

**JOINT DONOR AGENCIES STUDY ON THE PERFORMANCE  
OF AND GROWTH PROSPECTS FOR STRATEGIC EXPORTS IN UGANDA**

**ANNEX TO CASE STUDY  
ON LIVESTOCK AND LIVESTOCK PRODUCTS**

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**Table of Contents**

	<b><u>Page No</u></b>
Abbreviations.....	2
1. Background.....	3
2. The production and marketing situation in Uganda.....	3
2.1 The livestock population.....	3
2.2 Rangelands and livestock resources.....	3
2.3 Supply and demand.....	5
2.4 Stock routes, holding grounds and check points.....	6
2.5 Livestock markets.....	6
2.6 Slaughtering facilities.....	7
3. Proposed Livestock Development Project.....	8
3.1 Area covered .....	8
3.2 Description of components.....	9
3.3 Livestock marketing activities.....	9
3.3.1 Marketing and slaughtering infrastructure.....	10
3.3.2 Marketing information system.....	12
3.3.3 Livestock regulatory services.....	14
3.3.4 Support to hides and skins sector.....	14
4. Impact of disease on production, processing and marketing.....	15
4.1 Estimates of livestock GDP and annual biomass.....	15
4.2 Effect of disease on production and processing.....	16
4.3 Effect of disease on export marketing.....	17
4.4 Diseases of importance to production.....	17
5. Directives governing imports to European Union.....	21
5.1 Imports of fresh meat.....	21
5.2 Imports of meat products.....	24
5.3 Requirements applicable to both meat and meat products.....	25
5.4 African countries certified for animal health purposes.....	28
6. Regulation and procedures of the OIE Animal Health Code relevant to Uganda's strategic exports proposals.....	29
6.1 General obligations.....	29
6.2 Evaluation of veterinary services.....	31
6.3 Surveillance and monitoring of animal health.....	35
6.4 Foot and mouth disease.....	38
6.4.1 Foot and mouth inactivation procedures.....	43
6.5 Recommended standards for epidemiological surveillance systems for contagious bovine pleuropneumonia.....	44
7. Inter-regional Livestock Trade Commission.....	50
8. Persons met.....	52

**Tables**

Table 1.	Uganda's livestock population.....	4
Table 2.	LDP marketing problems and proposed activities.....	9
Table 3.	Diseases constraining cattle production & development.....	18
Table 4.	Diseases constraining sheep/goat production & development.....	19

**Abbreviations**

Uganda - Strategic exports

## 1. Background

This annex provides further details to support the statements made in the two summary documents covering (a) livestock and hides, skins and leather products; (b) milk and milk products which were in response to GOU's Strategic Exports Proposals.

The Government of Uganda (GOU) has set itself the goal of eradicating poverty, and two major GOU programmes aimed at addressing these issues are:

- *The Poverty Eradication Action Plan (PEAP)*, a key element of which is the *Plan for Modernization of Agriculture (PMA)*. The PMA is a long term strategy which intends to reduce poverty from the present level of at least 35% to 10% by 2017, and in particular to do so by changing subsistence farmers into market oriented commercial farmers.
- *Strategic export proposals* detailed in a paper called 'Government interventions to promote production, processing and marketing of selected strategic exports' (July/August 2001). This is seen by MAAIF as a shorter term programme to boost earnings from strategic exports i.e. those seen as having reliable external markets. One group of the commodities which was identified as strategic for export was livestock/livestock products including meat (particularly beef, goat and sheep meat); milk; and hides, skins and leather products. The promotion of these products for export is seen as assisting the alleviation of poverty in the long term since the production of export quality products will eventually include smallholders and small to medium scale entrepreneurs when they realise the increased profitability of exports of better quality livestock/products.

## 2. The production and marketing situation in Uganda

### 2.1 The Livestock Population

When considering the available resource base for marketing of livestock and livestock products the Uganda Statistical Bulletin (2000) states that the existing population is about 5.8 million cattle, 6.2 million goats, 1 million sheep, 1.5 million pigs and 24.5 million poultry. However these figures are only estimates based on the census of 1991 and are therefore may not be accurate.

The cattle population consists principally of short-horned Zebu and long-horned Ankole, cross-breeds between the two, and a smaller number of N'ganda. Cattle are concentrated in the south-west, north-east and central areas. Nearly all goats and sheep are indigenous breeds. They are generally spread over the whole country but the nine Districts in the Northern region account for 40% of the national goat and 50% of the sheep population.

### 2.2 Rangelands and Livestock Resources

Smallholders and pastoralists raise over 90% of the livestock in mixed farming and range systems. This sub-sector is an important contributor to national food security and nutritional balance and its contribution to total GDP was about 7% in the 1997/98 financial year. However continuing civil unrest and instability in the northern and eastern rangelands continue to be an impediment to realizing their full potential. The Uganda

National Household Survey (1999-2000) estimates that poverty in northern rural areas has increased from 62% to 67% between 1997/98 and 1999/2000 largely due to the adverse effects of insecurity on rural economic activities. The prolonged drought and extensive flooding in the rangelands during the El Niño phenomenon seriously affected the growth of the sub-sector. It has been suggested that the consumption of livestock products is far below the recommended FAO standards. This implies that there is need to increase productivity of the national herd and ensure efficiency in resource utilization.

**Table 1: Uganda Livestock Population (millions)**

	1993	1994	1995	1996	1997	1998	1999
Cattle	5.37	5.1	5.23	5.3	5.46	5.65	5.82
Sheep	0.87	0.97	0.92	0.95	0.98	1.01	1.04
Goats	5.23	5.71	5.55	5.68	5.83	5.99	6.18
Pigs			1.34	1.38	1.43	1.48	1.52
Poultry			21.83	22.05	22.27	22.29	24.62

The major livestock systems are as follows:

*Pastoral System* This is an extensive, subsistence production system in which owners move with their herds looking for grazing and water, and comprises indigenous breeds of cattle, sheep, goats, camels and donkeys. Milk is important nutritionally and small stock may be slaughtered for meat. Cattle are rarely killed for consumption. Donkeys and camels provide transport and camels are also milked. Market off-take is low, and people keep their wealth in live animals. Pastoralists are mainly found in the north-eastern Districts where population density and rainfall are low. Pastoralism also occurs in western Uganda but is decreasing as people are obtaining freehold and leasehold title to their land.

*Agro-pastoral System* Agro-pastoralism develops as pastoralists settle and start to grow crops, though the primary emphasis remains on livestock which provide milk, meat, draught power, savings and income. Livestock graze on communal land and consume crop residues, but are moved in the dry season in search of grazing and water. Livestock are generally marketed only when a pressing need arises.

*Settled Livestock/Crop System* Here the major source of household food and income is from crops. Livestock rely on natural grazing as well as crop residues. While wealth is kept mainly in the form of livestock, some households will market excess animals due to pressure on grazing land.

*Ranching* This is a commercial system whose main objective is to produce animals for sale. Unimproved natural pastures are generally used. Before the civil strife of the 1980s there were over 500 ranches in the country including 5 ranching schemes which held 100,000 cattle. By 1985 only 42,000 head remained. Under the Ranches Restructuring Scheme over 2000 squatter families and their animals were resettled on the ranches. By 2000 only about 50 of the original 500 ranches were functioning commercially. These ranches have regular livestock off-take and a few have weigh-bridges which allows them to sell by weight.

*Dairy systems* There are about 300,000 dairy cattle in Uganda, the majority of which are cross-bred – Friesians being the most widely used exotic animal. Both natural

and improved pastures are used which are fenced into paddocks. Total herd size is usually below 50 animals with 20 or less in milk at one time. Yields vary from 2 liters/day from indigenous cows to up to 20 liters from exotics. Zero grazing and semi-zero grazing schemes are also used. Both bulls and, where available, AI are used for breeding. The major dairy systems are found in Mbarara District and around Kampala. Surplus male animals, often castrated, are regularly marketed.

*Pigs and Poultry* The Government of Uganda's Statistical Abstracts (2000) estimates that there are about 1.5 million pigs in the country. Some scavenge in small herds or are tied under trees to prevent damage to crops and are fed on household scraps and milling by-products such as bran. Both production and demand for pig meat is relatively low though a few commercial units exist in the peri-urban areas and supply hotels and supermarkets. Of the 24.5 million poultry in Uganda, about 3.4 million are exotic breeds. There are estimated to be about 1.1 million layers and 2.3 million broilers. Flock size of exotic birds average less than 100. In the rural areas marketing of poultry is largely at farm gate but some are also sold at livestock markets.

### **2.3 Supply and Demand**

The livestock sector and hence most livestock farmers have suffered considerably over the years from the periods of civil unrest and instability. Efforts have been made to improve the situation of actual and potential livestock owners through Government and donor supported investments and policy changes. However, results have been dampened by the inherently longer time periods required to rebuild and improve the livestock herds when compared to crops. The slowness of rebuilding, the low base that the sector started from, and the considerable additional funds and implementation effort required to materially improve the situation mean that there is still much to be done. The marketing component of the Project aims to support the Government's policy of modernizing the agricultural sector to realize more fully the sector's potential to increase production and off-take to national, regional and international markets. This will go hand in hand with other measures proposed by the Project which will increase productivity. These include animal health, supply of water, restocking and genetic improvement of stock.

From the estimated national livestock populations given above, livestock production contributes about 7% of total GDP. Production is estimated as 97,000 tonnes of beef, 510,000 tonnes (510 million liters) of cows milk, 41,000 tonnes of chicken meat, 16,000 tonnes of goat meat, 9,700 tonnes of mutton and lamb, 1,085 million eggs as well as limited products from other animals. Given these figures in relation to an estimated human population of 22.2 million it can be seen that consumption is low – around 6 kg per person. In addition, milk production and hence production per capita is low – around 23 liters. From a nutritional view this is considerably below the standard FAO minimum per capita recommendations.

The average number of people living below the poverty line has declined from 56% in 1992 to 44% in 1997 and reached 35% in 2000 but still remains a constraint to purchasing power for livestock products. However, significantly for the proposed Project, 40% of livestock owners and fishermen remain below the poverty line. Imports and exports of meat from Uganda are insignificant, and thus meat consumption is assumed to be equal to meat demand. According to the 1992/93 National Household Survey, the per capita consumption of beef in rural areas is about half that found in urban areas.

According to the same survey the consumers preference is for beef and goat meat. This is reflected in the income elasticity of demand for meat products of 1.01 for both beef and goat, 0.66 for chicken and 0.45 for pork. However, based on a predicted growth rate for GDP of around 2.9% pa, the probable rate of increase in per capita demand is around 7% for beef and goat meat, 5% for chicken and 3% for pork, assuming that the price of meat relative to other commodities remains stable. In addition to this, total human population is estimated to be rising by 2.66% per year. Combining these two factors indicates that total demand for beef and goat meat will be about 3 times higher after ten years, while chicken and pig meat demand will be 2 times higher. It will be difficult to meet increases of that magnitude without raising present animal numbers and levels of productivity. It can also be concluded that the increase in supply of livestock products which the Project will initiate can be absorbed by demand within the country. As supply increases still further there will be increasing opportunities for meat exports, particularly if the proposed export standard abattoir, which has been proposed for Kampala, is built and other constraints to exporting are overcome.

#### **2.4 Stock Routes, Holding Grounds and Check Points**

With increased pressure on land use, stock routes have largely disappeared and public roads are used to transport animals by vehicle or on the hoof. It is estimated that 95% of livestock are now transported by vehicles and only 5% on the hoof. Trains are little used: there is a lack of carriages suitable for carrying livestock which has resulted in injury and spoilage of hides and meat. Holding grounds with facilities such as water, dip, crush and loading ramp, and secure rest for animals in transit have fallen into disrepair or been used for other purposes. Check points for monitoring of livestock in transit still operate but are inadequately manned and equipped.

#### **2.5 Livestock Markets**

The difference between primary and secondary livestock markets is generally one of size and throughput rather than any significant difference in infrastructure. No reliable data on the number of primary and secondary markets could be obtained but according to the Meat Production Master Plan (1998) there are an average of 5 primary markets in each LC3/Sub-County. No data is supplied in the Plan on the breakdown of these between purely crop/vegetable/merchandise markets and those which are also livestock markets. However it is estimated that at least one LC3 market is a livestock market which suggests that a minimum of 600-650 primary livestock markets exist in the cattle corridor. Livestock markets normally take place once every two weeks or once a month and the throughput varies between 20 and 500 or more cattle, 10 and 80 goats and 10 and 200 poultry per market day.

Following privatization and liberalization, the primary and secondary markets are in the hands of private individuals who tender to run the market. These Lessees pay a fee which may vary from U Sh 0.3 – 2 million per month according to the throughput of the market. Market fees, which are kept by the lessee, vary between Districts but are on average U Sh 3,000 for cattle, U Sh 1,500 for sheep and goats. The District administration provides receipt books. Movement permits are also issued at livestock markets, which are legally free of charge though instances were found where a small fee was being charged. Some

markets are on land which is not owned by the local council. This has caused disputes, claims to repossess the land and encroachment of buildings.

