk will change with various factors such as evolution and spread of epidemic livestock diseases, changes in the international trading patterns and availability of new scientific knowledge and technology, the proposed system will not be regarded as a one-off activity but it will be updated and communicated with trading partners and relevant stake holders regularly.

For the system to work, sensitization of stakeholders on the importance of SPS certification system shall be regularly undertaken as important component of an overall disease control, animal welfare and livestock trade promotion strategy. In addition, effective communication on animal health and trade issues shall be maintained among livestock markets, collection points, feedlots, holding grounds/pre-quarantines, proper quarantines and post quarantines.

3. Diseases of Quarantine Concern in Ethiopia

The following are the most important trans-boundary animal diseases (TADs) which have the greatest impact on livestock and livestock products export trade in the country.

Foot and mouth disease (FMD): In Ethiopia, FMD is an endemic disease which occurs in different parts of the country. Although systematic FMD survey evidences are lacking, outbreak data suggests that incidences are low in small holder cattle production settings. Virus characterization works so far conducted at NVI, NAHDIC and other international institutions abroad (UK and RSA) revealed that the strains involve are A, O, SAT1 and SAT 2 with A and O being the most dominant ones. FMD occurrence in other species including shoats and wild life has not been studied. Preventive and control vaccination practices are limited to commercial dairy farms and feedlots. The country has developed FMD management strategy going to be applied in the near future. The annual production capacity of the National Veterinary Institute (NVI) is about 100 thousand doses but there is a plan to increase this volume in the future.

Rinderpest: Systematic rinderpest control and eradication activities implemented by National Pan-African Rinderpest Campaign (PARC) and Pan-African Control of Epizootics (PACE) projects have succeeded to eradicate the disease from the country's territories. In accordance with the provision of Article 2.2.12.3 of the OIE Terrestrial Animal Health Code, the International Committee of the OIE's Scientific Commission for Animal Diseases has now recognized and approved Ethiopia as "Free from Rinderpest Disease on a Countrywide Basis" since 25 May 2007.

Contagious bovine pleuropneumonia (CBPP): CBPP is a mycoplasma caused disease of cattle with established endemicity in lowlands of southern, western and north-western parts of the country. Since the cessation of vaccination against rinderpest using the bivalent RP/CBPP live attenuated vaccines during the JP 15 and PARC programs, the country is now implementing systematic prophylactic immunization. Most of the country's highland areas practicing sedentary crop/livestock farming and lowland areas where we source animals for export are free from CBPP.

Peste des petits ruminants (PPR): PPR is a wide spread disease caused by morbilli virus affecting small ruminant. According to a country-wide random serological survey conducted in 1999, prevalence ranges from 0-30%. The highest prevalence of 20-30% is in lowland areas of Afar, Somali, and Tigrai regions of the country. Based on these prevalence maps, a strategic preventive annual vaccination programs were carried out in the high prevalence areas and the disease is put under control to large extent. National control strategy for the control of PPR with SGPox is developed and based on this the control program in the pastoral areas is going to be implemented soon.

Lumpy Skin Disease (LSD): is a disease of cattle caused by a neethling virus under poxviradae family. Major epidemic of LSD occur every five to seven year interval. LSD outbreak control by vaccination is practiced using a live attenuated Capri pox vaccine produced by the National Veterinary Institute.

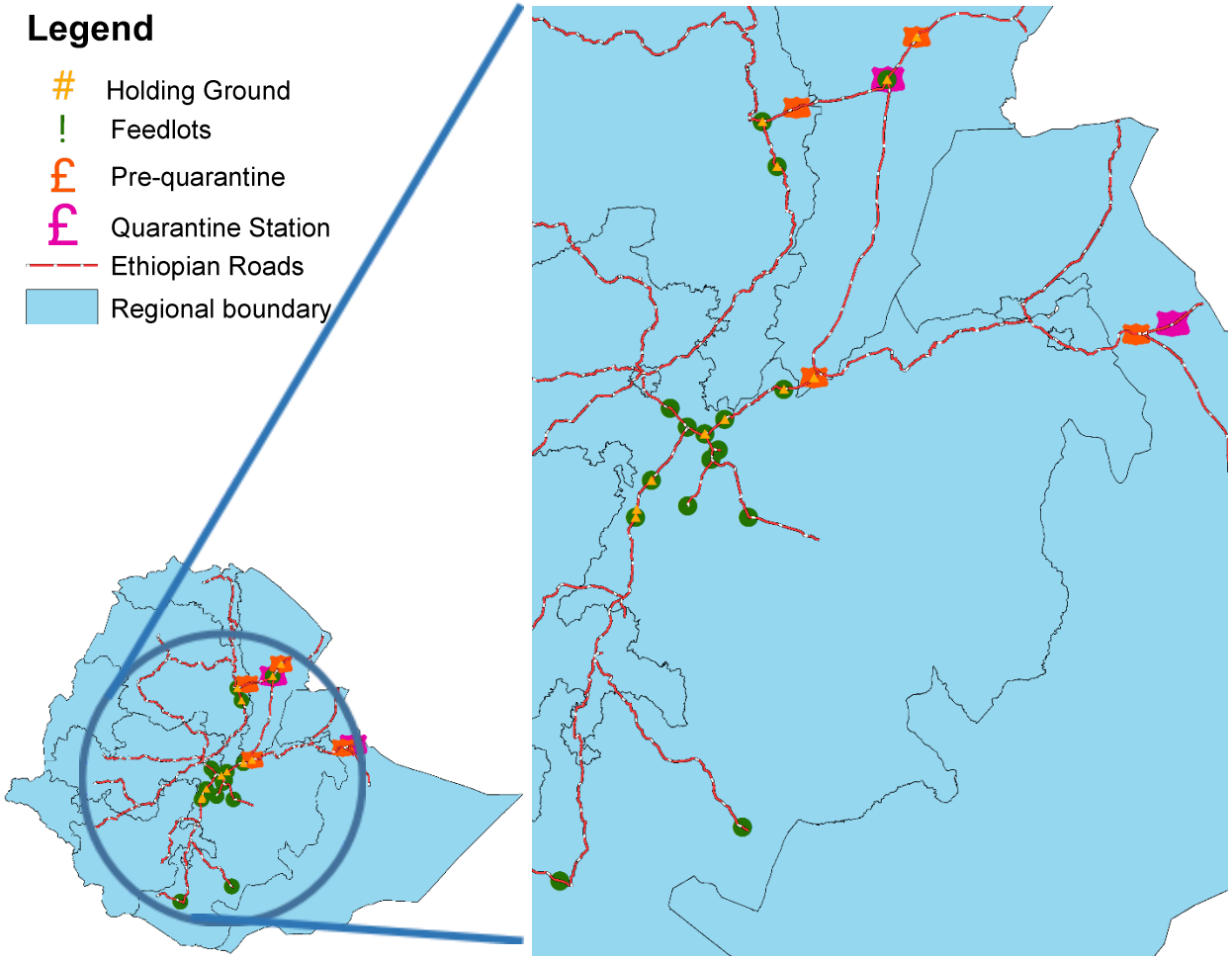
Rift Valley fever: The Ethiopian veterinary services has not reported occurrence of rift valley fever (RVF) epidemics. Systematic random serological survey conducted in the country in 1999-2000 (12 000 sera) revealed no evidence of the disease. Following the RVF outbreak in Northern Kenya, the UAE imposed ban on live animal and meat export from Ethiopia. Consequently, targeted RVF surveillance has also been conducted in a number of seasonally flooded districts of Somali, Oromia and SNNP Regions of Ethiopia bordering Kenya and Somalia. Occurrence of RVF epidemic (abortions) have been ruled out through field investigations and by testing of 2000 sera from different livestock species using IgG and IgM ELISAs. Most of the highland agro-ecologies (above 1500 masl) are not favorable for the infestation of biological vectors of the RVF virus.

