



**New Partnership for
Africa's Development (NEPAD)
Comprehensive Africa Agriculture
Development Programme (CAADP)**



**Food and Agriculture Organization
of the United Nations
Investment Centre Division**

GOVERNMENT OF THE REPUBLIC OF UGANDA

SUPPORT TO NEPAD–CAADP IMPLEMENTATION

**TCP/UGA/2910 (I)
(NEPAD Ref. 04/03 E)**

Volume III of VI

BANKABLE INVESTMENT PROJECT PROFILE

Livestock Development Project

November 2004

UGANDA: Support to NEPAD–CAADP Implementation

Volume I: National Medium–Term Investment Programme (NMTIP)

Bankable Investment Project Profiles (BIPPs)

Volume II: Smallholder Irrigation Development and Water Harvesting Project

Volume III: Livestock Development Project

Volume IV: Agricultural Marketing Project

Volume V: Natural Resource Management

Volume VI: Aquaculture Development Project

NEPAD–CAADP BANKABLE INVESTMENT PROJECT PROFILE

Country: Uganda

Sector of Activities: Livestock

Proposed Project Name: **Livestock Development Project**

Project Location: The Cattle Corridor

Duration of Project: 5 years

Estimated Cost: Foreign Exchange US\$21.8 million
Local Cost..... US\$34.9 million
Total US\$56.7million

Suggested Financing:

<i>Source</i>	<i>US\$ million</i>	<i>% of total</i>
<i>Government (central and local)</i>	8.5	15
<i>Financing institution(s)</i>	28.4	50
<i>Beneficiaries</i>	2.8	5
<i>Private sector</i>	17.0	30
<i>Total</i>	56.7	100

UGANDA:
NEPAD–CAADP Bankable Investment Project Profile
“Livestock Development Project”

Table of Contents

Abbreviations.....	iii
I. PROJECT BACKGROUND.....	1
A. Project Origin	1
B. General Information.....	1
C. Institutions.....	2
D. Constraints and Opportunities.....	3
E. Ongoing and Planned Activities or Programmes.....	3
II. PROJECT AREA.....	4
III. PROJECT RATIONALE.....	7
IV. PROJECT OBJECTIVES.....	7
V. PROJECT DESCRIPTION	8
<u>Component 1: Animal Breeding</u>	<u>8</u>
<u>Component 2: Improvement in Livestock Physical Infrastructure</u>	<u>9</u>
<u>Component 3: Transboundary Disease Control</u>	<u>10</u>
<u>Component 4: Pasture Improvement.....</u>	<u>10</u>
<u>Component 5: Strengthening Livestock Information Systems</u>	<u>11</u>
<u>Component 6: Project Coordination</u>	<u>11</u>
VI. INDICATIVE COSTS.....	11
VII. PROPOSED SOURCES OF FUNDING.....	12
VIII. PROJECT BENEFITS	13
IX. IMPLEMENTATION ARRANGEMENTS	14
X. TECHNICAL ASSISTANCE REQUIREMENTS	15
XI. ISSUES AND PROPOSED ACTIONS	15
XII. POSSIBLE RISKS	16
ANNEXES.....	17
Annex 1: Livestock Population and Agricultural GDP Growth in Uganda	19
Annex 2: Estimates of District Area, Human and Livestock Populations in the Cattle Corridor of Uganda	21
Annex 3: Map of the Cattle Corridor.....	23
Annex 4: References	25

Abbreviations

ADB	African Development Bank
AIDS	Acquired Immune Deficiency Syndrome
APEP	Agricultural Productivity Enhancement Programme
ARDCs	Agricultural Research and Development Centres
BADEA	Bank for Agriculture Development in Africa
CAADP	Comprehensive Africa Agriculture Development Programme
CAHWs	Community Animal Health Workers
DANIDA	Danish International Development Agency
GoU	Government of Uganda
DATIC	District Agricultural Training and Information Centre
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
HPI	Heifer Project International
IAEA	International Atomic Energy Authority
IFAD	International Fund for Agricultural Development
IFIs	International Financing Institutions
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MTTI	Ministry of Trade, Tourism and Industry
NAADS	National Agricultural Advisory Services
NARO	National Agriculture Research Organization
NGOs	Non-governmental Organizations
NEPAD	New Partnership for Africa’s Development
NMTIP	National Medium–Term Investment Programme
NORAD	Norwegian Agency for Development
PEAP	Poverty Eradication Action Plan
PMA	Plan for Modernization of Agriculture
PSFU	Private Sector Foundation Uganda
RPO	Rural Producers Organization
TCP	Technical Cooperation Programme
UBPA	Uganda Beef Producers Association
UCA	Uganda Cooperative Alliance
UIA	Uganda Investment Authority
ULIA	Uganda Leather Industries Association
USAID	United States Agency for International Development
UVA	Uganda Veterinary Association
VEDCO	Volunteer Efforts for Development Concerns
WB	World Bank

I. PROJECT BACKGROUND

A. Project Origin

I.1. This project idea originated from the *Ministry of Agriculture, Animal Industry and Fisheries* (MAAIF) with the aim of promoting increased production of milk and meat and associated products from cattle, small ruminants and non-ruminants such as pigs and poultry. Projects targeting livestock development have been prepared by the *Directorate of Animal Resources* of MAAIF within the overall framework of the *Meat Production Master Plan Study*, the *Dairy Development Master Plan Study* and, recently, the *Plan for the Modernization of Agriculture* (PMA), the *Strategic Interventions for Exports Programme* and MAAIF’s *Development Strategy and Investment Plan for 2004/05–2006/07* currently being finalized. These projects directly support livestock restocking, animal health, water supply for livestock, forage resources, livestock marketing, livestock information, environmental concerns, capacity building, socio-economic issues and gender analysis. However, some of these components need scaling up in order to meet the desired targets and goals. This project would contribute to that aim. At a national stakeholders workshop held in Kampala in February 2004 to validate the NEPAD–CAADP *National Medium–Term Investment Programme* (NMTIP) for the agriculture sector, livestock was identified as one of the priority areas for bankable investment projects. Project activities would be financed by the beneficiaries, the private sector, the government, IFIs and donors.

B. General Information

I.2. ***The Agriculture Sector.*** Agriculture (comprising of crops, fish and livestock) is the mainstay of the Ugandan economy, providing a significant share (about 40%) of gross domestic product (GDP) (see Annex 1, Table 2), 85% of export earnings, 80% of total employment and the bulk of raw materials used by the mainly agricultural-based industrial sector comprising coffee hulling, cotton ginning, tea processing, sugar cane milling, soap manufacturing, cigarette manufacture, grain milling, and dairy and leather products manufacturing. About 85% of the population, estimated at close to 25 million in 2002, live in the rural areas and depend directly or indirectly on agriculture for their livelihoods. Coffee, fish, tea and tobacco are the key export earners, followed by horticulture and grains (mainly maize) and beans.