A *primary market* is generally one formed by several villages within a Parish. Often it is an unfenced area with few or no facilities such as perimeter fence, loading ramp, crush, toilets. Local farmers buy breeding stock and traders buy animals for slaughter which are often taken to Kampala. At the smaller markets animals, after purchase, are often driven from the market on the hoof. Traders purchase animals from several primary markets until they have sufficient to fill a lorry. All livestock movements from markets require a movement permit. Occasionally animals purchased for breeding and being driven on foot to nearby farms are taken without permits though strictly this is illegal. Since decentralization to the Districts the number of trading licenses being issued appears to have declined and some traders are apparently operating without licenses.

A *secondary market* normally has a larger throughput than a primary market but again has few facilities. Traders come with lorries and hope to buy a full load for immediate transportation to large centers such as Kampala. Termite mounds, or any other available elevation, are often used as loading ramps.

Animals are sold according to size, age and appearance through negotiation between seller and butcher/trader/farmer. The seller is often at a disadvantage:

- If there are few traders present with whom to negotiate
- Because he normally does not know the price of livestock in the big centers
- Because he is often selling under pressure in order to meet an immediate cash need (such as school fees) and does not want to risk losing a sale.

However in Districts where there are large numbers of animals for sale and numerous traders, livestock owners are able to bargain successfully with traders to obtain a fair price. Port Masindi is an example of a market which is strategically placed to receive traders from a wide catchment area. These traders, because they do not know each other well, are less prone to collude to try to keep prices artificially low. At some livestock markets sellers appear to have quite accurate knowledge of local prices.

*Sales Procedure* A farmer wishing to sell an animal requires a letter from the LC1 to the District Officer stating that the animal is disease free and confirming ownership. The letter allows entry to the livestock market where fees are paid. For example at Port Masindi market the seller pays U Sh 3,000 market fee. The buyer pays a loading fee of U Sh 2,000, a market fee U Sh 3,000 and may have to pay U Sh 500 for a movement permit (these are sometimes supplied free of charge).

## 2.6 Slaughtering Facilities

The main slaughter houses are located in urban centers; Kampala (4), Jinja (1), Mukono (1), Masaka (1) and Mbarara (1). In order to reduce large scale movement of livestock from the up-country production areas to the slaughter houses, Government encourages the establishment of medium sized slaughter houses country wide. The Uganda Beef Producers' Association (UBPA) is negotiating with Government and the private sector to build an export quality abattoir in Kampala with a throughput of 200 cattle per day. The feasibility study is currently being carried out.

Throughput of typical town slaughterhouses such as Mbarara Municipal Slaughterhouse is a maximum of 50 cattle per day with an average throughput of 12-15 head per day, 7

days per week. Small stock, mainly goats, range from 0-3 head per day. Often butchers are also traders. Blood is collected, cooked and sold for about U Sh 250 per kg., burnt horn ash for U Sh 150 per kg. There is an incinerator for condemned carcasses. At Municipal abattoirs meat is inspected for foot & mouth disease, liver fluke and septicemia, though few animals are condemned. Like livestock markets, the running of slaughter houses and slabs is put out to tender. The successful lessee charges a fee, typically U Sh 4,500 for cattle.

For religious reasons pigs are not slaughtered with cattle and small stock. They are normally slaughtered and dissected at a separate slaughter area in the vicinity of a slaughter slab and then the meat is brought to a discreet corner of the market for sale.

Disposal of waste water is causing environmental problems. At the two main abattoirs in Kampala there is a large soak-away area serving the two establishments. However the remaining liquid was said to find its way into Lake Victoria. At slaughterhouses and slabs there is often poor disposal of waste water which may flow into a depression and soak away.

### **3. Proposed Livestock Development Project**

In October/November 2001 a Livestock Development Project (LDP), to be funded by African Development Bank, was prepared and approved by GOU. This was based to some extent on the findings of the Meat Production Master Plan (1998). The LDP is at the appraisal stage and is expected to come into operation during 2002. It is based in the 29 Districts of the cattle corridor which is the major livestock producing area in Uganda. The project will have a major impact on those districts and will complement GOU's Strategic Exports Proposals.

#### **3.1 The area covered by LDP**

The Livestock Development Project is based in the 29 Districts of the cattle corridor. These are Kotido, Moroto, Nakapiripirit, Kitgum, Pader, Soroti, Katakwi, Kaberamaido, Kumi, Lira, Apac, Sironko, Pallisa, Nakasongola, Luwero, Masindi, Kiboga, Kibale, Mubende, Kyenjojo, Kamwenge, Mpigi, Semabule, Rakai, Mbarara, Ntungamo, Bushenyi, Kayunga and Kamuli. In four of these Districts (Kotido, Moroto, Nakapiripirit and Kitgum) there are predominantly livestock pastoralists while the other Districts contain both crop and livestock farming systems. The cattle corridor Districts comprise a total of 102,000 km<sup>2</sup> and contain 42% of the country, 51% of the land area, 40% of the human population, 55% of indigenous cattle, 42% of exotic cattle, 42% of sheep and goats, 36% of pigs and about 38% of poultry. About 60% of households in the cattle corridor are livestock keepers compared with 22% nationally. The marketing interventions which are proposed will, however, have influence and benefit beyond the cattle corridor, for example in the livestock and products sent to Kampala and other centers of population. In addition, there will be influence on the drive towards exports, which at present is almost entirely in the form of hides and skins and milk.

### 3.2 Description of LDP components

The project comprises five components. The Livestock Restocking and Improved Genetic Potential component (Ush 11.4 billion) involves (a) the provision of oxen, indigenous cows, goats and poultry together with initial support to poor rural households in those areas of the cattle corridor with sufficient feed, and (b) providing improved indigenous cattle sires, and cross bred Boer goats to all 29 districts in the cattle corridor. The Animal Health component (Ush 16.2 billion) covers control of the major vector borne and epidemic animal diseases not covered by other programmes as well as providing support to veterinary and regulatory delivery services. The Water Supply and Forage Resources component (Ush 11.7 billion) aims to construct, rehabilitate and provide reticulation for viable valley dams and tanks in the cattle corridor as well as providing dam scoops to smaller groups to establish their own water points. It also provides support to small scale outgrower pasture seed producers, improved rangeland management and provision of dry season feeding through demonstration plots. The Livestock Marketing component (Ush 5.4 billion) supports construction and rehabilitation of selected livestock markets and slaughter slabs, improved livestock marketing information, provision of training in hides and skins, and set livestock and meat standards. The Project Coordination Unit and Livestock Information component (Ush 5.3 billion) aims at overall project coordination as well as supporting the setting up of livestock and range inventories and database management systems

### 3.3 LDP livestock marketing activities

Project marketing activities, which support the exports initiatives, are shown in Table 2.

**Table 2: LDP Marketing Problems and Proposed Activities**

Problems Identified	Proposed Project Activities
Lack of infrastructure at livestock markets and slaughter places	Construct/rehabilitate 170 markets with fencing, crush, loading ramp, weigh-bands, toilets. 10 markets to receive weigh-bridges. Construct 100 slaughter slabs (rehabilitate if feasible)
Inadequate livestock marketing information	Support present system (FOODNET): Livestock marketing information system (MIS) to be supplied by <ul style="list-style-type: none"> <li>• Officer in Kampala gets motorbike, reports daily</li> <li>• District Trade and Commercial Officers report weekly</li> <li>• Radio and newspaper coverage over entire country</li> </ul> Staff receive training in information collection & analysis
Outdated/poorly drafted livestock & meat regulations/standards, inadequately enforced	MAAIF supported to define & develop livestock and meat policy & standards: 5 workshops in 2004, staff salaries, field expenses, operating costs
Loss of income from hides and skins	4 trainers given motorbikes, train flayers/skinners in 20 Districts over 5 years
Lack of access to meat export market	Enabling environment created by above proposals: Improved marketing & slaughtering; MIS export information; defined and enforced meat policy/standards

### 3.3.1 Marketing and slaughtering infrastructure development

#### Improving Livestock Markets

170 primary and secondary livestock markets located in 25 Districts in Uganda's key livestock-producing Districts of the cattle corridor will be rehabilitated/upgraded over the life of the Project. The markets selected for rehabilitation will, as far as possible, be in locations where they cause minimal social and environmental disturbance. They will also be located on sites for which the District has Land Title. Markets will not be considered for improvement until this has been clearly established. If necessary the site of a market should be changed to conform with this requirement. Construction/rehabilitation will be carried out as follows:

- *Perimeter fencing.* Most markets have no perimeter fence, or a poorly constructed fence which does not adequately constrain animals. This results in difficulties in handling animals and the need for large numbers of people inside the marketing area to separate the many small groups of animals being sold. Animals unaccustomed to being handled often break out of the marketing area. Lack of fencing also hinders the efficient collection of market fees and the issuing of movement permits. The length of fence required depends on the size of market but an average length of 300 meters has been budgeted for. Fencing will be of treated poles spaced 3 meters apart and concreted into the ground. Poles will be 2 meters long by 15 cm diameter, 50 cm of which will be in the ground. Six strands of heavy duty barbed wire will be used. Other horizontal materials such as timber and piping were considered but rejected on the grounds of cost and likelihood of theft. Materials required are 100 posts, 1,800 meters barbed wire, staples (U nails), 15 m<sup>3</sup> concrete.

*Total cost per fence = U Sh 4.33 million (\$2,500)*

- *Crush for weighing and treating animals.* A crush at a market allows proper examination and, if necessary, treatment of livestock. It also makes easier the assessment of weight using weigh-bands and, for the 10 markets where they will be installed, will guide animals into the weigh-bridge. The crush will be made of sawn treated timber posts and rails concreted in to a depth of 0.6 meters. The crush posts will be set at an angle, being 0.6 meters apart at ground level and 0.8 meters apart at their maximum height of 130 cm. This design enables long-horned Ankole cattle to pass through the crush. 3 moveable barrier poles of 1.2 meters will be installed to restrain animals at intervals along the crush. The crush will be 7.5 meters long. There will be a holding ground of 5m x 5m. Gravel/murram is preferred for the ground as it provides a firmer footing for livestock, and is easily renewable. Concrete floors are often made with inadequate grooving, causing animals to fall and become injured.

*Total cost per crush = U Sh 900,000 (\$530)*

- *Loading ramp:* 95% of livestock in Uganda are transported by road and only 5% on the hoof. However the lack of loading ramps at livestock markets forces traders to use unsuitable elevations such as termite mounds or other naturally

occurring elevations. Smaller animals are sometimes lifted manually into the lorry. The simple loading ramp will consist of rammed earth (consolidated with water). It will be 6 meters wide (to allow 2 lorries to load at one time) with a 1.2 meter concrete retaining wall and footing. There will be timber posts to guide livestock into the lorries. Topsoil will be removed and subsoil will be used to assist compaction.

*Total cost per loading ramp = U Sh 1.19 million (\$700)*

- **Weigh-scales and Weigh-bands.** Apart from a very few privately owned ranches and a few larger abattoirs there are no facilities for weighing livestock in Uganda. In the past, weigh-bridges were put into the larger secondary markets. These soon became in-operational due to improper use, lack of maintenance and vandalism. However livestock owners are at a disadvantage at markets because they are unable to know the live-weight of their animals and it was observed that they often underestimate live-weights. Traders generally estimate live-weights more accurately and thus farmers are often denied a fair price. To address this problem a weigh-bridge will be installed in each of 10 large markets where throughput is around 500 cattle plus small stock per market day. These will be installed at the end of the crush. They will have weights shown electronically by use of a portable 12 volt battery, such as that used in a vehicle. Weigh bars will be removable from beneath the weighing platform. This has the advantage that when animals are placed in the crush for purposes other than weighing they can easily pass through the weigh-bridge. Weigh-bridges can be purchased in Uganda for about U Sh 4 million (\$2,350) each including installation costs. The weigh-bridge and all other market installations, will be the responsibility of the lessee for general maintenance and protection. However annual inspection and maintenance of weigh-bridges will be carried out by the supplier and financed by the District. Weights at smaller markets will be estimated by using weigh-bands combined with appearance/finish of animal. Weigh-bands will be kept by the veterinary staff at LCs who will bring them to market when they come for inspection of livestock. There will be separate weigh-bands for cattle and small stock. 10 weigh-bands will be supplied per market.

*Total cost of U Sh 5,000 each = U Sh 50,000 (\$30) per market*

- **Toilets.** Most livestock markets do not have toilets and this forces people to use the surrounding area which becomes a health hazard. For this reason a block of 3 VIP pit latrines will be constructed. It may be possible to rehabilitate some broken toilets. Many livestock markets do not have water nearby. The VIP toilet overcomes this to some extent because of the ventilation pipe which makes them more hygienic than those without ventilation. To conform with environmental considerations, toilets will be located away from surface or ground water sources such as streams and wells.