Contagious Caprine Pleuro-pneumonia (CCPP): Mycoplasma Caprine-pneumoniae caused acute disease of goats is confined to some goat rearing areas of the country namely Omo valley and Borana. Important goat rearing ecologies like afar and the majority of districts in Somali have not reported CCPP. Other agents including *Manhemia haemolytica* and peste des petits ruminant viruses are involved in causing concurrent infections in CCPP infected animals.

Brucellosis in ruminants: Sero-epidemiological surveillance of brucellosis in selected pastoral areas (Afar, Borana, Omo) in 2005-2006 revealed a prevalence rate of 2.6% (shoats), 1.8 % (camel). In mixed crop/livestock production system in the highland areas, prevalence of bovine brucellosis in cattle is rated 1.4% (Gonder), 0.6% (Tigray), 2.4% (Sidama), and 1.5% in the intensive urban dairy. The overall brucella antibody prevalence in the highland sheep and goats is 1.5% and 1.3% respectively.

Other diseases: Vaccinations are carried out regularly for other diseases including anthrax, blackleg, haemorrhagic septicaemia, and small ruminant pasteurellosis. Trypansomiasis in cattle impacts cattle production in the lowland tsetse fly infested areas of the country. External and internal parasite control practices are exercised in large scale.

4. Animal Health Procedures along the Live Animal Export Value Chain



4.1. Livestock Markets

Primary livestock markets will be clearly identified and market shades feeding primary markets will be delineated. According to the new livestock market proclamation of the Ministry of Trade, primary markets are defined as markets where the first officially recognized transaction happens between producers and traders or feedlot operators or exporters.

In livestock markets, incoming and outgoing animals are not admitted based on their origin and health status. As a result, livestock markets play an important role in the dissemination of infectious organisms by serving as contact nodes between infected and uninfected animals. The movement of trade animals to and from these markets is risky and as a result, minimizing such risks along these points in the chain is of high priority for the country's Veterinary Services.

The following are the main interventions to be carried out in primary livestock markets.

Before purchasing animals from primary markets, the wereda animal health personnel shall periodically collect information about the livestock disease situation of the areas where animals are sourced using the National Animal Disease Surveillance System (NADSS). This information will be the basis for the decision to whether or not buy animals from a specific source and subsequent inspection of animals. Animals coming to the market should be inspected for their health status and only apparently healthy animals will be issued a pass and allowed to enter the market. The wereda animal health personnel shall clinically inspect individual animals before they are purchased. Accordingly, each animal is inspected for physical fitness, body temperature, body and hair coat condition, its alertness, signs of salivation and eye discharge, mouth lesion, lameness and any other abnormalities (as per the pre-purchase inspection guideline) and only those apparently healthy animals will be purchased.

From this point onward, Ethiopia's SPS certification system for cattle will be backed up by an Identification and Traceability System (LITs) that enables immediate tracing and rectifying of anomalies should they occur anywhere in the livestock value chain. LITs will start from primary livestock markets and each cattle will be identified by twin plastic tamperproof tag (yellow in color with black writing and pre-printed with the country code clearly visible) to identify and trace animals back to the primary market and to their sources. The tags will be applied by a veterinary officer at the wereda where the primary market is located. The tags will have the caption "illegal to remove" clearly written on them.

In addition, the Woreda veterinary officer will complete an official form with a ministry letterhead with details of the owner's name, address, cell phone number, kebele ID, purchase, identification number of the tag, health status of the animal and the general status of diseases in the area where cattle are sourced, at the primary market or thereafter at collection points. The whole batch of animal details will be entered onto paper form. 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 ground/pre-quarantine facility.

Within 48 hours, the feedlot owner/exporter should enter this information onto the national database. Failure to do so would result in a fine. Compliance will be ensured by the animal health inspectors assigned to oversee the live animal export trade.

4.2. Collection Points

Collection points are areas where animals from markets assemble for a short period of time. Depending on the availability of animals, transport facilities and until the required numbers are purchased, cattle, sheep, goats and camels are kept temporarily in such points for 1-3 days before they are moved to feedlots or holding grounds/pre-quarantine facilities. For this purpose, each exporter is required to have a temporary collection area with secure fencing and a loading rump for animals to be trucked directly to the next

level. The collection points will be owned privately (e.g. companies themselves, individuals, cooperatives, unions, etc). These facilities are required to be fenced with wooden-concrete poles and tensile barbed wires to avoid contact with other animals in the area. The height of the fence should be at least 1-2 meters depending on the species of animals. During this time, animals shall be vaccinated at least against shipping fever. As feed and water can be source of diseases, animals are required to be provided with good quality straw or hay sourced from known areas and water from boreholes. Animals are followed up until they are transported from collection areas to feedlots or holding grounds/pre-quarantine facilities.

Animals around the collection areas, markets and market shades deserve special attention in terms of strategic disease prevention and control and hence, they shall receive regular protection against major diseases of trade importance.

4.3. Feedlots

Feedlots are profit centers operated by private entrepreneurs and are used as pre-quarantine facilities. Feedlots are located in strategic locations that allow good access to feed resources, meat processing abattoirs or along the way to port of embarkation. Export feedlots are based on zero grazing system where animals are fattened using formulated total mixed ration (TMR). TMR aids in eliminating an animal‘s selectivity for individual feeds. All forages, protein and energy supplements as well as minerals and vitamins are thoroughly mixed and milled. If the roughages and concentrates are fed separately, some animals may select the roughages only or consume only very little of the concentrate. Such animals cannot attain the desired level of body weight gain. On the other hand, some animals may selectively consume only the grain or concentrate and avoid the roughage. Such animals could suffer from stomach upset such as acidosis due to over consumption of grain and grain by-products and lack of structural carbohydrates in the diet. When total mixed ration is used, animals have very little chance of selecting and feeding on specific feed ingredients which will help them to perform better in terms of weight gain and health.

Although feedlots are owned and managed by the private sector, their day to day operations are under Federal veterinary regulation, supervision and audit. Animals remain in feedlots as long as it takes to reach export quality and until the operators get market in destination countries. Under current practice, livestock are kept in feedlots for longer duration of time than the standard quarantine period required by importing countries and as a result, there is an ample time span for verifying their health status.

4.3.1. Minimum requirements

It is mandatory for feedlots to have a manager, veterinarian, veterinary technicians, attendants, and other personnel as needed. Federal quarantine and inspection officers keep records and follow health status of animals inside the facilities (identification, vaccination, testing, treatment, etc) on a daily basis. Handlers and operators in livestock export establishments shall be healthy and shall have checkups every six months.

The sites for feedlots facilities shall be located in areas that ensure isolation and secure fencing. In general, feedlots shall have the following minimum requirements.

- a receiving area outside of the facilities where animals are inspected prior to entry into the facilities;
- sufficient feeding and watering facilities;
- loading and offloading facilities;
- footbaths for admitted animals and tyre baths for entering vehicles;
- a crush;
- isolation pens;
- an office;
- sample collection and vaccination equipment;
- cold chain equipment;
- toilets;
- power supply;
- laboratory;
- security arrangements;
- and safe carcass and waste disposal area;

4.3.2. Planning to receive animals

Before cattle arrive at feedlots, a receiving plan is put in place to ensure cattle are adequately handled with minimal stress. In addition, detailed plan on the requirements in terms of feed, water, infrastructure, maintenance, facilities, equipment, consumables, inputs, human resource, etc are routinely worked out.

