

Poultry sector country review



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This review is based on the following report:
The structure and importance of the commercial and
village based poultry industry in Uganda

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Foreword

The unprecedented widespread outbreaks of Highly Pathogenic Avian Influenza (HPAI) that occurred in many countries in Asia, Europe and Africa since 2003 have been asking for rapid and active response on a national, regional and international level. The HPAI crisis had to be addressed worldwide at the source, which is the poultry population.

The main danger of this disease, like others, lies in the way in which humans interact with and handle the production, distribution, processing and marketing of live poultry and poultry products. The direct and indirect socio-cultural and economic impacts of disease outbreaks influence policy measures and disturb markets, causing the loss of assets. There are strong negative impacts on the livelihoods of rural communities for all producer groups including small holders. Assessment and guidance on measures along the poultry chain for a safe poultry production is therefore of great importance. Specific consideration should be given to strategies and measures that ensure a sustainable pro poor supporting approach and development.

Better understanding of the specific situations of the different poultry sectors and the related market chains will help to develop appropriate disease control measures and improve biosecurity.

This review is part of a series of Country Reviews that are commissioned by the Animal Production Service (AGAP) of the Food and Agriculture Organization of the United Nations (FAO) for the Socio-Economics, Production & Biodiversity Unit of the Emergency Centre for Transboundary Animal Disease of FAO (ECTAD).

This review is intended as a resource document for those seeking information on the poultry sector at national level. It is not exhaustive. Some topics are only partially covered or not covered at all and the document will be supplemented and updated on an ongoing basis. Contributions and feedback are welcome by the author(s), FAO/AGAP and FAO/ECTAD Socio-Economics, Production & Biodiversity Unit¹.

The original report by Denis K. Byarugaba was edited by Ms Jenny Schwarz in June 2008 and has been supplemented with data from the FAO statistical database (FAOSTAT), the World Bank and the United Nations Population Division.

¹ For more information visit the FAO website at: www.fao.org/avianflu/en/farmingsystems.html or contact either Philippe Ankers or Olaf Thieme, Animal Production Officers Email: Philippe.Ankers@fao.org and Olaf.Thieme@fao.org Food and Agriculture Organisation, Animal Health and Production, Viale delle Terme di Caracalla, 00153 Rome, Italy.

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Acronyms and abbreviations

ADB	African Development Bank
AI	Avian Influenza
AIPI	Avian Influenza and Pandemic Influenza
CDC	Centres for Disease Control
DANIDA	Danish International Development Aid
DOC	Day Old Chicks
EAC	East African Community
FAO	Food and Agriculture Organisation of the United Nations
FVM	Faculty of Veterinary Medicine
GDP	Gross Domestic Product
GEIS	Global Emerging Infections Surveillance System
GoU	Government of Uganda
HPAI	Highly Pathogenic Avian Influenza
HPAI H5N1	Highly Pathogenic Avian Influenza of hemagglutinin subtype 5 and neuraminidase subtype 1
IAEA	International Atomic Energy Agency
IBAR	Interafrican Bureau for Animal Resources
IGAD	Intergovernmental Agency for Development
ILRI	International Livestock Research Institute
MAAIF	Ministry of Agriculture Animal Industry and Fisheries of the Republic of Uganda
MOH	Ministry of Health of the Republic of Uganda
MT	Metric tonnes
MUWRP	Makerere University Walter Reed Project
NAGRIC & DB	National Genetic Resources Centre and Data bank
NALPIP	National Livestock Productivity Improvement Project
NARO	National Agricultural Research Organisation
ND	Newcastle Disease
NGO	Non-Governmental Organisation
NIC	National Influenza Centre
NTF	National Task Force for the control of AI
NUSAF	Northern Uganda Social Action Fund
OIE	World Animal Health Organisation
PEAP	Poverty Eradication Action Plan
PMA	Plan for Modernisation of Agriculture
UBOS	Uganda Bureau of Statistics
Ug Shs	Ugandan shillings

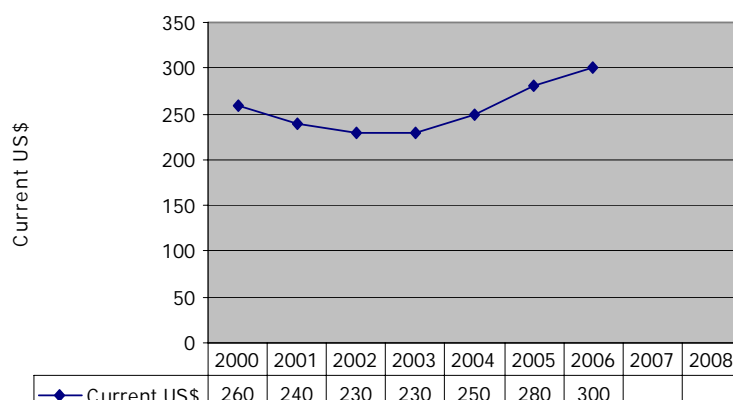
ULCFA	Uganda Local Chicken Farmers Association
US	United States
USAID	United States Agency for International Development
UVRI	Uganda Virus Research Institute
WHO	World Health Organization