*Cost = U Sh 2.8 million (\$1,670) per market.*

### **Improving Slaughter Facilities**

Many towns and villages have no suitable place for slaughtering livestock, not even a slaughter slab. Village slaughtering often involves preparing an area with a

covering of leaves to prevent contamination by soil and a small amount of water is carried there for cleaning purposes. Some slabs exist but are generally in a dilapidated condition. The Project will improve the situation in towns and trading centers which have no facilities by constructing simple slaughter slabs where piped water is available. This will be of considerable assistance to improving hygiene and its impact on human health. One hundred slaughter slabs will be constructed of concrete measuring 20 meters by 10 meters. Construction procedure will be as follows:

- Earthworks: site clearance and excavation; gravel/hardcore fill
- Concrete slab and rendering; mesh reinforcement, sloping to central channel; reinforcing iron set in concrete to allow restraint of animals
- Drainage: central drainage channel
- Waste disposal system:
  - For waste water: soak pit with gravel fill; cover slab (concrete); 2 soak-away channels
  - For solid waste: unlined pit excavated by hand of size 2m, x 2m x depth 1.5m
- Water supply: 50 meters of 25mm mains pipe with standpipe for use with hose. Hose to be supplied by lessee.

*Cost per slaughter slab = U Sh 19 million (\$11,000)*

A block of 2 VIP toilets will also be constructed. These will be located away from surface or ground water sources such as streams and wells.

*Cost per toilet block = U Sh 2.5 million (\$1,470)*

### **3.3.2 Market Information System**

MAAIF operated a Market News Service until May 1999 when, mainly because of financial constraints, it ceased to function. The vacuum was filled by the IITA - FOODNET Market Information Service (MIS) which is based in Kampala. It is currently in negotiations with Government to become fully integrated under NAADS as the recognized MIS for Uganda. The Project started in September 1999 with the aim of collecting, tabulating, analyzing, interpreting and disseminating market data and intelligence to the farming and trading community in Uganda. The MIS's aim is to improve market access, transparency, market efficiency and to increase market competition in Uganda. The MIS has two integrated components:

- The macro-level MIS, currently funded by the United States Agency for International Development (USAID) is designed to collect and disseminate national and regional market information to planners, government agencies, food security agencies and large-scale traders.
- The micro-scale MIS activities, currently funded by the Technical Centre for Agricultural and Rural Cooperation (CTA) is designed to provide market information to small-scale actors in Uganda's agricultural sector.

Information on prices of 32 agricultural commodities from 18 districts is collected weekly. Information on traded volumes is also collected every day from three major

wholesale markets in Kampala. The focus of the service currently has a bias towards crops though efforts are now being made to improve information services on livestock for traders and pastoralists. In addition, information is collected on weather conditions and forecasts, road conditions, import and export activities and regional and international markets for products produced in Uganda.

District Commercial Officers and Trade Officers (formerly Marketing Officers) provide market reports from the Districts. FOODNET has provided Districts with a computer and funds to enable travel and sending of results by fax weekly. Information is broadcast on Radio Uganda and several other radio stations which provide a nation-wide coverage with up to 7 million listeners. The market information is also available by contacting FOODNET directly.

The Project will support FOODNET in the following ways:

- 28 existing District Commercial and Trade Officers plus 2 MAAIF marketing staff will be trained in market information collection and analysis which will assist the quality of market information and will help to ensure sustainability. Of these, 18 of the District Officers working in areas managed by FOODNET will be supported with field expenses to enable them to travel to markets and to provide more comprehensive information on market prices and trends for livestock and livestock products.
- A media coverage supplement will be provided for MIS radio broadcasts and newspaper coverage for inclusion of livestock information. This will, where appropriate, include information to support the drive towards exporting meat regionally and internationally.
- A motorcycle and running costs for a market reporter already employed by FOODNET will be provided. The reporter will be based in Kampala and will be responsible for providing information on market prices and trends in the Capital. He/she will send information for incorporation into the radio broadcasts and market information printed in the newspapers.

The main components of the FOODNET approach are:

- A twice weekly 2 minute market prices broadcast on Tuesdays and Thursdays. This is a market update including major changes in the market place. The program will include livestock marketing information once data begins to flow in from the supported District Trade and Commercial Officers.
- A 15-30 minute program at the end of the week which provides a national overview of the market and more in depth information about why the market is changing. To include interviews with local traders and producers and to be transmitted nationally by Radio Uganda and locally in the local language.
- A third set of programs based on longer term learning programs, including ideas of collective marketing, grades and standards and linkage to traders and credit options.
- Retraining of staff in new areas including collection of livestock data and interviewing livestock farmers and traders.

### 3.3.3 Livestock regulatory services

One of the constraints affecting livestock which was identified by stakeholders in Uganda was that existing livestock regulations and standards are outdated, poorly drafted and inadequately enforced. The Project proposes to provide support (Ush 38 million) for the improvement of Livestock Regulatory Services through the following measures:

- Investigation into, and preparation of background papers on the existing regulations and standards in Uganda
- Review of measures required to improve levels of production, marketing and processing of livestock and livestock products within Uganda so that export standards are achieved
- Identification of target markets for possible export of meat and meat products – including regional and international outlets – including a review of regulations and standards pertaining to those outlets.
- Follow-up on the proposed export standard abattoir for Kampala for which a feasibility study is currently being carried out. The involvement of organisations such as the Uganda Beef Producers' Association will be required
- Holding of 5 stakeholder workshops for in-depth discussions on the way forward

This component of the project will fund operating costs to define and develop the standards as follows:

- Staff salaries for 4 staff at U2 and U3 levels for 6 months
- Field expenses for 4 staff for 5 days per month for 6 months
- Stationery and other related costs pertaining to a literature search
- Other operating costs including fuel for travel

During the 6 month period of investigation, MAAIF will be in a position to develop the required policy and standards. The Project's other initiatives will help to create an enabling environment for the policy and standards. These include

- Livestock restocking and genetic improvement
- Disease control
- Water supply
- Other livestock marketing initiatives: improvements to markets and slaughtering facilities, the marketing information service and hides and skins.

*The total of unit costs for this support is U Sh 3.45 million (\$2,000)*

### 3.3.4 Support to hides and skins sector

*Improving Flaying and Skinning of Hides and Skins* In Uganda up to 80% of hides are rejected because of poor quality and the biggest cause of rejection is poor flaying.

Flayers are often paid per hide and the incentive is to flay as quickly as possible. Another cause is inappropriate branding in some parts of the country particularly the Karamoja area. There owners wish to identify their animals from a distance so large brands/marks are used and placed in the center of the body which reduces the usable area of the hide. Unsuitable pointed flaying knives are often used instead of the recommended round-ended type. It is difficult to flay an animal with a pointed knife without damaging the hide or skin. Hides are split after flaying so that the inner layer is used for suede items. At present little of this can be used because of cuts caused during flaying. Many goat and sheep hides do not reach the market because they are rejected as a result of poor condition (mainly from poor storage or uneven drying) or small size.

The current (October 20001) value of dry hides weighing 10-11 kg when bought from farmers by traders is U Sh 1450/kg = about U Sh 15,000 per hide. Goat and sheep skins are currently being sold for U Sh 1800 per piece – they are not weighed individually. Figures from Government Customs department indicate that processed hides and skins for export have been realizing over U Sh 4,000/kg.

The Livestock Development Project will provide support for training of abattoir, slaughter house and slaughter slab workers in flaying and skinning as follows:

- 4 Trainers, previously trained in country to a high level will be employed on contract basis and supplied with a motorcycle so that each can travel round a District in which several training courses will be conducted.
- 20 Districts will be covered with 8 courses per District and a maximum of 10 trainees per course. Total persons trained by end of Project will be 1,600.

*Unit cost of a training group = U Sh 1.4 million (\$820) and unit cost of trainers = U Sh 9.24 million (\$5,400)*

#### **4. Impact of disease on production, processing and marketing**

To appreciate the impact of diseases on the animal industry, it is helpful first to gauge the magnitude of total GDP attributable to livestock. In the following section this is broken down into two components: (1) the amount of GDP attributable to the estimated livestock monetary value; (2) a component that measures productivity in terms of estimated meat, milk, hides and skins, traction and manure yields.

##### **4.1 Estimates of livestock GDP and annual production**

Cattle account for the largest proportion of total livestock biomass (68%) followed by goats (15%), pigs (9%), poultry (5%) and sheep (3%), Table 1. When all possible livestock contributions is taken into account, total GDP is estimated at 1,700 billion Shs (\$1,047 million) and the same trend is maintained, respectively 70, 15, 2, 7 and 6% (Annex 3). When worth is cash value generated the share of cattle increases to 75% while that of goats declines to 13% followed by pigs (6%), poultry (5%) and sheep (2%). On the other hand when the calculation is based on estimated annual production of meat, milk, hides and skins, traction and manure, the proportion attributed to cattle declines sharply to 58% while the contribution of goats increases to 19%, with 10% for poultry, 10% for pigs and 3% for sheep. The findings suggest that goats, poultry and pigs perhaps

make greater contributions to the livestock industry than is ordinarily perceived and valued.

Overall levels of production are nevertheless low. Among cattle, for example, off-take rate for slaughter is 10% compared to 24% in Argentina rising to 35% in USA, Europe and Australia. Low slaughter rates arise from several reasons, including the fact that heifers are first bred at 3-4 years and female fertility is low (calving rate 50%). High rates of mortality (30% before weaning, 10% between weaning and a year of age, and near 10% overall) further depress production. Cows that comprise 40% of the herd and 90% are of local genotypes, calve every 24 months and give 3-5 liters milk a day in 150-200 days. Since 60% of production is again cropped for human consumption, survivor calves grow slowly and take 5-6 years to reach slaughter weights of 350 to 400-kg if only grazed, with a dressing percentage of 48% and carcass weights are just 150-200-kg. Total beef production is therefore about 91,500-MT, 15-kg per head of cattle annually. Sheep and goats yield 5-kg of meat per head, pigs 12-kg and chicken 0.6-kg a year (Annex 3). There is a need to increase productivity per head as well as per unit area of land, partly by helping farmers improve the health status of their animals.

#### **4.2 Effect of disease on production and processing**

The economic importance of diseases on production is manifested by the failure of producers to realise the full benefits of livestock farming because of reduced productive potential. Diseases exert direct losses through:

- Mortality (death) of infected animals, which also includes the capital cost of replacements,
- Morbidity or quantitative and qualitative declines in body weight gains, meat, milk yield, egg production, reproductive performance, and condemnations, and
- Increased cost of production because of purchasing and administering necessary treatment or control regimes.

The indirect losses, which are more difficult to quantify, include:

- Opportunity costs foregone by farmers when they remove or eliminate livestock from disease infected grazing areas,
- Reduced crop production because of insufficient draught power and manure.

In addition, some diseases including tuberculosis, brucellosis, anthrax and rabies are of zoonotic importance and are hazardous to human health.

Research on the economic impact of disease on production is usually reported for single ailments, e.g., rinderpest, trypanosomosis, foot and mouth disease, endoparasites etc. Losses in productivity are then used to generate a monetary figure reflecting how much the disease costs. Thereafter potential benefits of what might accrue in the absence of the disease can be assessed. Most livestock in Uganda are raised traditionally in mixed specie and age groups and, gauging from abattoir meat inspections, some animals become exposed to and simultaneously suffer from more than one health problem. Accurate data on which a proper economic assessment [including population size, herd composition, growth and off take rates, body weights for age, calving interval, meat milk and egg production, vaccination coverage, mortality rates, etc.] is not available. When preparing

the LDP a broad estimate of these parameters was made using values in MAAIF reports, university dissertations and interactions with professionals having a good knowledgeable of the livestock industry in Uganda. A data set on slaughter cattle pathology from one of the major abattoirs in Kampala was particularly useful in gauging the impact of diseases on production by assessing losses arising from post-slaughter condemnations. The data set comprised of 119,079 cattle and 20,177 goats slaughtered from June 1996 to May 2001.

Losses because of disease are estimated at \$86.3 millions a year through morbidity (\$50.3 millions, 58.3%), mortality (\$26.0 millions, 30.1%), post-slaughter condemnations (\$8.7 millions, 10.1%) and \$1.3 millions (1.5%) because of conditions detected during processing especially of milk. The losses represent a 26% decline in productivity itself estimated at \$330 millions. The losses average \$14 (Ush 23,800) per TLU. The average livestock producer owns 11.2 TLUs, ranging from a single chicken to over 3500 cattle. It is thus possible that a person may be losing \$155 (Ush 260,000) a year because of disease, the value of an average cow. Latin American studies have shown that effective control and eradication of animal diseases, a major reflection of the quality of veterinary services, would make it possible to realise a 35% increase in meat production without significantly increasing the animal population. The animal health problem in Uganda is likely to be larger, suggesting, perhaps, that an even greater response in protein supplies would be registered from better disease control.

#### **4.3 Effect of Disease on export marketing**

Uganda is not exporting any meat largely because of restrictions imposed due to the prevalence of diseases. An export quota of 10,000-MT beef a year (55,000 head of good quality slaughter cattle), representing a 9% increase to current off-take rate, which is feasible, would realise a profit of about \$12.5 millions. On the other hand if sold locally the same beef would raise \$2.5 million profit. Zimbabwe currently has an export quota of 9,000-MT of beef to Europe and 5,000-MT to South Africa.

