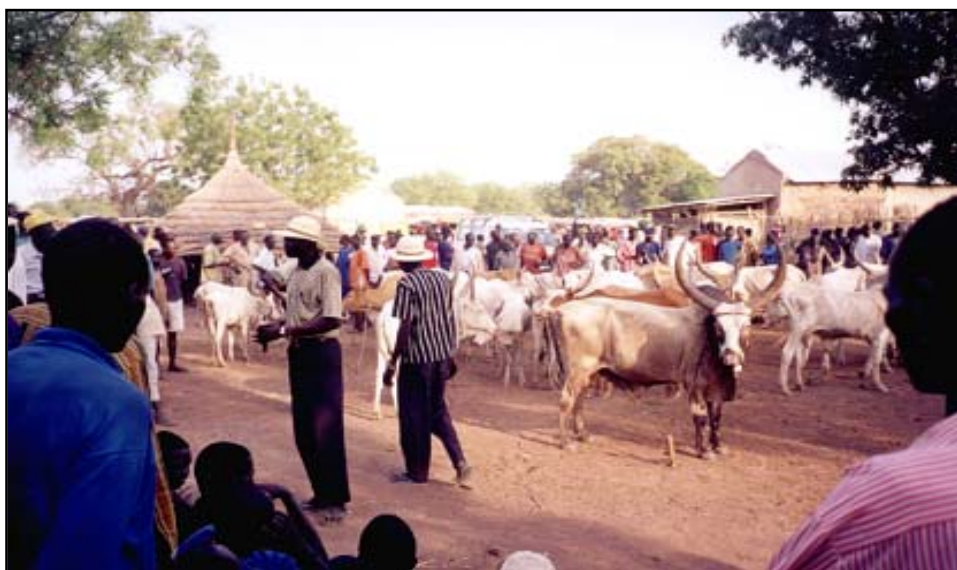




ORGANISATION OF AFRICAN UNITY
INTER-AFRICAN BUREAU FOR ANIMAL RESOURCES
PAN AFRICAN PROGRAMME FOR THE CONTROL OF EPIZOOTICS
COMMUNITY-BASED ANIMAL HEALTH AND PARTICIPATORY
EPIDEMIOLOGY UNIT (CAPE)



LIVESTOCK MARKETING IN SOUTHERN SUDAN

**With Particular Reference to the Cattle Trade between
Southern Sudan and Uganda**

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The views expressed in this report are those of the consultants.

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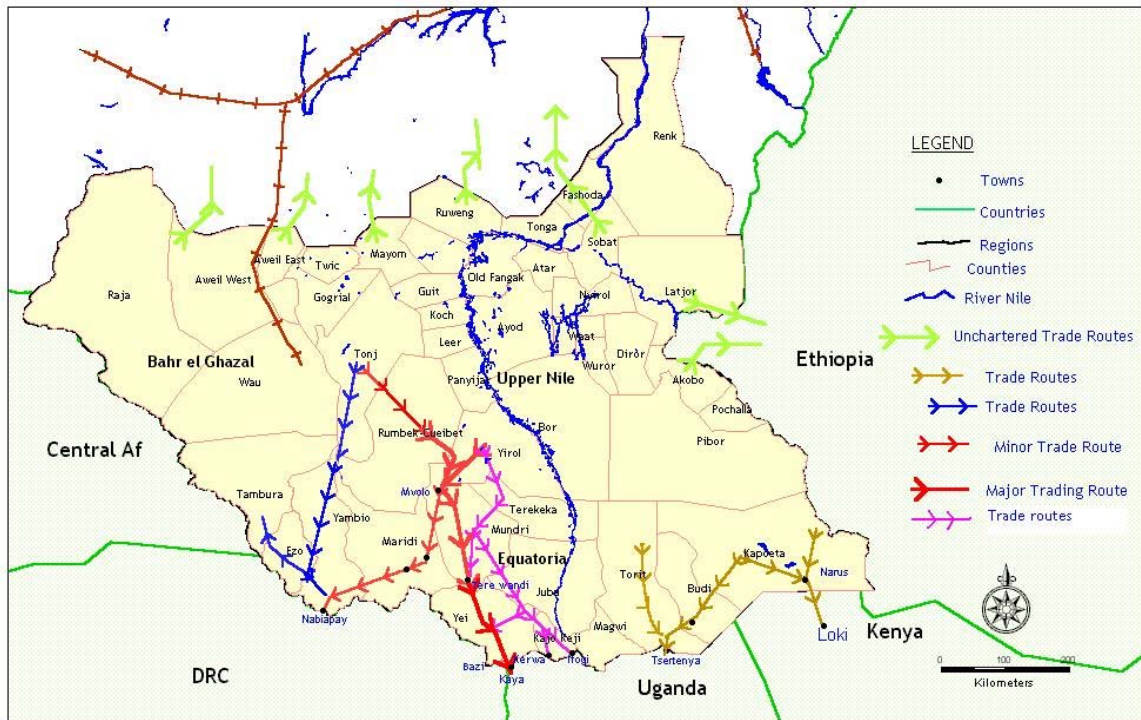
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ABBREVIATIONS

AHAs	Animal Husbandry Auxiliaries
ASF	African swine fever
BSE	Bovine spongiform encephalitis
CAO	Chief Administration Officer
CAPE	Community-based Animal Health and Participatory Epidemiology Unit
CAR	Central African Republic
CBAHWs	Community-based Animal Health Workers
CBPP	Contagious bovine pleuro-pneumonia
CCPP	Contagious caprine pleuro-pneumonia
DAR	Director of Animal Resources
DRC	Democratic Republic of Congo
DVO	District Veterinary Officer
ECF	East coast fever
EU	European Union
FAO	Food and Agriculture Organization
FMD	Foot and mouth disease
GDP	Gross Domestic Product
GOU	Government of Uganda
Ha	Hectare
IBAR	Interafrican Bureau for Animal Resources
Kg	Kilogramme
Km	Kilometre
Ksh	Kenya shilling
LSD	Lumpy skin disease
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MOH	Ministry of Health
ND	Newcastle disease
NGO	Non-Governmental Organization
OAU	Organization of Africa Unity
OLS	Operation Lifeline Sudan
OIE	Office International des Epizooties
PACE	Pan African Programme for the Control of Epizootics
PARC	Pan African Rinderpest Campaign
PM	Post mortem
RP	Rinderpest
SEAZ	Small East African Zebu
SPLA	Sudan People's Liberation Army
SPLM	Sudan People's Liberation Movement
SPS	Sanitary and Phyto-Sanitary
SRRA	Sudan Relief and Rehabilitation Association
SS	Southern Sudan
TB	Tuberculosis
TBD	Tick borne disease
TLU	Tropical Livestock Unit
UMP	Uganda Meat Packers
Ush	Uganda shillings
UVA	Uganda Veterinary Association
VO	Veterinary Officer
WTO	World Trade Organization

CATTLE TRADE ROUTES IN SOUTHERN SUDAN



This map does not imply official endorsement from the UN.

Produced by: Data Analyst David Ombagi
Dated: 12th May 2002

1. Summary

Currently Dinka cattle from Sudan are being marketed in northern Uganda but supply far exceeds demand and Sudanese traders control numbers crossing the border to avoid flooding the market. Ugandan restrictions are in force which prevent cattle being sent to the larger southern markets mainly because of concern about spreading diseases, particularly rinderpest. However discussions with Uganda authorities confirmed that there is no objection to Sudanese cattle being marketed anywhere in the country providing they are free from diseases and parasites. Even though Uganda is actively promoting its own export of livestock, its cattle resources are limited. Cattle from Sudan would probably be used to support the local market. Their use by Uganda for export is less likely because the disease-free zones so far envisaged are in the south-western region of Uganda.

Total beef production in Uganda is calculated at about 121,400 tonnes a year from the slaughter of 607,000 head of cattle. This indicates an annual *per capita* beef intake of 5.5 kg. Taking FAO's recommended intake of 50 kg of beef per person per year, there is a theoretical local market shortfall of 900,000 tonnes a year. The extent to which Sudanese beef can fill this niche depends partly on changes in purchasing capacity and consumption habits as well as the extent to which Uganda is able to penetrate beef export markets.

Cattle marketed in Uganda are walked mainly from the Bahr El Ghazal and Lakes regions of Southern Sudan. There are five official cattle crossing points into Uganda: These are (a) From Bazi/Kaya in Sudan to Oraba, Koboko and Arua in Uganda; (b) from Kerwa in Sudan to Merwa and Yumbe in Uganda; (c) from Kajo Keji in Sudan to Afoji and Moyo (or Arua) in Uganda; (d) From Nimule in Sudan to Ajumani and Gulu in Uganda; (e) from Tsertenya in Sudan to Agoro and Kitgum in Uganda. Livestock infrastructure and veterinary facilities at these crossing points are inadequate on both sides of the border and they must be improved before Uganda will permit cattle to be marketed in the south of the country - which is the key to increased marketing. Requirements include the construction or improvement of holding grounds/quarantine areas on each side of the border and improvements to veterinary facilities. There is also a shortage of water on some marketing routes from the cattle rearing areas which would benefit from the installation of small dams.

It will be necessary for a local organisation to oversee construction of new facilities and to co-ordinate the improved marketing system on both sides of the border from two bases, one in Southern Sudan and one in northern Uganda.

The livestock marketing system would benefit from the construction of three small abattoirs [see section 9.1] in northern Uganda at Arua, Gulu and Kitgum which are on the three major stock routes for cattle coming from Sudan. Each abattoir should be capable of handling 50 cattle and 50 goats per day. The meat and meat products produced would then be distributed by refrigerated trucks to other towns in Uganda including Kampala. Advantages of the abattoirs would include reduced transport costs by transporting meat instead of live animals and better control over the destination of cattle from Sudan. Private investors should be encouraged to examine the feasibility of investing in these abattoirs. The Government of Uganda has also proposed the construction of the Arua abattoir.

Roads on the main cattle marketing routes are generally in poor condition. Cattle owners and traders do not send animals by truck because of the risk of injury or death. If roads were improved it would be more viable to send cattle by truck. One major transport company – Truckoil – is willing to carry cattle at reduced prices, though these have not yet been specified. On good roads cattle could be transported from Rumbek to the Uganda border in 12 hours with no need to offload for feeding/watering. At present in the dry season the journey takes 2 –3 days and cattle which survive require at least 5 days of feed and rest to recover from the journey. In the rainy season parts of the road can become impassable for vehicles. Currently cattle are trekked on the hoof for 30 – 45 days or more, may lose weight and may have insufficient access to water. They are also at risk from diseases as they enter the tick-infested, higher rainfall areas near the Uganda border. However, if protected

from disease and parasites and if trekked slowly, cattle can gain weight as they pass through the grasslands to the south of Southern Sudan.

At present cattle marketing is generally profitable for traders. Sudanese traders purchasing cattle in towns such as Rumbek (Sudan) and selling them in northern Uganda are currently realising an average margin of just over Ush 100,000 per animal providing there is no delay crossing the border. Currently delays are occurring because traders have agreed to limit the number of cattle entering Uganda in order to maintain prices. Traders make further profits on commodities purchased in Uganda for re-sale in Southern Sudan.

There is reported to be a high demand for meat in Democratic Republic of Congo [section 4.3] and some Sudanese cattle are being sent there, though most traders from Sudan avoid it. The DRC market requires further investigation. Sudanese cattle are entering Kenya [section 4.2] via Narus and Nadapal – one major trader imports 250 per month. The trade is inhibited by insecurity, unauthorised charges and problems in obtaining permits. A feasibility study funded by AMREF supports the construction of an abattoir at Lokichoggio in Kenya which could handle 220 cattle per day. While this mainly targets livestock from Turkana, it would also attract animals from Southern Sudan.

Training of livestock producers, traders and butchers as well as hides & skins handlers, is required on marketing and related issues [section 6]. The main areas in which they require training are: Selection, weight assessment and pricing of animals suitable for slaughter and for trekking over long distances; Relationship of livestock movement and livestock diseases; Currencies and exchange rates; Veterinary and other livestock treatments necessary for marketing; Regulations governing movement of livestock including movement permits; Existing internal and external markets; Factors affecting supply and demand; Production and marketing of hides and skins (training to be carried out by Uganda Leather and Allied Industries Association (ULAIA)); Simple record keeping; Formation of livestock trader groups; How to access credit; Livestock welfare/cruelty. Training should be carried out by an NGO in Southern Sudan.

2. Background

This study¹ reviews, *inter alia*, the current marketing system with its constraints and potentials, makes proposals for its improvement and investigates possible new market outlets. It also examines the need for training for traders and others. The study was conducted in Kenya, Uganda and Southern Sudan. In Nairobi meetings were held with NGOs and other organisations working in Southern Sudan. The study team then visited a number of Uganda Government Officials in the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) in Entebbe, as well as people from the private sector, and the main abattoirs, in Kampala. In Southern Sudan meetings were held with SPLA/M and SRRA officials, truck owners, veterinary staff, NGOs, livestock owners, traders, and butchers as well as hides & skins handlers were met during the field trips. Cattle camps in Sudan were visited, as well as the livestock auction in Rumbek where prices being paid for livestock were obtained. The three main livestock marketing routes through Kaya, Kerwa and Kajo Keji were visited both on the Southern Sudan and Uganda sides. The two other routes through Nimule and Tsertenya were not visited. In Lokichoggio, Kenya, livestock traders were met. The Team also had access to literature, in particular previous reports from earlier studies in the Southern Sudan region.

¹ Study was carried out by Alan King (Livestock Production & Marketing Specialist), Dr E. Mukasa-Mugerwa (Veterinarian & Livestock Production Specialist) and Dr William Mogga (FAO/OLS Assistant Livestock Project Officer)



Photo 2. Cattle camp near Rumbek, Southern Sudan

Livestock numbers in Southern Sudan have been increasing for several years. Reasons for the increase include improvements in animal health and production through:

- Control of rinderpest through the Pan African Rinderpest Campaign (PARC), the Thermostable Rinderpest Vaccine Technology Transfer (TRVTT) Project and the Participatory Community-based Animal Health and Vaccination (PARC-VAC) Project
- Development of community-based animal health services through NGOs, PARC-VAC, the Community-based Animal Health and Participatory Epidemiology (CAPE) Unit – a unit of the Pan African Programme for the Control of Epizootics (PACE) of OAU/IBAR, and FAO/OLS.

There has not been a parallel development in markets to provide outlets for the increased livestock population. Reasons for this include:

- The war between north and south in Sudan which has restricted the traditional markets in the north, and in the major southern towns under Sudan Government control, for cattle raised by pastoralists in the south
- Lack of marketing infrastructure and veterinary services which restrict entry to markets in neighbouring countries because of the fear of contagious diseases.

2.1 Cattle population and importance in Southern Sudan

Southern Sudan has approximately 5.8 million head of cattle [Jones, 2001, Annex 3] and an almost similar number of sheep and goats. This translates into a domestic ruminant livestock biomass of 5.4 million Tropical Livestock Units (1 TLU = 250-kg live weight). The cattle population increases from fairly small herds of 5-50 animals in the higher rainfall counties bordering Uganda to herds of 500 or more in the drier pastoral areas of Kapoeta, Pibor, Phou, Bieh, Latjor, Sobat, Fashoda, Lieh, Tonj, Gogrial, Twic, Awiel, Yirol and Rumbek counties [Annex 3]. In order to access the Uganda, Kenya, Democratic Republic of Congo (DRC) and Central African Republic (CAR) cattle markets, animals may be walked for 45 days and can cover more than 800-km distances. Most animals observed being trekked to Uganda markets were males of which 60-70% were castrated.