I.3. ***The Livestock Subsector.*** The livestock subsector contributes 7.5% of GDP and 17% of agricultural GDP. Livestock statistics in Uganda are extrapolations from census information collected over 10 years ago. The livestock population is estimated at 5.8 million cattle (of which 5% are exotic or exotic crosses for dairy), 1 million sheep, 6.2 million goats, 1.5 million pigs and about 24 million units of poultry (of which 1 million are exotic layers and 2.4 millions are broilers) (see Annex 1, Table 1). Production is estimated at 97,000 t of beef, 510,000 t (510 million litres) of cow milk, 41,000 t of chicken meat, 16,000 t of goat meat, 9,700 t of mutton and lamb, and limited amounts from various other animals. Per capita meat and milk consumption is estimated at just 6 kg per capita and 23 l per capita respectively, which is below the FAO minimum per capita requirements of 50 kg and 200 l of meat and milk, respectively. It is expected that rural consumption is lower than urban, reflecting different levels of income. Livestock husbandry is becoming increasingly common and it has been argued that livestock is increasingly replacing coffee plantations as a major asset and source of income for rural livelihoods. The livestock subsector has shown consistent positive growth rates estimated at 7.6% per annum from 1990–1999 (Annex 1).

I.4. ***Livestock Breeds.*** The major cattle breed is Ankole breed which accounts for half of the indigenous cattle (estimated at 95% of the national herd), followed by Zebu which account for one third and their crosses (Nganda) which constitute most of the rest of the herd. This is a huge change

since the 1970s when the Ankole breed accounted for 30% and 60% of the national herd were the small East African Zebus. Small numbers of exotic tropical beef breeds exist on commercial ranches, most notably Boran. Just over 40% of the goats are believed to be of the Small East African breed, with one-third Mubende and other breeds making up the rest. There are small numbers of dairy goat breeds, namely Toggenberg, Anglo-Nubian and Saanen and their crosses, and the more recently introduced Boer goats. Fat-tailed and black-head types, similar to Red Maasai and Somali breeds, dominate sheep populations. There is virtually no trace of the exotic breeds introduced in the 1960s such as Corridales, Romney Marsh and Merino. By 1993, slightly over 400 commercial pig units were in operation, while traditional production systems had recovered in the north and northeast.

I.5. **Livestock Production Systems.** There are four main livestock production systems in Uganda:

- ***Pastoral System.*** This is an extensive, subsistence-oriented production system where owners move with their herds in search of grazing and water. Indigenous breeds of cattle, goats and sheep are kept. The system is low-input low-output, and is found mainly in northeastern (Kotido and Moroto) and western (Mbarara and Ntungamo) districts.
- ***Agro-pastoral System.*** This is a mixed farming system with emphasis on livestock production reliant on communal grazing, supplemented with crop residues grazed *in situ*. Cattle, goats, sheep and poultry are kept; productivity is higher than in pastoral systems. This system is common in the north and east of the country where land is communally owned.
- ***Settled Mixed Crop-Livestock System.*** The major source of food/income is derived from cropping and herds are smaller than in the agro-pastoral areas. Livestock grazing is supplemented mainly by crop residues. Small poultry flocks of layers and broilers are kept.
- ***Commercially Oriented System.*** This includes ranching for beef production and intensive systems like zero grazing for dairy production, non-ruminant systems for pigs and poultry.

C. Institutions

I.6. Within the Government of Uganda (GoU), MAAIF is mandated to “*support, promote and guide the production of crops, livestock and fisheries in a sustainable manner, so as to ensure the improved quality and quantity of agricultural produce and products for domestic consumption, food security and export.*” Other players include development partners comprised of FAO, ADB, BADEA, DANIDA, WB, EU, the Government of Japan and the Government of Germany. These have been instrumental in providing counterpart funding in the areas of capacity building, research, water provision, breeding, forage resources, disease control and marketing. The private sector involvement in livestock development has been through dairy and beef production, pasture production, leather tanning, slaughtering of animals (many abattoirs have been privatized) and marketing of livestock products. The private sector is organized mainly through their umbrella organizations, which include PSFU, UNCCI and UMA. The NGOs and CBOs have also played a significant role in the development of this sector, in particular Heifer Project International, OXFAM (GB) Uganda, the Roman Catholic Church and Church of Uganda.

D. Constraints and Opportunities

- I.7. The most significant constraints to the livestock subsector include:
- low productivity because of the low genetic potential of indigenous livestock and the low-input low-output animal husbandry practices of the majority of livestock owners;
 - high disease incidences, e.g. ECF, trypanosomiasis and mastitis;
 - shortage of grazing and animal feeds;
 - high cost and poor quality of inputs;
 - poor rural infrastructure (mainly road network and power), with negative implications on service delivery and marketing;
 - inadequate technical support from the understaffed and poorly equipped Directorate of Animal Resources of MAAIF;
 - lack of facilities for value addition, particularly for the processing of livestock products; and
 - civil unrest and instability, mainly in the north and northeastern areas of Uganda.
- I.8. Opportunities include:
- government commitment to the development of the subsector;
 - inclusion of the livestock sector among the strategic exports;
 - a long tradition of livestock-keeping among many Ugandan households;
 - promotion of farmers’ organizations after putting NAADS into operation and improved agricultural service delivery, including for livestock;
 - willingness of a number of national and multinational NGOs and development partners to provide counterpart funding and technical assistance to develop the sector; and
 - availability of a local and export markets for livestock products.

E. Ongoing and Planned Activities or Programmes

- I.9. A number of GoU and donor-assisted initiatives include:
- the *Pan-African Control of Epizootics* (PACE) (worth US\$2.63 m, funded by EU and GoU);
 - Support to the Dairy Development Authority (worth US\$0.81m, funded by GoU);
 - Farming in Tsetse areas of East Africa (funded by EU and GoU, ends in 2005);
 - Tsetse control in Buvuma Islands (funded by IAEA and GoU);
 - Small Ruminant and Rabbit Development Programme (funded by BADEA and GoU);
 - Pasture farming in Ankole Ranch (funded by GoU, German Government and Mbarara LC);
 - Production of high yielding germplasm (worth US\$1.03 m, funded by JICA and Government of Japan);

- Animal production systems research (worth US\$6.3 m, funded by GoU, DANIDA and IAEA);
- Animal Genetic Resource Centre (worth US\$0.5 m, funded by GoU);
- Immunization against ECF;
- Animal Health Research Centre (worth US\$0.07 m, funded by GoU);
- Tsetse and trypanosomiasis control (worth US\$4.2 m, funded by GoU and EU);
- Tsetse control in Buvuma Islands (worth US\$0.24 m, funded by GoU and IAEA);
- FAO-funded cross-border animal disease control through improved surveillance; and
- the ADF-funded livestock development project that cuts across all areas of the livestock sub sector.

II. PROJECT AREA

II.1. The proposed project would cover the cattle corridor (see Annexes 2 and 3) that consists of 29 of the country’s 56 administrative districts. The area has been chosen for this project because of:

- the importance of livestock within the cattle corridor;
- the subsistence-based nature of farming that is characterised by low-input low-output animal husbandry practices; and
- the relatively high levels of poverty compared with other parts of the country.

II.2. The corridor covers the areas with the greatest concentrations of cattle in Uganda as well as the drier areas and trekking routes across the country, running southwest to northeast. These districts make up 44% of Uganda’s surface area, contain close to 40% of the human population; about 55% and 42% of the indigenous and exotic cattle respectively; 42% of sheep and goats; 36% of pigs; and 38% of the poultry flock. Some 60% of the households in the corridor are livestock keepers compared to 22% nationally. However, despite their relatively high livestock populations, these districts are among the poorest in the country. Stock farmers’ poverty indicators reflect the low input/low output, subsistence nature of livestock farming in the area.