#### **4.4 Diseases of importance to production**

Animal diseases may be grouped according to causative agent into microbiological (bacterial, viral, fungal), parasitic (protozoa, rickettsia, helminths and arthropods), metabolic disorders, poisoning (plants, chemical, snakes), neoplasms, and traumatic. Some diseases occur over a short period and cause high mortality and economic losses. Others, especially the viral ailments are endemic and pose a threat to neighbouring regions, while a few are transmissible to man (zoonoses).

Particularly spectacular are health problems that arise when temperate animals are introduced into tropical Uganda conditions. In addition to climatic stresses that have hindered their introduction to the particularly hot regions, these exotic breeds and sometimes even their crosses with the locals, are genetically much more susceptible to diseases like dermatophilosis, East Coast Fever, trypanosomosis, babesiosis, cowdriosis, lumpy skin disease, tick-infestation and many other ailments than the local breeds in areas where these diseases are endemic. This is because co-evolution of the parasites and host has tended to result in natural selection for greater resistance among indigenous

**Table 3. Diseases constraining cattle production and development**

Agro-Ecological Zones	Pastoral dry semi-arid range lands (Semi-Arid II)	Northern and Eastern short grasslands (Sub-Humid III)	Southern and Western tall grasslands (Humid IV)	High altitude (Montane I)
<b>Group I Diseases</b>				
1 Rinderpest	+	+	+	+
2 CBPP	++	++	++	++
3 Foot and Mouth Disease	+++	+++	+++	+++
4 Lumpy Skin Disease	++	++	++	++
<b>Group II Diseases</b>				
1 Trypanosomosis	++	+++	+++	+
2 Tick-borne diseases, TBDs				
. East Coast Fever --ECF	++	+++	+++	++
. Anaplasmosis	++	+++	+++	+++
. Babesiosis	+	+	+	+
. Cowdriosis	+	+	+	+
3 Dermatophilosis	+	+	++	++
4 Internal parasitism	++	++	++	++
<b>Group III Diseases</b>				
1 Anthrax	++	++	+	+
2 Calf diarrhoea	+	+	++	+++
3 Tuberculosis	++	+	++	+
4 Brucellosis	+	++	++	++
5 Pneumonias	+	+	++	++
6 Reproductive diseases	+	+	+	+
7 Mastitis	+	+	++	+++
8 Pasteurelosis	+	+	++	++
9 Haemorrhagic septicaemia		+	+	
10 Lameness		+	++	++
11 Metabolic disorders	+	+	+	++
12 Mineral/Vitamin Def.	+	++	++	+

Blank = no importance, + = light importance, ++ = moderate importance, +++ = very important

**Table 4. Diseases constraining sheep & goat production and development**

Agro-Ecological Zones	Pastoral dry semi-arid range lands (Semi-Arid II)	Northern and Eastern short grasslands (Sub-Humid III)	Southern and Western tall grasslands (Humid IV)	High altitude (Montane I)
<b>Group I Diseases</b>				
1 CCPP	+	+	+	+
2 Foot-and-Mouth Disease	++	++	++	+
1 GI helminthiasis	+	++	++	++
2 TBDs & Ectoparasites	+	+	++	++
3 Sheep pox	++	++	++	++
4 Trypanosomiasis	+	+	+	
1 Anthrax	+	+	+	+
2 Brucellosis	+	+	+	+
3 Pneumonic pasteurelosis	+	++	++	++
4 Haemorrhagic septicaemia	+	+	+	+
5 Infertility			+	+
6 Mastitis	+	+	+	+
7 Coccidiosis	+	+	++	++
8 Contagious ecthyma		+	+	
9 Foot rot		+	+	+
10 Plant poisoning	+	+	+	
11 Lameness		+	+	+
12 Metabolic disorders	+	+	+	+
13 Mineral/Vitamin Def.	+	+	+	+

Blank = no importance, + = light importance, ++ = moderate importance, +++ = very important

breeds. But differences in susceptibility are not only limited to between tropical and temperate breeds. Differences occur between Asian and African cattle breeds, Asian Zebus being just as susceptible as temperate breeds to cowdriosis, dermatophilosis, and ECF for instance. Hence it is not so much a matter of breed or specie, rather, one of populations being locally selected under natural pressure of disease. This factor ought to be given adequate consideration when choosing the livestock genotype appropriate for a given ecological zone, even in Uganda, as for example in restocking.

It is therefore more accurate for diseases to be classified using a system that reflects their potential impact on production and the likely influence of the management system. Under such a scheme three groups of livestock diseases are differentiated.

Group I diseases consist of the epidemic infectious ailments like rinderpest, contagious bovine pleuropneumonia (CBPP), and contagious caprine pleuropneumonia (CCPP), lumpy skin disease, and foot-and-mouth disease (FMD). These diseases can pose a regional risk with high mortality and major economic losses, and, if not properly controlled they can severely limit sector development. Fortunately, effective vaccines and preventive control measures are available for most of them. Some are progressively being brought under control through combined efforts of national veterinary services and international agencies, such as the Pan African Rinderpest Campaign (PARC) and Pan African Program for the Control of Epizootics (PACE) against rinderpest and CBPP.

Group II diseases are the next most important livestock diseases largely consisting of parasitic, viral and the vector transmitted diseases whose severity is influenced by local environmental conditions. They are distributed through all the agro-ecological zones in Uganda. Important Group II diseases are trypanosomosis, theileriosis (East Coast Fever – ECF), cowdriosis, anaplasmosis, babesiosis, dermatophilosis, African swine fever and gastro-intestinal parasitism. Many have no effective and easy-to-administer vaccines or chemotherapeutic agent. Control of tick or insect vectors with pesticides is the advisable control method. Trypanosomosis, tick-borne diseases and internal parasitism continue to limit livestock production in many parts of the country.

Group III diseases are those which become more prominent and important as production systems intensify. These diseases are generally not associated with high mortality except among younger animals. However, they cause serious economic losses through reduced productivity (morbidity), and, some are zoonoses of public health importance. Group III diseases include soil-borne bacterial infections like anthrax, infectious reproductive ailments like brucellosis and trichomoniasis, haemorrhagic fevers, diarrhoeas, pneumonias, mastitis, tuberculosis, sheep and goat pox, pasteurellosis (shipping fever), Newcastle disease, mange, and mineral and vitamin deficiencies. To a large extent their control measures are known and their prevalence and severity substantially depends on level of management, genotype, nutrition status, and local environment.

Annexes 5, 6, 7 and 8 list the livestock diseases that impact on cattle, sheep and goats, pigs and poultry production highlighting their relative importance in the four major agro-ecological zones: 1) the pastoral dry to semi-arid rangelands in east Ankole, west Masaka and Karamoja, 2) the Northern and Eastern sub-humid short grasslands, 3) the Southern

and Western humid tall grasslands, and 4) the high altitude (montane) areas in Kigezi, Sebei, West Nile and some parts of Ankole. Brief notes about the cattle diseases are given in Annexes 14. Opportunities to trade in meat and meat products will depend on how well the country can control infectious diseases, in particular, foot and mouth disease.

## **5. Directives governing imports to European Union**

It is not possible for Uganda to import meat to the European Union (EU) at the present time because of the directives governing livestock diseases, slaughter and transport of meat. A full set of directives is held at the Delegation of the European Commission in Kampala. The more important regulations are summarised in this section.

### **5.1 Importation of fresh meat**

#### **Article 14**

Member States shall not authorise the importation of fresh meat unless it comes from third countries:

(a) which, for the previous 12 months have been free from those of the following diseases to which the animals from which the meat has come are susceptible: cattle plague, African swine fever, contagious porcine paralysis (Teschen disease);

(b) in which no vaccinations have been carried out for the previous 12 months against the diseases mentioned under (a) to which the animals from which the meat has come are susceptible.

© in which no classical swine-fever has been detected for at least the preceding 12 months, vaccination against classical swine-fever has not been authorized for at least the preceding 12 months and no pigs have been vaccinated against classical swine-fever in the preceding 12 months.;

3. (a) the import of fresh meat from third countries in which:

- foot and mouth disease (strains O, A, C) is endemic
- systematic slaughtering is not carried out where an outbreak of foot and mouth disease occurs
- vaccination is practised

shall be permitted only under the following conditions:

(i) the third country or a region within the third country is approved under the procedure laid down in Article 29

(ii) the meat is matured, its pH controlled, deboned and the major lymphatic glands removed

The import of offals for human consumption shall be restricted, taking into account expert scientific opinion. Special conditions may be possible for offals for the pharmaceutical and petfood industry. These restrictions and conditions shall be adopted according to the procedure laid down in Article 29.

(b) The import of fresh meat from third countries in which vaccination against foot and mouth disease strains SAT or ASIA 1 is used shall be permitted only under the following conditions:

(i) the third country has regions where vaccination is not permitted and no foot and mouth disease has occurred for 12 months: the regions shall be approved under the procedure laid down in Article 29.

- (ii) the meat is matured, deboned and the major lymphatic glands have been re-moved, and is not imported until 3 weeks after slaughter
- (iii) the importation of offal from these countries is not permitted
- © the import of fresh meat from third countries
  - in which vaccination is practised, and
  - which have been free of foot and mouth disease for 12 months shall be permitted

in accordance with conditions established under the procedure laid down in Article 29.

(d) the import of fresh meat from third countries in which:

- routine vaccination is not carried out, and
- freedom from foot and mouth disease has been established

shall be permitted under the procedure laid down in Article 29 and in accordance with the rules governing intra-Community trade.

Additional rules may apply to the countries referred to in (a) and (b) of the first subparagraph shall be established in accordance with the procedure laid down in Article 29.

**Article 15**

It may be decided, under the procedure set out in Article 29, that Article 14 (2) (a) shall apply only to a part of the territory of a third country. In accordance with the same procedure and by way of derogation from Article 14 (2) (b), importation of fresh meat may be permitted, on certain conditions, from a third country or part of the territory of that third country where vaccinations have been carried out against one or several of the diseases referred to in Article 14 (2) (a).

The conditions relating to the said imports, established in accordance with the procedures referred to in the second and third subparagraphs, must in no case be more favourable than those governing intra-Community trade.

**Article 17**

1. The Member States shall not authorise importation of fresh meat in the form of carcasses, including half carcasses in respect of swine, and halves or quarters in the case of bovine animals and solipeds, unless it is possible to reconstruct the entire carcasses of each animal.

2. Such importation shall be subject to the following conditions: fresh meat must have (a) been obtained in a slaughterhouse included on the list established in accordance with Article 4 (1);

(b) come from a slaughter animal inspected ante mortem by an official veterinarian in accordance with Annex I, Chapter VI of Directive 64/433/EEC and passed fit as a result of such inspection for slaughter for the purposes of export to the Community in accordance with the procedure laid down in Article 29, additional requirements adapted to the specific situation of countries specified by name with respect to certain diseases likely to endanger human health may be decided on.'

© have been treated according to the hygiene conditions in accordance with Chapter VII, Annex I to Directive 64/433/EEC

(d) have undergone a post mortem inspection carried out under the responsibility and direct control of an official veterinarian in accordance with Chapter VII, Annex I to Directive 64/433/EEC and have shown no change except for traumatic lesions incurred shortly before slaughter or localised malformations or changes provided that it is established, if necessary by appropriate laboratory tests, that these do not render the

carcasses and offal unfit for human consumption or dangerous to human health; In accordance with the procedure laid down in Article 29, additional requirements adapted to the specific situation of countries specified by name with respect to certain diseases likely to endanger human health may be decided on.'

(e) the health mark must be applied in accordance with Chapter XI of Annex I to Directive 64/433/EEC

(f) after post mortem inspection carried out as laid down in (d), have been stored in establishments under satisfactory hygienic conditions and in accordance with Chapter XIV of Annex I to Directive 64/433/EEC storage plants;

(g) have been transported in accordance with Chapter XV of Annex I to Directive 64/433/EEC and undergone handling in satisfactory conditions of hygiene. 11

4. When carrying out the post mortem inspection referred to in 2 (d), and when verifying compliance with the hygiene conditions referred to in 2© and with the requirements of Chapter XIV of Annex I to Directive 64/433/EEC, the official veterinarian may be helped by assistants working under his responsibility These assistants must:

(a) be appointed by the central competent authority of the exporting country, in accordance with the provisions in force;

(b) have appropriate training;

© enjoy a status guaranteeing their impartiality towards those running the establishments;

(d) have no power of Decision concerning the final result of the public health inspection.

(e) Come from a country on the list established in accordance with Article 3(1) and that the animal health requirements are complied with. The Member States in the territory of which the international organisations in question are located shall ensure that this meat is not placed in free movement.