Livestock are one of the key primary resources in Southern Sudan which also carries a human population of 7 millions. About 60% of the people are dependent on livestock which contribute 20% of local gross domestic product (Guvele, 1999). The cattle to human population ratio of 0.8 *per capita* in Southern Sudan is one of the highest in Africa. In contrast, in neighbouring Uganda which has a cattle population of 6.1 millions against a human population of 21 millions, the same ratio is only 0.3. There is a human population growth rate of 2.8% against an animal products growth rate of 1.5 percent. The traditional agricultural calendar in Southern Sudan is simplified below.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Climate	D	D	D	D	P	P	P	H	H	H	H	D
Food security	Hunger Gap											

Seasons: D = Dry; P = Planting; H = Harvesting

Livestock play a key role in improving the food security of many families in Southern Sudan. Cows produce milk that helps to bridge the 'hunger gap' before harvest. Livestock sales are a form of cash generation and livestock are also bartered for grain. In times of severe famine, having livestock may make the difference between death and survival (Lautze, 1999). But the role of livestock extends beyond the nutritional value. They serve as a store of wealth in addition to important cultural functions like dowry or compensation for wrongful death, hence the common view that livestock are “everything” to pastoralists such as the Dinka and Baggara. Although the calendar above tends to suggest that cattle sales would peak during the 'hunger gap' period, in practice sales go on throughout the year especially as producers and traders are becoming more market oriented.

2.2 The Uganda beef industry

Total beef production in Uganda is calculated at about 121,400 tonnes a year from the slaughter of 607,000 head of cattle. This indicates an annual *per capita* beef intake of 5.5 kg (Mukasa and Mpairwe, 2002). Taking FAO’s recommended intake of 50-kg beef per person per annum, there is a theoretical local market shortfall of 900,000 tonnes a year.

Uganda is a major trading partner with Southern Sudan and livestock are a major export commodity from that area. The majority of the cattle traded originate mainly from Bahr El Ghazal and Upper Nile regions. The traders on return take back commodities including sugar, clothes, salt, soap, beer etc. Improved inter-territorial trade in livestock from Southern Sudan would enhance the animal agriculture economy and household food security in that region while also increasing meat availability in Uganda. Government of Uganda supports efforts to gain access for its meat in the regional and Arabic countries markets. Legal importation of livestock from Southern Sudan would support this objective, at least by helping to protect against local shortfalls not covered by Uganda's own livestock population.

2.3 The Kampala meat market

If cattle marketing from Southern Sudan to Uganda is to increase significantly it will be essential to gain access to the Kampala market. Currently about 75,000 head of cattle are annually slaughtered to supply beef to Kampala City and its peri-urban areas. There are three main slaughterhouses in the city – Basajjabalaba Hides and skins (BHS), Uganda Meat Packers (UMP) and Kalerwe – which between them handle 80% of these slaughter animals; the rest are slaughtered at smaller slaughter slabs. All the slaughter facilities dress the animals of private customers or traders for a fee. But in addition, UMP handles special grade cattle to produce the 'high quality' beef it processes at its meat and meat auxiliary plant called ‘Top Cuts’. UMP buys well-finished animals from contracted ranches to meet this special niche demand.

The two main abattoirs, BHS and UMP, have an installed capacity to slaughter 250 animals a day but they presently slaughter 50-80 heads each. The number of cattle slaughtered fluctuates seasonally, for

example tending to peak during festivals but declining when school fees have to be paid. The demand for good quality beef however tends to remain constant because this is targeted at the 'elite' market patronized by expatriates, higher income Ugandans and the hotel (tourist) clientele. The retail price of beef and goat meat in the 'elite' markets can be 100% and 35% respectively higher than the average quality meats. Kampala abattoirs prefer the meat of cattle weighing 250 to 400-kg live weight, aged 2½ to 3 years and certified free of diseases. The main abattoirs in Kampala have no major objections to slaughter and process the meat of cattle from Southern Sudan provided the animals fulfill their qualitative criteria and the zoo-sanitary standards of the country.

3. The existing marketing system

3.1 Marketing routes and organization

Livestock traders in Sudan informed the team that the main livestock routes from Bahr El Ghazal and Lakes regions to Uganda are:

- Gogrial, Warrap and Tonj Counties to Rumbek
- Rumbek, Agany/Mvolo, Yeri, Kotobi, branch left to Tore Wand, Mapoko, transit camp 13 miles from Yei, transit camp at Minyori (6 miles from Yei), Yei to Uganda border at Bazi/Kaya
- Rumbek, Mvolo, Maridi, Ibba, Yambio to DRC border
- Yirol, Awerial, Tali Post, Lui, Lainya, Yei to Uganda border **or** Mangalatore, Bamuriye to Uganda border at Kerwa or Kajo Keji. This is a wet season route when the river Yei is impassable
- Yirol, Tali, Kotobi, Tore Wand, Mapoko to 13 and 6 mile transit camps from Yei
- Yei, Gimunu, Pakula, Yarbe, Ajio to Uganda border Kerwa/Merwa or Kajo Keji/Afoji. This is the alternative to route 4 in the dry season when the river Yei is passable
- Rumbek, Mvolo, Maridi, Ibba to DRC border **or** Yambio to DRC border.

To maintain price levels in Uganda the (mainly) Dinka cattle owners/traders control the number of cattle entering Uganda. Cattle are held at recognised transit camps along the marketing routes and information is passed to inform traders when to move forward. Dinkas also appear to use this system to discourage non Dinkas from marketing their livestock, and appear to be operating a trading monopoly to the detriment non-Dinka traders. However several traders said that marketing cattle can take up to 3 months because of the queuing system at the Uganda border. Most Sudanese traders said they would like a market on the Sudanese side but were not sure whether Ugandan traders would cross the border to buy livestock.

3.2 Entry points and infrastructure

The main livestock entry points from Southern Sudan to Uganda and their existing infrastructure are shown in Table 1. Livestock for marketing are almost entirely cattle: small stock cannot be walked the long distances of up to 1,000 km from the livestock rearing areas of Southern Sudan.

Details of the main livestock entry points into Uganda are:

- **Bazi - Kaya (Sudan) to Oraba – Koboko – Arua.** Dinka cattle from Sudan are held at a holding ground at Bazi in Sudan, about 12 km from Kaya on the Sudan/Uganda border. Currently (March 2002), because of a seasonal lack of water at Bazi, cattle are being kept about 3 km north of Bazi. The Bazi holding ground was built in 1999 and is located 0.5 km from Bazi town and next to a police post, which is good for security. The ground is a 200x300 metre fenced enclosure and located on high ground which traders previously associated with ECF outbreaks in the wet season. There is need for a pit latrine, a small dam is needed for water, and for supervisory staff housing/base camp. It would be advisable to build a completely new veterinary station and holding ground at a new location with a more assured water supply and one that has a lower risk for ECF, such as the cattle camp 3 km away which is referred to above.

Table 1.
Main livestock entry points from Southern Sudan to Uganda and their existing infrastructure

ENTRY POINT IN SUDAN	DESTINATION	EXISTING INFRASTRUCTURE
Bazi, Kaya,	Uganda: Oraba to Koboko to Arua town (average of 100 cattle/month in 2001)	300 m x 200 m holding ground at Bazi (12 km from Kaya) fenced with erythrina poles, crush of sawn timber, tick and seasonal water problem. No accommodation for vet. Vet laboratory at Arua destroyed during war but equipment exists
Kerwa	Uganda: Merwa to Yumbe to Arua	Holding ground at Merwa of local poles and 4 strands barbed wire.
Kajo Keji	Uganda: Afoji to Moyo or Gulu (Dinka cattle). Unofficial routes through Lefori, Gbari-Metu & Arra-Dufile (zebu cattle)	Area 500 m. x 200 m. provided by local council for holding ground at Afoji on Uganda border. No facilities. Water from stream.
Nimule	Destination Gulu/Ajumani	
Tsertenya	Uganda: Agoro (livestock walked to Kitgum)	At Agoro: holding ground, livestock market, Animal Husbandry Officer/vet, motorcycle

Cattle are also examined at Oraba and treated against external parasites (spray/pygrease). Capacity at Oraba holding ground is 300 cattle. They were formerly observed for two weeks though in practice this is not now done. In 2002 about 50-80 cattle per week were being marketed compared with about 400 per week in 1998. There is good cooperation between veterinary/livestock staff on each side of the border. The VO in Koboko travels by motorbike to Bazi and liaises with Sudanese staff. On the Sudanese side a veterinary certificate is issued confirming that livestock are healthy, though external parasites remain a problem – there are ticks in the Bazi holding ground.

The VO confirmed that all animals must show proof of having been treated in Bazi by producing the necessary animal health and movement permits issued by UNICEF/FAO-authorized community animal health workers. The certification (or yellow vaccination card) means that animals had been vaccinated against rinderpest/CBPP and pygrease ointment applied to minimise tick infestation. These same treatments were given at Oraba. At the time of the visit copies of the agreed certificate had been exhausted.

There is no holding ground at Kaya in Sudan. Sudanese cattle stay for free at the Oraba quarantine facility which is maintained by MAAIF. Animals in quarantine graze in the nearby pastures and water from down the valley. There have been no major animal health problems encountered among the Dinka cattle.

After satisfying the necessary health regulations, animals are given a Uganda health certificate and allowed to move on to Koboko. There the Sudanese traders directly sell animals to Ugandan buyers who then trek them, using Sudanese herders, to Arua for slaughter though a few are slaughtered at the local slabs. Animals destined for Arua are given a movement permit which the buyers (Uganda traders) must surrender at the Arua abattoir. In exchange they are given a receipt after paying the local slaughter and inspection fees. About 25% of Arua meat is from Dinka cattle. The Arua Butchers Association (35 licenced traders plus another 25 likely to join) are influential in controlling the price of meat. In Arua it was found that good cuts with bone are sold at Ush 2000/kg and without bone at up to Ush 2500/kg, mainly to hotels and government employees. Poor people pay up to Ush 500 for meat 'piles' which weigh less than 0.5 kg. Fat of Dinka cattle is yellowish in contrast to the white fat of local cattle. Some local people consider Dinka cattle meat to be hard and to take longer to cook but this seems to be fallacious.



Photo 3. Dinka (larger size) and East African Zebu cattle at Arua slaughterhouse, northern Uganda

It was reported that during the 1997-99 period 500 Sudanese cattle went through Arua region every week, or 2,000 heads every month. This number declined to 1,000-1,500 heads a month in 2000, 300-600 heads a month in 2001, and 20-50 heads per week or 200 animals a month in 2002. The causes of decline, according to traders, are queuing at the border for up to three months (see section 3.1), high taxation rates, lack of water along the route especially from February until April, fear of ECF outbreaks in border areas, insufficient or inadequately equipped facilities for holding, inspecting, vaccinating and treating animals *en route*. Very few sheep or goats come through the entry point, and the few that do are cleared as personal effects. The majority of cattle are males, 60-70% being steers.

- **Kerwa (Sudan) to Merwa – Yumbe.** The quarantine station at Merwa entry point is a 50-m barbed wire fenced enclosure able to handle 100-150 head of cattle. The station is located next to Merwa market in Midigo sub-county and the livestock section operates every 2 weeks. Merwa is located 30-km from Yumbe town and 7-miles from the Uganda-Sudan border.

At around 9 am on a livestock market day, cattle traders from Sudan bring their animals into the market at a time when Uganda buyers also start to arrive. Sudanese traders generally act as a group and select a single spokesman (middleman) who then negotiates the sale price for each animal with the Ugandan buyers. When the price is agreed, the veterinary inspector is called in to examine the animal after which the negotiated price is paid to the owner and the buyer applies for the onward movement permit and health certificate.

Until 1½ years ago Dinka cattle used to cross through Merwa in larger numbers. Though the number has recently declined. The market handles about 20 Sudanese animals every fortnight. Three-fourths of the Sudanese Dinka cattle that come into the market get sold, the rest cross the border back into Southern Sudan. It is estimated that 10% of the animals purchased by Uganda traders are slaughtered in Yumbe town, the rest are moved on to Arua abattoir. District veterinary personnel noted that during the time of its operation, no Sudanese cattle had been rejected or turned back because of ill health. This is an indication that cattle from Sudan are healthy enough to satisfy the health standards for slaughter cattle in Uganda.

The Merwa entry point is a 50-metre diameter kraal (enclosure) built by MAAIF. The fence consists of 5-7-ft high natural wooden posts with four strands of barbed wire. The facility has no other major provisions. The holding ground needs to be rebuilt with permanent angle iron posts as proposed for Bazi, though of a smaller size. A holding ground also needed on Sudanese side at Kerwa to include crush, shade and pit latrines.

- **Kajo Keji (Sudan) to Afoji – Moyo (some proceed to Arua – 3 days walk).** Physical structures at the Afoji entry point do not exist. The local community has demarcated a piece of land measuring 200x500-m to develop the quarantine station for animals coming from Sudan. Local authorities have also authorised that animals in quarantine can have unlimited access to grazing near the station and water from a valley point across the road. The site is located 11 km from Moyo town and 2 km from the Sudanese border. It is also close to a dilapidated customs post.

The Afoji entry point has not been built because trade in Dinka cattle from Southern Sudan has been stopped. Due mainly to a lack of proper controls, there used to be a lucrative but unregulated livestock trade involving hundreds of Dinka cattle until the late 1990s. Traders and other Ugandans alike used to travel deep into Sudan to purchase and bring back animals in what used to be good business. Some of the animals were slaughtered locally in Moyo but many more were shipped on to Gulu and beyond. Uncertain of the animal disease situation in Sudan, the Government of Uganda in 1997-99 took steps to regularise the trade and minimise the potential risk of introducing stock diseases into the country. Disease control measures including possible quarantine and taxation were introduced. Also the movement of cattle from Sudan was restricted to within the border districts and only for slaughter. No movement permits were to be issued to allow cattle deeper into Uganda. Several taxes and charges were levied on the animals. Because of the high charges, sometimes buyers only paid the Sudanese traders after the meat was sold which occasionally led to confusion, for example, when the carcass was rejected as unfit for human consumption due to bovine measles (*Cysticercus bovis*) or tuberculosis. There was also no grazing facility for unsold animals while the Sudanese traders waited for payment and consequently Sudanese animals damaged crops of local farmers. As a result local Government official asked the Sudanese traders to curtail their business until the problems were solved.

The new steps were not popular with the Sudanese traders, many of whom started to trade through the Oraba entry point in Arua district. However, this also allowed a number of Ugandans to move in and become licensed livestock traders themselves.

There is currently very limited trade in Dinka cattle from Kajo Keji through Afoji entry point. But, unofficial trade is suspected through Lefori, Bari and Ara routes. The unofficial trade involves non-Dinka cattle i.e the Sudanese Kuku cattle that look like the local Small East African Zebu in Uganda. Although a number of Kuku cattle get slaughtered, because of close similarity, some become part of the local herd which supplements the on-going restocking exercise in the district.

- **Nimule (Sudan) to Ajumani (Uganda) to Gulu**
The team did not visit this entry point. It is understood that currently few cattle are entering Uganda through this route but that some refugees are returning with animals to Southern Sudan. Further study of this route is advisable.
- **Tsertenya (Sudan) to Agoro (Uganda) to Kitgum**
The Team did not visit this entry point but it learnt that it is strategically well placed. The facility is located near an established livestock market. In terms of disease control animal movement is easy to monitor because the site is located between hills. There is an existing quarantine station built under the PARC and PACE programmes although the facility needs rehabilitation. There is

also a sub-county veterinary laboratory. At present veterinary staff from Kitgum travel twice a month on market days to inspect animals. Further study of this route is advisable.