4.3.3. Receiving

When receiving animals, the following animal health measures are routinely taken at feedlots by Federal quarantine and inspection and private animal health officers.

Unloading is carried out with minimum stress using proper unloading facilities. Animals entering the feedlots facilities are inspected for their health status and cross-checked against animal movement, health documentation and identification tags for traceability purposes. When receiving cattle from collection points, the quarantine inspectors check the accompanying certificate and ID numbers and physical condition of individual animals.

Details of the pre-printed double tamperproof tag applied on each animal at the primary market will be captured onto a national database at the feedlot as they can load data electronically into a web-based LITS database under development and to be owned and managed by the Ministry of Agriculture. The database will keep record of the identification details of all actors in the value chain including the producers/pastoralists, buyers, markets, holding grounds, feedlots, quarantine stations, etc.

4.3.4. Processing

Before admission of a cohort of animals in to the facility, the inspectors ensure that a particular paddock has been cleaned and kept empty (without animals) for at least one week in order to allow desiccation of pathogens under the heat of the sun. At feedlots, animals are vaccinated against CBPP, LSD, PPR, CCPP, Anthrax and Blackleg. Each animal will be de-wormed and sprayed for internal and external parasites. Whenever there is RVF epidemic in the source area, there will be voluntary cessation of export or depending on the requirements of importing countries, each export animal will be vaccinated against RVF using killed viral vaccine. Animals coming from the same source are put together in one pen (as cohorts) and they stay together throughout the feeding period.

4.3.5. Feeding and watering

As soon as they arrive at feedlot facilities, cattle are provided with adequate water and good quality hay or straw. On day one and two, animals are allowed to get access to adequate amount of hay or straw at the rate of 1.5% and 1.0% of body weight, respectively. On day three, they shall be fed hay or straw and total mixed ration at the rate of 0.5% of body weight. As of day four, they are fed total mixed ration and this continues until the animals are moved out of the feedlot and moved and admitted to a proper quarantine facility.

4.3.6. Hygiene and sanitation

In all feedlots, regular cleaning, disinfection and safe disposal of waste materials is undertaken and appropriate records maintained. Provided trucks are properly disinfected between loads, ordinary trucks are used to transport animals throughout the proposed export certification system.

After animals are released from the pens previously occupied, pens and any associated equipment, water troughs and feeders are cleaned and disinfected. At completion of the feedlot cycle, the facilities that have been used, including feed stores and store rooms are cleaned and disinfected.

4.3.7. Rodents, insect vector and pest control

Rodents, insect vector and pest control programs are put in place on feedlot facilities so as to minimize the chance of these animals and insects transferring infections to and between animals in the facilities, or to the environments outside the facilities.

4.3.8. Bio-security measures

Local animals in a buffer zone around the feedlot facilities are routinely vaccinated by local public animal health staff against FMD, LSD, CBPP, anthrax and blackleg (decided

based on risk pathway analysis i.e. by identifying major routes for disease introduction and spread into these facilities e.g. presence of disease outbreak, the cause and nature of disease outbreak, the livestock population size, availability of natural barriers in the area, locations of facilities, extent of movement of animals, presence or absence of wildlife in the vicinity, etc. The public veterinary service monitors the health status of animals in the buffer vaccination zone, creates awareness among communities to enhance reporting on TADs and report on newly introduced stocks.

4.3.9. Follow up and monitoring

Subject to official veterinary approval, animals for export enter into their pre-quarantine periods at the feedlots before they move to quarantine facility for final verification and export. Mixing of different consignments of animals and species is not allowed. Daily inspection of animals is undertaken by the private animal health and quarantine veterinary staff. A regular health monitoring is conducted on all animals inside the facility and private animal health officers keep records of each animal. The private animal health officer makes sure that the risk of introduction of disease to animals in the facility is minimal and that an appropriate bio-security is put in place such that

- prohibiting entry of people not working in the feedlot facility,
- ensuring that foot/shoe and tyre baths at the gates of the facility are replenished regularly with the right strength of disinfectants.
- avoiding entry of new animals to an existing cohort of animals (otherwise, the whole cohort and probably cohorts in adjacent pens will be rejected and removed from the facility. If there are new additions, pre-quarantine period will be invalidated and it will re-start as day 1 from the day of addition/contact).

Each feedlot facility is required to make sure that feeds or feed sacks are not source of disease transmission (by avoiding feed sack circulation between facilities).

Depending on the requirements, all feedlot animals are tested for Brucellosis using Rose Bengal plate test and positive animals are rejected from the export chain. In the case of clinical FMD outbreaks in particular pen(s), all animals in the pen(s) and probably in adjacent pen(s) are removed from the facility. The rest of animals in other pens are followed up and if required, these animals are also tested for FMD. In case of clinical FMD in all the pens of the facility, the entire herds of animals will be rejected and removed from the facility. In any situation, the whole facility is properly decontaminated. Similarly, proper decontamination and disposal procedures is also followed in the case of other trade related livestock disease other than FMD. As regards to testing of animals for TADs, decisions is made based on the requirements of the importing countries.

All in all out system is followed in all the feedlot facilities.

Cattle of same cohort will be certified and transported to the quarantine stations and all animals will be accompanied with animal health certificate. The certificate attests that; “animals are clinically normal, have been tested and/or vaccinated against specific

disease(s) and have never been in contact with animals from other paddocks or from outside the feedlot facility".
Good management practices, routine risk analysis and stricter bio-security systems is introduced into the export chain in order to make sure that animals are not contracting diseases (refer to the various guidelines and SOPs prepared by VSD, MoA).

Apart from this, hazard analysis is incorporated into the export certification system in order to create animal populations which have a different health status from the market and possibly source where they were purchased and also from the surrounding livestock populations.

4.3.10. Isolation and treating sick animals

Animals showing signs of sporadic diseases are transferred to sick/recovery pen and go through adequate veterinary care until complete recovery. There will be a regular clinical checkup of each animal until it leaves the pre-quarantine period at the feedlots. If case of infectious/contagious disease, quarantine officers in the area are informed to take necessary measures. The cause of any deaths is investigated and appropriate sampling and testing undertaken. Outbreaks of disease within the feedlot are dealt with under the Animal Diseases Prevention and Control proclamations No 267/2002.

4.3.11. Carcass of dead animals and waste disposal

Sites selected for feedlots have gentle slope to ease drainage development and waste disposal. Waste products are disposed of so that they do not cause any significant contamination of surface or underground water resources and offence to residents in the vicinity. Ideally, all waste products are incorporated into a crop production without any long term adverse effects on soil fertility or structure. The use of feedlot wastes to supplement the nutrient requirements of crops is an environmentally acceptable practice.

Burial of carcasses and other infectious products is considered the best method of disposal except in the case of anthrax when animals must be burnt to avoid long-term contamination of a site.

4.3.12. Record keeping and auditing

Identification and records of any animals sampled, treated, or vaccinated is accurately maintained and kept for a minimum of one year. Once the LITS system is operational, records will be maintained indefinitely. All the processes (vaccination, testing, treatment, disease history, disinfection of vehicles, culling, etc) are properly documented and audited by the Federal Quarantine inspectors. The private animal health officers in feedlots also collect information on health status of the animals in the buffer zone on a regular basis and verifies that buffer vaccination against diseases of concern is properly implemented.

4.3.13. Emergency preparedness plan

As regards to epidemic diseases such as Rift Valley fever, the Federal veterinary services directorate undertakes rigorous surveillance and risk evaluation for early warning and detection of RVF cases on potential risk areas which are suitable as mosquito habitats and prone to inundation as a result of heavy rainfall. In case of occurrence of suggestive epidemiological findings for RVF, purchase and exportation of animals from suspected areas will be voluntarily suspended (refer to RVF Contingency Plan for Ethiopia).