The first subparagraph shall apply mutatis mutandis to meat products

#### **Article 20**

(i) from animals to which hormonal substances prohibited under Directives 81/602/EEC and 88/146/EEC have been administered:

(ii) containing residues of hormonal substances authorized in accordance with the exceptions provided for in Article 4 of Directive 81/602/EEC and Articles 2 and 7 of Directive 88/146/EEC, residues of antibiotics, pesticides or other substances which are harmful or likely to make the consumption of fresh meat dangerous or hazardous to human health in so far as such residues exceed the permitted levels. Permitted levels shall be fixed by the Council, acting on a proposal from the Commission, and may subsequently be amended in accordance with the procedure laid down in Article 29;

© fresh meat treated with ionising or ultraviolet radiation, and fresh meat from animals to which tenderisers or other products likely to adversely affect the meat's composition or organoleptic characteristics have been administered;

(d) fresh meat to which have been added substances other than those provided for in paragraph 58 of Chapter XI of Annex I to Directive 64/433/EEC have been added for the purpose of health marking;

(e) fresh meat from animals which have been found to have any form of tuberculosis whatsoever and fresh meat from animals which, after slaughter are found to have tuberculosis in any form whatsoever, or to be carrying one or more cysticerci bovis or cysticerci cellulosa, live or dead, or in the case of swine, to have trichinae;

(f) fresh meat from animals slaughtered too young;

- (g) parts of the carcasses or offal with traumatic lesions incurred shortly before slaughter or mal-formations, contaminations or changes referred to in Article 17 (2) (d);
- (h) blood;
- (i) minced meat, meat cut up in a similar manner and mechanically recovered meat;
- (j) fresh meat in pieces of less than 100 grams
- (k) the heads of cattle, and parts of the muscular and other tissues of the head apart from the tongue

## **5.2 Imports of meat products**

### ***Article 21a***

1 Without prejudice to paragraph 2, the meat products must have been prepared wholly or partly from fresh meat:

- (i) satisfying the requirements of Articles 14 and 15, and any specific animal health conditions laid down pursuant to Article 16, or originating in a Member State, provided such fresh meat: satisfies the requirements of Articles 3 and 4 of Directive 80/215/EEC without prejudice to the requirements of Articles 7 and 10 of that Directive,
- (ii) has been sent, under veterinary control, to the processing establishment either directly or following prior storage in an approved cold-storage plant,
- (iii) has, before processing, undergone inspection by an official veterinarian to ensure that such fresh meat is still fit to undergo processing in accordance with Directive 77/99/EEC.

### ***Article 21b***

In addition to the requirements set out in Article 21a, meat products coming from third countries may be imported into the Community only if they satisfy the following requirements:

1. they must have been obtained in an establishment appearing under the "meat products" heading on the list drawn up pursuant to Article 4;
2. they must have come from an establishment meeting the relevant requirements of Annexes A and B to Directive 77/99/EEC;
3. they must have been obtained in conditions of hygiene satisfying the requirements of Chapter II and points 23 and 25 of Chapter III of Annex A to Directive 77/99/EEC;
4. they must have been obtained wholly from:
  - (a) fresh meat: from an establishment appearing on one of the lists drawn up pursuant to Directive 64/433/EEC or this Directive; satisfying requirements of Articles 17 and 18 of this Directive, and, in addition, meeting the conditions laid down in points 23 and 25 of Chapter III of Annex A to Directive 77/99/EEC;
  - (b) where Article 21a (2) applies, from meat satisfying the specific requirements fixed for the producing country in question;
- © meat products obtained in an establishment appearing either on the list drawn up pursuant to Article 4 or on one of the lists referred to in Article 7 of Directive 77/99/EEC;
5. they must meet the general requirements laid down by Directive 77/99/EEC, and in particular:
  - (a) they must have undergone one of the treatments defined in Article 2(d) of Directive 77/99/EEC;
  - (b) they must have undergone inspection by an official veterinarian in accordance with

Chapter IV of Annex A to Directive 77/99/EEC and, where hermetically sealed, inspection pursuant to requirements to be established in compliance with Chapter II of Annex B to Directive 77/99/EEC.

In carrying out such inspection, the official veterinarian may be aided by assistants reporting to him. Such assistants must:

- (i) be appointed by the central competent authority of the exporting country in accordance with the provisions in force;
- (ii) have received appropriate training;
- (iii) have a legal status ensuring that they are independent of those in charge of the establishments;
- (iv) have no power of decision concerning the final result of the inspection;
- © in the event of wrapping and packaging, they must have been wrapped and packaged in accordance with Chapter V of Annex A to Directive 77/99/EEC;
- (d) they must bear a public health stamp which meets the marking conditions laid down in Chapter VI of Annex A to Directive 77/99/EEC, except for the initials and sets of initials for Member States as specified in point 39 (a), which are to be replaced by the name of the third country of origin, accompanied by the veterinary authorization number of the establishment of origin;
- (e) they must be stored and transported to the Community under satisfactory conditions of hygiene in accordance with Chapter VIII of Annex A to Directive 77/99/EEC and handled under satisfactory conditions of hygiene; in the case of meat products referred to in Article 12 of that Directive, the producer must, for the purposes of inspection, mark visibly and clearly on the packaging of the product the temperature at which the product must be transported and stored and the period for which it can be stored in that condition;
- (f) they must not have been subjected to ionizing radiation.

Pending the establishment by the Commission import certificates and lists of establishments from which imports of intestines and the other products referred to in Article 2 (b) (v) of Directive 77/99/EEC or the conclusion of veterinary equivalence agreements, and until 31 December 1998 at latest. Member States shall be authorized to import the products in accordance with the national rules in force by way of derogation from the requirements laid down in paragraphs 1, 2 and 4 (a) (i).

### **5.3 Requirements applicable to both meat and meat products**

#### **Article 22**

1. Member States shall not authorize fresh meat or meat products to be imported without presentation of an animal health certificate and a public health certificate drawn up by an official veterinarian of the exporting third country.

These certificates must:

- (a) be drawn up in at least one of the official languages of the country of destination and one of those of the Member State in which the import inspections provided for in Articles 23 and 24 are carried out;
- (b) accompany the fresh meat or meat products in the original;
- © consist of a single sheet of paper;
- (d) be made out for a single consignee.

The animal health certificate must certify that the fresh meat or meat products comply with the animal health requirements laid down in this Directive and with those laid down

pursuant to it with respect to the importation of fresh meat or meat products from the third country.

2. The health certificate must correspond to a model established in accordance with the procedure laid down in Article 29. It may be decided in accordance with the same procedure and case by case that this animal health certificate and the public health certificate shall constitute a single sheet.

3. The public health certificate must correspond, in presentation and content for fresh meat to the specimen appearing in Annex A and for meat products to the specimen appearing in Annex C, and be issued on the day on which the fresh meat or meat products are loaded with a view to dispatch to the country of destination.

**Article 23**

1. The Member States shall ensure that, upon arrival in the geographical territory of the Community, fresh meat or meat products are subjected without delay to an animal health inspection carried out by the competent authority, whatever the procedure under which they were declared. The detailed rules necessary to ensure that the inspection referred to in this paragraph is carried out in a uniform manner shall be adopted in accordance with the procedure laid down in Article 29.

2. Without prejudice to paragraph 3, the Member States shall ensure that importation is prohibited if this inspection reveals that:

(a) the meat or meat products do not come from the territory of a third country, or from a part thereof, included on the list drawn up in accordance with Article 3 (1),

(b) the meat or meat products come from the territory of a third country, or from a part thereof, from which imports are prohibited in accordance with Articles 14 and 28, but without prejudice to Article 21a (2),

(c) the animal health certificate which accompanies the meat or meat products does not comply with the conditions laid down pursuant to Article 22 (1) and (2).

3. The Member States shall authorize fresh meat or meat products from one third country to be transported to another provided that:

(a) the party concerned supplies proof that the first third country towards which the meat or meat products are being sent, after transit through Community territory, undertakes under no circumstances to reject or to send back to the Community the meat or meat products the importation or transit of which it has authorized;

(b) such transport has been previously authorized by the competent authorities of the Member State in the territory of which the animal health inspection provided for in paragraph 1 is carried out;

© such transport is carried out, without the goods being unloaded on Community territory, under the supervision of the competent authorities in vehicles or containers sealed by the competent authorities; the only handling authorized during this transport shall be that carried out respectively at the point of entry into or exit from Community territory for direct transshipment from a ship or aircraft to any other means of transport or vice versa.

4. All expenditure incurred pursuant to this Article shall be chargeable to the consignor, the con-signee or their representative without compensation by the State.

**Article 24**

1. The Member States shall ensure that each consignment of fresh meat or meat products undergoes a public health inspection before being released for consumption on the

geographical territory of the Community, and an animal health inspection, carried out by an official veterinarian.

The Member States shall ensure that importers are obliged to give at least two working days' notice to the local service responsible for the import inspection at the post where the fresh meat or meat products are to be submitted for inspection, specifying the quantity and nature of the meat or the meat products and the time from which the inspection may be carried out.

2. The public health inspection provided for in paragraph 1 shall be carried out by random sampling in the case of imports covered by Articles 17 (1), 18 (1) and (2) and Articles 21a and 21b. The purpose of this inspection shall be in particular to verify, in accordance with paragraph 3:

- (a) the public health certificate, the compliance of the fresh meat or meat products with the stipulations on that certificate, the health marking;
- (b) the State of preservation, the presence of dirt or pathogenic agents;
- (c) the presence of residues of substances referred to in Article 20;
- (d) whether, with regard to fresh meat, slaughter and cutting or, with regard to meat products, the production have been carried out in establishments approved for that purpose;
- (e) the conditions of transport.

3. There shall be adopted, in accordance with the procedure laid down in Article 29, the implementing rules necessary to ensure that the inspections referred to in paragraph 1 are carried out in a uniform way, particularly as regards the application of Article 20, and more particularly the methods of analysis and sampling intervals and standards.

4. The Member States shall prohibit the marketing of fresh meat or meat products if the inspections provided for in paragraph 1 have shown that:

- 1. the fresh meat or meat products are not suitable for human consumption, 15

The detailed rules necessary to ensure that the inspection referred to in this paragraph is carried out in a uniform manner shall be adopted in accordance with the procedure laid down in Article 29.

2. Without prejudice to paragraph 3, the Member States shall ensure that importation is prohibited if this inspection reveals that:

- the meat or meat products do not come from the territory of a third country, or from a part thereof, included on the list drawn up in accordance with Article 3 (1),
- the meat or meat products come from the territory of a third country, or from a part thereof, from which imports are prohibited in accordance with Articles 14 and 28, but without prejudice to Article 21a (2),
- the animal health certificate which accompanies the meat or meat products does not comply with the conditions laid down pursuant to Article 22 (1) and (2).

3. The Member States shall authorize fresh meat or meat products from one third country to be transported to another provided that:

- (a) the party concerned supplies proof that the first third country towards which the meat or meat products are being sent, after transit through Community territory, undertakes under no circumstances to reject or to send back to the Community the meat or meat products the importation or transit of which it has authorized;
- (b) such transport has been previously authorized by the competent authorities of the Member State in the territory of which the animal health inspection provided for in paragraph 1 is carried out;

© such transport is carried out, without the goods being unloaded on Community territory, under the supervision of the competent authorities in vehicles or containers sealed by the competent authorities; the only handling authorized during this transport shall be that carried out respectively at the point of entry into or exit from Community territory for direct transshipment from a ship or aircraft to any other means of transport or vice versa.

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4. The Member States shall prohibit the marketing of fresh meat or meat products if the inspections provided for in paragraph 1 have shown that:

- the fresh meat or meat products are not suitable for human consumption

**5.4 African countries certified for animal health purposes**

Seven African countries have been approved by the EU for importations of meat into its territory. However in four of these countries, as a result of disease problems, only part of the country has been certified as disease free. Currently the approved countries are:

Botswana, Morocco, Madagascar, Namibia (south of the cordon fences which extend from Palgrave Point in the west to Gam in the east), Swaziland (west of the 'red line' fences which extend from the river Usutu to the frontier with South Africa, and excluding the gazetted veterinary foot-and-mouth surveillance and vaccination control areas), South

Africa (excluding certain foot-and-mouth disease control areas) and Zimbabwe (excluding certain gazetted districts)

## 6. Regulations and procedures of the OIE Animal Health Code relevant to Uganda's Strategic Exports Proposals

To enable it to enter the export market Uganda needs to focus on curbing livestock diseases and to improve its veterinary health capability. These areas are governed and guided by the OIE Animal Health Code. It is important to be aware of the kinds of regulations which OIE has in place which need to be met. In this section several key OIE requirements are highlighted. These are 1. General obligations for international trade; 2. Evaluation of veterinary services; 3. Surveillance and monitoring of animal health; 4. Foot-and-mouth disease procedures; 5. Recommended standards for epidemiological surveillance systems for contagious bovine pleuro-pneumonia.

### 6.1 General obligations

#### Article 1.2.1.1.

*International trade* in animals and animal products depends on a combination of factors which should be taken into account to ensure unimpeded trade, without incurring unacceptable risks to human and animal health.