Chapter 1

The country in brief

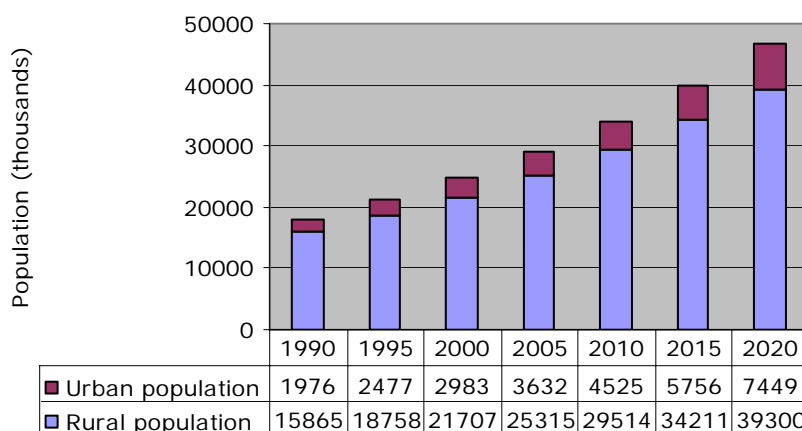
Country:	Uganda	
Location:	Eastern Africa, west of Kenya, bordering Democratic Republic of the Congo 765 km, Kenya 933 km, Rwanda 169 km, Sudan 435 km, Tanzania 396 km	
Population, total	29,898,598 (2006)	Source: World Bank, May 2008
Population, growth rate:	3% (2006)	Source: World Bank, May 2008
Economy group:	Low income	Source: World Bank, May 2008

FIGURE 1: Gross national income (GNI) per capita
(Atlas method, current US\$)



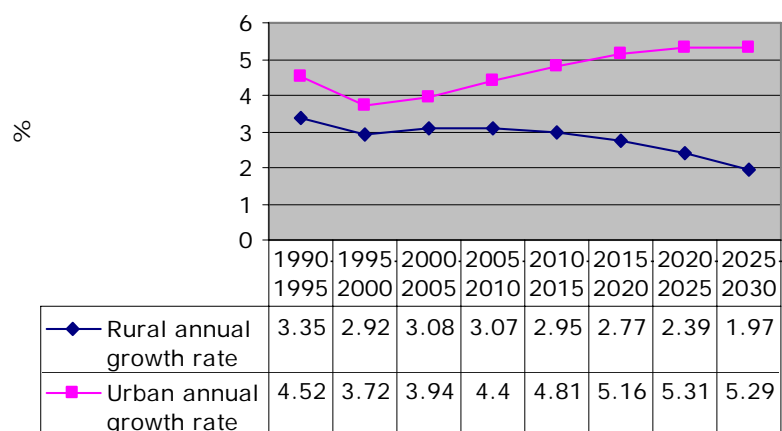
Source: The World Bank Group World Development Indicators, May 2008

FIGURE 2: Demographic profile



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2006 Revision and World Urbanization Prospects: The 2007 Revision, <http://esa.un.org/unup>, May 2008