4.3.14. Moving animals to quarantine facilities

Cattle will be individually certified and transported to quarantine facilities for final verification and export. During this time, they will be accompanied by animal health certificate attesting that “animals are clinically healthy, have been tested and/or vaccinated against the specific diseases and have never been in contact with animals of different health status”. The private animal health inspector makes sure that animals are transported in cleaned and disinfected vehicles. Transport from feedlots will be absolutely safe because the financial consequences of introducing disease from these facilities to the quarantine stations will be enormous.

4.4. Pre-quarantine facilities

Pre-quarantine facilities are establishments where animals from temporary collection points assemble for first level quarantine interventions such as identification, sampling and testing, vaccinations, treatments, monitoring for presence of disease, inspection, and certification and finally they are moved to quarantine facilities. The purpose of these facilities is, therefore, not for feeding, conditioning, fattening and improving carcass quality as is the case in feedlots. As a result, pre-quarantine facilities will be built in locations closer to sources of cattle, in order to access animals from different collection points. The amount and type of feed required in these facilities is less expensive which includes good quality hay or straw.

Pre-quarantine facilities are mainly for sheep, goats, camels and sometimes also for cattle which are intended to be exported without further reconditioning. Unlike cattle, sheep and goats do not go through fattening facilities for reconditioning because of adaptation problems to change of feeding regime (hay/concentrate) and their vulnerability to climatic variations. Few private enterprises have established holding grounds/pre-quarantine facilities in some parts of the country. These facilities are owned and managed by private companies. However, veterinary interventions in these facilities are regulated and controlled by the official veterinary quarantine officers. In the future, the government will build a pre-quarantine facility in strategic locations along export stock routes (e.g. Bati, Awash and Jijiga areas) and owners are required to move their animals to these facilities directly from collection points.

4.4.1. Minimum requirements

Holding grounds/pre-quarantine facilities must be fenced and are required to have the following minimum standards: feeding and watering facilities, a crush for animal health purposes, an isolation pen for sick animals, offices for staff and record keeping and storage, loading and unloading facilities, toilets, and security arrangements. The facility must be isolated and securely fenced for purposes of sufficient biosecurity and to avoid close contact with other animals outside the facility. Human contact with animals in holding grounds/pre-quarantine facilities should be limited to facility personnel only. Regardless of ownership, all current holding grounds/pre-quarantine facilities shall be under regulatory control of official veterinary authorities.

4.4.2. Receiving and processing

Only healthy animals are allowed to enter into these facilities and animals which are non-compliant to visual inspection shall be isolated, treated, followed up or else rejected.

As soon as animals arrive at the facility, they are fed, watered, rested, identified and provided with veterinary treatments. In these facilities, animals are vaccinated against CBPP, LSD, PPR, CCPP, Anthrax and Blackleg. Each animal is de-wormed and sprayed for internal and external parasites. Whenever there is RVF epidemic in neighboring countries, there will be voluntary cessation of export or each export animal will be vaccinated against RVF using killed viral vaccine depending on the requirements of importing countries. Depending on the requirements, animals may be screened individually for brucellosis using Rose Bengal Plate Test and on a random basis, for other trade sensitive diseases.

Animals entering holding grounds/pre-quarantine facilities must be identified at the primary market under the LITS program and records maintained till the time when animals are exported. In addition to information about each animal, the LITS system will 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. Only animals with such tags are allowed to pass through the facility and proceed along the rest of the quarantine system.

4.4.3. Follow up and monitoring

In these facilities, animals are followed up at any time to ensure their health, welfare and safety status. Sensitization of stakeholders is undertaken regularly by veterinary authorities on the importance of holding grounds/pre-quarantine and proper quarantine facilities as a components of the overall quarantine and certification system.

4.4.4. Bio-security measures

These facilities shall be equipped with secure gates and foot and tyre baths. Local animals in a buffer zone around the feedlot facilities are routinely vaccinated by local public animal health staff against FMD, LSD, CBPP, anthrax and blackleg (decided based on risk pathway analysis i.e. by identifying major routes for disease introduction and spread into these facilities e.g. presence of disease outbreak, the cause and nature of disease outbreak, the livestock population size, availability of natural barriers in the area, locations of facilities, extent of movement of animals, presence or absence of wildlife in the vicinity, etc). The public veterinary service monitors the health status of animals in the buffer vaccination zone, creates awareness among communities to enhance reporting on TADs and report on newly introduced stocks.

4.4.5. Isolation and treating sick animals

Animals showing signs of sporadic diseases are transferred to isolation pen and are treated and followed up by the private animal health personnel. If cases of infectious/contagious disease are suspected or detected, quarantine officers in the area are informed to take necessary measures. The cause of any deaths is investigated and appropriate sampling and testing undertaken.

4.4.6. Dead animal carcass and waste disposal

In case of disease outbreaks, appropriate decontamination & disposal procedures are carried out. Burial of carcasses and other infectious products is considered the best method of disposal except in the case of anthrax when animals must be burnt to avoid long-term contamination of a site. Waste products are disposed of so that they do not cause any significant contamination of surface or underground water resources and do not cause offence to the vicinity.

4.4.7. Moving animals to quarantine facilities

Animals leaving the holding grounds/pre-quarantine facilities will be inspected for their health by competent veterinary personnel and issued with a movement permit to proceed to a proper quarantine facility. The time spent in the holding ground/pre-quarantine facilities may be, through an agreement, considered as a portion of the total quarantine period required before an animal is certified and exported. However, a maximum of 2 weeks is sufficient before an animal moves to the next quarantine facility as incubation period for most important livestock diseases does not exceed 10 days.

4.5. Livestock Quarantine Stations

A quarantine is a facility where animals are being held in isolation for a specified period of time for purposes of veterinary observation, sampling, testing, vaccinations and/or treatment, inspection and certification and export as per the requirements of importing

countries. As animals come through pre-quarantine facilities, the main task in the proper quarantine facilities is to make sure that animals coming from holding grounds/pre-quarantine facilities are indeed healthy and that the next quarantine period is a final confirmation of their health and status.

In collaboration with ILRI, Ethiopia had carried out risk assessment in the past over its SPS certification system. The assessment had concluded that the risks of TADs associated with live animal exports from Ethiopia is high but it can be reduced by applying rigorous quarantine and certification procedures. Veterinary authorities in MENA countries had also expressed their willingness to accept Ethiopian live animals provided that animals are certified as free from trade related diseases based on 21-30-day all-in-all-out quarantine system. For this reason, the GoE has built large quarantine facility at Mille in Afar regional state. On the other hand, the volume of animals traded and exported via informal trading routes, particularly Somali region, significantly exceeds the volume of animals exported through official channels. As a result, similar quarantine facility is also under construction at Kebri Ahmed in Somali region which is aimed at minimizing the risk of introducing pathogens into the territory of the importing countries through informal ways. Informal trades are often the causes of trade bans in countries of the Horn of Africa including Ethiopia. Both quarantine facilities are strategically located taking into account proximity to seaports, availability of feed and water and distance from the main highways.

4.5.1. Minimum requirements

The quarantine facilities in Ethiopia are located, isolated and securely fenced for purposes of sufficient biosecurity to avoid close contact with humans and other animals outside the facilities. Both quarantine facilities are under the ownership and regulatory control of the Ethiopian Veterinary Services Directorate.