Because of the likely variations in animal health situations, various options are offered by the *Code*. The animal health situation in the *exporting country*, in the *transit country* or *countries* and in the *importing country* should be considered before determining the requirements which have to be met for trade. To maximise harmonisation of the sanitary aspects of *international trade*, *Veterinary Administrations* of Member Countries should base their import requirements on the OIE standards, guidelines and recommendations. These requirements should be included in the model certificates approved by the OIE which form Part 4 of this *Code*.

Certification requirements should be exact and concise, and should clearly convey the wishes of the *importing country*. For this purpose, prior consultation between *Veterinary Administrations* of *importing* and *exporting countries* is useful and may be necessary. It enables the setting out of the exact requirements so that the signing veterinarian can, if necessary, be given a note of guidance explaining the understanding between the *Veterinary Administrations* involved.

#### Article 1.2.1.2.

### Responsibilities of the importing country

- 1 The import requirements included in the *international veterinary certificate* should assure that *commodities* introduced into the *importing country* comply with the national level of protection that it has chosen for animal and human health. *Importing countries* should restrict their requirements to those justified for such level of protection.
- 2 The *international veterinary certificate* should not include requirements for the

- . exclusion of pathogens or animal diseases which are present within the territory of the *importing country* and are not subject to any *official control programme*. The requirements applying to pathogens or diseases subject to *official control programmes* in a country or zone should not provide a higher level of protection on imports than that provided for the same pathogens or diseases by the measures applied within that country or zone.
- 3 The transmission by the *Veterinary Administration* of certificates or the communication of import requirements to persons other than the *Veterinary Administration* of another country, necessitates that copies of these documents are also sent to the *Veterinary Administration*.

This important procedure avoids delays and difficulties which may arise between traders and *Veterinary Administrations* when the authenticity of the certificates or permits is not established.

This information is usually the responsibility of *Veterinary Administrations*. However, it can be the responsibility of *Veterinary Authorities* at the place of origin of the *animals* when it is agreed that the issue of certificates does not require the approval of the *Veterinary Administration*.

#### Article 1.2.1.3.

#### **Responsibilities of the exporting country**

- 1 An *exporting country* should be prepared to supply the following information to *importing countries* on request:

- a) Information on the animal health situation and national animal health information systems to determine whether that country is free or has *free zones* of *List A* or *List B* diseases, including the regulations and procedures in force to maintain its free status;
- b) regular and prompt information on the occurrence of transmissible diseases;
- c) details of the country's ability to apply measures to control and prevent *List A* diseases and, where appropriate, *List B* diseases;
- d) Information on the structure of the *Veterinary Services* and the authority which they exercise;
- e) Technical information, particularly on biological tests and vaccines applied in all or part of the national territory.

- 2 *Veterinary Administrations* of *exporting countries* should:

- a) have official procedures for authorisation of certifying veterinarians, defining their functions and duties as well as conditions covering possible suspension and termination of the appointment;
- b) ensure that the relevant instructions and training are

- c) provided to certifying veterinarians;  
monitor the activities of the certifying veterinarians to  
verify their integrity and impartiality.

3 The Head of the *Veterinary Service* of the *exporting country* is ultimately  
. accountable for veterinary certification used in *international trade*.

Article 1.2.1.4.

#### **Responsibilities in case of an incident occurring after importation**

*International trade* involves a continuing ethical responsibility. Therefore, if within the recognised *incubation periods* of the various diseases subsequent to an export taking place, the *Veterinary Administration* becomes aware of the appearance or reappearance of a disease which has been specifically included in the *international veterinary certificate*, there is an obligation for the Administration to notify the *importing country*, so that the imported stock may be inspected or tested and appropriate action be taken to limit the spread of the disease should it have been inadvertently introduced.

Equally, if a disease condition appears in imported stock within a time period after importation consistent with the recognised *incubation period* of the disease, the *Veterinary Administration* of the *exporting country* should be informed so as to enable an investigation to be made, since this may be the first available information on the occurrence of the disease in a previously free herd. The *Veterinary Administration* of the *importing country* should be informed of the result of the investigation since the source of infection may not be in the *exporting country*.

## **6.2 Evaluation of veterinary services**

One of the factors which countries will consider when deciding whether or not to import Ugandan livestock products is the quality of its veterinary services. This section gives information pertinent to the evaluation of these services and standards which Uganda will need to reach to be considered to have an effective veterinary service.

Article 1.3.3.1.

### **Quality of veterinary services**

The quality of the *Veterinary Services* depends on a set of factors, which include fundamental principles of an ethical, organisational and technical nature. The *Veterinary Services* shall conform to these fundamental principles, regardless of the political, economic or social situation of their country. Compliance with these fundamental principles by the *Veterinary Services* of a Member Country is important to the establishment and maintenance of confidence in its *international veterinary certificates* by the *Veterinary Services* of other Member Countries.

Should the responsibility for establishing or applying animal health measures, or issuing *international veterinary certificates* be exercised by an organisation other than the *Veterinary Services*, or by an authority or agency on behalf of the *Veterinary Services*, the same fundamental principles should apply.

These fundamental principles are presented in Article 1.3.3.2. The remaining factors of quality are described in Part 1 of the *Code* (notification, principles of certification, etc.) and the document entitled 'Guidelines for the evaluation of Veterinary Services' published in the OIE *Scientific and Technical Review* (new version in preparation).

The quality of *Veterinary Services* can be measured through an evaluation, whose general principles are described in Articles 1.3.3.3. and 1.3.3.4.

#### Article 1.3.3.2.

#### **Fundamental principles of quality**

The *Veterinary Services* shall comply with the following principles to ensure the quality of their activities:

##### 1. Professional judgement

The officials of *Veterinary Services* should have the relevant qualifications, scientific expertise and experience to give them the competence to make sound professional judgements.

##### 2. Independence

Care shall be taken to ensure that *Veterinary Services*' staff are free from any commercial, financial, hierarchical, political or other pressures which might affect their judgement or decisions.

##### 3. Impartiality

The *Veterinary Services* shall be impartial. In particular, all the parties affected by their activities have a right to expect their services to be delivered under reasonable and non-discriminatory conditions.

##### 4. Integrity

The *Veterinary Services* shall guarantee that the work of each of their officials is of a consistently high level of integrity. Any fraud, corruption or falsification shall be identified and corrected.

##### 5. Objectivity

The *Veterinary Services* shall at all times act in an objective, transparent and non-

discriminatory manner.

#### 6. General organisation

The *Veterinary Services* must be able to demonstrate by means of an appropriate legislation and organisation that they are in a position to have control of the establishment and application of animal health measures, and of international veterinary certification activities. In particular, they shall define and document the responsibilities and structure of the organisations in charge of the animal identification system, control of animal movements, animal disease control and reporting systems, epidemiological surveillance and communication of epidemiological information.

A similar demonstration should be made by *Veterinary Services* when they are in charge of veterinary public health activities

The *Veterinary Services* shall have at their disposal effective systems for animal disease surveillance and for *notification* of disease problems wherever they occur, in accordance with the provisions of the *Code*. Adequate coverage of animal populations should also be demonstrated. They shall at all times endeavour to improve their performance in terms of animal health information systems and animal disease control.

The *Veterinary Services* shall define and document the responsibilities and structure of the organisation (in particular the chain of command) in charge of issuing *international veterinary certificates*.

Each position within the *Veterinary Services* which has an impact on their quality shall be described. These job descriptions shall include the requirements for education, training, technical knowledge and experience.

#### 7. Quality policy

The *Veterinary Services* shall define and document their policy and objectives for, and commitment to, quality, and shall ensure that this policy is understood, implemented and maintained at all levels in the organisation. Where conditions allow, they may implement a quality system corresponding to their areas of activity and appropriate for the type, range and volume of work that they have to perform. The guidelines for the quality and evaluation of *Veterinary Services* propose a suitable reference system, which should be used if a Member Country choose to adopt a quality system.

#### 8. Procedures and standards

The *Veterinary Services* shall develop and document appropriate procedures and standards for the implementation and management of animal health measures and

international veterinary certification activities. These procedures and standards may for example relate to:

- Programming and management of activities, including international veterinary certification activities;
- Prevention and control of disease *outbreaks*;
- Epidemiological surveillance and zoning;
- Inspection and sampling techniques;
- Diagnostic tests for animal diseases;
- Preparation, production and control of biological products for use in the diagnosis or prevention of diseases;
  
- *Disinfection and disinsectisation*;
- Treatments intended to destroy, if appropriate, pathogens in animal products.

Inasmuch as the OIE has adopted standards on these matters, the *Veterinary Services* shall comply with these standards when applying animal health measures and when issuing *international veterinary certificates*.

#### 9. Information, complaints and appeals

The *Veterinary Administration* shall undertake to reply to legitimate requests from *Veterinary Administrations* of other Member Countries or any other authority, in particular ensuring that any requests for information, complaints or appeals that they may present are dealt with in a timely manner.

A record shall be maintained of all complaints and appeals and of the relevant action taken by the *Veterinary Services*.

#### 10 Documentation

The *Veterinary Services* shall have at their disposal a reliable and up to date documentation system suited to their activities.

#### 11 Self-evaluation

The *Veterinary Services* should undertake periodical self-evaluation especially by documenting achievements against goals, and demonstrating the efficiency of their organisational components and resource adequacy.

A Member Country can request the Director General of the OIE to arrange for an expert or experts to assist in the process.

#### 12 Communication

*Veterinary Services* should have effective internal and external systems of communication covering administrative and technical staff levels and parties

affected by their activities.

#### Article 1.3.3.3.

For the purposes of the *Code*, every Member Country shall recognise the right of another Member Country to undertake, or request it to undertake, an evaluation of its *Veterinary Services* where the initiating Member Country is an actual or a prospective importer or exporter of *commodities* and where the evaluation is to be a component of a risk analysis process which is to be used to determine or review sanitary measures which apply to such trade.

Any evaluation of *Veterinary Services* should be conducted having regard to the OIE Guidelines for the evaluation of *Veterinary Services*. A Member Country has the right to expect that the evaluation of its *Veterinary Services* will be conducted in an objective manner. A Member Country undertaking evaluation should be able to justify any measure taken as a consequence of its evaluation.

#### Article 1.3.3.4.

A Member Country which intends to conduct an evaluation of another Member Country's *Veterinary Services* shall give them notice in writing. This notice should define the purpose of the evaluation and details of the information required. On receipt of a formal request for information to enable an evaluation of its *Veterinary Services* by another Member Country, and following bilateral agreement of the evaluation process and criteria, a Member Country should expeditiously provide the other country with meaningful and accurate information of the type requested.

The evaluation process should take into account the fundamental principles and other factors of quality laid down in Articles 1.3.3.1. and 1.3.3.2. It should also take into consideration the specific circumstances regarding quality, as described in Article 1.3.3.1., prevailing in the countries concerned.

The outcome of the evaluation conducted by a Member Country should be provided in writing as soon as possible, and in any case within 4 months of receipt of the relevant information, to the Member Country which has undergone the evaluation. The evaluation report should detail any findings which affect trade prospects. The Member Country which conducts the evaluation should clarify in detail any points of the evaluation on request. In the event of a dispute between two Member Countries over the conduct or the conclusions of the evaluation of the *Veterinary Services*, the matter should be dealt with having regard to the procedures set out in Article 1.3.1.4.

### 6.3 Surveillance and monitoring of animal health

This section covers the ability of the veterinary services work efficiently and effectively through surveillance and monitoring. As noted in the summary report, since decentralisation of Ministries to the districts, the percentage of veterinary disease status reports being submitted has declined alarmingly. Surveillance and monitoring is another

factor which will be examined when countries decide whether or not to accept livestock products from Uganda.

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#### Article 1.3.5.1.

##### **Introduction**

The ability of the *Veterinary Services* to substantiate elements of the reports on the animal health situation of their country by surveillance data, results of monitoring programmes and details of disease history is highly relevant to the procedures of risk analysis. However, if the risk assessment conducted on a *commodity* demonstrates an insignificant risk, this may not be necessary.

The science of epidemiology provides the foundation for surveillance and monitoring. A national epidemiological system should incorporate agent surveillance and/or monitoring, description of host population characteristics, and environmental assessment. An effective veterinary infrastructure is necessary to support this epidemiological system.

Surveillance means the continuous investigation of a given population to detect the occurrence of disease for control purposes, which may involve testing of a part of the population.

Monitoring constitutes on-going programmes directed at the detection of changes in the *prevalence* of disease in a given population and in its environment. The following Articles represent a standardised approach to meet the demand for scientifically based import trade requirements.

#### Article 1.3.5.2.

##### **Agent surveillance and monitoring**

Agent surveillance and monitoring may involve the clinical or pathological examination of *animals*, the identification of pathogens, and the detection of immunological or other evidence of previous exposure of *animals* to pathogens.

##### 1 Early investigation of clinical disease

Investigation of the suspicion of *cases* of animal disease is one of the most important means of agent surveillance. Investigations may focus on exotic or new and emerging diseases within the country.

##### 2. Agent detection and disease prevalence

A complete epidemiological system may also require the screening of animals for *List A* and *List B* diseases having a major economic impact on trade in *animals* and animal products, as appropriate to the animal health situation of the country.