3.3 Size of the existing livestock market in Uganda

It is estimated that around 3,000 head of cattle per year enter Uganda through the three official entry points at Oraba, Merwa and Afoji. A similar number perhaps enters the country through the entry points east of the River Nile (through Nimule and the Tsertenya to Agoro route) which were not visited. This would suggest that the total number of animals coming into the country through the official entry points may be up to 6,000 head a year. Perhaps 25% more (1,500 head) unofficially cross the border but this would relate only to the Dinka cattle that are easy to detect. It is estimated that 40% more animals (3,000) of the Sudanese Zebu type come in through unofficial routes because they are hard to differentiate from local Zebu animals. Therefore, in the absence of official accurate data the annual total number of cattle crossing into Uganda was derived at 10,500. This is a plausible estimate given that numbers have declined since the 1977-1999 period when reports indicate that 2,000 head of cattle were being trekked into the Arua region every month i.e. 24,000 heads a year.

Based on a cattle population of 5.8 millions in Southern Sudan and estimating annual off-take as 8-10%, the number of animals coming into Uganda represents 2.3% of total off-take calculated at 464,000 head of cattle a year. Sudanese cattle are also entering Kenya, DRC and CAR. The number entering each country would vary because of the prevailing circumstances and attractiveness of the market.

3.4 Constraints to the marketing system

In no order of importance, after the discussions the Team had with various stakeholders and own observations during the field trip, the following were regarded as factors still limiting the cattle marketing system:

- **Northward animal movement.** While it is easy to visualise the cattle trade as largely involving Dinka cattle moving from Sudan into Uganda, livestock, including cattle, actually continuously move in both directions. For example, there are Sudanese that live in Uganda with their own herds. These herds periodically move back into Sudan for grazing. At other times animals must be paid by Ugandan men to fulfil cultural requirements when they marry women from Sudan, and the reverse is also true. Their trans-border migrations have implications for disease control.
- **Dilapidated or lack of holding facilities.** There is an insufficient number of holding grounds in Southern Sudan. A number of quarantine stations in Uganda also need repair and/or modification to support proper animal disease control and screening programmes. For example, almost all the original cattle dips on the Uganda side are non-functional. The brown-eared tick which transmits East Coast Fever (ECF) does not exist in the livestock rearing areas of Southern Sudan. When cattle enter Uganda they may be afflicted with ECF unless treated against ticks. The DVO at Arua said that of Dinka cattle brought to the slaughterhouse in Arua about 30% have Tuberculosis and 15% have CBPP. In local East African Zebu cattle cases are very low - about two per month.
- **Uncontrolled contacts between animals.** Because of the lack of properly controlled stock routes and enforcement, it is difficult to control contacts between market animals and other livestock and human population *en route*. This increases their chances to spread or contract diseases.
- **Roads and transport.** The lack of a viable road transport system in Southern Sudan forces traders to walk their animals to markets, sometimes for up to 45 days and covering 800-kms or more. Along the way animals may destroy the crops of settled farmers. Some fall sick and get left at grazing camps en route under the care of other traders. Others become very weak and are sold for slaughter to butchers in towns on the way. Transport is equally important for the field staff

themselves. Previous MAAIF projects have provided motor vehicles and cycles to those in Uganda but a number of these now need replacement, which PACE is starting to address. It is felt that provision of similar facilities, e.g., bicycles for CBAHWs, motor cycles to AHAs and lab technicians, and motor vehicles to veterinarians will be a useful input for the programme in Sudan.

- **Taxes and other charges.** Traders say that they are subjected to several taxes/charges within and outside Sudan, sometimes extorted by unauthorised people. As explained by the SPLM Minister of Finance, County livestock taxes should only be charged by the County of origin and of destination, not by Counties through which the livestock pass. Because of the size of the country and shortage of personnel it is difficult to stop such abuses. He also confirmed that the 2% Commerce charge is illegal and will be stopped. The result of these taxes/charges is that some traders use unofficial entry points to Uganda and also avoid veterinary treatments which may result in further expenses. Tables 2 to 4 provide examples of charges paid by traders

Table 2.
Charges/cattle/head on the Kajo Keji – Afoji – Moyo marketing route

Charges on the Sudan side (Uganda shillings)		Charges on the Ugandan side (Uganda shillings)	
Jubana (Council tax)	8,000	Movement permit	3,000
Commerce	2,000	Inspection fee	4,000
Veterinary	2,500	Slaughter fee	1,500
Customs	2,200	Market fee	1,500
Total	14,200	Animal movers	6,000
		Total	16,000
Grand Total = 30,200			

On the Kaya – Oraba – Koboko – Arua marketing route traders in Arua town said that they are charged as shown in Table 3.

Table 3.
Charges paid by trader: Koboko to Arua

Charge/head (Ush)	Reason for charge	Location of charge	Charged by
2,000	Local Council Tax	Koboko	Local Council
2,500	Vet Certificate	Koboko	DVO
3,000	Herding to Arua	Koboko	Herders
2,000	Kraal fee	Arua slaughterhouse	DVO/Local Council
1,000	Kraal herding	Arua slaughterhouse	Herders
5,100	Inspection of animal	Arua slaughterhouse	DVO/Local Council
1,000	Slaughter fee	Arua slaughterhouse	DVO/Local Council
Total 16,600			

Table 4 overleaf shows the costs per head of bringing cattle from Rumbek to Maridi for slaughter, a walk of ten days. Medium sized cattle are bought for about Ush 150,000 in Rumbek and they fetch about Ush 220,000 in Maridi. If market prices are poor some cattle are trekked to DRC for sale. Large, strong bulls are trekked on different routes to Uganda.

Table 4.
Costs per head (Uganda shillings) of trekking cattle from Rumbek to Maridi for slaughter

Item	Cost (Ush)
Rumbek auction: middleman bids on behalf of trader	400
Auction fees	4,200
Herder fee until cattle ready to move	1,000
Herder fee on route	6,000
Movement pass from local authority	400
Endorsement of papers en route at Pacong, Barpakeng, station between Barpakeng and Mvolo, Mvolo, Bokoro, Katimbili, Mutbai (Ush 400 per station)	2,800
Slaughter fee in Maridi if not possessing slaughter licence	30,000
Maridi local council fee	2,000
Veterinary fee (ante and post mortem), often paid as 1kg meat	1,000
Carrying of carcase from slaughter slab to town	2,000
Seller of meat (sold in kilos)	2,000
Cutting and selling of head	2,000
Sale of offals	2,000
Chopping of bones	1,500
Butchery cleaner	500
Total	57,800

- **Unlicensed traders.** The majority of cattle traders are not properly licensed or identified. Sometimes those that have the annual trade license choose to rent it out which often makes it difficult to apportion blame. Less than 30% of the traders we met were 'regular traders' who make 2 or more trips to Uganda a year. The rest were first timers trying their chances because there was nothing else to do other than cultivation of crops. Most of the traders who bring cattle into Uganda are from Southern Sudan, in particular the Dinka people themselves.
- **Unknown sources of cattle.** Under the present set-up, it would be very difficult to trace the exact origin of cattle coming into Uganda from Southern Sudan. It may thus be difficult, for example, in the case of an emergency, to go to the original population to screen or contain a health problem.
- **Lack of capital or credit.** Sudanese cattle traders were concerned by the lack of access to capital. Many used to buy over 20 animals at a time, which they transported to Gulu and beyond. At present it is difficult for many to accumulate enough capital to buy more than 6-10 animals at a time. In fact less than a quarter of the traders made two or more trips to Uganda in a year. This is partly because of limited capital but it also takes long to dispose of the animals in Uganda and the commodities they subsequently purchase and sell in Sudan.
- **Lack of marketing knowledge and information.** Different currencies and exchange rates within and outside Sudan, language barriers, inadequate knowledge of variables affecting price differences and collusion between knowledgeable traders often cause low prices paid to, or outright cheating of, livestock owners and smaller traders. Some Sudanese cattle owners cannot speak Arabic whereas traders can do so. Dominic², working with in Magwi and Kajo-Keji Counties in 2001, found that:
 - Of 45 livestock traders and 20 livestock owners, 75% lacked basic knowledge of marketing
 - Some traders lacked knowledge of foreign currencies and exchange rates.

In Government-controlled northern Sudan the currency in use is the Dinar. 1 Dinar at inception = 10 Sudanese pounds (£S) though technically the £S is illegal. In rebel-held Southern Sudan currencies being used are old Sudanese pound (£S), Uganda shilling, Kenya shilling, United States dollar and, in northern areas, Dinar.

The general communication system in Southern Sudan is not adequate. Many traders were not properly informed about market prices. People in border areas could receive broadcasts Radio Koboko and Paidha Radio broadcasts from Uganda. Traders felt they would benefit if these radios could carry programmes related to livestock production and marketing in their dialects. Since these are largely private stations, sponsorship will be the major determining factor to air such programmes. Communication between animal health personnel in Uganda and Sudan was also not regular. The CBAHWs in Southern Sudan also reported difficulties in communicating with each other or their head office in Lokichoggio. Regular communication between district animal health workers in Uganda with their counterparts in Sudan and among the CBAHWs in Sudan will be very important for disease control, monitoring livestock movement, and in implementing and enforcing regulations within regions and across the common border.

- **Lack of training for traders.** There are a number of key areas where traders would benefit from training. Traders contacted expressed willingness to be trained on such topics as basic animal health management practices especially as it relates to the management of ticks and tick-borne ECF, business management, record keeping, and formation and running a traders' association. Traders will need also to be trained and made aware of the benefits that can accrue from using holding grounds and cattle restraining facilities, in particular the role of health on production, international trade and potential profits. If a fee to maintain these facilities should be charged, this should be kept very low as an incentive for traders to utilise the facilities. Otherwise, many will avoid the facilities and their original objectives may never be fully realised.
- **Inadequate water supplies.** One of the major constraints facing animals trekked from Southern Sudan into Uganda is the availability of water *en route*. The provision of water at strategic intervals along the stock routes must be given serious consideration. There must also be adequate watering facilities at or near to all holding grounds since animals might be held at these facilities for some time. The grazing resources available to cattle in transit are also likely to be poor. Provision of water to cattle grazing from such pastures considerably improves the digestibility of these low quality forages even without extra supplementation.

4. Potential for increasing the market

4.1 Uganda

Entry to the southern markets of Uganda, especially Kampala, is the key to increasing livestock marketing from Southern Sudan. If cattle are disease and parasite free, they have no objection to livestock being marketed in any part of the country. The improvement of animal health and certification procedures, as proposed in this report, is crucial to the acceptance of Sudanese cattle for the southern markets. The Uganda Government has recently produced a strategy for increasing livestock and livestock products exports from Uganda. Despite this, discussions with MAAIF officials indicated that Uganda also wishes to import livestock from Sudan to maintain this export drive. They have proposed the construction of an abattoir in Arua because slaughtering there would be more economical than transporting live animals to Kampala. This study also proposed the construction of abattoirs in Gulu and Kitgum. Given (a) the annual *per capita* consumption in Uganda of only 5.5kg per head compared with FAO's recommended consumption of 50 kg; (b) the need to meet export quotas; (c) the liking of the large-bodied Sudanese cattle by Ugandan butchers, prospects for increased marketing in Uganda appear to be good.

4.2 Kenya

The marketing of livestock to Kenya was briefly examined by talking with cattle traders in Lokichoggio. Livestock exported through Narus and Nadapal in Southern Sudan to Kenya are both cattle (mainly the Toposa type which are larger than most indigenous Kenyan cattle) and small stock. One major trader in Lokichoggio purchases an average of 250 cattle/month from Sudan. Toposa cattle

from Sudan are currently purchased at an average price of Ksh 8,300/head. Table 5 shows income and costs of bringing 20 cattle from Narus to Nairobi.

Traders said that the main obstacle to the cattle trade are:

- Customs and County Council charges in Sudan – total of Ksh 1,100/head
- Unauthorised charges on road from Lokichoggio to Nairobi
- Insecurity on both sides of the border necessitating hiring of escorts. If livestock are delayed in Lokichoggio they are liable to be stolen while grazing
- Movement permit not available in Lokichoggio but must be obtained in Lodwar
- A ‘No Objection’ (to movement of livestock) letter must be obtained from veterinary authorities in Nairobi.

Table 5.
Profitability (Kenya shillings) of trucking 20 head of cattle (bulls) from Narus (Southern Sudan) to Nairobi (Kenya)

Item	Cost (Ksh)
Average cost of cattle: 8,300	166,000
Customs charge, Sudan, 400	8,000
County Council charge, Sudan, 700	14,000
Boma charge	400
Loading sand on lorry	300
Loading animals	400
Security escort	950
Road block	1,600
Payment of workers	1,000
Hire of truck: Narus, Sudan to Lokichoggio, Kenya	11,000
Hire of truck: Lokichoggio to Nairobi	50,000
Security escort	10,500
Cess: 50/head	1,000
Miscellaneous charges	2,000
Total costs	267,150
Sale of cattle @ 18,000	360,000
Margin	92,850
Margin/head	4,642.50

A feasibility study by AMREF supports the construction of an abattoir in Lokichoggio at a cost of Ksh 233 million to handle 220 cattle per day. While this mainly targets livestock from Turkana, it would also attract animals from Southern Sudan.

4.3 Democratic Republic of Congo (DRC)

There is reported to be a considerable demand for meat in DRC. A small number of cattle are said to be moving on foot from Yambio in Southern Sudan to the border region inside DRC. Taking cattle on foot deeper into DRC is difficult because of the generally unstable situation, lack of roads and thick bush infested with Tsetse flies. In Uganda the DVO in Arua town reported that few Sudanese cattle are currently moving to DRC but that some cattle from DRC are moving to Arua. The SRRA in Southern Sudan have made contacts with DRC authorities regarding the possibility of flying in chilled carcasses. It would require the construction of chilling facilities in DRC and guarantees over payment. Further investigations are required into the feasibility of developing a livestock export market from Southern Sudan to DRC.

5. Profit margins and economic balances in trade

Conclusions on this issue were reached after discussions with livestock owners, herders, traders, butchers and officials, visiting the livestock auction in Rumbek and markets and slaughterhouses in Uganda. Profitability of bringing cattle from Rumbek in Southern Sudan to northern Uganda is detailed in table 6. Sale prices of cattle at the Rumbek auction were heard personally on two consecutive days and figures for the previous 14 months obtained from auction records. The maximum price paid for a 5 year old animal (i.e. those considered to be strong enough to walk to Uganda) over the previous 14 months was Ush 178,000 and the average price was Ush 143,000. Purchase prices in Koboko/Arua ranged from Ush 300,000 to Ush 420,000.

Table 6.
Profitability of trekking cattle from Rumbek (Sudan) to Koboko (northern Uganda) assuming no delay crossing into Uganda

Item per animal	Amount(Uganda shillings)
(a) In Sudan	
Purchase of 5-year-old animal, Rumbek auction	Maximum price 178,000; Average price 143,000
Auction fee, Rumbek	2,200
County permit	2,000
Herding before trekking	1,000
Herding on trek	1,000
Owner's costs (hotel/meals @ 6,000 x 10 nights)	60,000
Water at village pump (1,000 x 2)	2,000
Endorsement of permit en route at Pacong, Jakue, Pan Ade, Mvolo, Kotobi & Yei (400 each)	2,400
Entry to Yei town	400
Movement permit, Yei	1,500
Kaya (Customs, commerce, council tax, veterinary inspection fee)	5,500
(b) In Uganda	
Oraba: customs	12,500
Veterinary inspection fee	5000
Koboko: Local council fee	2,000
Total costs (a)	97,500 + animal @ 178,000 = 275,500
Total costs (b)	97,500 + animal @ 143,000 = 240,500
(c) Profitability	
1. Purchase by Uganda butcher @ 380,000	Margin (380,000 – 275,500) = Ush 104,500
2. Purchase by Uganda butcher @ 300,000	Margin (350,000 – 244,900) = Ush 109,500

Although most traders informed the team that cattle trading was not profitable, table 6 indicates that Sudanese traders purchasing animals in Rumbek for sale in Koboko/Arua are realising a margin of over Ush100,000 per animal providing there is no delay crossing the border. They then purchase commodities in Uganda for sale in Southern Sudan from which further considerable income is said to be made. Similarly, for livestock exported to Kenya, Guvale and Lautze (1998)³ found high marketing margins being obtained by mainly Somali and Kenyan traders at the expense of Sudanese livestock owners. They found that some traders colluded to keep prices to producers low and had arrangements with local authorities to reduce the level of unofficial taxes. This might also be occurring at livestock auctions in Southern Sudan though the team did not attempt to obtain evidence of this.