II.3. **Topography, Climate and Soils.** The project area includes areas with an altitude ranging from 150 m to 4,000 m above sea level. Most of the areas experience bimodal rainfall (except the northern areas, which have one long rainy season). The first rainy season extends from mid-February to May and the second season stretches from September to November.

II.4. The majority of the area receives from 1,000 mm–1,500 mm of annual rainfall, while about 30% of the area receives from 500 mm–1,000 mm. Where less rain falls, it is also erratic, unreliable and highly variable according to seasons; long periods of drought may be experienced. Temperatures range from 12°C–30°C. The dominant soil types are sandy clay loams with heavier clay soils in the valley bottoms. There are clear indications of soil erosion throughout the area, especially in the highlands, which has resulted in gulleys in many places and an overall decline in soil fertility and livestock grazing pasture. This phenomenon is more pronounced in the western regions than in the others. Deforestation (mainly for fuel wood and construction) is a serious problem.

II.5. **Population.** The last comprehensive national population and housing census was undertaken in 2001. The population of the project area is estimated at 10 million, with density ranging from 25 persons per km² (in Kotido and Moroto) to over 500 persons per km² (in Masindi) as compared to the national average of 103 persons per km².

II.6. **Agriculture.** Agriculture (crops and livestock) is the mainstay of the population in the project area.

II.7. **Crops.** The major production tool in Ugandan agriculture is the hand-hoe; animal traction is utilized mainly in the eastern areas. Large-scale farms are limited and subsistence production (on holdings of an average size of 2.2 ha) predominates. Irrigation is practiced on a limited scale and mainly for high-value crops. The higher altitude areas experience cool weather, high effective rainfall and cloud cover and higher population densities with smaller-sized holdings. Irish potatoes, wheat and bananas are grown in these areas. The mid-altitude areas, with a cool subtropical climate, are suitable for the cultivation of a wide range of crops including bananas, cassava, maize, sorghum, finger millet, sweet potatoes and oil seeds such as soybeans and groundnuts. The low-lying areas have a warmer climate that is suited for maize, bananas, sorghum, finger millet and beans. In general the major food crops in the project area are sweet potatoes, bananas, beans, maize, cassava, groundnuts, soybeans, sorghum and finger millet. The traditional cash crops are mainly coffee (production of which is currently being limited by tracheomycosis and price volatility), cotton, tea and tobacco; the dominant fruits and vegetables are pineapples, tomatoes, onions and cabbages.

II.8. **Livestock.** In the drier areas of the project area, livestock farming is the primary source of income and pastoralism is still pronounced. Pastoralism is a natural resource-based subsistence system of livestock production that relies predominantly on communal or free-range grazing over natural pastures, involving a significant level of mobility to track seasonally available pastoral resources. Pastoralists constitute a significant part of the population (e.g. Kotido, Sembabule, and Nakasongola) with significant contributions to some district economies (e.g. Sembabule generates 65% of total revenue from livestock production). Ugandan pastoralists range from agro-pastoralists, who are largely sedentary and combine livestock and crop production, to more mobile transhumant pastoralists who maintain a home base where a core herd is kept and a satellite herd that moves in search of water and pastures as the season demands. The degree of mobility reflects the harshness of the environment. More intensive systems of livestock production are developing, especially in central and western Uganda.

II.9. Livestock numbers in the project area are relatively high: cattle ownership is estimated at 0.40 per capita here, compared to the lower national per capita cattle ownership level estimated at 0.28. Sironko district (45% of which is covered by the cattle corridor) has the largest number of cattle per km², estimated at over 101 compared to the national figure of 31.5 cattle per km². Within the cattle corridor and outside of the pastoral areas, the largest numbers of cattle are in Mbarara (0.7 million), compared with Ntungamo, Mubende and Kamuli districts, with more than 0.1 million. Nakapiripirit, Moroto, Kotido, Mbarara, Rakai and Ntungamo districts have the largest number of cattle per capita, estimated at 3.9, 2.8, 1.9, 0.6, 0.6 and 0.4, respectively.

II.10. Shoats (sheep and goats) are estimated at 0.52 per capita ownership in the project area (the largest number of cattle per km², estimated at 140.5, is found in Ntungamo). Kotido and Moroto each has more than 1 million sheep/goats; Mbarara has 0.6 million, Lira and Ntungamo have 0.3 million each, Kamuli and Sembabule each have 0.1–0.2 million. Soroti district (14% of total area covered by the project area) has the largest number of pigs. Together with Lira and Kumi, they hold over 0.3 million pigs. Four districts are each estimated to contain over 1 million indigenous poultry (Soroti,

Lira, Apac and Mbarara), with Lira having the largest number (17% of the total). Mpigi has the largest number of exotic layers (47%) and broilers (44%) in the project area.

II.11. The main cattle diseases are foot-and-mouth disease (FMD), East Coast fever, rinderpest and mastitis. The main poultry diseases are Newcastle and coccidiosis.

II.12. The feed resource is limited, including pastures like *Hyperrhenia rufa*, *Panicum maximum*, *Cydonon dactylon*, *Brachiaria* spp, *Chloris gayana* and *Setaria sphacelata*. Crop residues from cereals and Napier grass are also important feed resources. Some common grazing areas in the western areas are overgrazed and degraded. In most areas, there are generally adequate numbers of veterinary surgeons, assistants and animal husbandry officers whose services have increasingly tended towards a private sector approach.

II.13. **Coping Strategies.** The farmers who live in the project area adopt coping strategies mainly as mitigation against low, erratic and unreliable rainfall. These include diversification in crops (annuals, perennials, biennials) and livestock enterprises (ruminants and non-ruminants), and off-farm employment like petty trade in food products and household merchandise, fishing from nearby lake shores, brick-making and provision of farm labour.

II.14. **Infrastructure and Services.** The districts in the cattle corridor are some of the poorest in Uganda; they are the most disadvantaged in terms of access to basic social services such as schools, clinics, sanitation, etc. Health services are still limited and concentrated in urban centres. There is a serious shortage of drugs and basic medical equipment. The government target is to have a fully equipped health centre at each subcounty level. Private clinics have become more numerous in recent years, and offer reasonable first line treatment to rural populations. The main human health problems are malaria, TB, typhoid, internal parasites and HIV/AIDS. Poor access to health centres is exacerbating the problem of rural health care. The all-weather roads are few; they are not regularly maintained. During the rainy seasons, many roads are impracticable with ordinary means of transport. A reasonable number of both private and public schools exist in these areas but many are characterized by inadequacies in buildings and basic equipment, high teacher to pupil ratio, and lack of modern equipments.

II.15. **The Social Setting.** Employment patterns here are gendered, with women providing the majority of labour for the production of household goods and services and men clearing land, marketing livestock and crops and growing cash crops. Many women own and raise free-range chickens, goats and a few pigs while men mostly own and raise cattle. The people in these areas are ethnically different with distinct dialects. The common point among them is their strong dependency on livestock for their livelihood. A strong social cohesion in the project area is characterized by the continuity of the cooperative structure (the existence of a number of registered primary societies is documented), although some individuals have still not joined because of bad experiences with cooperatives in the past. This is further supported by the emergence of unique grassroots rural producer organizational (RPO) structures (some with the assistance of and based on the NAADS approach of a farmers’ forum at subcounty level), which provide an excellent framework for development activities. The strengths of these RPOs is seen in their capacity to handle a range of activities including environmental protection, reasonably easier access to reasonably priced, quality inputs through bulk purchases, advisory services, production credit and the possibility of bulking the products in order to exercise leverage on the product prices realized.