FIGURE 3: Annual population growth rates

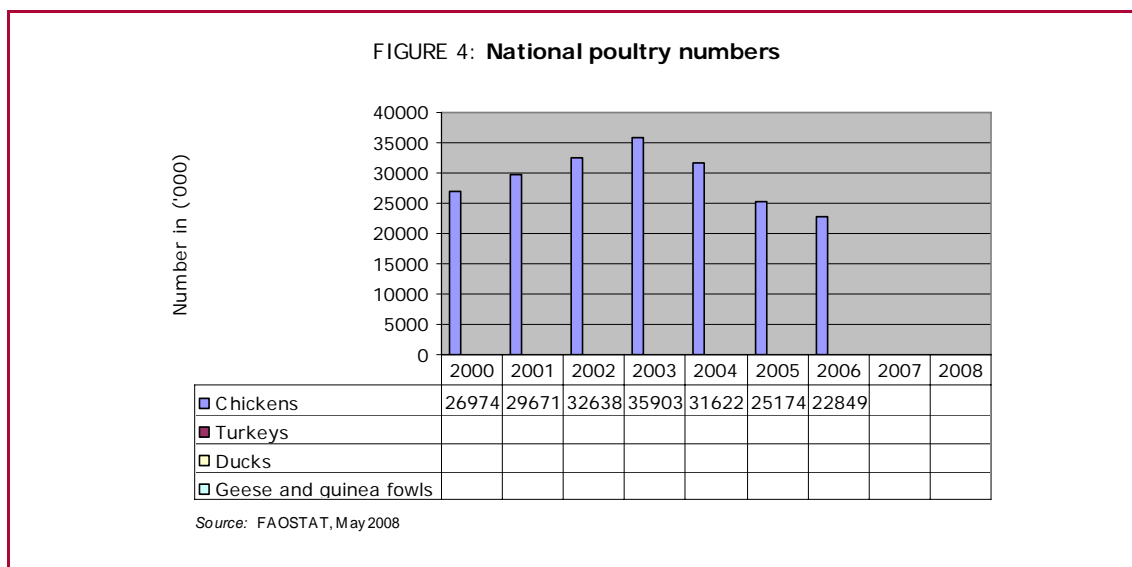


Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2006 Revision and World Urbanization Prospects: The 2007 Revision, <http://esa.un.org/unup>, May 2008

Chapter 2

Profile of the poultry sector

2.1 NATIONAL POULTRY FLOCK



The last comprehensive livestock census which included poultry was in 1991. Since then no complete data has been collected. Numbers provided have been based either on estimates, partial surveys or projections.

Data available in the FAO database is provided in figure 4. The Uganda Bureau of Statistics provided the data used in table 1:

TABLE 1:
Numbers of poultry ('000) by type and region

Region	2002 Estimates			2006/2007 Projections		
	Exotic	Indigenous	Total	Exotic	Indigenous	Total
Central	2,398	4,291	6,689	3,321	5,943	9,265
Eastern	854	7,382	8,236	1,182	10,225	11,408
Northern	49	4,227	4,276	67	5,855	5,922
Western	416	3,905	4,322	5,76	5,409	5,986
Total	3,717	19,806	23,523	5,148	27,434	32,583

Source: UBOS

The total poultry population in Uganda was projected to be about 32.6 million birds for 2006/7 compared to 23.5 million in 2002. Of this, about 80% is comprised of free-range indigenous breeds whilst the remaining 20% is commercial types mainly composed of exotics. Chickens form the main poultry types, but turkeys, ducks, geese, pigeons and ostriches are also kept in some areas.

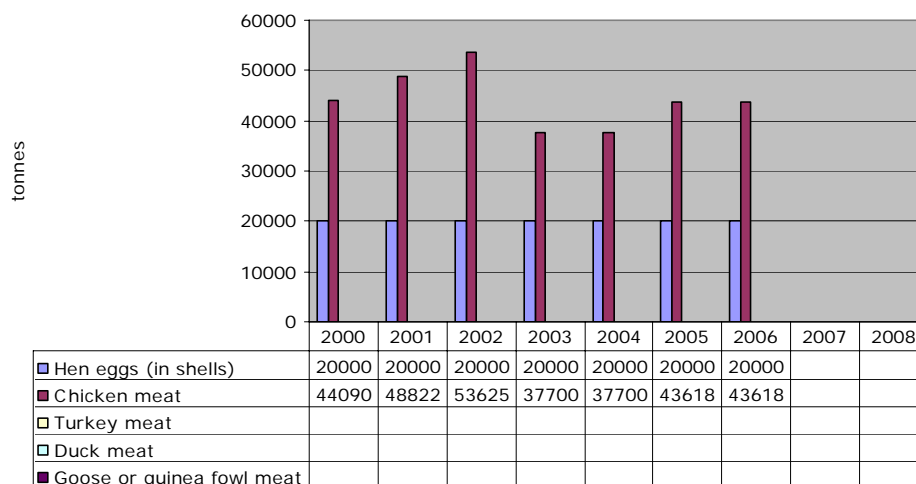
The Eastern Region had the highest numbers of free-range birds (representing about 37.3%) followed by the central region. On the other hand, the central region had the highest percentage of exotic poultry numbers.

2.2 GEOGRAPHICAL DISTRIBUTION OF POULTRY FLOCKS

See above and maps in chapter 11.