Photo 4. Small stock auction at Rumbek, Southern Sudan

However the Sudanese trader may encounter further expenses at the Sudanese border because cattle are being held in camps for up to three months and released in smaller groups in order to maintain prices in Uganda. The trader then renegotiates a fee with his herder.

5.1 Cost/benefit analysis of trekking versus trucking

Table 6 shows that the total cost to a trader of walking an animal from Rumbek (Southern Sudan) to Koboko (northern Uganda) is Ush 101,900. By trucking cattle on good roads for one day (12 hours), the trader would save (a) at least 5 days of his own costs (Ush 30,000), (b) herding fees (2,000), (c) watering charges (Ush 2,000) and – according to discussions with traders – (c) permit endorsements (2,400). Total savings are Ush 36,400. This compares with a likely trucking charge of Ush 20,000 per animal with Truckoil and other companies whose vehicles often return empty from Bahr El Ghazal and Lakes Regions. Total savings $(36,400 - 20,000) = \text{Ush } 16,400/\text{head}$. Apart from financial savings, other benefits include:

- Prevention of loss of weight and condition from trekking for 40 days or more
- Prevention of contact with ticks and risk of disease outbreak
- More groups of cattle able to be marketed in a given time.

At present the cost/benefit analysis is academic: Sudanese and Ugandan traders said they do not use vehicles in Sudan because roads are so poor that livestock are liable to be injured or killed on the journey. At present in dry weather a truck takes up to three days from Rumbek to the Uganda border which brings problems of feeding and watering animals. Traders who bring cattle from Rumbek to Maridi in Southern Sudan for slaughter said they prefer to bring them on the hoof so they can feed and maintain weight. In one instance in 2001 traders hired a lorry at Ush 20,000 per head but several died during the journey which took 1.5 days in the rainy season. However they would like to use lorries if road were in good condition. In the rainy season there is a serious danger that trucks would get stuck. Given good roads the journey would be accomplished in 12 hours and most traders said that they would then use trucks. The Coordinator of Truckoil Ltd said that the company would be willing to carry cattle from Bahr El Ghazal at reduced prices (probably Ush 20,000 or less per head)



Photo 5. Dinka cattle near Wullu being trekked from Southern Sudan to Uganda

Ugandan traders said that they would be willing to use vehicles to transport cattle in Uganda if shown to be profitable. From Moyo to Gulu costs Ush 15,000 per animal on produce trucks returning empty. They would save herding costs: at present Ugandan traders must pay Sudanese herders to trek cattle in Uganda because only they can control the animals.

5.2 Potential limitations to Southern Sudan cattle trade in Kampala

The main abattoirs in Kampala had no major objections to slaughter and process the meat of cattle from Southern Sudan provided the animals fulfilled their qualitative criteria and the zoo-sanitary standards of the country. The key factor that would limit trade in clean animals from Southern Sudan for slaughter in Kampala would be the cost to transport them from northern Uganda cattle markets. The average cost to truck slaughter cattle from livestock markets in Masindi and Mbarara districts, 200 to 250-km to Kampala, is Ush 22,000 (\$13) per head. The five major entry points for cattle from Southern Sudan into Uganda are 500 to 550-km from Kampala. The price of average quality beef in Kampala was Ush 2,400 (\$1.40) per kg, slightly higher than the Ush 2,000 (\$1.20) in northern Uganda towns but almost double the price of beef (Ush 1,000 or \$0.60) encountered in Southern Sudan itself.

6. Training of traders and other stakeholders

As noted in section 3.4, traders/butchers lack knowledge about marketing as confirmed by talking with many traders. The main areas in which they require training are:

- Selection, weight assessment and pricing of animals suitable for slaughter and for trekking over long distances
- Relationship of livestock movement and livestock diseases
- Currencies and exchange rates
- Veterinary and other livestock treatments necessary for marketing
- Regulations governing movement of livestock including movement permits
- Existing internal and external markets

- Factors affecting supply and demand
- Production and marketing of hides and skins. Since the position of Hides Improvement Officer was abolished by GOU, quality, grading and marketing of hides and skins has declined sharply. Training by Uganda Leather and Allied Industries Association (ULAIA) is recommended.
- Simple record keeping
- Formation of livestock trader groups
- How to access credit
- Livestock welfare/cruelty

Training is also required for other stakeholders including hides and skins traders, butchers, Public Health officials and those in the hotel industry. Training should be carried out by an NGO in Southern Sudan.



Photo 6. Hides sun dried at Yei, Southern Sudan. Note use of wooden pegs.

7 The animal health situation

7.1 The disease status of animals coming from Southern Sudan to Uganda

An accurate survey of the level of livestock diseases in Southern Sudan was not undertaken nor were departmental annual reports available to help build a tentative picture. Time did not allow for a rapid field survey to be mounted, consequently, the disease profile among animals marketed that follows was generated from other alternative sources, namely:

- Discussions with MAAIF veterinary staff at the district and county offices in Arua, Yumbe, Moyo and Koboko
- Slaughterhouse records from abattoirs handling cattle originating from Sudan

- Deliberations with traders, some of whom were themselves cattle farmers, and with animal health workers at Moyo in Uganda and at Rumbek, Kaya and Bazi which lie on the main stock route bringing cattle from Southern Sudan to Oraba market, and the end markets in Koboko and Arua in Uganda
- Information in previous write-ups from the area
- The consultants own knowledge of animal production in Uganda

Rinderpest

Uganda places great importance in knowing the status of rinderpest among animals originating from Sudan. The Team noted that slaughter cattle coming from Southern Sudan into Uganda have generally been free of rinderpest. In fact, in the area of Southern Sudan that lies west of the River Nile, the PACE vaccination programme against the disease has stopped. This places that part of Southern Sudan at the same level as northern Uganda where vaccination stopped in December 2001. The vaccine supplies were transferred to the eastern side of the River Nile where vaccinations against rinderpest will end in June 2002. In northern Uganda sero-monitoring and epidemio-surveillance arrangements (based on owner reports, clinical signs, market place surveys) are in place, and area veterinary staff are constantly on the alert to investigate any suspected outbreak of rinderpest-like disease as required by PACE. While similar arrangements are desirable and necessary, they were not evident on the Sudan side. It is recommended that an institution, perhaps local, which can assume this responsibility needs to be identified as soon as possible. In addition, because of a general lack of veterinary staff in Southern Sudan, cross-border harmonisation meetings among animal health personnel were not regularly reported. It was concluded that while rinderpest may have been brought under control on the western side of the Nile, the same could not be said for the eastern side.

Contagious bovine pleuropneumonia (CBPP)

The disease was reported to be common among Sudanese cattle destined for slaughter in Uganda, especially animals originating from the Nimule area. In fact the three neighbouring counties of Ogoko, Ribo and Rhino Camp along the River Nile were under quarantine at the time of this study. Records from the Arua abattoir indicated that up to 15% of the Dinka cattle slaughtered were infected with CBPP. It will be necessary to ensure that the PACE ongoing CBPP vaccination programme is properly co-ordinated in Southern Sudan. All animals for export to Uganda will need to be vaccinated against CBPP, and perhaps also FMD, blackquarter, anthrax and haemorrhagic septicaemia.

In addition to CBPP, Arua abattoir staff indicated that over 75% of the lungs of Dinka cattle were condemned because of severe lung congestion that could not be attributed to CBPP or blood aspiration during slaughter. The condition, which might require further investigation, was suspected to arise from the environmental changes these animals experience as they move from the much warmer pastoral lowlands to the cooler ambient temperatures of north-western Uganda.

Zoonotic diseases

Tuberculosis (TB) was frequently reported among humans and cattle. Post-mortem examinations showed that sometimes up to 30% of the Dinka cattle are infected with TB. Similar examinations also revealed the presence of beef measles (*Cysticercus bovis*) in the same animals. Both diseases are zoonotically important. But, it was also important to note that in the case of generalised infection carcasses are condemned. This results in a total loss of investment for traders. However, sometimes traders are only paid after the meat is sold. Under such arrangements total condemnation would result in losses for the traders, and trader purchaser conflicts are not uncommon. Although no cases of rabies were reported lately its zoonotic importance is recognised. In Uganda, a number of veterinary officers had received supplies of the necessary vaccine and many dogs and cats had been vaccinated. Finally, because most of the Dinka cattle coming into Uganda were males, it was not easy to ascertain the prevalence of brucellosis in these animals.

Partly because of the high incidence of TB and CBPP among Sudanese cattle, Uganda authorities have often insisted that when allowed in, they be moved as soon as possible by truck from holding grounds near the entry points to the nearest slaughterhouse. Nonetheless, because of bad roads and high taxes levied on animals, Ugandan and Sudanese traders try to reduce costs by walking the animals. There is always the risk that trekking cattle over these long distances without established veterinary services in Southern Sudan, increases chances for contact with other populations *en route* and between Sudanese and Ugandan cattle and the human population in Uganda. Even at the ultimate slaughterhouse in Arua, animals that were not immediately slaughtered were taken out for grazing in nearby villages where contact with the local populations is possible.

Ticks and tick borne diseases (TBDs)

Dinka cattle come from areas where although ticks exist, the brown ear tick (*Rhipicephalus appendiculatus*) that transmits *Theileria parva* organisms which cause the much-feared East Coast Fever (ECF) is not present. Consequently, tick control programmes in Southern Sudan generally depend on the application of pyrethrin ointment but the animals remain very susceptible to ECF. Traders and animal health workers recalled the high rates of mortality due to ECF when Dinka cattle were kept in crowded holding grounds in the border areas during the wet season. The higher susceptibility of Dinka cattle to ECF has limited their massive introduction into northern Uganda. Out of the 48 cattle dips that were built in the border districts of Arua, Kitgum, Moyo and Kotido in 1995, only one was still functional. Ticks cause extensive physical damage to hides and skins, they suck blood, but, they are dreaded most for their ability to transmit ECF, Anaplasmosis, Babesiosis and Cowdriosis all of which are present in the border areas.

Trypanosomiasis (tryps)

Trypanosomiasis is a common problem in humans (sleeping sickness) and cattle (nagana). Animals in a debilitated physical state and suspected to have been suffering from chronic trypanosomiasis infection were encountered in the field and at pre-slaughter railages.

Helminthiasis

Internal parasitism was reported to be a widespread problem for which field staffs were often asked to provide either a treatment or prevention in Southern Sudan. A number of NGOs animal health programmes provide antihelmintic drugs at a subsidised price in the region. However, the lack of proper control over these, and other pharmaceuticals, has sometimes resulted in limited impact and their occasional filtration out of the intended areas. Depending on the season, the abattoir in Arua reported that liver-fluke infection was sometimes found in Dinka cattle.

Black quarter

Uganda veterinary staff and farmers that had opportunity to work and/or own cattle from Southern Sudan reported having diagnosed cases of blackquarter in these animals.

Eye infections

Both farmers and veterinary staff noted a recent upsurge in cattle eye infections. Some of the cases started as a one-eye infection that spreads to the second eye and occasionally resulted in total blindness.

Mismanagement problems

Cases of bloat were reported when animals raised on the range were left unattended in post-harvest grain fields and this can happen also to trekking animals in transit. Cases of wild dogs cannibalising

smaller stock were also mentioned. In addition sporadic deaths were recorded after cattle had ingested polythene plastic bags (*kaveera*). Finally, although not directly related to Dinka cattle, veterinary staff reported a common practise of farmers to improperly tether their calves. The ropes are applied so tight that blood circulation may be checked, gangrene sets in and leg amputation becomes the only solution.

7.2 Requirements for disease control and certification

Uganda's Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is responsible for promoting, supporting, guiding and regulating the export and import of animal and animal by-products into the country. This is realised by setting up and enforcing zoo-sanitary standards and regulations, which have been internationally developed to prevent and control animal diseases, public health diseases as well as environmental hazards. It is within this broad mandate that the requirements for disease control and the certification of livestock originating from Southern Sudan would be implemented. Successful implementation of the regulations would promote legal cross-border trade and the movement of animals, their products along with biological by-products related to animals. Annex 8 gives details of official guidelines and regulations as well as the expected responsibilities of a potential client such as a livestock owner or trader.

After examining the disease spectrum, it is recommended that while they are being held at the holding grounds in Southern Sudan, all cattle for export to Uganda should be vaccinated against CBPP and if possible FMD, blackquarter, anthrax and haemorrhagic septicaemia. Either in the production areas (preferably) or at strategic point(s) *en route*, the animals would ideally need to be drenched against internal parasites using a broad spectrum antihelminthic drug, protected against ticks using 'pour-ons' like Deltamethrin (e.g., Spot-on®), pyrethrin applications or dipping/spraying using Amitraz (Triatix®), and to be given a trypanocidal drug therapy. We suggest that the latter would be the first of a 2-trypanocidal-injection strategy to treat against trypanosomes. The second injection would be given when the animals are quarantined in Uganda. One other advantage of using the trypanocidal drugs is that they also help to treat for babesiosis.

7.3 The existing field situation

The common practice is for Sudanese traders, mostly Dinka people themselves, to bring animals to the Uganda entry points. It is no longer common for Ugandan traders to go into Sudan, look for, purchase and drive the cattle back. Cattle now enter Uganda without a previously approved import permit that Ugandan traders would have had to apply for under the official procedure outlined in Annex 8. Instead, cattle for sale are brought across the border with (1) a health certificate from Sudan, and (2) a movement permit also from Sudan. Both documents are issued under the jurisdiction of the Sudan Relief and Rehabilitation Association --SRRA. The movement permits and health certificates that we saw lacked consistency. Some health certificates did not give adequate detail (Annex 4) while others did (Annex 5). Since there was no standard form to use, the qualitative differences were taken to reflect the level of training and experience of the officers issuing the permits and certificates. In some cases a people's movement pass issued by security officers was used as a cattle movement permit. It is felt that the permit was meant to allow only the trader as a person to pass. However, it was accepted as cattle movement permit since the details of the trip made reference to the number of cattle the trader had, where they had come from and where they were going (Annex 6). An example of a suitable health certificate format proposed by Vetwork Sudan is shown in Annex 7.

MAAIF veterinary personnel hold cattle entering Uganda in quarantine facility for 14 days under observation. During the two weeks of isolation the animals are vaccinated or re-vaccinated against CBPP and are under constant surveillance for clinical signs of rinderpest as required by PACE. Animals are also sprayed against ticks by MAAIF staff. Virtually all dips tanks in the border districts were reported to be non-functional. On release from the quarantine facilities Uganda MAAIF staff issue (1) a movement permit, and (2) a health certificate to the trader/owners. The documents allow

the animals to move on further into Uganda, certifying that they have fulfilled the zoo-sanitary standards of the country.

In summary, it is Sudanese cattle traders who bring cattle to the entry points, clear them through Customs, and get them quarantined and certified by Ugandan authorities. On being released, they sell them to licensed Ugandan cattle traders. Sales may be done through middlemen and animals may change hands up to 3 times before final slaughter. However, increasingly Dinka traders sell their animals to the local buyers directly, especially in the Arua area where most Uganda traders also speak Arabic. It is after the animals are sold to a Ugandan trader that an internal movement and health is then issued to the buyer/trader for onward trekking to the abattoir in Arua or other nearby slaughter slab. Cattle are therefore officially being allowed into the country after conforming to expected zoo-sanitary standards and, currently, on condition that they are destined for slaughter. Most animals are males. However, the fact that animals are walked to slaughter, and because ownership may change, chances for mixing with people and other local herds exist. Animals physically similar to hybrids of the two types were occasionally observed.