In general, the quarantine stations have reception facilities, including crushes and collection pens for inspecting animals which enter into the facilities. Animals arriving at these facilities are checked for an ID (as per the LITS program) and accompanying pre-quarantine health and movement certificates. Animals are required to go through pre-quarantine before they are admitted to the quarantine facilities. An animal which hasn’t passed through pre-quarantine and proper quarantine facilities is not eligible to get an international sanitary certificate and be exported. The quarantine stations are equipped with a controlled gate through which all traffic entering the station is controlled. The gates are constantly controlled by the quarantine station guards under the overall guidance of the station management by ensuring that the procedures outlined in this operations manual are respected. Staff and other authorized personnel need an ID/gate pass before they are allowed to enter the facility.

The quarantine facility is required to provide provision for individual or group of pens to clearly separate animals of different health status as newly arriving animals should be separately penned from those animals which are under quarantine observation. Internally, facilities should also allow different species to be kept well apart (preferably

by at least 200 meters), and all drainage and effluent should be isolated from coming into contact with any animals. The arrival offloading ramp should be separated from the departure loading ramp.

The quarantine facilities have the following minimum provisions.

- Main gate with foot and tyre bath (vehicle disinfection facility),
- loading and unloading ramps,
- working facilities (crushes, spray races, scale)
- livestock pen and shade areas,
- feeding and watering troughs,
- ground water and underground reservoirs
- feed stores and feed processing facilities,
- isolation pens,
- laboratory facilities,
- refrigeration equipment and facilities;
- vaccination and treatment equipment;
- veterinary supply store
- emergency slaughter, post mortem and incineration facilities,
- access roads and lighting,
- electric power line and standby generator,
- inner and outer fences,
- staff houses and washing rooms
- administration blocks.

4.5.2. Planning to receive animals

Before cattle arrive at the quarantine station, a receiving plan will be put in place to ensure that animals are adequately handled with minimal stress. Feed, water and supplies need to be ready before the animals arrive. The station manager will make sure that everyone who will be working with the animals is trained in proper handling, feeding and care of newly arriving animals and is motivated to carry out her/his responsibilities. A coordinated plan involving the station manager, veterinarians, technicians, nutritionist, feeders, animal handlers, the owners of the consignments of animals, etc will be prepared to prevent one of the most important factors associated with too many cattle to care for at once and related losses in the facilities.

4.5.3. Receiving

For ease of this procedure, a check list should be prepared to recognize the status of each and every animal arriving at the gate of the facility.

When receiving animals to the quarantine station, the quarantine inspector will check the ID number of each animal and information in the certificate which accompanies the animals including things as details in the pre-quarantine movement certificate, any recent contact with other animals or problems encountered during transport, including

demeanor of each animal (whether or not it is bright, alert, dull, depressed, responsive, timid, aggressive including lameness, swelling, etc), date and time of shipment, comments regarding vaccines, medications and disease situation in their routes, etc. The accompanying animal health certificate provides a useful checklist and is to be used to record initial observations for each animal prior the veterinary inspection is conducted. In addition, all the papers and documentations that accompany each consignment of animals will be checked by preparing a checklist.

4.5.4. Processing

Upon arrival, the quarantine veterinary officer inspects the animals at the quarantine gate and a proper assessment of the physical and clinical condition of each animal is noted. Anything untoward will be recorded and the station manager informed. Mixing of different consignments of animals and species is not allowed. Animals entering quarantine facilities are required to come with ear tags (based on the LITS program) that identifies them as of a group of animals (cohorts) received and processed in and dispatched from a pre-quarantine facility all at the same time. Each inspected and admitted animal gets a lot number and pen assignment based on its species and source as feedlot (cattle) or pre-quarantine facility/holding ground (sheep, goat, camels and cattle). In any case, animals coming from feedlots should be well separated from animals coming from holding-grounds/pre-quarantine facilities (during receiving, processing, penning, feeding and watering, etc) as the cost involved in animals coming from feedlots is very high. Stocking density per pen will be maintained for the species and age group in question as per VSD SOPs and guidelines.

Animals which have lost their ID will be ear tagged again as per the LITS program.

4.5.5. Feeding and watering

Cattle coming from feedlots will be provided with water and placed on a high energy feed. Animals (sheep, goat, camels and cattle) coming from a pre-quarantine facility will be offered with water and good quality hay or straw at the rate of 1.5% of body weight. However, the quarantine inspector together with the intuitionist will establish a working set of records and adjust the health and feeding programs based on the performances of animals.

4.5.6. Hygiene and sanitation

Regular cleaning, disinfection and safe disposal of waste materials will be undertaken to meet OIE standards, and records maintained. Any equipment that has been in direct contact with animals will be thoroughly cleaned and disinfected after use and before being removed from the quarantine premises. Staff are required to wash their hands thoroughly after handling animals, or equipment, and before and after preparation of animal feed. Visiting veterinarians (that may be assigned by the owner of the animals) pose a risk of introducing disease as well as carrying disease agents out of a quarantine station. Strict controls over such personnel are essential and procedures such as

routine changes of protective clothing and use of dedicated equipment are of paramount importance. Cross contamination of water, manure, feed, or equipment between groups of animals will be prevented. The quarantine pens will be regularly cleaned thoroughly on completion of the quarantine period of a cohort of animals. Treatment equipment's and surgical kits used will be cleaned between each use so as to prevent cross contamination between healthy and sick/dead animals. Different equipment will be used to feed and to clean pens, or they will be completely cleaned between uses. Contaminated vehicles and equipment will be cleaned and disinfected before use around healthy animals.

4.5.7. Rodents, insect vector and pest control

Vector and pest control programs will be carried out in the quarantine stations regularly so as to minimize the chance of vectors and pests transferring infections to and between animals in the station, or to the environments outside the station.

4.5.8. Bio-security measures

The quarantine stations will be equipped with a foot and tyre bathes at the gate through which all traffic entering the station are disinfected. Chemical disinfectants (for tyre and foot baths) and cleansers will be used strictly in accordance with the manufacturer's instructions. Opening of the gate will be controlled by the guards of the quarantine station. Staff and other authorized personnel shall have an ID or gate passes to enter into the facility. All visitors entering the internal quarantine area must sign a visitors book giving date, name, address and purpose of the visit. Visitors entering the internal quarantine area should be accompanied/ supervised by a quarantine officer. As a general rule visitors should not remain on the station when there is no quarantine officer on the station. If possible, vehicle entry to the internal quarantine area will be minimized, and when in this area, vehicles will stay on the roadways.

The feed chain (transport, storage, and feeding) will be managed properly in such a way as to protect feed from contamination (biological, chemical, and physical hazards) and minimize spoilage with molds. Feed will be acquired from suppliers who follow recognized good manufacturing practices (in consultation with the Veterinary Drugs and Feed Administration and Control Authority). Only ground water within the quarantine facility will be used for watering livestock. As a rule, Ethiopia does not feed ruminant protein to ruminants. Veterinary medicines and biological products will be used strictly in accordance with the manufacturer's instructions or veterinary prescription.

As a further deterrent to unauthorized personnel entry, "No Entry Quarantine Area" signs will be posted at regular intervals around the quarantine facilities. Security lights will be maintained for night use in the internal quarantine area. A control program will be regularly carried out in the surrounding animals which could spread disease to animals inside the quarantine facilities (domestic and wild animals, etc).

Local animals in a buffer zone around the feedlot facilities are routinely vaccinated by local public animal health staff against FMD, LSD, CBPP, anthrax and blackleg (decided based on risk pathway analysis i.e. by identifying major routes for disease introduction and spread into these facilities e.g. presence of disease outbreak, the cause and nature of disease outbreak, the livestock population size, availability of natural barriers in the area, locations of facilities, extent of movement of animals, presence or absence of wildlife in the vicinity, etc. The public veterinary service monitors the health status of animals in the buffer vaccination zone, creates awareness among communities to enhance reporting on TADs and report on newly introduced stocks.