III. PROJECT RATIONALE

III.1. GoU’s strategy for economic transformation has been spelled out in its *Poverty Eradication Action Plan* (PEAP), a medium-term development plan that guides government policy and provides a framework for detailed sector and district plans. The overarching aim of the PEAP is to develop policies and resource allocations that will reduce poverty in Uganda from 44% in 1997 to 10% or less by 2017. Because most Ugandans live in rural areas and earn their living from agriculture, the success of efforts to reduce poverty will depend ultimately on increasing agricultural growth rates, diversifying agricultural production, and expanding non-farm employment in rural areas.

III.2. In this context, GoU places very high priority on the development of the livestock sector, as this is critical to government’s poverty reduction and eradication initiatives. Not only is poverty widespread in most of the predominantly livestock-keeping areas, but the poor animal husbandry methods and physical infrastructure in those areas also mean that the population — in spite of owning considerable numbers of livestock — are not able to use the resource to improve their livelihoods. A project envisaged to address these constraints in more than half of the national administrative districts (about 44% of the national population), by increasing incomes and enhancing food security as well as increasing national exports, will therefore be very beneficial at household and national levels. The national market would easily absorb the resulting production surplus, because the country is still unable to meet its domestic demand for animal products. Others could be exported to neighbouring countries, while by-products such as hides and skins could be exported to Asia and Europe.

III.3. The project would complement a number of livestock projects that are starting up or being formulated to address the key constraints within the subsector, particularly:

- the *National Livestock Productivity Improvement Project* (ADB);
- the *Integrated Area-wide Tsetse and Trypanosomiasis Eradication and Emergency Assistance to Control African Swine Fever Project* (FAO); and
- the *Expansion of ECF Immunization Project* (FAO).

IV. PROJECT OBJECTIVES

IV.1. The overall objective of the project is to increase livestock production and productivity, thus raising farm family income and nutritional levels and generating surplus livestock products for export earnings. The specific objectives of the project are to:

- Improved livestock breeds (cattle, goats, sheep and chicken) to ensure increased productivity per unit while at the same time conserving the positive attributes found in the indigenous herd, like disease tolerance.
- Increase productivity of livestock enterprises through prevention, control and eradication of epidemic transboundary diseases, e.g. FMD and Rinderpest, as a prerequisite to accessing international market for livestock and livestock products.
- Improve the nutrition of livestock, which is still a major constraint to increased livestock productivity, through promoting production, supply and distribution of high-quality pasture seeds (and other planting materials), pasture maintenance and utilization, reseeded, forage conservation and improved provision of water.

- Safeguard the quality of livestock products for domestic and foreign consumers and to meet the growing phytosanitary requirements regarding livestock products. The project will also work towards minimizing post-harvest losses of livestock products.
- Improve the processing of hides and skins, by reducing losses and increasing their value through quality improvement, by providing staff training and by upgrading physical facilities.

V. PROJECT DESCRIPTION

V.1. The project, to run for five years, will be composed of the six following components.

Component 1: Animal Breeding

V.2. The project will work to conserve the high genetic potential of indigenous cattle, goats and sheep breeds. Indigenous cattle breeds are hardier, more resistant to diseases and ticks, and the females make better brood cows when compared with exotic breeds, although they produce little milk. Different breeds of cattle are valued by farmers for different reasons. Ankole cattle are valued for milk and ghee production, while Zebu cattle are the major source of draught power. Nganda cattle are important for milk, manure and for commercial sales. Borans are preferred for their high-quality beef. Given the positive attributes of these indigenous breeds, they will be conserved for further research and breeding work. Owing to the fact that these breeds do well in different areas of the country, district production committees in the project area will be charged with the task of selecting 100 farms (preferably private, with an incentive to sell off animals beyond a specific number for breeding purposes) and the relevant breeds for this purpose. Each of the farms will be stocked with 3 Ankole, 3 Nganda, 3 Zebu and 3 Boran cattle together with 3 Mubende and Small East African goats (some males should be included; otherwise artificial insemination will dominate breeding work), 3 sheep, 3 pigs (where applicable) and 15 local chickens. Owing to the sensitive nature of breeding work, 10 well-referenced public institutions will also be facilitated to undertake work in this respect. Each institution will be provided with 20 cows, 12 goats, 3 sheep, 5 pigs and 25 chickens.

V.3. The project will also work towards improvement of the deteriorating genetic potential of the indigenous and exotic breeds of cattle, goats, pigs and poultry. This improvement will be achieved through importation of exotic breeds for cross-breeding: 90 head of cattle (30 each of Friesian, Guernsey and Jersey breeds); 120 goats (30 each of Boer, Toggenburg, Saanen and Anglo-Nubian breeds), 60 sheep (30 each of Romney Marsh and Corridales breeds), 90 pigs (30 each of land race, large white and Saddleback) for stocking on well-managed public and private farms. Improvement work will involve selection, breeding and distribution of selected sires to district-selected RPOs. Ongoing breeding programmes (semen and embryo production, artificial insemination, embryo transfer, liquid nitrogen production and distribution, preservation of semen and embryos) of NAGRCDB (formerly the Animal Breeding Centre, mandated to produce genetically superior breeding stock using state-of-the-art animal breeding models and modern techniques to hasten the genetic progress of the national herd of both indigenous and exotic stocks) will be facilitated.

V.4. All beneficiaries will be required to undergo specialized training in relevant husbandry aspects like feeding, disease identification and control, records keeping, as well as sensitization about the overall objective of this activity. Refresher training will be provided to at least two Extension staff from the public sector from each district.

Component 2: Improvement in Livestock Physical Infrastructure

V.5. This component comprises three subcomponents, as follows:

- ***Establishment of Water Facilities.*** The project will establish at least 90 valley dams, each with up to 100,000 m³ net water storage capacity, 300 farm ponds of 3,500 m³ net water storage capacity¹ each and 300 manual boreholes² (each to yield up to 5,000 m³ of water³ annually). The combined total of water that can be provided has been estimated at 11.55 million m³ of water, a level that would comfortably cater for 330 million livestock units annually. Valley dams are preferred for their ease of construction, low maintenance costs and high storage capacity compared to valley tanks. Farm ponds are also being considered because they can be constructed in natural sloping valleys/depressions with higher efficiency than for valley tanks. Boreholes are being considered because of their capacity to provide clean, safe water that can also be drunk and used by humans. Beneficiaries will receive training in the operation and maintenance of the facilities.
- ***Improvement of Livestock Marketing Facilities:***
 - About 200 primary holding grounds/livestock markets in the rural areas and 100 secondary holding grounds in or around urban centres will be rehabilitated or upgraded. Rehabilitation will include perimeter fencing to ensure that animals are properly restrained and controlled; each crush–pen will be provided with holding grounds/collecting yards; weighbridges will be availed to 20 large markets; weigh–bands will be provided for each primary market, and toilets will be constructed to reduce health hazards.
 - The project will improve animal slaughter facilities in towns with piped water. About 100 slabs will be constructed with the following features: concrete slab, drainage, waste disposal (soak pit) and water supply. This will further be facilitated with 2 toilets for each facility. The 2 main abattoirs in Kampala city are substandard, lacking in hygiene and operating below capacity. They will be upgraded along with 4 regional abattoirs in the towns of Mbarara, Masaka, Mbale and Jinja.
 - The insufficient cold chain infrastructure (from slaughter to the market) for livestock products will be addressed. Funds will be availed on credit to the private sector to buy 100 cold trucks for transportation, and the cold facilities at the rehabilitated abattoirs will be repaired or replaced.
- ***Improvements in Tannery Processing.*** About 20% of hides and skins exported from Uganda are rejected on quality grounds, especially for poor flaying and skinning. A large part of this shortcoming is attributed to poor training and inadequate extension services. The project will therefore provide training to abattoir, slaughterhouse and slaughter slab operators, and staff in flaying and skinning. Support will also be given to local initiatives, e.g. indigenous technical knowledge that utilizes vegetables and herbs in the tanning process. Each district in the project area will be required to select a trainee to undergo a trainer’s course. Those trained will then be facilitated with motorcycles and funded to conduct several other courses in their respective districts. All of the 29 districts will be covered with 10 courses per district during the project life and with a maximum of 15 participants per course. At the end of the project, 4,350 persons will have been trained.