7.4 PACE and livestock disease control in Uganda

Details of the PACE programme for controlling epizootic diseases in Uganda, and its CAPE unit is contained in Annex 9. It is concluded that the set up of the PACE programme in Uganda is suited to monitoring and controlling the major epizootics on the Uganda side including cattle that may be imported from Southern Sudan and are likely to be moved for slaughter or have inadvertent contacts with the local population. This is particularly important because of the linkages between PACE and CAPE, and given the mandate of CAPE to operate in pastoral areas where most of the cattle coming from Sudan are likely to be raised. The expectation is that a set up similar to the PACE programme in Uganda would be implemented on the Sudan side.

8. Developing an improved veterinary and marketing system

Ugandan authorities have said that they will accept the movement of Sudanese cattle as far as Kampala providing they are known to be healthy. Presently they are permitted to be slaughtered only in northern Uganda where the market is restricted by the relatively small human population. This study proposes changes in the marketing infrastructure so that livestock will be permitted to be moved to the south of Uganda where a much larger market exists. Uganda is currently trying to develop an export market for beef but its own cattle resources are likely to be insufficient to maintain a regular supply. Sudanese cattle can also be used to boost future Uganda export quotas.

The importance of good animal health lies in the fact that diseases may lead to increased mortality which reduces marketable off-take rates, infertility that can affect herd size structure and growth rates, and depressed performance levels in terms of growth etc among survivors. Some diseases are endemic in Uganda like FMD, CBPP, ASF, Rabies and Newcastle Disease. Others have a zoonotic importance posing a risk to the public at large or the people in direct contact with them. The success of any disease control programme in Southern Sudan will depend on:

- Having a realistic livestock development plan with clear priorities
- Availability of funding
- Having a functional organisational structure
- The capacity to prevent and control the spread of diseases through vaccination programmes and good management practises
- Being able to treat sick animals
- Better training and awareness programmes for producers, traders and extension personnel.

For Sudanese traders it would be preferable to have auction markets on the Sudanese side at Kaya etc so that Ugandan traders deal directly with Sudanese traders and reduce the number of middlemen. Sudanese traders would be likely to obtain better prices for cattle; they would continue to go to

Uganda to purchase commodities for sale in the northern areas of Southern Sudan as they do at present which is an important additional source of income of many traders. Sudanese import duty on essential commodities, such as medicines, soap, sugar, clothes, and food not produced in Southern Sudan is 1% - 4% of value. However it is to be questioned whether Ugandan traders/butchers would be willing to cross into Southern Sudan given the difficulties which some have experienced when doing so in the past.

8.1 Present Infrastructure and changes required

8.1.1 Holding grounds/quarantine stations

A. Bazi – Kaya – Oraba – Koboko marketing route



Photo 7. Cattle crush in quarantine station at Oraba, northern Uganda

Bazi holding ground (Southern Sudan) 12 Km north of Kaya: This is 300 m x 200 m and is fenced with erythrina intended as a live fence, and a crush with holding area constructed of sawn timber concreted in. Few erythrina posts are growing and the rest will be eaten by termites in due course. The crush is too wide for efficient handling of livestock but is in good condition. Water is currently a problem because the swampy area near the holding ground has dried up. There are also problems of ticks in the holding ground, insufficient grazing nearby and damage by cattle to nearby crops. To access water, cattle are now being kept about 3 km away and only brought to Bazi for inspection/treatment. The area where cattle are being kept was inspected and found suitable for a holding ground. It is proposed that a new holding ground should be constructed at the current temporary camp as recommended by traders to whom the team spoke.

Requirements are: Increase size to 500 m x 200 m: fence with 4 mm angle iron posts and 6 strands of heavy duty barbed wire with two double metal gates (\$5,000), provision for water (\$500), crush (\$700), loading ramp (\$750) shade for veterinary work and shelter (\$4,000), grazing paddocks (\$300), 3 long drop toilets (\$1,750)). Total cost = \$13,000.

Oraba holding ground. The present holding ground has a fence of erythrina poles and a dilapidated crush. It should be rebuilt on the same site. Requirements are as for Bazi but size should be reduced to 200 m x 200 m. Total cost = \$10,000.

B. Kerwa – Merwa – Yumbe marketing route

Kerwa holding ground. There is no holding ground at Kerwa (Sudan). A new holding ground should be built as for Oraba. Total cost = \$10,000

Merwa holding ground: At present this is a small holding ground fenced with locally cut poles and 4 strands of barbed wire. Fence is in poor condition and there are no other facilities. A new holding ground should be built as for Oraba. Total cost = \$10,000.

C. Kajo Keji – Afoji – Moyo/Arua marketing route

Kajo Keji holding ground. A new holding ground is required at Kajo Keji which should be constructed as for Oraba. Total cost = \$10,000

Afoji. A piece of land has been allocated by the local community for construction of a holding ground. Currently there is no infrastructure. The land is suitable for a holding ground and has shade trees and good grazing. Watering from a stream would be on the other side of the road and would require a corridor for livestock. A holding ground (200m x 200m) should be constructed as for Oraba at a cost of \$10,000.

D. Nimule – Ajumani – Gulu marketing route

This route was not visited. It is understood that no livestock are currently entering Uganda by this route but that some refugees with livestock are using the route to return to Southern Sudan. Further study of this route is required. If found appropriate, a holding ground on each side of the border should be constructed as for Oraba, each costing \$10,000.

E. Tsertenya – Agoro – Kitgum marketing route

This route was not visited but it is understood that sales of cattle to Uganda is increasing and livestock markets at Agoro have increased to two days per month. There are no facilities, only a piece of land used as a market. Insecurity remains a constraint. Further study of this route is required. If found appropriate, a holding ground should be constructed on either side of the border as for Oraba, each costing \$10,000.

Note: A holding ground, which is currently being used for the restocking programme, has been built near the airport at Moyo. This is a suitable model for other holding grounds. It is constructed of angle iron of 4 mm width x 5 cm with 6 strands of barbed wire. The same person should be employed to construct the new holding grounds required for improving the livestock marketing system.

8.1.2 Veterinary base camps/laboratories

There are veterinary diagnostic laboratories in Arua, Moyo, Gulu and Kitgum in Uganda. These laboratories have been rehabilitated and/or upgraded by PACE and it will be necessary to ensure these laboratories continue to be able to make and examine blood/lymph node smears to examine for tick borne diseases (ECF, babesiosis, anaplasmosis), to examine faecal samples for internal parasites, collect and forward serum samples to the epidemiology laboratory in Entebbe. There is a Veterinary Officer posted at Koboko who is doing a very good job controlling the entry of Sudanese cattle into Uganda. Given that Oraba is likely to remain one of the busiest entry points for cattle from Sudan, it is recommended that a small veterinary lab capability should be put in place at Koboko.

There were no veterinary diagnostic laboratories in the part of Sudan that we visited except at Kaya on the Sudan-Uganda border where a proper base camp has been established. The Kaya field station is

a complex of four one-room Tukuls made out of mud and wattle with a grass-thatched roof. They included an office/laboratory, a store, a kitchen, and a residence. There was also provision for a pit latrine and an outside bath enclosure. The team felt that this type of complex was very suitable to support the animal diseases control programmes. In addition to the housing units, the field station/laboratory base camp would need to have the following:

- 1 Equipment
 - . a light microscope
 - . a hand/field centrifuge
 - . a generator
 - . a water bath
 - . McMaster counting chamber
 - . droppers, staining dishes etc.
 - 2 Supplies
 - . faecal cups
 - . blood collection tubes (vacutainers/syringes/needles)
 - . cold chain (cool boxes, refrigerator and thermos flask)
 - . microscopic slides and cover slips
 - . reagents, stains, salt
 - . a supply of necessary antigens
 - . capillary tubes and a haematocrit reader
- Cost to build Tukuls \$6,500
 Cost of equipment \$3,750 per unit
 Cost of basic furniture \$500
 Annual cost of supplies \$1,250

Total estimate to build a new field station with an adjacent holding ground would be \$25,000 or Ush 42.5 million. (The cost of a generator not included).

8.1.3 Water points

Livestock traders met at Yei recommended that, on the route from Bahr El Ghazal watering points are needed at Yeri, Ambara and Wullu. Types of water points proposed included (a) valley dams and (b) use of water pumps presently used for humans after agreement with the local communities. Small valley dams are recommended. The use of water points also used for humans is a common cause of conflict especially if used by itinerants.

8.1.4 Stock routes and roads

All cattle from Sudan are presently walked to Uganda and it will be necessary to ensure that animals move along identified stock routes. At present livestock marketing routes to Uganda partly follow the road system but there are significant deviations to shorten the trek and to seek water. The road system, in places, is in very poor condition. Most Sudanese traders said they would transport cattle by lorry if roads were improved but do not do so now because of fear of injury or death of cattle and problems of how to feed and water them. At present when roads are dry a lorry normally takes 2-3 days from Rumbek to the Uganda border, and in wet weather up to 10 days with the added danger of getting stuck. With good roads the journey could be done in a 12-hour day, eliminating problems of injury, feeding and watering. Corresponding journeys on the hoof (including feeding, watering and resting) are 44 days from Gogrial in Bahr El Ghazal region and 30 days from Yirol in Lakes region. Truckoil, a major transport company operating in Southern Sudan are willing to negotiate reasonable prices for carrying cattle.

At meetings with the SPLM administration it was found that negotiations are continuing with donors to support improvements to the road system and it is hoped that the state of roads and overall road network will improve to allow cattle to be moved by trucks/lorries. This will shorten transportation

time and distance and enhance proper disease control. But, even when trucks are used it will be important that they too follow prescribed routes. Similarly, the movement of the animals after they enter Uganda should continue to be along designated routes. There will also be a need, within Sudan, to monitor the migratory patterns of cattle e.g., during drought outbreaks in order to respond to emergencies that might disrupt regional disease control programmes.

9. Changes in methodology, legislation and manpower

9.1 Small-size abattoirs in northern Uganda

At the moment cattle from Southern Sudan enter and are slaughtered in Arua, Nabbi, Yumbe, Moyo, Adjumani, Gulu, Kitgum, Pader and Lira districts. It is expected that with necessary steps, regulations and enforcement, more animals could be imported and Sudan cattle beef could be available in other areas up to Kampala. Table 7 gives the estimated livestock and human populations in Uganda's northern region districts. Relative to the rest of Uganda and Southern Sudan, the livestock to human population ratios in northern Uganda is still generally low. The northern region is particularly suitable for beef cattle production due to its climatic conditions (see MPMPS, 1998). Post-harvest crop residues and oil-seed (sunflower and cotton seed cakes) are also seasonally available in the region.

Table 7.
Area and estimated human, cattle and small ruminant population in northern Uganda

District	Area, km ²	Estimated Population			TLU:Human ratio**
		Human	Indig. Cattle	Sheep/Goats	
Apac	6,451.2	555,800	57,473	423,855	0.15
Arua	7,879.2	819,700	178,128	864,760	0.26
Gulu	11,715.7	455,400	17,519	197,913	0.07
Kitgum	16,563.7	483,600	14,650	94,436	0.04
Kotido	13,245.2	245,900	517,321	1,065,754	1.93
Lira	7,200.7	535,300	33,627	333,883	0.11
Moroto	14,351.6	271,400	818,086	1,013,658	2.52
Moyo*	4,977.7	216,900	37,059	193,983	0.21
Nebbi	2,917.2	422,400	135,325	314,433	0.30
Total for N. Region	85,302.2	4,106,400	1,809,188	4,502,675	0.42
All Uganda	241,458.8	21,619,700	5,847,159	10,869,539	0.24
S. Sudan		7,000,000	5,782,750	5,700,000**	0.76

* Includes Adjumani district populations **Reported same as cattle

It is proposed that all cattle coming from Sudan should be slaughtered at one of three small size abattoirs, conforming to acceptable international standards and hygiene. They need not be of export quality because it is envisaged that Sudanese beef will be consumed in Uganda. Mobile slaughter trucks might also be considered. These abattoirs should be built in northern Uganda, one each in Arua, Gulu and Kitgum town. These towns lie along the three major stock routes for cattle coming from Sudan. The abattoirs should be capable of handling up to 50 head of cattle and the same number of goats a day. The slaughterhouse in Kitgum would attract cattle from the 'cattle corridor' districts of Kotido, Moroto, Pader and Lira. The slaughterhouse in Gulu would also attract cattle from Apac and perhaps Masindi districts. The slaughterhouse in Arua would attract cattle from Nebbi, Yumbe, Adjumani and Moyo districts. The meat and meat products produced would then be distributed by refrigerated trucks to other towns in Uganda including Kampala.

There are several significant advantages in establishing small size regional abattoirs. In the present case, these would include: 1) better control over the destination of cattle from Sudan, 2) reduced live animal transport costs, 3) upcountry industrial development, 4) create of employment in rural areas, 5) better chances to establish a 'disease-controlled' zone in northern Uganda where diseases like FMD,

rinderpest, CBPP, tuberculosis and brucellosis are better controlled, and 6) small regional slaughterhouses minimize environmental hazards associated with single large abattoirs.

9.2 Animal identification, recording and reporting system

Whereas the movement permits issued to traders in Sudan state the number of animals for which it is given, it is difficult to monitor whether its the same animals that eventually cross the border into Uganda. Equally, it is more by trust that the movement permit subsequently issued to Ugandan traders relate to the animals that are finally presented for slaughter. And yet, ideally, whenever cattle cross international boundaries, it is imperative to be able to trace their origin. This is possible only if they are tagged or branded, i.e. they can be individually identified. There was no way of reliably identifying the animals we met except by detailed phenotypic descriptions which was not likely to be very accurate.

Charging traders to ear-tag their animals that are likely to be slaughtered over the subsequent 2-3 weeks is unlikely to be popular. Instead, it is suggested that when proper holding grounds are set up on the Sudan side, all cattle traders will need to be registered and each given a permanent number. Whenever the trader will bring his cattle through the holding grounds *en route* to Uganda, the trader's number shall (in lieu of an ear tag being applied) be painted using oil paint, indelible ink or permanent marker pen on the left flank of the animal. The colour of the marker or paint will be unique for a particular stock route. The number of the animal in the trader's group shall be marked on the right. The two numbers shall then be entered onto the movement permit issued to the trader. On the Uganda side, the Customs and veterinary officials will cross check the identity of the animals prior to issuing them with the final health and movement permit that will also carry the same numbers. In addition to being used on all recorded forms, the given numbers shall be used on samples submitted to laboratories and will be used to identify the carcasses when the animal is finally slaughtered.

9.3 Legislation

There was no evidence that legislation similar to what has been listed for Uganda (see Annex 8) is in force in Southern Sudan. The Team learnt that a previous OAU-IBAR mission had been devoted to ironing out the policy issues that might be related to cattle trade in the region. The expectation is that proper legislation will be enacted because these are an integral part of sound health enforcement programmes. Uganda itself is contemplating a review of some of its legislation or a formulation of new policies that are more consistent with the expectations of international trade today.

9.4 Trained manpower and technical capability

There is an acute shortage of trained manpower (animal health professionals and technicians) in Southern Sudan. Trained personnel will be needed to enforce policies, control diseases, treat sick animals, provide extension services, plan for, co-ordinate, supervise and monitor animal movements and/or migration within the region and across its borders with Uganda, Kenya, DRC and CAR. A number of CBAHWs have been trained by Vetwork Sudan and other NGOs and are deployed at various 'cattle camps' in Southern Sudan.