Depending on the diseases present and the priorities with regard to export, components of agent screening may include the following active and passive

surveillance methods:

- a) scientifically based surveys;
- b) routine sampling and testing of *animals* on the farm, at market or at slaughter;
- c) an organised sentinel programme, sampling *animals*, herds, flocks, or vectors, and/or collecting diagnostic results from veterinary practices;
- d) the banking of biological specimens for retrospective studies
- e) analysis of veterinary diagnostic laboratory records.

#### Article 1.3.5.3.

##### **Description of host population characteristics**

Description of host population characteristics concentrates on the factors in the national animal population which may influence or be associated with disease occurrence. These host factors may include:

1. Intrinsic factors such as genetics, animal demographics (age, sex, breed distribution) and physiological state (immature, sexually mature but un-bred, gestating, geriatric);
2. Extrinsic factors such as marketing and movement patterns, domestic/wild animal interactions, animal use (draft, meat production, milk or egg production, pets) and management factors (husbandry system, preventive medical practices).

The linkage of demographic data to agent surveillance data is critical for predicting the potential spread of diseases or identifying optimal control measures.

#### Article 1.3.5.4.

##### **Assessment of environmental factors**

Data on environmental assessment include physical factors, biological factors, and economic and structural characteristics of ancillary industries. Some examples of these data are as follows:

##### 1. Physical factors

Air and water quality monitoring, topographical and soil distribution maps, and meteorological data are routinely collected in many countries by a variety of government agencies. Additional data may be available from university researchers or private industry.

##### 2. Biological factors

Vector population distributions may be available from specialists on invertebrates. Vector competence data describes the ability of specific vectors to serve as

biological vectors for specific diseases.

### 3. Ancillary industry characteristics

Data on feed and slaughter industries, on the biologics and pharmaceutical industries, and on marketing and distribution patterns help define the intervention options available in each country.

This information allows estimation of trends for the future, geographic shifts in animal production and processing, and more accurate assessment of disease risk and characterisation and delineation of zones. Much of the required data may be obtained through governmental or non-governmental sources.

## 6.4 Foot and mouth disease

The foot-and-mouth disease virus is highly contagious and, although deaths of animals may be few, it causes morbidity and serious deterioration in growth and production. For these reasons it is one of the most feared livestock diseases and a major reason why Uganda has failed to gain access to export markets. This section covers FMD requirements and procedures for inactivation of the virus in livestock products

Article 2.1.1.1.

### Incubation period

For the purposes of the OIE *Code*, the *incubation period* for foot and mouth disease (FMD) shall be 14 days. Standards for diagnostic tests and vaccines are described in the OIE *Manual*.

Article 2.1.1.3.

### FMD free country where vaccination is practised such as Uganda

To be listed in FMD free countries where vaccination is practised, a country should:

- 1 ) have a record of regular and prompt animal disease reporting;
- )
- 2 ) send a declaration to the OIE that there has been no *outbreak* of FMD for the past 2 ) years, with documented evidence that:
  - a) an effective system of disease surveillance is in operation and that all regulatory measures for the prevention and control of FMD have been implemented, and
  - b) routine vaccination is carried out for the purpose of the prevention of FMD and that the vaccine used complies with the standards described in the *Manual*, and
- 3 ) have a system of intensive and frequent surveillance for detection of any viral ) activity.

The name of the country will be included in the list only after acceptance of submitted evidence by the OIE.

If an FMD free country where vaccination is practised wishes to change its status to FMD free country where vaccination is not practised, a waiting period of 12 months after vaccination has ceased is required.

Article 2.1.1.5.

**FMD free zone where vaccination is practised**

An FMD free zone where vaccination is practised can be established in a country with a free zone where vaccination is not practised or in a country of which parts are still infected. The free zone where vaccination is practised is separated from the rest of the country and, if relevant, from neighbouring infected countries by a buffer zone, or physical or geographical barriers and animal health measures which effectively prevent the entry of the virus. A country in which an FMD free zone where vaccination is practised is to be established should:

- 1) have a record of regular and prompt animal disease reporting;
- 2) send a declaration to the OIE that it wishes to establish an FMD free zone where vaccination is practised, where there has been no *outbreak* of FMD for the past 2 years;
- 3) supply documented evidence that an effective system of surveillance is in operation in the FMD free zone where vaccination is practised as well as the buffer zone if applicable, that routine vaccination is carried out for the purpose of the prevention of FMD, and that the vaccine used complies with the standards described in the *Manual*;
- 4) describe in detail:
  - a) the boundaries of the FMD free zone where vaccination is practised and the buffer zone if applicable,
  - b) the system for preventing the entry of the virus into the FMD free zone, and supply evidence that these are properly supervised, and that all regulatory measures for the prevention and control of FMD have been implemented;
- 5) have a system of intensive and frequent surveillance for detection of any viral activity in the FMD free zone where vaccination is practised.

The name of the free zone will be included in the list of FMD free zones where vaccination is practised only after acceptance of submitted evidence by the OIE.

If a country that has an FMD free zone where vaccination is practised wishes to change the status of the zone to FMD free zone where vaccination is not practised, a waiting period of 12 months after vaccination has ceased is required.

#### Article 2.1.1.6.

##### **FMD infected country**

An FMD infected country is a country that does not fulfil the requirements for being considered as an FMD free country.

When FMD occurs in an FMD free country or zone where vaccination is not practised, the following waiting periods are required to regain the disease free status:

- a) 3 months after the last *case*, where stamping-out and serological surveillance are applied; or
- b) 3 months after the slaughter of the last vaccinated animal where stamping-out, serological surveillance and emergency vaccination are applied.

When FMD occurs in an FMD free country or zone where vaccination is practised, the following waiting periods are required to regain the disease free status:

- a) 12 months after the last *case* where stamping-out is applied, or
- b) 2 years after the last *case* without stamping-out,

provided that an effective surveillance has been carried out.

#### Article 2.1.1.7.

##### **FMD infected zone**

An FMD infected zone is a zone where the infection is present in a country with a free zone where vaccination either is or is not practised. The infected zone should be separated from the free zone either by a surveillance zone, or a buffer zone, or by physical or geographical barriers and animal health measures which effectively prevent the escape of the virus.

Live animals from FMD susceptible species can only leave the infected zone if moved by mechanical transport to the nearest designated abattoir located in the buffer zone or the surveillance zone for immediate slaughter. In the absence of an abattoir in the buffer zone or the surveillance zone, live FMD susceptible animals can be transported to the nearest abattoir in a free zone for immediate slaughter only under the following conditions:

- 1) no animal in the *establishment* of origin has shown clinical signs of FMD for at least

30 days prior to movement;

- 2) the animals were kept in the *establishment* of origin for at least 3 months prior to movement;
- 3) FMD has not occurred within a 10-km radius of the *establishment* of origin for at least 3 months prior to movement;
- 4) the animals must be transported under the supervision of the *Veterinary Authority* in a *vehicle*, which was cleansed and disinfected before loading, directly from the *establishment* of origin to the abattoir without coming into contact with other susceptible animals;
- 5) such an abattoir is not export approved;
- 6) all products obtained from the animals must be considered infected and treated in such a way as to destroy any residual virus; in particular, *meat* must be processed in conformity with one of the procedures referred to in Article 3.6.2.1.;
- 7) *vehicles* and the abattoir must be subjected to thorough cleansing and disinfection immediately after use.

Animals moved into a free zone for other purposes must be taken to a *quarantine station* under the supervision of the *Veterinary Authority*. Freedom of infection of these animals must be established by appropriate tests.

#### Article 2.1.1.10.

When importing from FMD free countries or zones where vaccination is practised, *Veterinary Administrations* should require:

for domestic ruminants and pigs

the presentation of an *international veterinary certificate* attesting that the animals:

- 1) showed no clinical sign of FMD on the day of shipment;
- 2) were kept in an FMD free country since birth or for at least the past 3 months; and
- 3) have not been vaccinated and showed a negative response to tests for antibodies against FMD virus, when destined to an FMD free country or zone where vaccination is not practised.

FMD free countries where vaccination is not practised may require additional guarantees.

Article 2.1.1.11.

When importing from FMD infected countries or zones, *Veterinary Administrations* should require:

for domestic ruminants and pigs

the presentation of an *international veterinary certificate* attesting that the animals:

- 1) showed no clinical sign of FMD on the day of shipment;
- 2) were kept in the *establishment* of origin since birth or
  - a) for the past 30 days, if a *stamping-out policy* is in force in the *exporting country*, or
  - b) for the past 3 months, if a *stamping-out policy* is not in force in the *exporting country*,

and that FMD has not occurred within a 10-km radius of the *establishment* of origin for the relevant period as defined in points a) and b) above;

- 3) were isolated for the 30 days prior to quarantine in an *establishment*, were subjected to diagnostic tests (probang and serology) for FMD with negative results, and that FMD has not occurred within a 10-km radius of the *establishment* during that period;
- 4) were kept in a *quarantine station* for the 30 days prior to shipment, were subjected to diagnostic tests (probang and serology) for FMD with negative results at the end of that period, and that FMD has not occurred within a 10-km radius of the *quarantine station* during that period;
- 5) were not exposed to any source of infection during their transportation from the *quarantine station* to the *place of shipment*.

Article 2.1.1.24.

When importing from FMD infected countries or zones, *Veterinary Administrations* should require:

for meat products of domestic ruminants and pigs

the presentation of an *international veterinary certificate* attesting that:

- 1) The entire consignment of *meat* comes from animals which have been slaughtered in an *approved abattoir* and have been subjected to ante-mortem and post-mortem inspections for FMD with favourable results;
- 2) The *meat* has been processed to ensure the destruction of the FMD virus in conformity with one of the procedures referred to in Article 3.6.2.1.;
- 3) The necessary precautions were taken after processing to avoid contact of the *meat products* with any potential source of FMD virus.

#### 6.4.1 Foot and mouth disease virus inactivation procedures

These regulations are important for Uganda as a FMD infected country because they describe procedures can be carried out which enable, in certain circumstances, products from infected livestock to be exported.

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##### Article 3.6.2.1.

#### **Meat**

For the inactivation of viruses present in meat, one of the following procedures should be used:

##### 1. Canning

Meat is subjected to heat treatment in a hermetically sealed container to reach an internal core temperature of at least 70°C for a minimum of 30 minutes or to any equivalent treatment which has been demonstrated to inactivate the FMD virus.

##### 2. Thorough cooking

Meat, previously deboned and defatted, shall be subjected to heating so that an internal temperature of 70°C or greater is maintained for a minimum of 30 minutes.

After cooking, it shall be packed and handled in such a way that it cannot be exposed to a source of virus.

##### 3. Drying after salting

When *rigor mortis* is complete, the meat must be deboned, salted with cooking salt (NaCl) and completely dried. It must not deteriorate at ambient temperature.

'Drying' is defined in terms of the ratio between water and protein which must not be greater than 2.25:1.

##### Article 3.6.2.2.

#### **Wool and hair**

For the inactivation of viruses present in wool and hair for industrial use, one of the following procedures should be used:

1. **Industrial washing**, which consists of the immersion of the wool in a series of baths of water, soap and sodium hydroxyde (soda) or potassium hydroxyde (potash);

2. chemical depilation by means of slaked lime or sodium sulphide;
3. fumigation in formaldehyde in a hermetically sealed chamber for at least 24 hours. The most practical method is to place potassium permanganate in containers (which must NOT be made of plastic or polyethylene) and add commercial formalin; the amounts of formalin and potassium permanganate are respectively 53 ml and 35 g per cubic metre of the chamber;
4. industrial scouring which consists of the immersion of wool in a water-soluble detergent held at 60-70°C;
5. storage of wool at 18°C for 4 weeks, or 4°C for 4 months, or 37°C for 8 days.

#### Article 3.6.2.4.

##### **Raw hides and skins**

For the inactivation of viruses present in raw hides and skins for industrial use, the following procedure should be used: salting for at least 28 days in sea salt containing 2% sodium carbonate.

#### Article 3.6.2.5.

##### **Milk and cream for human consumption**

For the inactivation of viruses present in milk and cream for human consumption, one of the following procedures should be used:

1. Ultra-high temperature (UHT) (UHT = minimum temperature of 132°C for at least 1 second);
2. if the milk has a pH less than 7.0, simple high temperature – short time pasteurisation (HTST);
3. if the milk has a pH of 7.0 or over, double HTST.

## **6.5 Recommended standards for epidemiological surveillance systems for contagious bovine pleuropneumonia (CBPP)**

CBPP is another Group 1 disease which is a serious constraint to the exporting of beef from Uganda. Surveillance systems in Uganda need to be improved and this section explains recommended standards for effective surveillance of the disease. These regulations are included as a means of emphasising the effort required in Uganda to bring epidemiological surveillance systems up to the standards required if meat exports are to be achieved.

### **1. Definition and purposes of surveillance**

Disease surveillance is necessary to provide evidence that a country or zone is free from a disease or infection.