¹ Each is estimated to cost US\$180,000.

² Each is estimated to cost US\$8,500.

³ Each is estimated to cost US\$5,000.

The *Uganda Leather and Allied Industries Association* (ULAIA), representing the private sector, will be facilitated and charged with the responsibility of identification of trainees and follow up.

Component 3: Transboundary Disease Control

V.6. The project will intervene to support the prevention and treatment of transboundary diseases such as FMD, rinderpest, lumpy skin, CBPP, African swine fever and Newcastle disease, which have the potential to spread widely and can significantly effect regional and international trade in livestock. It will facilitate the reporting, regular monitoring and intensive sero-surveillance of the diseases and assist farmers in their treatment, including vaccination campaigns. The project will encourage networking among technically relevant parties, individuals and organizations so as to facilitate information exchange and experience sharing about the epidemiology of such diseases. It will finance erecting a game fence around each of the major game reserves to separate wild animals (which may be disease vectors) from domestic livestock. For Newcastle disease control, the project will facilitate vaccination import substitution by exploring the possibilities of manufacturing the vaccines locally. Comparative studies on the costs of local production relative to importation will be undertaken. To improve communication, frontline veterinary staff will be equipped with communication equipment and transport facilities. Training workshops will be organized for community animal health workers (CAHWs) and para-veterinarians to maintain a high level of vigilance across the borders.

Component 4: Pasture Improvement

V.7. This component will be composed of three subcomponents, as follows.

- **Seed Production.** The project will encourage farmers to grow pasture seed for local and export markets. The project will contract 1,000 seed farmers, schools and NARO institutions under an outgrowers' scheme, linking them to marketing organizations like USRP (Kawanda) and private dealers. Each farmer will be provided with enough seeds for 0.5 ha each of legumes and grasses (2 kg of legumes and 2 kg of grasses). The pasture fields will also serve as teaching demonstrations, with the possibility of other farmers adopting the techniques. Contractual arrangements will be encouraged to avoid farmer exploitation. Seed testing to ensure quality and viability will be undertaken by USRP. The pastures being recommended are the grasses like *Cynodon dactylon*, *Chloris gayana*, *Panicum maximum*, *Pennisetum purpureum*, *Themeda triandra*, *Brachiaria* spp, *Setaria* spp and *Hyaparrhenia* spp; in addition to these grasses, legumes like *Stylosanthes* spp, *Desmodium* spp, *Macroptilium atropurpureum*, *Centrocema pubescens* and *Glycine wightii*, *G. lablab* and *G. mucuna*.
- **Forage Conservation.** Providing supplementary feed in the form of hay, silage and fodder crops will ease grazing pressure on pasture during the dry season. During rainy periods, forage in some areas is more than what is utilized by the animals; it thus gets wasted. The project will promote forage conservation methods including the HPI silage and hay making methods known as “*Gunny/plastic bag technique*” and “*Hay box baling technique*”. Some work has been done by HPI and their experiences will be useful in this component. Selected farmers (300 in total) and extension workers in the respective project areas will be trained as trainers for other farmers. Three persons from each participating district will be trained and facilitated to promote hay and silage making. Private-sector investors will be encouraged to invest in this undertaking as it has a high financial viability potential.

- **Reseeding.** The project will support the reseeded of areas with pasture degraded from overgrazing or uncontrolled bush fires. It will fund the reseeded of 1,000 ha using pasture grasses and legume seeds from within the country, from the farmers who have produced the pastures and seeds imported from neighbouring countries or abroad. Some areas covered with natural grasses will be oversown with forage legumes to establish grass/legume swards. Pasture agronomists/experts from Makerere University, NARO and MAAIF will be consulted to ensure that the exercise is professionally accomplished. The areas identified for reseeded include Nakasongola, Luwero, Mbarara, Ntungamo, Kotido, Moroto, Nakapiripirit, Sembabule and Rakai districts.

Component 5: Strengthening Livestock Information Systems

V.8. The project will strengthen UBOS and the MAAIF *Directorate of Animal Resources* to undertake collection, compilation, analysis, storage and dissemination of livestock information that is pertinent to the planning, management and control as well as the monitoring and evaluation processes. This will entail supporting 4 regional information officers each responsible for up to 8 districts (assisted by 29 assistants — one from each district — who will already be in the Production Department) under UBOS. The project will provide computers and related accessories to facilitate this work.

Component 6: Project Coordination

V.9. The project will, as far as possible, work within the existing structures of MAAIF, the private sector and farmer organizations. However, for coordination purposes, a small unit will be set up in MAAIF with a coordinator, support staff and equipment. Liaison offices will also be established in each of the project districts.

VI. INDICATIVE COSTS

VI.1. The project will cost about US\$56.7 m over a 5-year implementation period. The Table below gives the indicative estimated costs per component. About 61.5% of the cost will be in local costs and 38.5% in foreign exchange. The costs have been derived from reports outlining similar project components. Where information is limited and/or lacking, professional estimations were used.

NEPAD – Comprehensive Africa Agriculture Development Programme
Uganda: Investment Project Profile “Livestock Development Project”

Cost Summary by Component					
Component (Costs in US\$000)	Local	Foreign ^(a)	Total	% Foreign exchange	% Total base costs
1. Germplasm improvement/conservation	856	1,457	2,313	63	5
2. Transboundary diseases	2,859	1,510	4,369	40	8
3. Pasture improvement	1,565	737	2,302	32	5
4. Physical infrastructure					
– Water facilities	14,932	12,217	27,149	45	60
– Marketing	2,010	990	3,000	33	7
– Tanning	903	73	976	7.5	2
5. Information systems	525	975	1,500	65	3
6. Project coordination	2,185	1,457	3,642	40	8
Total baseline costs	25,835	19,416	45,251	43	100
Physical contingencies ^(b)	2,583	1,942	4,525	43	10
Price contingencies ^(c)	6,459	466	6,925	7	15
Total Project Costs	34,877	21,824	56,701	38	125
^(a) A 2.7% factor has been applied to cater for foreign inflation. ^(b) A 10% factor has been applied to the total baseline costs. ^(c) A 5% factor has been applied to cater for local inflation.					

VII. PROPOSED SOURCES OF FUNDING

VII.1. GoU, donors, the private sector, NGOs and the beneficiaries will finance the project. GoU will provide US\$8.5m or 15% of total project financing; the donors/IFIs will provide US\$28.4m or 50%; the beneficiaries will provide US\$2.8m or 5%; and the private sector will contribute US\$17.0m, or nearly one-third of total funding.