It is estimated that when the five diagnostic laboratories and holding grounds are set up in Southern Sudan, it will ideally be necessary to recruit and station the following minimum number of trained people in the area:

- . 8 veterinary degree graduates; 1 at each diagnostic laboratory and 3 in administration
- . 5 veterinary laboratory technicians; 1 at each laboratory
- . 62 animal health assistants (Diploma graduates), 2 per county
- . 186 CBAHWs, 6 per county or 1 per 31,000 head of cattle.

The above staffing level will result in 261 trained people in the area. The aim should be to increase this number by 20% each year, i.e., to double the number to 522 within 5 years. These trained people

will be nucleus for carrying out inspection, testing and identification, treatments, vaccinations, quarantine and issuance of animal health certificates and movement permits. As the number of these people increases, more will be deployed deeper into the region until it will become possible to carry out these functions at three levels; at the source, en route and at the border points.

It is therefore proposed that funds should be sought to initiate a training programme that will identify and sponsor A'level Sudanese students from those currently attending schools in Uganda and Kenya to become animal health assistants, veterinary laboratory technicians or graduate veterinarians. Conditions for selection should include acceptance that they will be posted back into Southern Sudan. One way of ensuring this will be to simultaneously develop the infrastructure (holding facilities, laboratory and supporting structures) needed to keep them occupied in the field. Some of the animal health assistants could receive specialised training in meat inspection, hides and skins, tick/tsetse fly control, or cow artificial inseminators etc. CBAHWs could be trained locally through short specialised courses. An adequate number of CBAHWs will be the first step in training the actual livestock producers (farmers) and traders themselves as these people will be deployed to make contacts at the primary level of production. This recommendation is consistent with the Tract 3 programme for peace through development in Southern Sudan.

9.5 Requirements for, and feasibility of vaccination, treatment and screening of livestock for export from Southern Sudan

The need for undertaking vaccination together with treatments among the animals entering Uganda from Southern Sudan and the ease with which this was judged to be feasible at present is shown in the table in Annex 10. In summary, there is a need to formulate policies and legislation to guide proper trade, to set up the relevant infrastructures, and to train enough personnel to oversee the trade and enforce the regulations through inspection and reporting.

10. Co-ordination of activities

It is recommended that Vetwork Services Trust (VST) should be the NGO to co-ordinate activities on both sides of the Uganda/Sudan border. VST is already well established in the region, with bases in Nairobi, Arua and Tali. FAO is currently managing a CBAHW programme in Bazi (Morobo) Payyam which VST could expand. VST is a charitable, non-profit making and non-political organisation established in 1997 by southern Sudanese livestock professionals, and has successfully managed several small grants by various donors.

VST should have a base in Bazi where vaccines will be stored. It should employ a livestock officer with experience of marketing at a salary of USD 800/month. It should also employ a laboratory technician at a salary of \$500/month. If necessary the person should be trained in livestock marketing as part of capacity building. The livestock/marketing officer should initially monitor, using a motorbike, the three main livestock routes which pass through Kaya, Kerwa and Kajo Keji. As the infrastructure is put in place, the officer should also monitor the routes east of the Nile which pass through Nimule and Tsertenya. At the same time Vetwork's CBAHW programme in Bazi (Morobo) Payam should be expanded to the whole of Yei County.

VST should manage several aspects of the improved livestock marketing system including construction and management of holding grounds, quarantine stations and veterinary camps/laboratories; certification of livestock entering Uganda from Southern Sudan; and training of traders and other stakeholders. Support would be for operating out of a base camp as Bazi (Morobo) close to the holding ground. Table 8 shows the proposed financial support required for VST. The Tsertenya and Nimule livestock marketing routes were not visited by the team. Building of the holding grounds proposed for these routes, and for the dams proposed for Yeri, Amabara and Wullu, first require visits to the areas to assess requirements and feasibility.

Table 8.
Support for Vetwork Services Trust

Year	Activity	Indicative annual cost (\$)
1 – 5	<u>Support to Vetwork Services Trust:</u> Salary of vet/marketing officer @ \$800/month Salary of laboratory technician @ \$500/month Fees for consultant trainer Fees for infrastructure technician Stationery Travel & per diem Fuel & lubricants for motorcycle Spares & repairs Office rent in Arua (\$300/month) Telephone, fax & facilities	9,600 6,000 5,000 4,000 2,000 3,000 2,000 1,000 3,600 3,000 Annual cost = 39,200
1	<u>Additional costs year 1</u> Motorcycle (year 1) High frequency radio for base camp	4,500 4,500 Additional cost year 1 = 9,000

11. Recommendations

- The following items should be constructed/reconstructed over a five year period [see Annex 11]:
 - Holding grounds and field veterinary camps in Southern Sudan at Bazi, Kerwa, Kajo Keji, Tsertenya and Nimule
 - 2-room veterinary laboratory/office at Koboko, Uganda
 - Quarantine stations in Uganda at Afoji, Ajumani, Oraba, Merwa and Agoro
 - Small dams in Southern Sudan, following field assessment, at Yeri, Ambara and Wullu
 - Small abattoirs in Uganda, by private investors, at Arua, Gulu and Kitgum

Holding grounds and quarantine stations should include the following: fence of angle iron posts and heavy duty barbed wire with two double metal gates, provision for water, crush, loading ramp, shade for veterinary work and shelter, grazing paddocks, 3 long drop toilets. The holding ground built at Moyo should be used as a model.[section 8.1.1]. Improvements should begin on the Bazi-Oraba-Arua route as this is currently the most frequently used.

- In the holding grounds in Southern Sudan cattle should be vaccinated against CBPP, and preferably also against FMD, blackquarter, anthrax and haemorrhagic septicaemia if not already vaccinated at source. *En route*, internal parasites should be treated by drenching, and external parasites by pour-on, pygrease or dipping/spraying. A 2-injection trypanocidal drug therapy is recommended to treat against trypanosomiasis – the first given in Sudan and the second when quarantined in Uganda. This also helps to treat for babesiosis and anaplasmosis. [section 7.2]
- As part of animal health control, measures should be introduced to ensure that cattle move, either on foot or in trucks, only along designated stock routes both in Sudan and Uganda. The migratory patterns of Sudanese livestock across the Uganda border should also be investigated [section 8.1.4].
- All cattle traders should be licenced and issued with a number which will be used to identify and record cattle movements in Sudan and Uganda. [section 9.2]
- Funds should be sought to initiate a training programme to sponsor ‘A’ level students attending schools in Uganda and Kenya to become animal health personnel to support the proposed new

infrastructure [section 9.4]. Of these, trained CBAHWs should be deployed to train livestock producers and traders at the primary level of production.

6. Network Services Trust (VST) should be funded for five years [Table 8], working from bases in Bazi and Arua, to carry out constructions, manage the marketing system including health certification of livestock, and train traders and producers. This should include (a) veterinarian/marketing officer; (b) laboratory technician; (c) consultant trainer; (d) consultant infrastructure technician.
7. Producers, traders, butchers and hides & skins handlers should be trained in various aspects of livestock marketing [section 6]
8. The authorities in Southern Sudan should be supported in its ongoing efforts to engage donors to improve the road system.
9. Further investigations should be carried out into:
 - Viability of developing livestock marketing from Southern Sudan to DRC [section 4.3]
 - Infrastructure and veterinary requirements at the Nimule-Ajumani and Tsertenya-Agoro border crossing points [section 3.2]
 - Feasibility of constructing small dams at Yeri, Ambala and Wullu [section 8.1.3]

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Annex 2

Livestock Sold At Rumbek Auction: January 2001 – February 2002

Numbers sold and average price (Uganda shillings)

Livestock Type	Jan 2001	Feb 2001	Mar 2001	April 2001	May 2001	June 2001	July 2001	Aug 2001	Sept 2001	Oct 2001	Nov 2001	Dec 2001	Jan 2002	Feb 2002	Total & Average Price
Bulls 1 year	62 30,000	40 34,000	44 26,000	54 30,000	49 20,000	81 22,000	120 18,000	97 28,000	125 20,000	144 24,000	156 32,000	49 32,000	70 22,000	41 24,000	1,132 25,857
Bulls 2 years	95 50,000	71 46,000	163 42,000	39 48,000	28 40,000	77 42,000	116 40,000	90 50,000	134 36,000	192 38,000	172 48,000	60 51,000	75 32,000	56 34,000	1,196 42,642
Bulls 3 years	117 66,000	84 48,000	79 56,000	61 30,000	75 50,000	80 50,000	97 48,000	110 68,000	162 46,000	165 46,000	128 64,000	151 64,000	103 48,000	74 58,000	1,486 53,000
Bulls 4 years	82 116,000	67 94,000	55 96,000	48 90,000	64 99,200	49 92,000	107 80,000	86 80,000	97 74,000	91 82,000	112 102,000	58 107,000	104 104,000	39 100,000	1,059 94,014
Bulls 5 years	61 172,000	70 142,000	31 162,000	60 158,000	32 147,600	38 134,000	109 178,000	94 120,000	56 104,000	74 122,000	99 138,000	60 151,000	67 140,000	62 142,000	913 143,614
Heifers	102 110,000	93 90,000	28 100,000	73 120,000	40 90,000	49 80,000	21 100,000	139 120,000	102 90,000	128 100,000	130 120,000	47 110,000	81 132,000	39 72,000	1,072 102,428
Milking cows	90 140,000	13 120,000	10 110,000	15 120,000	12 130,000	11 140,000	174 150,000	12 160,000	15 140,000	20 146,000	17 150,000	135 140,000	5 144,000	8 180,000	537 140,000
Pregnant cows	6 100,000	75 90,000	72 120,000	77 140,000	90 110,000	80 100,000	0 120,000	124 90,000	105 80,000	104 96,000	121 100,000	6 110,000	92 104,000	99 102,000	1,051 102,500
Cows	117 80,000	146 35,000	98 64,000	100 60,000	135 80,000	131 70,000	266 60,000	211 66,000	210 62,000	124 70,000	113 80,000	49 60,000	138 50,000	178 76,000	1,820 65,214
Sheep and goats	61 6,000	48 7,000	42 5,000	64 4,000	86 4,000	46 5,000	131 3,000	135 4,000	132 3,000	97 6,000	112 6,000	72 5,000	81 9,380	120 7,180	1,227 5,325

Annex 3 Estimates of the livestock population of Southern Sudan (Jones, 2001)

<u>County, East of the Nile</u>	<u>Estimated cattle population</u>
Pibor	802,000
Latjor	420,000
Kapoeta, East	300,000
Sobat	250,000
Phou	135,000
Bieh, West	105,000
Bieh, East	100,000
Fashola	100,000
Torit	61,650
Kapoeta, West	61,200
Bor	60,000
Latjor, South	23,400
Magwe	14,000
Sub-Total	2,432,250
<u>County, West of the Nile</u>	
Tonj	700,000
Liech	600,000
Yirol	550,000
Rumbek	410,000
Gogrial	330,000
Aweil, East	276,000
Twic	160,000
Aweil, West	83,000
Mundri	60,000
Ruweng	40,000
Kajo Keji	35,000
Yei	35,000
Wau	25,000
Maridi	22,000
Terekeka	20,000
Katigiri-Juba	3,000
Tambura	1,300
Yambio	200
Sub-Total	3,350,500
Total	5,782,750

**DEPARTMENT OF VETERINARY SERVICES
KAJO-KEJI COUNTY**

PROVISIONAL VETERINARY HEALTH CERTIFICATE
(FOR INTERNAL AND EXTERNAL USE)

This is to certify that the animals described below have been found free of any animal diseases or zoonotic ones. They are allowed to cross to: MUJALE MARKET

County: KAJO-KEJI

Payam: MANGALOTRE D-CAMP

Boma: MANGALOTRE

Name of Owner: MOUUT Gai

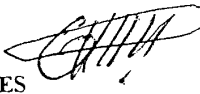
No. of Animals: White and Black

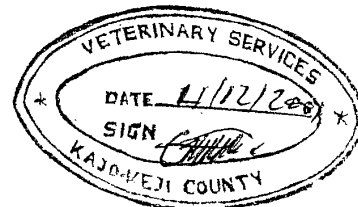
Date of Issue: 11/12/2001


Received the sum of 2,000/= Per animal

Receipt number: 3 HEADS

OFFICER-IN-CHARGE
VETERINARY SERVICES
JAK/KERWA


CAHW





Permit No: 02
 Fee Paid: £54.50

SECRETARIATE OF AGRICULTURE & ANIMAL RESOURCES UNICEF/OLS
 SOUTH SUDAN PROGRAMME
 LIVESTOCK MOVEMENT PERMIT/HEALTH CERTIFICATE


This is to permit Mr. ADUR MATHUI of address Go9Rial
 And Sudanese Nationality to move 45 Head of CATTLE
 From Kaya to KOBOKA
 Movement by Hoof/Lorry Registration Number.....
 Permit valid for four (4) days only from date issue.


The animals have been vaccinated against Rinderpest/GBPP/CCPP latest
 on the date: 21/11/99
 And are all visibly free from any contagious diseases.

The purpose of movement is for immediate slaughter only.

This permit issued by the UNICEF/OLS Veterinary Officer stationed
 in YEI County and KAZI Town.

For movement of animals inside Southern Sudan only/for the purpose of
 Export to Port entry KAYA into Uganda Country.

NAME: Stephen Guya Zeachim
 DESIGNATION: vet assistant
 SIGN: 
 DATE OF ISSUE: 22/11/99



Note: It's an offence to move animals without a legal veterinary permit

Annex 6 External Travelling Permit, Kajo Keji County, Southern Sudan

31/03/2001
 These animals must be vaccinated
 CIVIL Authority for the New Sudan
 KAJO-KEJI County.
 Date 28/3/2001

Department of Public Security
 KAJO-KEJI COUNTY.

EXTERNAL TRAVELLING PERMIT.

SUBJECT TAKING TWO (2) COWS TO UGANDA.
 TABAN FRANCIS

Ref: 1- DANIEL WOSERA (2) EDWARD SOMA (3) JULIUS FRAMA
 The above mentioned Three (3) peoples are all the
 Sudanese by the nationality.
 They are taking two cows to Uganda. The colours of
 cows are as follow 1- bull black in colour.
 2 She cow Red in colour.
 All SPLA/A are requests to allow those peoples free
 movement or passage.

PUBLIC SECURITY OFFICE
 DATE 28/3/2001
 SIGNATURE

INSPECTOR OF Public Security
 KAJO-KEJI county

To
 Mr Alex Tomilyan
 please issue travelling permit to the
 bearer of this note.

Yours
 Zakes Niyarady
 Inspector of Veterinary
 Kajo Keji County
 New Sudan

PUBLIC SECURITY OFFICE
 DATE 28-3-2001
 SIGNATURE
 KAJO-KEJI COUNTY NEW SUDAN

**Annex 7 Draft example of detailed Animal Health Certificate for Southern Sudan
(adapted from Vetwork Services Trust)**

Serial No.....

This is to certify that of and registered under trade license number has submitted his cattle for inspection, vaccination and treatment at holding ground in county and the following observations were made:

The cattle were visually inspected for the following diseases:

Disease	No visible signs	Visible lesions
Foot and Mouth Disease		
Lumpy skin disease		
Rinderpest		
Streptothricosis		

The cattle were tested for the following diseases:

Disease	Positive	Visible lesions
CBPP		
Trypanosomiasis		
East Coast Fever --ECF		
Anaplasmosis		
Babesiosis		
Brucellosis		

The animals were vaccinated against the following diseases:

Disease	Date
Foot and Mouth Disease	
Lumpy skin disease	
Rinderpest	
Anthrax	
Blackquarter	
Haemorrhagic septicemia	

Ticks and other ectoparasite infestation were controlled using on
 The animals were de-wormed using on
 The animals with the following ID on the right side, which also bear the traders registration number on the left side, have been certified fit for export to Uganda for immediate slaughter.