Disease surveillance should be implemented by both:

- a) a system of reporting any signs of disease activity which come to the notice of Veterinary Services or livestock owners; and,
- b) an active programme of examination of statistically selected samples from host populations in order to detect clinical signs or other indications of the occurrence of disease or transmission of infection.

In either case, suspicion of disease activity should be followed by quarantine, confirmatory diagnostic work and any necessary disease control measures. Surveillance thus implies that official action will follow from the discovery of evidence of disease or infection. It can be contrasted with monitoring, in which the gathering of data from the field takes place similarly, but no official action based on the findings is implied in the data-gathering activity.

Within the context of pleuropneumonia, specific measures need to be implemented, such as an exhaustive inspection of all lungs of bovines throughout the country or zone.

## **2. Steps to be taken to declare a country free from contagious bovine pleuropneumonia**

The current goal in CBPP control is to achieve freedom from disease in particular countries and later of entire world regions, with the ultimate aim of achieving global eradication. It is therefore necessary to institute a system for verifying the steps towards these short and long-term aims, and to assist countries which wish to trade in livestock or livestock products, but face difficulties due to the presence or past occurrence of CBPP.

In conformity with the general principles for assessing disease status developed by the OIE, a four-stage process should be applied:

- intention to eradicate pleuropneumonia: the longest phase, depending on prevalence of the disease in the country or zone, geographical, socio-economic and administrative conditions, and the capacity of the animal health infrastructure.
- once a country is free from CBPP and that disease is unlikely to be re-introduced, the country can declare itself provisionally free from disease, provided it meets the criteria listed below;
- declaration of freedom from clinical CBPP, after international verification carried out under the auspices of the OIE;
- declaration of freedom from CBPP, where a country meets more stringent

surveillance and control criteria.

The last three stages are strictly covered by the epidemiological surveillance methods of the OIE.

The sequence of operations differs both in terms of tactics and duration depending on whether or not the country wishing to eradicate CBPP practises vaccination.

'Disease' in the context of declaration of freedom means that the particular pathogenic agent is present and causes significant pathological effects on animals which become infected with the agent. Thus 'freedom from disease' means that there is no evidence in animals within the country or zone of any pathological effects occurring (including clinical signs) due to the presence of the agent, and from all the evidence pathogenic strains of the particular agent have been eliminated.

#### viii. **Countries Practising Vaccination**

##### **Requirements for the declaration of *freedom from disease* and *freedom from CBPP***

###### a) Provisional freedom from disease

For a country to declare the whole or a zone of its territory provisionally free from disease, it must fulfil certain conditions, which are:

- i) no clinical or pathological evidence of CBPP should have been detected for at least 3 years;
- ii) there is an effective Veterinary Service which is able to monitor the animal health situation in the country;
- iii) there is effective meat inspection at *approved abattoirs*, and effective surveillance of populations in which significant numbers of slaughtered susceptible livestock are not subject to meat inspection;
- iv) all evidence suggestive of CBPP is investigated by field and laboratory methods (including serological and microbiological assessment) to refute a possible diagnosis of CBPP;
- v) there is an effective reporting system, both from the field to the central veterinary authority, and by that body to the OIE;
- vi) there is an effective system to prevent the introduction of infection,

including appropriate border control, quarantine etc.;

- vii) if vaccination has been used, all vaccination against CBPP has ceased by the date of declaration; the OIE and neighbouring countries having been notified in writing, giving the date from which vaccination was discontinued.

b) Freedom from clinical CBPP

A country which has declared itself or a zone to be provisionally free from disease may be declared by the OIE free from clinical CBPP, provided that the following criteria are met:

- i) no clinical or pathological evidence of CBPP has been detected for at least 5 years;
- ii) no CBPP vaccination has taken place for at least 2 years;
- iii) the country operates surveillance and disease reporting systems for CBPP adequate to detect disease if it were present, and ensures that veterinary staff are adequately trained in the recognition of CBPP;
- iv) all susceptible livestock at recognised abattoirs are subject to meat inspection procedures adequate to detect lung lesions, with diagnostic procedures to refute a possible diagnosis of CBPP;
- v) there has been a programme of surveillance (using serological, pathological and microbiological techniques) for at least 2 years on any populations of susceptible domestic livestock where more than 10% of slaughtering is not subject to adequate meat inspection procedures;
- vi) all evidence suggestive of CBPP is investigated by field and laboratory methods (including serological and microbiological assessment) to refute a possible diagnosis of CBPP;
- vii) there are effective measures in force to prevent re-introduction of the disease.

On meeting these criteria, a country may apply to the OIE for all, or a zone, of its territory to be declared free from clinical CBPP.

An Expert Panel for the Verification of Disease Status of the OIE will evaluate the application and decide whether or not to approve it. In coming to its decision, the Expert Panel will consider evidence presented by the country and will gather information on the extent to which the criteria are met. This

information-gathering will usually include sending members of the Panel to make a field visit to the country. The Expert Panel will report its findings to the OIE Foot and Mouth Disease and Other Epizootics Commission. The Commission will report its conclusions annually to the International Committee for endorsement.

To maintain this status, a country must continue to meet these requirements until it is declared free from CBPP, and must report to the OIE an annual summary of developments.

Should there be a localised temporary outbreak of disease due to re-introduction of CBPP to a country which has met, or is within 2 years of meeting, the requirements for a declaration of freedom from clinical CBPP, that country should implement a stamping-out policy, which may be supported by intensive perifocal vaccination, to eradicate the outbreak. In such circumstances if no vaccination was carried out, it will then require at least one year from the date of the last case before the country becomes eligible to apply for a declaration of freedom from clinical CBPP. If vaccination was used, this period is extended to 2 years from the date of the last case or the last vaccination (whichever occurs later). In making an application under these special circumstances, it must be shown that the outbreak did not represent endemic infection, and that the disease has been eradicated by the actions taken.

The declaration of zones to be free from clinical CBPP will not remove the requirement for the country subsequently to meet the criteria for declaration of freedom from clinical CBPP for the country as a whole; if it wishes to achieve that status, it will have to meet all of the requirements specified above before it can apply for a declaration of freedom from clinical CBPP for the entire country.

c) Freedom from CBPP

A country or a zone of its territory which has within the last 10 years either vaccinated against CBPP, or found clinical or pathological evidence of CBPP, may be declared by the OIE to be free from CBPP if the following criteria are met:

- i) it has been declared free from clinical CBPP at least 2 years earlier, and continues to meet the requirements for this status;
- ii) there has been effective abattoir surveillance for at least 4 years, covering all susceptible domestic livestock;
- iii) use has been made of diagnostic procedures capable of differentiating *Mycoplasma mycoides* from other bovine *Mycoplasma* infections in the

investigation of respiratory disease, and the findings are consistent with freedom from *M. mycoides* infection;

- iv) there has been a programme of surveillance, including serological, pathological and microbiological components, for at least 3 years on any populations of susceptible domestic livestock where more than 10% of slaughter stock are not subject to adequate meat inspection procedures.

On satisfying these criteria, a country may apply to the OIE to be declared free from CBPP.

An Expert Panel for the Verification of Disease Status of the OIE will evaluate the application and decide whether or not to approve it. In coming to its decision, the Expert Panel will consider evidence presented by the country and will gather information on the extent to which the criteria are met. This information-gathering will usually include sending members of the Panel to make a field visit to the country.

The Expert Panel will report its findings to the OIE Foot and Mouth Disease and Other Epizootics Commission. The Commission will report its conclusions annually to the International Committee for endorsement.

In the special case of a country or zone which has been considered to be continuously free from CBPP for at least 10 years, and meets all of the following requirements:

- v) has not vaccinated against CBPP for at least 10 years;
- vi) throughout that period found no clinical or pathological evidence of CBPP infection;
- vii) had throughout that period, and undertakes to maintain permanently, an adequate disease surveillance and reporting system, covering all susceptible domestic livestock;
- viii) in appropriate circumstances, made use of diagnostic procedures capable of differentiating *Mycoplasma mycoides*; from other bovine *Mycoplasma* infections in the investigation of respiratory disease, with findings consistent with freedom from *M. mycoides* infection;

the country or zone may be declared by the OIE to be free from CBPP without the necessity to proceed through the normal intermediate steps. This declaration will be based on the conclusions of the Expert Panel for the Verification of Disease Status.

Declaration of freedom from CBPP can be made for the country as a whole, or for zones within a country.

Should there be a localised temporary outbreak of disease due to re-introduction of CBPP to a country which has met, or is within one year of meeting, the requirements for a declaration of freedom from CBPP, that country may take special measures (excluding the use of vaccination) to eradicate the outbreak. In such circumstances, it will then require at least 2 years from the date of the last case before the country becomes eligible to apply for a declaration of freedom from CBPP. In making an application under these special circumstances, the country must demonstrate that the outbreak did not represent endemic infection, and that the disease has been eradicated by the actions taken.

In order to maintain this status, the country must continue to operate an efficient disease surveillance and reporting system, which would detect CBPP if it occurred.

## **7. Inter-regional Livestock Trade Commission**

It is recommended that Uganda takes advantage of a new initiative to create an inter-regional Livestock Trade Commission. The PACE initiative and the Pastoral Livelihoods Programme (PLP) of OAU-IBAR have been working with FAO and UNDP on efforts to lift the ban on livestock exports from the Greater Horn of Africa (GHA) states to the Arabian Peninsula (Middle East) nations which was imposed due (reportedly) to Rift Valley Fever. Although Rift Valley Fever is not a serious problem in Uganda, the initiative to create an inter-regional Livestock Trade Commission has already established links with the Middle East which appear to have potential for improving livestock trading links between it and GHA. The GHA countries are: Egypt, Sudan, Eritrea, Djibouti, Ethiopia, Somalia, Kenya, Tanzania and Uganda. Three consultative meetings took place to develop the programme:

- An Expert Consultation (Rome, May 2001)
- A meeting of the Directors of Livestock Services of GHA (June 2001)
- A Technical Consultation of participants from GHA, Yemen and the Nairobi Embassy of Saudi Arabia (June 2001)

Recommendation or resolutions arising from these events were:

- A commitment on the part of the countries of GHA to develop open and transparent disease prediction and reporting systems
- Unanimous support for the development of an Inter-Regional Livestock Trade Commission to maintain dialogue between exporting and importing countries and work to promote trade through information collection, analysis and dissemination

- Recognition by exporter countries on the need to work continuously to meet importer country animal health requirements for livestock and livestock products.

In addition, as part of PLP's Trade Advocacy Initiative, there have been a series of joint missions to the Arabian Peninsula, in particular Saudi Arabia and the United Arab Emirates, to hold discussions with senior state officials and private sector livestock traders with a view to promoting and maintaining dialogue with Arabian Peninsula states on animal health and livestock trade. Specific objectives of these missions have been:

- To learn more about the animal health certification requirements of the importing countries
- To discuss the development of the proposed inter-regional Livestock Trade Commission

The PLP has said that the concept of the Commission has won strong support from both exporting and importing countries. As it develops and becomes operational PACE will advise on setting up animal disease surveillance systems in exporting countries, which will be of particular value to Uganda as it attempts to develop export markets. PACE will collate and analyse this information at IBAR level. Results will then be used to predict disease outbreaks and in addition, to temporarily halt livestock exports if and when conditions exist which pose threats to the disease-free status of exported livestock products.

**8. PERSONS MET**

<b><u>Name</u></b>	<b><u>Designation</u></b>
Paul Rossiter	Regional Livestock Coordinator, FAO Kenya
Bernard Rey	Rural Development Advisor, EU Kenya
Chip Stem	Senior Policy Advisor, OAU-IBAR Pastoral Livelihoods Project, Kenya
Yacob Aklilu	Director, Livelihoods Program, Fenstein International Famine Centre
Berhanu Bedane	Data Management Officer, OAU-IBAR PACE, Kenya
Chris Collinson	Marketing Economist, Natural Resources Institute
John Jagwe	Agricultural Economist, Foodnet, Kampala
Martin Fowler	Senior Policy & Programme Advisor, MAAIF
Otto Moller	First Counsellor (Agriculture), EU Uganda
Nick Roberts	Advisor to the NAO, Ministry of Finance, Planning and Economic Development, Kampala
Yves Gillet	Rural Development Counsellor, EU Uganda
David Kamukama	Director Projects, Intervet Services, Kampala
Dr C.S. Rutebarika	PACE Coordinator, MAAIF Entebbe
Adrian Mukhebi	Executive Director, Kenya Agricultural Commodity Exchange Ltd
Ambrose Gidudu	National Coordinator, FITCA Project, Uganda
Bradley Buck	Country Coordinator, Land O'Lakes Inc.
Clive Drew	Chief of Party, IDEA Project
Steven Humphries	IDEA Project
Dr Jimmy Saamanya	Commissioner, Dept of Animal Production & Marketing, MAAIF
Emmanuel Mwebe	General Manager, ULAIA
Dr Peter Ngategize	Adviser to PMA, MAAIF
Dr Nathan Twinamasiko	Executive Director, Dairy Development Authority
Hon. Gerald Ssendaula	Minister of Finance, Planning & Economic Development