VII.2. Among development partners, interest in funding livestock has been expressed mainly from AfDB, DANIDA, IAEA, WB, IFAD, EC, BADEA and FAO among others. These have largely funded past and Ongoing projects in the livestock sector. Other potential partners in this area could be USAID through its upcoming programme called APEP. The NORAD is also currently promoting producer associations and would be interested in funding this aspect of the project.

VII.3. The private sector, through PSFU and UNCC may be interested in financing technical staff (resource persons), purchase of vehicles and equipment, provision of office space and capacity building programmes at tertiary institutions. They have shown interest in funding particular programmes of relevance to them, like Agribusiness, at Makerere University. The sector has also sponsored a number of short-term courses to their members and also workshops and seminars. Private sector interests in the livestock subsector, as identified by UIA are:

- provision of artificial insemination services;
- production of high yielding breeds;
- provision of veterinary services;
- meat processing;
- vaccine development, research and production;
- forage seed production;
- animal feeds processing and distribution;

- integrated beef production and feedlot finishing; and
- establishment of modern abattoirs.

VII.4. A number of NGOs and associations are working on various aspects of livestock development. These include HPI, UBPA, ULIA, UVA, VEDCO and UCA among others. These will be willing to finance the capacity–building activities of the project.

VII.5. The beneficiaries will finance some aspects of the project through equity participation in form of land, cash, labour, locally available materials etc.

VIII. PROJECT BENEFITS

VIII.1. The primary project beneficiaries will be the 1.5 million livestock farming households in the cattle corridor which, through increased livestock production and productivity, will enjoy higher household incomes, better food security and better health because of higher nutritional levels. With surplus incomes, they will also be able to diversify into non–livestock economic activities, thus improving further their chances to reduce poverty.

VIII.2. The participating institutions like MAAIF will benefit mainly from the development of human resources through training. At the subcounty and district levels, there will be increased capacity for planning and management of livestock activities and increased employment opportunities and revenue collections from livestock–related economic activities. The country will benefit through a better facilitated private sector, reduction in expenditure on animal–disease control, reduced live animal imports and the establishment of a more soundly based livestock sector with both an export potential and an increased tax revenue base.

VIII.3. Improvement of the pasture resource will reduce overgrazing and improve the environment.

VIII.4. Specifically, a total of 100 farmers will be appropriately trained to participate in the genetic conservation sub–component of the project. These farmers will receive a total of 1,200 indigenous head of cattle, 600 local does, 300 ewes, 300 local pigs and 1,500 local chickens. This is anticipated to translate into a conservative number of 6,000 cattle, 3,000 goats, 3,000 sheep and 22,000 chickens by the end of the project. The participating farmers will then, following a “pass–on” system adopted by HPI and the “Send a Cow Project” of the Church of Uganda, be allowed to give away any animals above what they were given for purposes of sustaining this operation. Farmers buying the animals will be sensitized by the selling farmers about the objectives of this component. The 10 public–sector institutions, which will participate in the genetic conservation subcomponent, will receive a total of 200 head of cattle (indigenous), 120 local does, 30 ewes, 50 local pigs, and 250 local chickens. This should result in at least 1,000 cattle, 1,000 goats, 250 sheep, 2,000 pigs and 25,000 chickens. These will also be given away following a systematic “pass–on” system. The “pass–on” system will continue during the life of the project and the initial beneficiaries will be allowed to sell off some animals only upon conclusion of the project.

VIII.5. Ten selected public and private sector farming institutions that will be participating in the genetic improvement subcomponent will be given a total of 90 imported exotic breeds of cattle, 120 exotic breeds of goats, 60 exotic sheep and 90 pigs. The participating institutions will also be facilitated in terms of infrastructure development and animal maintenance expenses. These will translate into at least 450 head of cattle, 600 goats, 300 sheep and 720 pigs by the completion of the project. These animals will then be used in MAAIF breeding programmes under NAGRBC and GB,

and in the setting up of 10 nucleus–breeding centres. The project will also contribute to the development physical infrastructure: 200 primary, 200 secondary and 20 large regional markets will be rehabilitated and provided with facilities like loading ramps, crushes and toilets; 6 abattoirs will be rehabilitated and provided with cold facilities and modern slaughtering equipment and the acquisition of 100 cold trucks will be funded. Other facilities under the projects will include 43 vehicles and 183 motorcycles to assist office and field staff in carrying out their duties, and about 70 computers and related equipment.

VIII.6. A total of 2,000 kg of pasture grasses and 2,000 kg of pasture legumes, which will be partly imported and partly purchased locally, will be distributed to the farmers participating in the pasture improvement component of the project. The anticipated grass production at the end of the project will be over 200,000 kg of pasture grasses and almost the same quantity of grasses to will be distributed to other farmers. A total of 4,350 leather tanners from all project districts will be trained to improve handling of hides and skins.

IX. IMPLEMENTATION ARRANGEMENTS

IX.1. MAAIF will be the lead implementing agency for this project, and will be responsible for overall coordination, monitoring and evaluation. It will be guided by the PEAP and PMA principles on critical policy issues, reviewing progress and performance and recommending changes where required. Within the NAADS framework, MAAIF will facilitate the provision of technical advisory services. At the headquarters of MAAIF, a *National Technical Committee* responsible for technical guidance and reporting to the Permanent Secretary will be formed. It will be headed by the Assistant Commissioner (Monitoring and Evaluation) in the Planning Department, and will be responsible for project–level planning, procurement, coordination, monitoring and evaluation, sensitization and accountability. This person will be assisted by a *National Project Coordinator* who will be responsible for the day–to–day running of the project, assisted by the necessary staff. MUK and NARO will reinforce MAAIF’s technical backstopping capacity.

IX.2. In the decentralized districts, participation will be in terms of supplementary funding, providing guidelines and harmonizing policy application, ensuring prioritization, approval of work plans, addressing implementation constraints and recommending possible mitigation measures and advice on the security situation. District CAOs will be responsible for the provision of administrative expertise. A technical committee, headed by a DVO assisted by seconded staff, will manage work at this level. They will also be responsible for supervision of project activities and, in consultation with stakeholders, they will plan and design implementation arrangements. They will also play a role in sensitization, training, monitoring and evaluation and accountability.

IX.3. The private sector will be responsible for identification of supplementary funding sources, facilitating and managing the credit lines on a sustainable basis and building capacity through Farmers’ Organizations apex bodies like *Uganda Beef Producers Association* and RPOs. It will also, through competitive bidding, at district and subcounty levels, be involved in supplying materials such as seeds and animals and equipment like computers and vehicles, and in providing the required services for building physical infrastructure. The sector will also work with MAAIF to identify potential project participants and also get involved in all the stages of planning, monitoring and evaluation.

IX.4. The NGOs, CBOs and CSOs will be involved mainly in the execution of project activities like capacity building, support for group formation, sensitization and the identification of supplementary funding.

IX.5. The farmers will provide land, indigenous knowledge and the basic infrastructure and labour (and in some instances food) required for the execution of project activities.

IX.6. Prior to implementation, a detailed feasibility study will be required to design the project in detail in a participatory manner and estimate its financial and economic benefits.

X. TECHNICAL ASSISTANCE REQUIREMENTS

X.1. Local and foreign technical assistance needs are foreseen in the following areas.