Issued by:..... Title:..... Signature: Date:

This certificate is valid for only 14 days from the date of issue.

Annex 8 Requirements for Disease Control and Certification of Livestock Originating in Southern Sudan

List of animals, animal genetic materials and by-products governed by the various guidelines and regulations

Category	Species or item
Live animals, birds and insects	Cattle sheep goats pigs dogs cats donkeys horses mules camels poultry rabbits and any other pet animals; silk worms, bees etc; live fish and other related water species; zoo animals; caged birds; wild captive animals; rats, mice, Guinea pigs and all other domestic rodents
Animal genetic materials	Semen, embryos, ova, DNA material, hatching eggs, silkworm cocoons, bee brood combs
Animal products	Meat (fresh and processed), milk, table eggs, honey, propolis, bee wax, fish (fresh and processed), hides, skins (raw, dry and processed)
Animal by-products	Ghee, butter, cheese, yoghurt, powder milk, mixed food stuffs with animal origin protein, minced meat, meat preparations, fish by-products, tallow, collagen, beef extracts, bone, carcass meals, animal feeds, feathers, animal dung, horn tips, gall stones etc
Animal related biological products	Veterinary biological agents, animal pathological samples

A number of guidelines and regulations have been set out in Uganda (Acts and Codes) and by other international regulatory bodies like the Office International des Epizooties (OIE) and World Trade Organisation (WTO). All these documents not only set out to restrict but also to give conditions through which the movement and trade in animals and their products can be smoothly accomplished. The list of these documents is given below along with their broad objective and the primary enforcing authority in Uganda.

List of acts and guidelines that govern the movement of animals and products in Uganda

No	Act or Code	Objective	Enforcement Authority
1	The Veterinary Surgeons Act, 1964	Regulate the vet profession	UVA
2	The Animal Diseases Act, 1964	Control of animal diseases	DAR
3	The Rabies Act, 1964	Control of animal diseases	DAR
4	The Cattle Traders Act, 1964	Trade promotion	DAR
5	The Hides and Skins Act	Trade promotion	DAR
6	The Branding of Stock Act	Miscellaneous	DAR
7	The Animals (Straying) Act, 1964	Miscellaneous	DAR
8	The Cattle Grazing Act,	Miscellaneous	DAR

9	Prevention of Cruelty to Animals	Animal welfare	DAR
10	National Drug Statutes	Regulated use of drugs	NDA
11	Code of Meat Inspection, Uganda, 1973	Public health and safety	DAR
12	The Public Health Act, 1935	Public health and safety	DAR/MOH
13	Office International des Epizooties (OIE)	International trade etc	DAR
14	Sanitary & Phyto-sanitary (SPS) regulations of WTO	International trade etc	DAR

UVA = Uganda Veterinary Association, DAR = Director of Animal Resources, NDA = National Drug Administration, MOH = Ministry of Health

Expected responsibilities

Based on the regulations and guidelines listed above, the expectation is, that:

1. a potential client (trader/owner etc) submits a mandatory request to the Commissioner of Animal Health and Entomology (Commissioner) for a Livestock Movement Permit as required by the Animal Diseases Act on imports and exports. An movement permit is needed to move an animal, live fish and other related water species, zoo animals, caged birds, wild captive animals, and experimental animals.
2. the Commissioner would then set out the expected zoo-sanitary standards to be met by the intending importer. Similarly, in the case of export, the commissioner would ensure that these standards also conform to the zoo-sanitary standards set out by the importing country. Ideally this would be spelt out in the 'no objection' communication form from the recipient or importing country.
3. both authorities are required to ensure that the mandatory zoo-sanitary measures are actively being undertaken to finally enable for the certification or issuance of an Animal Health Certificate (in the case of an animal) or a Sanitary Certificate (in the case of animal products and by-products). The sequence above facilitates the international or across border movement of livestock, their products or by-products.
4. for their part, clients (traders, owners etc) are expected to ensure that their animal(s), animal products or animal related biological products for own (domestic) or breeding, cultural, sentimental or commercial including slaughter, or other usage are declared at all the exit and/or entry points of Uganda. And, that these must be subjected to a proper veterinary inspection as per the Animal Diseases Act. Failure to conform to the above procedures may lead to apprehension and prosecution.

In principle, therefore, a person (trader) wishing to import cattle or other livestock from Southern Sudan would be required to apply in writing to the Commissioner giving the following details:

- . Name (or name of the firm and country of origin)
- . Full postal address
- . Details of Import Licence and Income Tax clearance
- . Quantity of goods (animals) to be imported
- . Type of goods to be imported
- . Destination where the animals are going
- . Expected mode of transport and port of entry.

The above information would suffice to move cattle, but, in the case of other livestock products like vaccines hormones chemicals and drugs, technical information leaflets on the registration of these products would have to be attached to the application.

On receipt the Commissioner may accept the application setting out details of the zoo-sanitary and other conditions to be observed prior to accepting the importation. The Commissioner may even accept a third country as a transit route, again detailing the zoo-sanitary conditions to be fulfilled. Equally the Commissioner may reject the application giving the reasons for refusal. When an Import Permit is granted, it must be copied through the quickest means to, 1) the Customs Officer, and 2) the veterinary inspector at the port of entry. Ideally the Veterinary Inspectorate and Regulations Division of MAAIF must also be informed in advance of the date for arrival and the mode of transport.

For the animal import permit to be granted in Uganda;

- . the animal(s) must be coming from a country or zone free of OIE Class A diseases (including for cattle: rinderpest, FMD, CBPP, LSD, vesicular stomatitis) and some selected Class B and C diseases
- . if deemed necessary the animal(s) may be subjected to specific zoo-sanitary measures
- . the animal(s) must be free of ecto- and endo-parasites. Animal products and by-products must also be free of the above named diseases, and the animal(s) must have no more than the minimum acceptable residual levels of specified chemicals.
- . the animals must be in possession of an Internationally acceptable animal vaccination certificate against scheduled diseases.

Evidence that the above conditions have been fulfilled must be shown to the veterinary inspectors at the port of entry. The documentation must have English as one of the languages used to prepare them.

Prior to importation all the animals must have been quarantined and found to be free of the diseases, pests and other conditions stated in the import permit.

An authorised Government Veterinary Officer should inspect animals prior to shipment into Uganda. It is only after this step that, 1) an International Health Certificate, and 2) an International Animal Movement Permit would be issued by the exporting Southern Sudan authorities after certifying that the animals conform to the zoo-sanitary standards detailed in the import permit of the Commissioner. Similarly, animal related products and by-products would have to be processed and packaged consistent with Uganda Government, OIE and WTO-SPS and other specified international standards. They also need to have the above documents.

The mode of transport and port of entry would have to conform to what is specified in the import permit issued by the Commissioner.

Animals have to be moved in a manner consistent with Uganda's Prevention of Cruelty to Animals Act and the EU Directive No 95/26 EC. In the case of air transport, the International Transport Association requirements would have to be observed.

On arrival at the port of entry, animals or their products have to be declared to the Customs Officer and must immediately be subjected to a proper veterinary inspection. This particularly involves a good visual examination of cattle for clinical signs of FMD, lumpy skin disease, eye nasal and diarrhoea discharges perhaps suggestive of rinderpest, streptothricosis, ulcerative laryngitis, norcadia and tick infestation. Ideally, the animals would have to be tested for tuberculosis, CBPP, ECF, trypanosomiasis, anaplasmosis, babesiosis, brucellosis and internal parasites. A simple field

laboratory/veterinary camp to perform these tests should therefore be constructed at or near each entry point. Following this inspection the veterinary officer would issue a bio-safety (health) certificate that allows the animal(s) or product(s) entry into the country or to send the animals or products into a quarantine facility if they are found to be below the required zoo-sanitary standards. The latter is done at the client's risk and cost.

The Pan African Programme for the Control of Epizootics (PACE) of the Organisation for African Unity --OAU-IBAR and the European Union Commission was initiated to consolidate the efforts initiated during the Pan African Rinderpest Campaign (PARC-phase II). PACE has the aim to strengthen national and regional capacities for stimulating local and export trade in livestock and livestock products by sustainable surveillance and strategic control of priority epizootic animal diseases. The PACE programme in Uganda is based on four objectives: 1) to enhance national capacity for disease surveillance, 2) to improve the delivery of veterinary services and animal health care, 3) to eradicate rinderpest, and 4) to control major epizootic diseases. The final outcomes will include increased production of livestock and their products, rural development, better animal disease control, and increased livestock export trade.

PACE programmes are on going in 34 districts including all the northern region districts where Sudanese cattle enter Uganda and either get slaughtered or may come into contact with the local population. These districts include the Zone A areas of Arua, Yumbe, Moyo, Adjumani, Gulu, Kitgum, Pader, Kotido, Moroto and Nakapiripirit.

Vaccination against rinderpest stopped in Uganda in December 2001 and the country is now regarded to be free of the killer disease. Currently PACE is now backstopping a CBPP vaccination campaign for 2-3 years until October 2004 together with strong surveillance for rinderpest, CBPP, FMD, CCPP, LSD and Rabies (Pace, 2002). The aim is to set up an epidemio-surveillance network that would eventually be linked to regional and continental networks. The PACE programme in Uganda will cover 4.1 million cattle, 2.7 million goats, 1.1 million sheep, 0.8 million pigs dogs and cats.

The work of PACE is co-ordinated by 34 district staff including the DVOs and VOs in the border areas we visited. Their duty include to liase with the PACE project co-ordination unit and livestock farmers, to co-ordinate the local vaccination campaigns against major epizootics, take charge of the local epidemio-surveillance network, monitor rumoured disease outbreaks, and co-ordinate and report the local diseases surveillance and monitoring activities. The level of monthly report form submission to the central epidemiology unit at Entebbe was nevertheless still very low. PACE is not only buying and distributing the necessary vaccines, it has upgraded the laboratories (by providing equipment and reagents) and 'cold chain' in most of the districts and has provided motor vehicles and/or motorcycles to the programme's co-ordinating veterinary staff. PACE is also engaged in helping to consolidate the privatisation of veterinary services in Uganda, communication and the training of staff, livestock owners and community based animal health workers (CBAHWs). Since the inception of the privatisation of delivery of veterinary services project in June 2000, PACE has approved 10 project proposals for financing and the recipients are operating their private practises in various parts of the country. Another twelve proposals are under reviewed for funding.

Finally, PACE has evolved a Community-based Animal Health and Participatory Epidemiology (CAPE) Unit. CAPE is co-ordinated by the PACE Co-ordination Unit in OAU-IBAR and as its name suggests, it offers support in community-based delivery systems in the pastoral eco-systems of nine countries including Uganda, Sudan, Kenya, Tanzania, Ethiopia, Eritrea, Somalia, CAR and Chad. The five key outputs of CAPE are expected to be: development of primary-level veterinary services in pastoral ecosystems, promoting policy changes and legislation to create an enabling environment for community-based animal health services, supporting new learning for policy change, information dissemination, and strengthening regional capacity. The CAPE linkages with PACE and OAU-IBAR enable it to transfer field experiences to a range of stakeholders, including national veterinary services, veterinary training schools, research institutes, private practitioners, international livestock agencies and NGOs. CAPE has already developed strong partnerships with many of them.

Annex 10 Requirements for, and feasibility of, vaccination, treatment and screening of livestock for export from Southern Sudan

Requirement or Capability	Major undertaking					
	Vaccinations		Treatments		Screening	
	Needed	Feasibility	Needed	Feasibility	Needed	Feasibility
Holding/Testing facilities						
• Build holding grounds	++	2(5)	++	2(5)	+++	2(5)
• Lab support			++	1(3)	+++	1(4)
• Sample collection			+	0(2)	++	0(4)
Certification						
• Vet legislate/enforce	++	1(5)	++	1(3)	+++	1(5)
• Vaccine supplies	+++	3(5)				
• Cold chain	++	1(4)	+	0(4)	+	0(4)
• Transport	+	1(3)	+	1(3)	++	1(4)
• Disease status record & report system	++	2(5)	++	2(4)	++	3(4)
• Communication	++	2(4)	++	1(4)	++	1(4)
• Anim. Identification	+	1(4)	++	1(3)	++	1(4)
Cost recovery + taxation						
• Cost recovery	+	2(4)	+++	3(5)		
• Drugs supplies			+++	3(5)		
Trader registr. + training						
• Trained manpower*	++	1(4)	+++	1(5)	+++	1(5)
• Farmer training			+	1(2)		
• Trader registration	+	3(5)	+	1(3)	++	1(4)
Establish Official Cross points						
• Special entry points	++	4(5)	++	3(4)	+++	3(5)
• Stock routes	++	3(5)	++	2(4)	+++	2(5)

• Vet services	+++	1(4)	+++	1(4)	+++	1(4)
• Regional abattoirs					+++	0(5)

Remarks: The figure in brackets indicates desired optimum level

* Veterinary personnel, traders and producers

The left column of the table lists the various sub-components that will have to be put in place to implement a viable vaccination, treatment and screening programme. These are broadly itemised under the main components but in no specific hierarchy. The Team feels that if adequate financing is available to develop the necessary infrastructure, a programme is initiated to train an adequate supply of professional and support personnel, and relevant policies and regulations are enacted, it would be possible to implement a successful vaccination treatment and screening programme.

As noted in section 9.1.1, new holding grounds are needed at or near the five border crossing points in Sudan: Bazi/Kaya, Kerwa, Kajo Keji, Nimule and Tsertenya. About \$25,000 will be required to construct a holding ground with an adjacent base camp that would also include a small testing laboratory. Building, rebuilding of quarantine stations are also needed at the corresponding entry points in Uganda at Oraba, Merwa, Afoji, Ajumani and Agoro at a unit cost of \$10,000 except for Oraba which will cost \$13,000 because of its larger size.

After setting up the necessary infrastructure, proper integration of a number of items will be critical to implementing a good certification process. Briefly, legislation will be required that will make it necessary to enforce the certification process in Sudan. An animal identification system will be inevitable for both the traders and animals. It will be necessary to have enough trained professional and technical personnel, and they will need to be mobile enough to access the disease status of animals through physical check-ups and sample collection and examination. In a number of cases certification will depend on getting animals vaccinated and this might require a cold chain and a regular or adequate supply of vaccines. It will also be very important to maintain proper communication channels among staff within Sudan and between them and their counterparts in Uganda.

Most governments are moving towards privatisation of the provision of veterinary services or cost recovery systems. The best approach would have been to introduce the cost-recovery system gradually. However, in Southern Sudan this would have meant cost sharing with the government. In the absence of such opportunities, this sharing (or outright provision) has often been done by the NGOs. In the event, there is a need to introduce the process through proper training programmes for producers and traders. Training and awareness programmes will have to be designed in such a way that the benefits accruing from what the traders and producers must pay for are clearly demonstrated. As this is likely to relate to vaccinations and treatments, it will be important to ensure adequate supplies of both.

Equally if the benefits of being registered are demonstrated and explained the study Team does not anticipate major problems in getting traders to register. During the field trip many of these people expressed the need to get further training. But while it will be critical to train traders, if diseases are to be properly controlled, it will increasingly become inevitable to initiate training programmes also for the actual livestock producers. It is for this reason that having an adequate number of CBAHWs will be very important.

Finally, if all the previous steps can be put in place, it will not be difficult to set up the relevant crossing points. Most of these crossing points exist and are being used. What is needed is to regularise the way they operate so that the animals coming across do so within internationally acceptable norms.