4.5.9. Follow up and monitoring

Adequate regulatory veterinary staff will be made available at all times. Daily inspection of animals will be undertaken by the quarantine veterinary staff. The quarantine station management will avail trained staff at any time for the supervision and oversight of animals related with all aspects of animal health and husbandry requirements. Any health problems in quarantined animals will be immediately reported to the station manager or the supervising veterinarian. In the event of abnormal behavior, illness or injury in an animal, quarantine staff will notify the quarantine manager or supervising veterinarian and/or the owner's nominated veterinarian (as applicable). In such cases, the animal will be closely monitored and followed up but no treatment will be administered except under instruction of the quarantine manager. Animals exhibiting symptoms of illness or injury will be closely inspected by the quarantine veterinarian as soon as possible, to investigate the possibility of exotic disease(s). The quarantine station manager is required to notify the owner or agent of the illness, injury or death of any animal as soon as possible. In the case of death, the owner must be advised in writing of the cause of death as soon as the investigation is completed.

If a disease of quarantine concern is suspected in the station, the quarantine officer will take the following measures.

- contacts the CVO immediately
- records the number and species of animals affected
- ascertains the identity of animals affected (based on their IDs)
- provides a brief description of the clinical signs
- disallows any livestock or livestock product to leave the station until the situation is clarified (staff shall not leave the premises unless it is essential; (if staff must leave the premises, they must disinfect themselves, their equipment and vehicle; leave any potentially contaminated materials on the premises or transport them in sealed plastic bags)
- keeps suspect infected animals separate from non-affected animals
- properly handles any potentially contaminated materials on the premises or transport them in sealed plastic bags (when samples are sent to the lab)
- the veterinarian should undertake an immediate clinical examination of the suspect animals.

- maintain a detailed movements log until such time as the disease incident has been controlled.

Quarantine inspectors are required to ensure that there is no direct/indirect contact between sick and healthy animals at any time throughout the quarantine period. Where any direct/indirect contact occurs (outside of normal operational practices), this must be reported and recorded in a specific register for reference in case of a disease outbreak.

In preparation for embarkation to their destination markets, animals will be kept in strict isolation from any animal lower in health status than the animal(s) to be exported (e.g. sick, isolated animals). As a minimum, animals are subject to a veterinary examination immediately before release. Tests and treatments can be conducted as prescribed in import protocols of the importing country. Before export, each animal will undergo a total quarantine period of at least 21-30 days.

4.5.10. Isolation and treating sick animals

Since the quarantine facilities will handle quite a number of animals of various species, origin and quarantine stages, it will be very difficult for quarantine inspectors to follow each and every animal at frequent intervals. Therefore, the facilities shall have trained laborers who walk around individual pens to constantly observe animals that appear lethargic or demonstrate some other indication of sickness or poor health or that which go off feed and water. Such laborers can significantly enhance the effectiveness and efficiencies of quarantine inspectors to immediately remove these animals from the pens and have their health checked and also identify animal(s) in the early stages of sickness before a disease is spread to other animals.

Sick animals will be separated from healthy animals, followed, treated and where necessary culled so that transmission of infection does not occur to the rest of the animals in the facility. If case of infectious/contagious disease(s) outbreak or death of animals, the quarantine manager, CVO, the owner/agent will be notified before taking necessary measures. The cause of any deaths will be investigated and appropriate sampling and testing undertaken. Outbreaks of disease within the quarantine stations will be dealt with under the Animal Diseases Prevention and Control Proclamation 267/2002.

4.5.11. Laboratory procedures

Tests will be conducted based on the requirements of importing countries under the supervision of the quarantine manager and the CVO. Specimens will be taken with basic precautions to prevent contamination and proper techniques for collection, packaging and dispatch of samples will always be observed.

4.5.12. Post-mortem examination

Animals that die in the quarantine facility will be examined by a trained veterinarian (necropsy).

4.5.13. Carcass of dead animal and waste disposal

Incineration facilities will be used for an effective removal or disposal of dead so that other animals cannot come into contact with carcasses and that carcasses do not contaminate the drinking water and feeds. Such disposals will be properly recorded. The incineration site will be properly disinfected and secured so as to prevent any chance of disease spread. Needles and syringes and other disposable items will be temporarily stored in designated bins and destroyed at an approved facility.

4.5.14. Record keeping and auditing

Record keeping can be very valuable when investigating the source of a disease outbreak or if owners later make claims against the quarantine station.

Any abnormalities noted during the quarantine period will be recorded as they are detected. Any information related to each cohort of animals including their identification marks or devices and origin and date of arrival will be recorded to ensure that incoming animals are traceable to their sources. In addition, weight of each animal including vaccination, treatment, and/or culling of sick animals will be recorded, and records maintained. Individual record of each animal that are isolated and treated will also be kept. Detailed records of the origin and use of all medicines and biological products, chemicals, disinfectants, consumables including batch numbers, dates of administration, doses, withdrawal times, individuals or groups treated, etc will be recorded. Records of all feeds and dates of acquisition and feeding; where possible the animals/groups of animals fed will also be clearly recorded. In addition, known diseases/infections, diseased/infected animals and mortalities, as far as possible giving details such as dates, diagnoses (if known), and animals affected, treatments and outcomes will be recorded and maintained.

Proper routine recording of the movements in and out of animals, feed ingredients, equipment and the like, will be of paramount importance in investigating a suspected disease incursion and these information will be properly recorded and maintained.

The quarantine station management will provide a health record sheet/cards for each cohort of animals. These health record sheets/cards will only be completed for animals that are observed to have a health problems and daily observations are to be recorded on these sheets/cards. The quarantine station management will keep copies of all relevant information pertaining to animals admitted or leaving the quarantine station, as disease outbreak in animals (at the station or which are released from the station) may require tracing and re-call of animals. Even after animals have been released from the quarantine station, their history sheets and associated documentation will be archived and be easily accessible for auditing purposes.

A record of any internal and external security breaches will also be kept. The animal quarantine stations will keep copies of all relevant information pertaining to exported animals. In general, the following full records will be kept for each cohort of animals detailing the following:

- place of origin;
- name and address of exporter/importer;
- date of entry and release;
- clinical history during quarantine;
- tests, vaccinations and treatments performed;
- pens occupied during quarantine;
- any incident observed during their stay at the quarantine facility;
- visitors including private veterinarians;
- any other relevant information.

All incidents in and around the facility will be reported to the station management at weekly/fortnightly staff meetings. The quarantine management will give high priority to auditing and reviewing its activities as these activities are essential elements of effective quarantine management systems.

At the export facility, the exporter is 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 below.

4.5.15. Emergency preparedness plan

Where a disease of quarantine concern is suspected on the station, staff should follow the procedures as outlined in this guideline and the provisions of Animal Diseases Prevention and Control Proclamation 267/2002. When a disease outbreak emergency occurs in the facility or surrounding areas, the quarantine manager will take the measures outlined above.

4.5.16. Moving animals to Djibouti

Consignments of animals are admitted and released based on an all-in-all-out basis, and all animals are subject to veterinary inspection to confirm absence of clinical disease before release. Before the international veterinary certificate is issued, the quarantine officer will review the quarantine management report and laboratory results and carry out final health examination within 24 hours before shipment. The certificate to be provided by the quarantine officer needs to ensure that the identified animal(s) have finished their quarantine periods and satisfied all export requirements. In the event of an animal showing signs of illness or abnormal behavior, the quarantine officer may, at his or her discretion, instruct the station management not to release the animal.

4.5.17. Prohibited activities

Under normal circumstances, animals must not be removed from quarantine stations prior to the completion of their quarantine period.