- identification and selection of the desired indigenous and exotic breeds of cattle, goats, sheep and pigs and pasture species;
- modern natural and artificial animal breeding techniques;
- post-harvest handling techniques;
- agricultural/livestock economics and marketing with a view to promoting good marketing practices locally, regionally and internationally;
- an information expert to strengthen the project’s information system on a sustainable basis, as this is one of the key constraints in the sector; and
- an environmental specialist from NEMA to carry out environmental impact assessments.

X.2. Estimated duration of individual assistance elements will be worked out during detailed project formulation.

XI. ISSUES AND PROPOSED ACTIONS

XI.1. Below are some outstanding issues as well as proposed actions that could be taken to evaluate the soundness of the project design.

XI.2. **Public Budget Ceilings.** Within the PEAP/PRSP processes, GoU prepares medium-term expenditure frameworks (MTEF), which help to set sectoral budgetary ceilings for public expenditure in a given year. The MTEF therefore tries to ensure medium-term financial and macroeconomic stability by coordinating the allocation of all public spending (government and donor funds) within a unified framework to ensure consistency with overall resource constraints. These ceilings can sometimes be a bottleneck, as they prevent some sectors from accessing more funds for their development if sectoral financing needs exceed the set ceilings. Private sector participation in the project and cost-sharing by the beneficiaries may help mitigate this problem.

XI.3. There are several *environmental issues*:

- An increase in livestock numbers without corresponding increase in offtake rates will further degrade the environment through overgrazing of the range resources.

- Effluent emissions (solid, liquid and gaseous) from slaughterhouses, tanneries and processing plants will be released into the environment. High concentrations of salt and hydrogen sulphide greatly affect water quality. Suspended matter such as lime, hair, fleshings, etc. make the water turbid, while chromium tannin is toxic to fish and other aquatic life.
- Pasture improvement may lead to loss of plant biodiversity through selective removal of problematic and undesired plant species and the risk of importation of contaminated seed.
- Finally, the marketing structures and abattoirs could lead to localized soil and vegetation disturbances where building and/or upgrading is to be carried out. Therefore it is important to formulate mitigation measures at an early stage of project preparation.

XI.4. **Capacity at the Directorate of Animal Resources of MAAIF.** The proposed staffing levels at the Directorate indicate a total of 50 professional staff, with many positions unfilled. So the likely effective staffing level is around 40–45. On a national level, and given policy-making and regulatory requirements of the livestock subsector, this staff complement is insufficient.

XII. POSSIBLE RISKS

XII.1. Critical risks that could influence project operations and outcomes include:

- **Civil Strife.** Currently there are rebel activities in the northern and eastern parts of Uganda where livestock activities and potential are very high and some areas form part of the cattle corridor. If the war is not checked, no project activities will be possible in some areas.
- **Failure by farmers to get timely advisory services.** NAADS has not rolled out to all districts of Uganda which implies that farmers in those areas are not getting the institution’s advisory support services as needed.
- **Markets.** Markets play a crucial role in directing production investments by acting as signals. Under this project, increased production is anticipated. If the economy fails to grow at an anticipated rate, this will lead to slowed effective demand for livestock products locally.
- **Implementation delays.** Delays in implementation of a number of previous projects have been registered in various institutions. While some of the delays may be attributable to factors beyond the scope of the project, many result from bureaucratic red tape in implementing institutions and might similarly jeopardize the implementation schedule of the proposed project. The proposal for a more autonomous, flexible and decentralized decision-making and management structure should help to minimize this risk.
- **Public financing:** GoU has failed to meet its financing fulfilment for some projects in the past because of a shift in priorities and shortfalls in anticipated revenue levels. Lately, changes in financing priorities has been mainly towards funding security activities in the northern and eastern parts of the country, where rebel activities still remain a major concern.
- **Farmers’ failure to fulfil their obligations:** Past experience has shown that farmers sometimes fail to play their rightful roles to the detriment of the project.

ANNEXES

- Annex 1: Livestock Population and Agricultural GDP Growth in Uganda**
- Annex 2: Estimates of District Area, Human and Livestock Populations in The Cattle Corridor of Uganda**
- Annex 3: Map of The Cattle Corridor**
- Annex 4: References**

Annex 1: Livestock Population and Agricultural GDP Growth in Uganda

Table 1: Livestock Population (millions), 1993–2001									
	1993	1994	1995	1996	1997	1998	1999	2000	2001
Cattle	5.37	5.1	5.23	5.3	5.46	5.65	5.82	5.97	6.14
Sheep	0.87	0.97	0.92	0.95	0.98	1.04	1.04	1.08	1.10
Goats	5.23	5.71	5.55	5.68	5.82	5.99	6.18	6.40	6.62
Pigs			1.34	1.38	1.43	1.48	1.52	1.57	1.64
Poultry			21.83	22.05	22.27	22.29	24.62	26.97	29.67

Source: MAAIF, 2003.

Table 2: Agricultural GDP growth, 1995/96–2002/03 (% in real terms)								
Subsector	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03
Cash crops	22.6	13.9	-2.8	9.3	7.0	-4.9	6.7	9.0
Food crops	1.3	-2.0	1.6	6.1	6.1	6.2	4.6	0.5
Livestock	9.8	5.7	4.1	4.3	3.9	4.4	5.0	4.6
Forestry	4.4	4.4	4.0	5.2	6.8	5.8	4.4	4.3
Fisheries	2.5	4.5	5.0	0.9	-0.1	4.0	3.5	3.0
Sector	4.3	1.1	1.9	5.8	5.6	4.6	4.8	2.2