Annex 11 Five year budget (\$) for improving health services & livestock marketing in Southern Sudan & Uganda

Major Item	Key Component	Year 1	Year 2	Year 3	Year 4	Year 5	Total
New holding grounds	Bazi, Southern Sudan	13,000					13,000
	Kerwa, Southern Sudan		10,000				10,000
	Kajo Keji, Southern Sudan	10,000					10,000
	Nimule, Southern Sudan			10,000			10,000
	Tsertenya, Southern Sudan		10,000				10,000
New quarantine stations	Afoji, (Moyo route) Uganda	10,000					10,000
	Ajumani (Gulu route) Uganda			10,000			10,000
	Oraba (Koboko route) Uganda	13,000					13,000
	Merwa (Yumbe route) Uganda		10,000				10,000
	Agoro (Kitgum route) Uganda		10,000				10,000
Veterinary laboratory/office	Koboko, Uganda	15,000					
Field Veterinary Camps	Bazi, Southern Sudan	6,500					6,500
	Kerwa, Southern Sudan		6,500				6,500
	Kajo Keji, Southern Sudan	6,500					6,500
	Nimule, Southern Sudan			6,500			6,500
	Tsertenya, Southern Sudan		6,500				6,500
Small dams (years 1,2,3)	Yeri, Ambara & Wullu, S. Sudan	Site visits required before costing					
Network Services Trust (Table 8)	Support for livestock marketing	45,450	39,200	39,200	39,200	39,200	202,250
Veterinary Lab support services [generators not included]	In Southern Sudan, 5x1250	6,250	6,250	6,250	6,250	6,250	31,250
	In Uganda, 5x850	4,250	4,250	4,250	4,250	4,250	21,250
Small size abattoirs (years 1,3,5)	Arua, Gulu, Kitgum	Cost estimate = \$1 million each. Recommended for private investment					
Field Supplies	Vaccines	3,500	5,000	4,500	4,000	3,500	20,500
	Drugs	4,500	4,000	3,500	3,000	2,500	17,500
	Acaricides	3,000	3,500	4,000	4,000	4,000	18,500
Capacity building (Training)	5 Veterinarians @ 4,000/yr	20,000	20,000	20,000	20,000	20,000	100,000
	5 Lab. Technicians @ 2,500/yr	12,500	12,500	12,500	12,500	12,500	62,500
Local training programmes	Animal Health Assistants	15,000	25,000	25,000	25,000	25,000	115,000
	CBAHWs	17,500	25,000	25,000	25,000	25,000	117,500
Vehicles & cycles	3 Pickups, 4x4 wheel drive	20,000	20,000	20,000			60,000
	Motorcycles @ 4,500	13,500	13,500	13,500	13,500	13,500	67,500
	Bicycles @ 50	2,500	2,500	2,500	2,500	2,500	12,500
Transport	Fuel, maintenance, insurance	12,500	12,500	12,500	12,500	12,500	12,500
Communication	Within project	4,500	4,500	4,500	4,500	4,500	22,500
	Inter-regional consultations	2,500	2,500	2,500	2,500	2,500	12,500
Traders and producers training	IT, mass media	7,500	7,500	7,500	7,500	7,500	37,500
Capital expenditure	Comp. Fax, printer, furniture	8,500	2,500	1,500	1,000	500	14,500
Sub total		226,500	218,500	203,500	142,500	141,000	932,000
Contingencies, 12%		27,180	26,220	24,420	17,100	16,920	111,840
TOTAL		253,680	244,720	227,920	159,600	157,920	1,043,840

Annex 12 Itinerary of Alan King, Livestock Production & Marketing Specialist

<u>Date</u>	<u>Activities</u>
7-8 March 2002	Meetings in Nairobi with Vetwork Sudan, Toposa Development Association, SPLA officials, Catholic Relief Services, VSF Switzerland, AMREF, CAPE, OLS and P. Oyatsi (hides and skins businessman)
11 March	Flew from Nairobi to Entebbe. Meeting with E. Mukasa-Mugerwa and William Mogga.
12 March	Meetings in Kampala at Uganda Beef Producers Association, Uganda Meat Packers (abattoir) and BHS (abattoir)
13 March	Meetings in Entebbe with Dr C. Rutebarika (PACE Coordinator), Dr N.K. Kauta (Commissioner for Livestock Health & Entomology), Dr E. Rwamushwa (Assistant Commissioner Disease Control)
14 March	Discussions in Kampala with consultancy team
15 March	Flew from Entebbe to Arua. Meetings with RDC, DVO, Deputy DVO, VO in charge of Arua slaughterhouse and six livestock middlemen/traders
16 March	At Arua slaughterhouse: examination of Dinka cattle brought for slaughter; discussions with Ugandan Trader/butcher and LC1 councillor in charge of security. Discussions with Logistics Officer of Vetwork Services Trust.
17 March	Discussions with consultancy team and report writing.
18 March	Travelled from Arua to Yumbe: meetings with (1) Local Administration, (2) DVO & Animal Husbandry Officer – went with them to livestock holding ground at Merwa. Travelled to Moyo.
19 March	Meeting in Moyo town with DVO and staff. Visited site of proposed holding ground/quarantine station at Afoji and restocking holding ground near Moyo town. Meeting with 14 livestock traders/butchers.
20 March	Meeting at Oraba on Uganda border with URA officials, LC1 Security. Visited livestock holding ground at Oraba. Travelled to Koboko (Uganda): met lorry owners. Met Stephen Onzima, VO at Koboko
21 March	Travelled to Oraba/Kaya (Sudan border). Meeting with Jackson Taban (SRRA vet). Meeting with SRRA and administration staff. Visited livestock holding ground at Bazi. Meeting in Bazi with cattle traders, Political Commissioner (SPLM) and Police Commander. Travelled to Yei.
22 March	Met SPLM officials at Yei: Regional Secretary Equatoria Region, Commissioners of Agriculture and Finance, Director of Customs & Excise.
23 March	Meeting with livestock traders, Yei. Report writing.
24 March	Travelled from Yei to Maridi. Report writing.
25 March	Meeting with traders, Maridi. Report writing
26 March	Travelled from Maridi to Rumbek. Talked with herders on the road.
27 March	In Rumbek: met SRRA officials, veterinary coordinators and stockpersons. Visited Rumbek livestock auction - talked with owners & buyers and obtained cattle prices. Met Peter Adwok Nyaba, marketing researcher for SCF.
28 March	Visited cattle camp outside Rumbek town – had meeting with cattle owners Meetings with Executive Director of SRRA and County Secretary of SRRA, Rumbek County. Visited Rumbek livestock auction – obtained cattle prices.
29 March	Rumbek: Meeting with cattle traders & butchers and SRRA veterinary coordinators. Flew from Rumbek to Lokichoggio.
30 March	Meetings with livestock traders in Lokichoggio. Flew from Lokichoggio to Nairobi.
31 March – 5 April	Report writing.

Annex 13 Itinerary of Dr E. Mukasa-Mugerwa, Veterinarian & Livestock Production Specialist

Date		Activity
11-Mar	a.m	Made local arrangements in Kampala
	p.m	Team discussions
12-Mar	a.m	Team discussions and phoned contacts
	p.m	Visit to UMP and BHS slaughterhouses in Kampala
13-Mar	a.m	Visited MAAIF staff
	p.m	Own contacts in Kampala
14-Mar	a.m	Group discussions
	p.m	Literature searches
15-Mar	a.m	Flew to Arua, visited DVO and VO
	p.m	Visited RDC, local abattoir staff, cattle traders
16-Mar	a.m	Visit to Vetwork Sudan liaison office
	p.m	Own discussions
17-Mar	a.m	Reading and writing
	p.m	Reading and writing
18-Mar	a.m	Travel and visit to Yumbe Vet Officer, CAO
	p.m	Visited Meruwa entry point
19-Mar	a.m	Visit Moyo DVO and staff, Afoji entry point
	p.m	Visited with traders and Arepi quarantine station
20-Mar	a.m	Visited Oraba entry point, Customs post
	p.m	Discussions with Koboko Vet Officer
21-Mar	a.m	Visited Kaya border posy & Vetwork camp
	p.m	Visited Bazi holding ground, discussions with traders
22-Mar	a.m	Visited SPLM Admin & SRRA Agric staff in Yei
	p.m	Travelled back to Arua
23-Mar	a.m	Flew to Kampala
	p.m	Reading and Report writing
24-Mar	a.m	Reading and Report writing
	p.m	Report writing
25-Mar	a.m	Visit to Presidential adviser on Agriculture, Kampala
	p.m	Report writing
26-Mar	a.m	Report writing
	p.m	Report writing

Annex 14 Persons Met

Name	Position
Piers Simpkin	FAO Deputy Emergency Coordinator – Livestock – Southern Sudan and OLS Livestock Coordinator – Southern Section
Yacob Aklilu	Director, Livelihoods Program, Fenstein International Famine Centre
Tim Leyland	Advisor and Head of CAPE Unit
Andy Catley	Epidemiology and Informatics Officer, CAPE Unit
Thomas Taban	Managing Director, Vetwork Services Trust
Margaret Njoroge	Grant Officer, Catholic Relief Services/Sudan
Eberhard Zeyhle	Project Manager, Hydatid Disease Control Project, AMREF
Ernest Njoroge	Veterinarian, AMREF
Lokai Iko	Coordinator, Toposa Development Association
Eric Simba	Support Officer, Toposa Development Association
Pancras Oyatsi	Hides and Skins businessman, Kenya
Arthur Akuen	Secretary of Finance, SPLM
David Deng	Business transportation, SPLM
Sam Gonda	Livestock Project Officer, Oxfam (Sudan desk)
Francis Mujumba	Sales & Marketing Manager, Uganda Meat Packers, Kampala
Francis Mwesigye	Manager, Bassajabalaba Hides & Skins (BHS) abattoir, Kampala
Dr.Charles Oluport	Secretary, Uganda Beef Producers Association
Dr.Jean Oluport	Coordinator, Uganda Beef Producers Association
Roland Axelzon	Project Manager, Scanagri Sweden AB
Dr J.J. Otim	Presidential Advisor on Agriculture, Office of President, Kampala
Dr. C.S. Rutebarike	PACE Coordinator, MAAIF Entebbe
Dr. N.K. Kauta	Commissioner for Livestock Health & Entomology, MAAIF Entebbe
E. Payi	Entomologist, Arua, Uganda
James Aroba	Entomologist, Moyo, Uganda
Dr E. Rwamushwa	Assistant Commissioner for Disease Control, MAAIF, Entebbe
Dr G. Toa	District Veterinary Officer, Arua
Dr Edoni	Deputy DVO, Arua
Okott Nyaluru	Resident District Commissioner, Arua
Ben Moi	Mass Mobiliser for Production, Arua
Dr William Nguma	Veterinary Officer, Arua
Okutu Ismail	Livestock trader, Arua
Sadiki	Livestock trader, Arua
Yasin Sebi	Livestock trader, Arua
Asiku Robert	Livestock trader, Arua
Akbar Musa	Livestock trader, Arua
Sasi Ira	Livestock trader, Arua
Akomondu Malik	Livestock trader/butcher, Arua
Osoga Saban	Local Council Security, Arua
Swadik Juruga	Logistics Officer, Vetwork Services Trust, Arua
Amia Butele Casmir	Vice Chairman, Yumbe District Local Government
Moses Dalila	Deputy Chief Administrator, Yumbe District Local Govt.
Dr Wilfred Chakua	District Veterinary Officer, Yumbe
James Orale	Animal Husbandry Officer, Yumbe
Dr Lali Dominic	DVO, Moyo
Dr Thomas Anyanza	PACE Coordinator/VO, Moyo
Dr Mathias Afayoa	VO, Moyo

Richard Akule	Assistant Animal Health Officer, Moyo
Mrs Martina Azireo	Chairperson LC3, Moyo – Subcounty
Mrs Bunia Mindra	Senior Assistant Animal Husbandry Officer, Moyo
Aloro Basil	Uganda Revenue Authority, Oraba
Ratibu Siliman	Security, LC1 Oraba
Aduki Ibrahim	Chairman LC1 Oraba
Jackson Malish	Director, Bros & Company (U) Ltd, Koboko/Arua
Samuel Lotigo	Sales Manager, Akuur & Pan Ruel Company, Yei, Sudan
Peter Bashir Bandi	Co-ordinator, Truckoil Ltd, Koboko
Dr Stephen Onzima	Veterinary Officer, Koboko
Maurice Lokule	SPLM County Secretary, Yei
Bandindi Pascal Uru	Commissioner, Agriculture & Animal Resources, SPLM, Yei
Cdr. Samuel Abu John	SPLM Secretary, Equatoria Region, Southern Sudan
Daniel Gwangwe	Financial consultant, Yei
Michael Amule Joseph	Director of Customs & Excise, Southern Sudan
Dr Samuel Nyika	Oxfam, Kotobi
Peter Adwok Nyaba	Researcher, Larjour Consultancy
Albino Majur	Auction Clerk, Rumbek
Jacob Dhieu	Deputy Auction Clerk, Rumbek
Justin Makwach	Deputy Executive Director for SRRA, Rumbek
Peter Jok	Chief Veterinary Coordinator for SRRA, Rumbek
Benjamin Makoi	Veterinary Coordinator for SRRA, Rumbek
Gabriel Makuae	Stockperson & veterinary logistics, Rumbek
Samuel Hussein	Stockperson & hides and skins supervisor, Rumbek
Elijah Malok	Executive Director of SRRA
Paul Macuei	SPLM County Secretary, Rumbek County
Jane Mahungu	Livestock trader, Lokichoggio
Gladys Mahungu	Livestock trader, Lokichoggio
Getinet Tiruneh	Ethiopian livestock trader (Sudan – Kenya), Lokichoggio

Meetings with traders/butchers, attendants & officials

Cattle traders/attendants and butchers met at Moyo, 19.3.02

Abdulaziz Bashir Draluku, Dramadri Rashid, Juma Marijan, Abass Marijan, Mbruku Amza, Alli Abdalla, Ahuma Kashru, Chaga, Ijotiga Kassim, Sabbi Jackson, Taban Toha, Ratibu Geriga, Hassen Ramada, Taban Ahamdi.

Meeting held at Kaya border post, Southern Sudan, 21.3.02

Jackson Taban	SRRA Vet
Jackson Friday	SRRA Secretary
Solomon Lokang	Security, Personnel
George Lado	Finance Official
Martin Lasuba	Gibana Office, Kaya
Rufas Charles	Customs Officer
James Moses	Boma Local Council Chairman
James Ade	Chief, Kaya town
Michael lumori Ben	Customs Officer
Cosmos Lokyo	Boma Administration
Alex Mawa	Head of Station Commerce

Meeting held at Bazi, Sudan, 21.3.02

Dr Machar	PolITICAL Commissioner, SPLM
John Majau	Livestock trader
James Manyang	Livestock Trader
+ 7 other traders	
John Jak	Police Commissioner, Bazi
Kual Manyang	Chairman of Economic Commission, SPLM

Livestock traders met at Yei, Southern Sudan, 23.3.02

Nial Abugurun, Baranaba Bol, John Gai, Michael Kwech, David Majur, James Akot

Livestock traders met at Maridi, 24.3.02

Kenneth Mayor, Moses Mabior, Simon Majur

Meeting at Rumbek with cattle traders/butchers and SRRA veterinary coordinators, 29.3.02

Sunday Maliut (Rumbek Town Administrator)

Santino Malok (Traders, Trades Union Chairperson)

Peter Jok (SRRA Chief Veterinary Coordinator)

Benjamin Makoi (SRRA Veterinary Coordinator)

Cattle traders: Philip Kondip, Manyiel Broi, Matur Kucwuor, Samuel Majok Athuoi, Samuel Raik Kau, Abraham Kicek, Jacob Ajok, Peter Mabor.

Butcher: Makur Ayual