Blood samples or other material derived from animals in quarantine are not to be removed without approval by the quarantine management and may only be sent to National Animal Health Diagnostic and Investigation Center (NAHDIC) or other labs when approved by the quarantine management and VSD.
No unauthorized visitors are permitted to enter the animal quarantine facility, unless authorized to do so and unless they wear overalls and boots provided by the quarantine station. As a rule, visit of animals by the owners/importers is not allowed although the quarantine station may, under special circumstances, grant such rights to the owners/importers.

Videos and photography inside the station is strictly forbidden without formal permission from quarantine station management. If permission is granted, photography should be supervised by the quarantine management. To alert visitor or other individuals, the quarantine station shall display at regular intervals around the fence and inside the facility a sign stating "Photography without Permission is Prohibited".

Commingling of different batches of animals and also sick and healthy ones is strictly prohibited.

4.5.18. Pre-conditions/owners responsibilities

The following pre-conditions will be part of the overall contract that needs to be prepared and signed by the owner/exporter of animals and the quarantine management.

Costs associated with the testing, transport, quarantine (including any extension to the quarantine period) will not be met by the quarantine management. If any animals die or are slaughtered, compensation will not be paid by the Government. If any animal fails a test or shows signs of disease, that animal and any or all other cohorts of animals in the quarantine facility may be detained in the facility for further testing and/or observation at the owner’s/exporter‘s expense or destroyed without compensation. At the end of the specified quarantine period, if the quarantine inspector believes that a consignment of animals still presents an unacceptable risk of disease spread, the consignment may be held in quarantine for further investigation, observation, treatment, testing or for any other purpose appropriate to the circumstances at the owner's/exporter‘s expense.

The exporter must cover the cost of undertaking of duties related to the care and maintenance of the animals, cleaning of the stable complex, grooms quarters and janitorial, loading, unloading and transportation of the animals prior to, during and after the period of quarantine. The exporter must, at his/her own cost, provide all bedding and veterinary supplies for the animals. The exporter must, at his/her own cost, provide food for his/her staff during the quarantine period.

The owner/exporter must nominate a person among her/his staff who must serve as a contact person or else the owner or her/his agent may nominate a private veterinarian who will be available as a contact person and to treat any injury or illness while the animals are undergoing quarantine. All staff of the exporter must abide by the rules and regulations of the quarantine station and whilst on the station, the will take directions from the officer in charge of the station or his delegate.

Any costs occasioned during the removal, handling or treatment of an imported animal under the directions of an officer or occurring during the period of detention in quarantine, shall be borne by the owner/exporter of that animal and they shall have no claim for compensation for or in respect of such loss.

4.6. Transit and Holding Procedures in Djibouti

The quarantine facility at Mille is about 300 km from Djibouti port. There is a need for high level bilateral negotiations for SPS certified Ethiopian livestock to be transited freely across Djibouti directly to the Djibouti port where they will be offloaded, assembled and loaded onto ships destined for markets in MENA region. In addition, the quarantine facility needs approval by KSA and other MENA veterinary authorities. Animals kept in marshalling yards must be provided with adequate feed, water, and shade as appropriate. A facility located inside/near the port of embarkation where animals for export receive final veterinary inspection and port/customs clearance. Before loading, all required documentation must be confirmed by veterinary authorities including international animal health certificate, certificate of origin, quarantine reports including laboratory tests conducted and vaccines administered. Final inspection of animals for health and welfare fitness should be done during the actual boarding process by the appropriate veterinary personnel.

The facility for holding livestock at Djibouti port is very small. As a result, mixing animals from various origin and different health status is inevitable and it can promotes disease transmission. This will affect every effort made to ensure the production of safe and healthy animals for export and would be very difficult to provide the required guarantee to trading partners. Therefore, a separate holding ground should be made available inside Djibouti for SPS certified Ethiopian livestock from where animals can be transported to the port when the ship is ready for loading.

5. Other requirements/interventions

5.1. Animal welfare

In Ethiopia, the livestock production, marketing and export systems have significant effect on the welfare of animals. Along the systems, there is serious mishandling and excessive suffering of animals due to improper transportation and handling which causes stress (which lead to poor color and taste of meat), bruising (which is the most serious and significant production waste), dehydration and exhaustion (as a result of long distance travel without proper watering and feeding) and injuries (such as broken legs, horns, etc) and in extreme cases, animals may die. In general, mistreatments of animals are associated with handling, transporting, pre-slaughter penning, stunning and bleeding processes.

The owner/exporter has the greatest influence on handling and transport strategies that will improve the welfare of animals during loading. The driver is responsible for the welfare of the animals from loading until delivery. Good communication and cooperation between the owner/exporter and the driver is essential to maximize animal welfare.

5.1.1. Animal handling

Success in transporting cattle is determined by the attitude and actions of the handler. Animals travel better when they are quiet and also when segregated according to status and size. Animals shall be handled without noise and bustle. As the animals in the export chain are usually of high value, their conditions of welfare should similarly be of high standard.

Before loading animals, they should have access to fresh water and a diet to maintain full health and vigor. In addition, animals should be rested prior to transport.

5.1.2. Loading

The most serious animal welfare problems occur when loading animals onto a vehicle. Since livestock follow the leader animal, handlers need to take advantage of this natural behavior to move animals easily. Using the principles of flight zone and point of balance behavior, a handler is able to move animals into a vehicle in a calm and orderly way. The flight zone is the animal's personal space, and the size of the flight zone is determined by the wildness or tameness of the animal. Completely tame animals have no flight zone and people can touch them and vice versa. An animal will begin to move away when the handler penetrates the edge of the flight zone. Animals have a tendency to move in the opposite direction when a handler walks deep into their flight zones. The point of balance is at the animal's shoulder. All species of livestock will move forward if the handler stands behind the point of balance. They will back up if the handler stands in front of the point of balance. Therefore, animal handlers must learn to recognize animals' body language and react accordingly to address animal welfare issues by handling and loading animals safely.

For this to work, loading facilities are required to have a curved chutes with a round crowd pen system which are more efficient for loading animals because they take advantage of their natural behaviors. Animals move through curved races more easily because they have a natural tendency to go back to where they came from.

Animal handlers should be trained on sorting and moving animals quietly by using a small nylon flag at the end of a slender flexible stick. Actions which increase excitement of animals such as noise, vibration, motion, etc should be avoided at all times.

Before loading animals, the certifying animal health officer must check and confirm that animals are individually certified, carry ID numbers /tags/, are physically healthy and alert and are not bruised or injured. The inspector should reject non-compliant animals.

5.1.3. Loading space

Loading rates are determined according to the size, weight and status of animals, as well as weather conditions and distance to be transported. Overloading increases the risk of an animal going down and being unable to get up again.

5.1.4. Transporting and unloading animals

It is forbidden to comingle and transport animals of different ownership, species, cohorts, sources and health status.

Vehicles used to transport animals should be driven smoothly, without jerks or sudden stops. Corners should be taken slowly and gently. A second person should be in attendance and must falling animals so that the vehicle can be stopped and the animal lifted.

The skill of the driver and the quality of the road appear to be more important in determining transport stress and losses in carcass value than the distance traveled. People either handling or transporting the animals should be held accountable for losses and punished. The transporting contracts should be based on “live and healthy animals delivered” in the destination, instead of just “live animals loaded” which would provide an economic incentive to take better care for the animals as the drivers will lose money when livestock are injured when transported.

Drivers should load and unload animals quietly. Rushing livestock during unloading is a major cause of bruises and injury. Quarantine management should closely supervise truck loading and unloading. For all species, there must be sufficient unloading ramp so trucks can be unloaded promptly. Unloading ramps should have a level dock before the ramps go down so that animals have a level surface to walk on when they exit the truck. The slope of the ramp should not exceed 20 degrees. On concrete ramps, stair steps are recommended because they provide better traction than cleats or grooves when ramps become dirty.