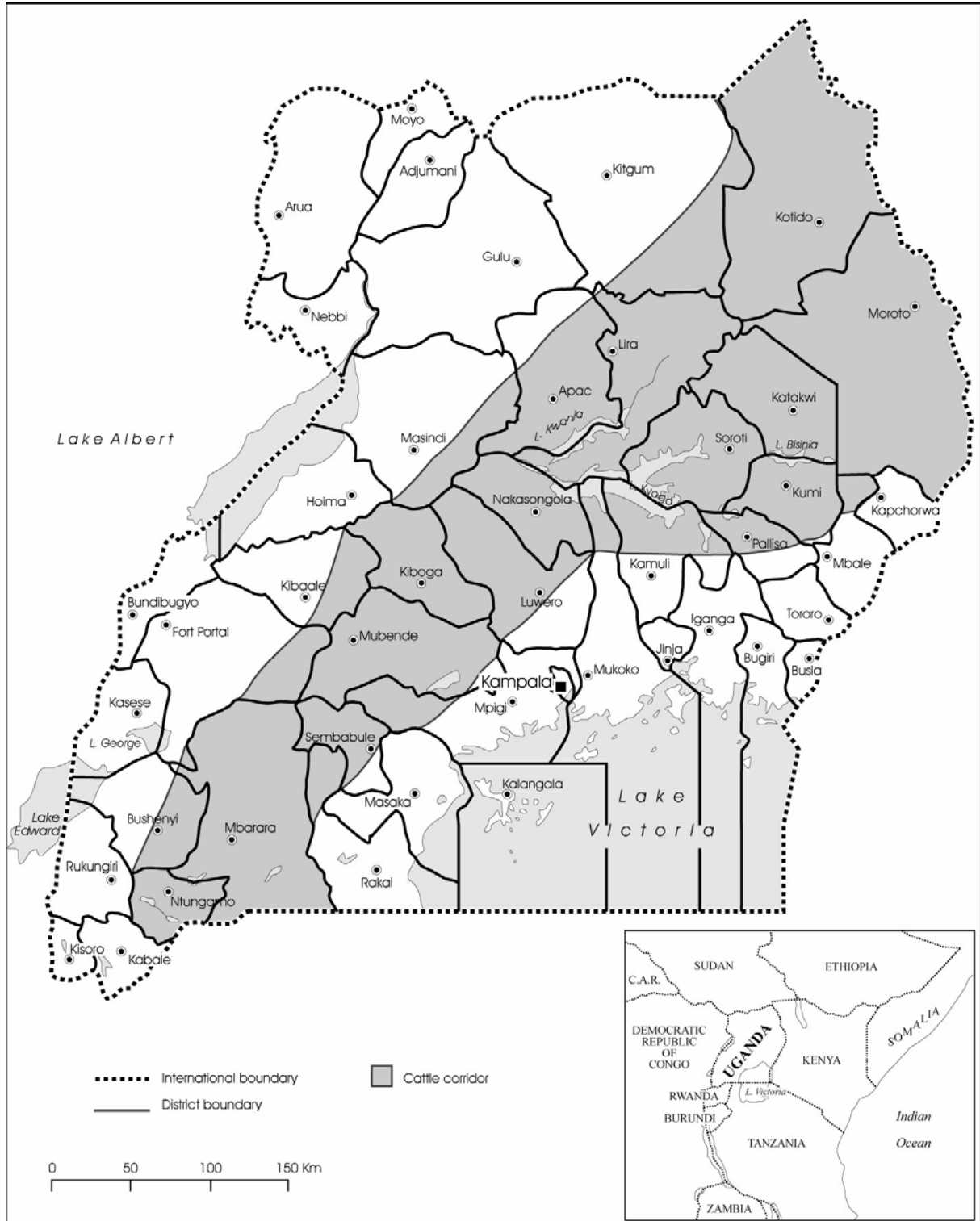
Source: MAAIF, 2003.

NEPAD – Comprehensive Africa Agriculture Development Programme
Uganda: Investment Project Profile “Livestock Development Project”

**Annex 2: Estimates of District Area, Human and Livestock Populations
in the Cattle Corridor of Uganda**

District	% covered by corridor	Area (km ²)	No. of counties (sub-counties)	Population				
				Human	Cattle	Shoats	Pigs	Poultry
Kotido	100	13,245	3 (12)	245,900	517,321	1,065,754	0	216,299
Moroto	100	14,351	5 (14)	271,400	818,086	1,013,658	78,719	537,042
Nakapiripirit	100	2,711	1 (3)	40,642	170,000	465,550	20,333	<i>Incl. in Moroto</i>
Kitgum	5	8,969	2 (10)	274,493	5,000	22,709		33,372
Pader	60	7,166	2 (10)	224,596	3,758	4,639		422,715
Soroti	100	9,149	4 (18)	396,578	23,333	13,255		
Katakwi	100	4,905	3 (14)	173,447		5,786		
Kaberamaido	100	910	1 (4)	40,081	4,667	2,651		
Kumi	100	2,861	3 (15)	236,694	15,000	70,323	81,419	678,619
Lira	100	7,251	6 (24)	500,965	22,268	84,175	97,478	1,886,433
Apac	80	6,488	4 (31)	454,504	41,992	170,646	20,092	1,242,127
Sironko	45	11,164	2 (10)	212,305	83,376	91,456	10,025	211,912
Nakasongola	100	3,250	1 (5)	100,497	58,787	11,283	6,474	449,598
Luweero	65	9,198	4 (20)	449,691	27,193	46,862	18,576	419,063
Masindi	20	9,326	4 (14)	260,796	51,833	80,290	4,343	102,175
Kiboga	100	3,774	1	141,607	35,290	10,513	8,313	244,959
Kibaale	27	4,718	3	220,261	10,740	49,986	27,518	187,582
Mubende	90	6,536	4 (22)	500,976	66,835	180,349	60,196	415,896
Kyenjojo	45	40,921	2 (12)	245,573	56,000	137,849	9,087	149,235
Kamwenge	35	2,457	2 (6)	201,654	54,145	136,603	17,137	53,723
Mpigi	40	3,499	3 (16)	613,081	105,482	60,098	32,714	349,922
Sembabule	85	2,324		144,039	10,469	41,002	5,090	256,339
Rakai	25	4,973	4 (21)	383,501	240,487	135,656	27,199	165,431
Mbarara	99	10,154	8 (34)	930,772	607,396	546,923	87,502	1,065,400
Ntungamo	100	1,051	3	289,222	125,627	58,455	453	
Bushenyi	35	4,026	5	736,361	161,278	315,460	14,883	329,743
Kayunga	40	236,177	2 (7)	236,177	39,259	149,452	62,534	106,543
Kamuli	50	4,348	4 (22)	485,214	128,648	116,439	39,407	448,929
Pallisa	50	1,919	4	357,656	157,888	97,851	9,898	342,235
Total	100			9,368,683	3,642,158	5,185,673	739,390	10,315,292

Annex 3: Map of the Cattle Corridor



Annex 4: References

1. **Agrisystems (Eastern Africa) Limited.** Nairobi, Kenya. 2002. Livestock Development Program: Preparation Report Working Papers 1 – 15. Republic of Uganda. Kampala, Uganda.
2. **Development Consultants International (DCI).** 2003. Consultancy Services for the Alignment of Ongoing Projects/Programmes in the Public Sector. Submitted to Ministry of Finance, Planning and Economic Development (MFPED), Ministry of Agriculture, Animal Industry and Fisheries and Plan for Modernization of Agriculture (PMA) Secretariat. Kampala, Uganda.
3. **Fintecs** Cairo, Egypt. 1998. The Uganda Production Master Plan Study (Vol. I and II). Kampala, Uganda.
4. **Ministry of Agriculture, Animal Industry and Fisheries.** 2003. Development Strategy and Investment Plan (2004/05–2006/07). Entebbe, Uganda.
5. **Ministry of Finance, Planning and Economic Development.** 2002. Public Investment Plan – Incorporating the Poverty Eradication Action Plan – Volume II 2001/02–2003/04. Priority Projects, Republic of Uganda. Kampala, Uganda.
6. **Ministry of Agriculture, Animal Industries and Fisheries.** 2002. Plan for Modernization of Agriculture: Eradicating Poverty in Uganda – Government Strategy and Operational Framework. Kampala, Uganda
7. **Muhereza, F. E and Ossiya, S. A (eds.).** 2004. *Pastoralism in Uganda. People, Environment and Livestock: Challenges for the PEAP.* Uganda National NGO Forum and Civil Society Pastoral Task Force. Kampala, Uganda.
8. **Mugisha, O. R.** 2002. Uganda Districts Information Handbook. Fountain Publishers. Kampala, Uganda.
9. **Mukiibi, J. K. (ed.).** 2001. National Agricultural Research Organization. Agriculture in Uganda, Volume IV. Livestock and Fisheries. Fountain Publishers. Kampala, Uganda
10. **NEPAD.** 2003. *Comprehensive Africa Agriculture Development Programme (CAADP).*
11. **PMA Secretariat.** 2003. Progress report: Where we started in December, 2000 and where we are now in June, 2003. Kampala, Uganda.
12. **Uganda Investment Authority (UIA).** 2001. *Outline of Investment Opportunities in Uganda.* Kampala, Uganda.