In Ethiopia, the most serious welfare problems occur when handling, loading and transporting camels. Camels are loaded inhumanely and also by using cranes. They also suffer a lot when they are transported as their limbs are tied together. Walking with arms outstretched will normally suffice to guide their movements into trucks. To handle individual camels, put one hand around the base of the neck, while placing the other on the rump. Do not roughly handle the animal. They are generally regarded as having weak necks and thus prone to injury in that region. Camels must have 100 mm clearance over their humps during road transport. Camels will normally sit down when being transported. Sufficient room must be available for all camels to sit. Failure to do so will result in camels sitting on one another and falling over, which risks entwining. During transportation, camels will sit for several hours at one time; however, they will move their legs to stimulate blood flow as required. This free movement is different to tying up the legs of camels where movement is restricted. If tying up is required, then they must be released and allowed to stand at least every four hours.

Cross cleats must either be removed from trucks or covered totally with a generous layer of hay, straw or sand. Failure to do so will injure the pedestal and the pads on the legs. Surface bedding must be checked during a long trip. Camels may be transported for a maximum of three days in suitably constructed transports which provide shade and allow daily feeding and watering.

5.2. Animal Health Surveillance System

It is the commitment of the Ethiopian VSD, as per the SPS Agreement, to set in place adequate systems to monitor livestock diseases, food borne zoonoses and pesticide residues. As a result, the VSD is developing mobile phone based disease notification and also strengthening the existing passive surveillance systems of the country. The systems allow the VSD to detect any problem in time to prevent its spread within the country and outside through exported commodities. If a problem is detected, the VSD has the means and commitment for notifying the relevant international organization such as the OIE, FAO and also trading partners.

The data supplied by the surveillance systems are used as an early warning system to detect trade related diseases in real time, track trends of TADs by monitoring their impacts on sources of export populations, identify populations that are at great risk and implement control measures such as movement restrictions, voluntary cessation of export trade, etc. The system will also enhance the competence and knowledge of the certifying veterinarian designated by the VSD in order to confidentially sign sanitary certificates.

The Veterinary Services Directorate (VSD) is currently implementing the following strategies aimed at significantly improving the livestock disease and food borne zoonotic disease surveillance system of the country. These include:

Developing a new web-based database management system known as Disease Outbreak and Vaccination Report (DOVAR) largely aimed at improving disease

knowledge of the origins of animals destined for export with improved laboratory capability for diagnosis of TADs. Even if pre-export quarantine system is introduced, a credible certification system requires that export animals and their herds or flocks of origin should be under constant surveillance system to ultimately certify them as being free from the diseases of concern to a reasonable level of confidence. Effective surveillance system helps to decrease the risk that animals entering quarantine are suffering from diseases and their chances for spreading diseases to others during and after the quarantine period. This enables to make sure that animals entering pre-export quarantine are indeed healthy and that the quarantine is a final verification of their status.

The other system is mobile based Animal Disease Notification Information System (ADNIS). ADNIS will be used to immediately report suspected occurrence of one of the target diseases listed by the VSD as per the former OIE List A diseases. Animal health assistants in selected kebeles are issued with a smart mobile telephone on which a customized template (data entry form) has been installed. The AHAs then report any suspected occurrence of a target disease by smart phone entering details such as species.

In general, the National Animal Disease Surveillance System (NADSS) which is composed of the above two systems is being used for planning and monitoring of disease control strategies and to facilitating the export of live animals, meat and other products of animal origin.

5.3. Livestock Identification and Traceability System (LITS)

Livestock identification and traceability is essential to modern livestock production practices as it assists to introduce good management and effective disease prevention, control and eradication practices. In relation with international trade, there is a need to identify and trace an animal and its products as it progresses through the production chain. The pressure for identification and traceability is rapidly mounting as consumers are demanding to know more about the animals from which their food was derived. More importantly, it is becoming more than a health issue as consumers need to know more about the circumstances under which animals were raised, how they were transported, how they were slaughtered: a host of events along the production chain are of interest to consumers and had to be traced. Traceability is no longer a health issue, but a marketing tool designed to give the consumers assurance that the product that they are consuming is both safe and ethically acceptable.

Ethiopia has introduced a Livestock Identification and Traceability System (LITS) for backing up the overall risk management efforts of the country by enabling immediate tracing and rectifying of faults should they occur anywhere in the production chain. The traceability system involves on a series of registers including when animals leave a primary market until the animal is delivered to the buyers. Where TADs outbreak occurs, it should be possible to determine the source of the problem and to take appropriate action.

5.4. Risk Analysis

Live animal trade with the MENA countries should not be subjected to an indiscriminate ban unless it can scientifically be shown by the importing countries that there is an unacceptably high risk of introduction and establishment of exotic disease agents in their territories. Therefore, there should be a periodic risk analysis effort to estimate qualitatively and, depending on the availability of data, quantitatively the risk of introduction, spread and establishment of trade related livestock diseases in to MENA countries from importation of live animals (sheep, goat, cattle and camels) from Ethiopia. The risk analysis should cover all trans-boundary animal disease risks associated with the importation of live animals. It should be designed to assess the level of risk associated with the livestock export trade and, depending on the disease agent and species of animal affected, propose specific risk mitigation measures that need to be implemented by VSD and regions in order to reduce the risk to an acceptable levels. Once the measures are implemented, they need to be monitored and re-evaluated anytime by the importing countries to ensure that they achieve the desired level of protection. The risk analysis documents should also be subjected to internal and external scientific review. The peer review resources may include scientific experts from the importing countries and epidemiologists and risk analysts in Ethiopia. The VSD should then work through the reviewers' evaluations. All reviewers' comments and proposals should be adopted unless there are any other convincing reasons not to do so. When a comment or suggestion is rejected, the reason should be documented. The revised risk analysis document will then be made available for importing countries' inspection. The importing countries' comments should be gathered and incorporated into the risk analysis document. The risk analysis document should be regularly updated, based on changing circumstances, and communicated with trading partners and relevant stake holders. Moreover, there should be transparency in sharing the information with all interested parties particularly the trading partners. Therefore, frequent communication between the risk assessor (s), risk managers and stakeholders in Ethiopia and veterinary authorities in importing countries is essential to ensure that concerned parties are aware of any relevant issues and have an opportunity to contribute to the development of safer live animal trade. In general, all risk communications with trading partners and stakeholders should be carried out by the VSD, (MoA).

5.5. Training, Code of Conduct and Institutional Collaborations

In the private sector, manpower development should be mandatory and short term and continuing technical and professional training programs need to be provided regularly by VSD for managing live animals and export facilities. The VSD, in collaboration with other stakeholders, should assess the training needs of live animal export enterprises and address the skills they will need to produce quality and SPS certifiable animals for international markets. The VSD shall design practical training modules and set minimum standards for qualifications of employees and workers that need to be employed by live

animal export operators. The private should be encouraged to invest in training of staff as a key means of producing quality and competitive live animals at international markets.

Live animal export operators need to have their own codes of conduct on good livestock management practices. These practices need to be monitored and enforced by VSD to ensure the export of healthy and quality animals.

VSD need to apply checklists to check the compliance of livestock exporters and their facilities and use it as a pre-condition for issuance of new and renewal of existing licenses. To this end, MoA shall initiate series of discussions with the Ministries of Trade and Industry and Investment Agencies at Federal and Regional levels and other stakeholders to streamline duties and responsibilities of the various institutions so that licensing of export establishments are to be based on compliance requirements of the VSD, importing countries and international standards.