2.3 PRODUCTION

FIGURE 5: National production of the poultry sector



Source: FAOSTAT, May 2008

2.4 CONSUMPTION

Figure 6.a and 6.b: Poultry meat (in average calories/capita/day) (in kg/capita/year)

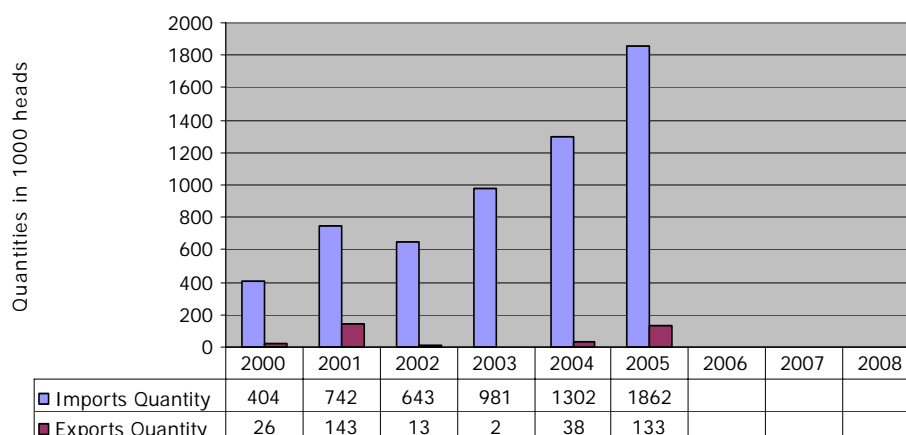
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Figure 6.c and 6.d: Eggs (in average calories/capita/day) (in eggs/capita/year)

This information has not yet been sourced.

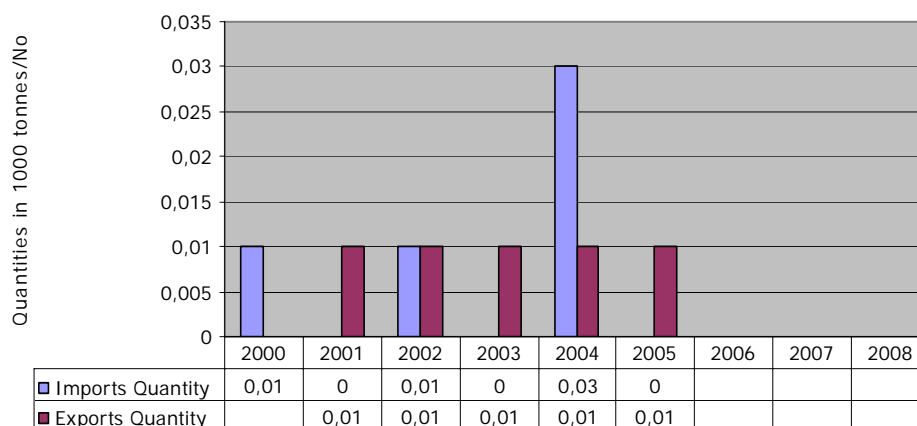
2.5 TRADE

FIGURE 7.a: Import/Export of live chickens (up to 185 g. only)



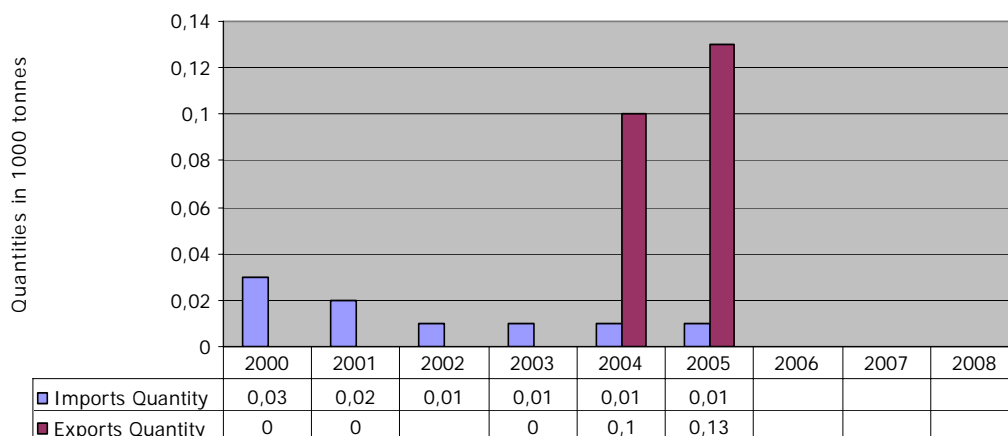
Source: FAOSTAT, August 2008

FIGURE 7.b: Import/Export of chicken meat



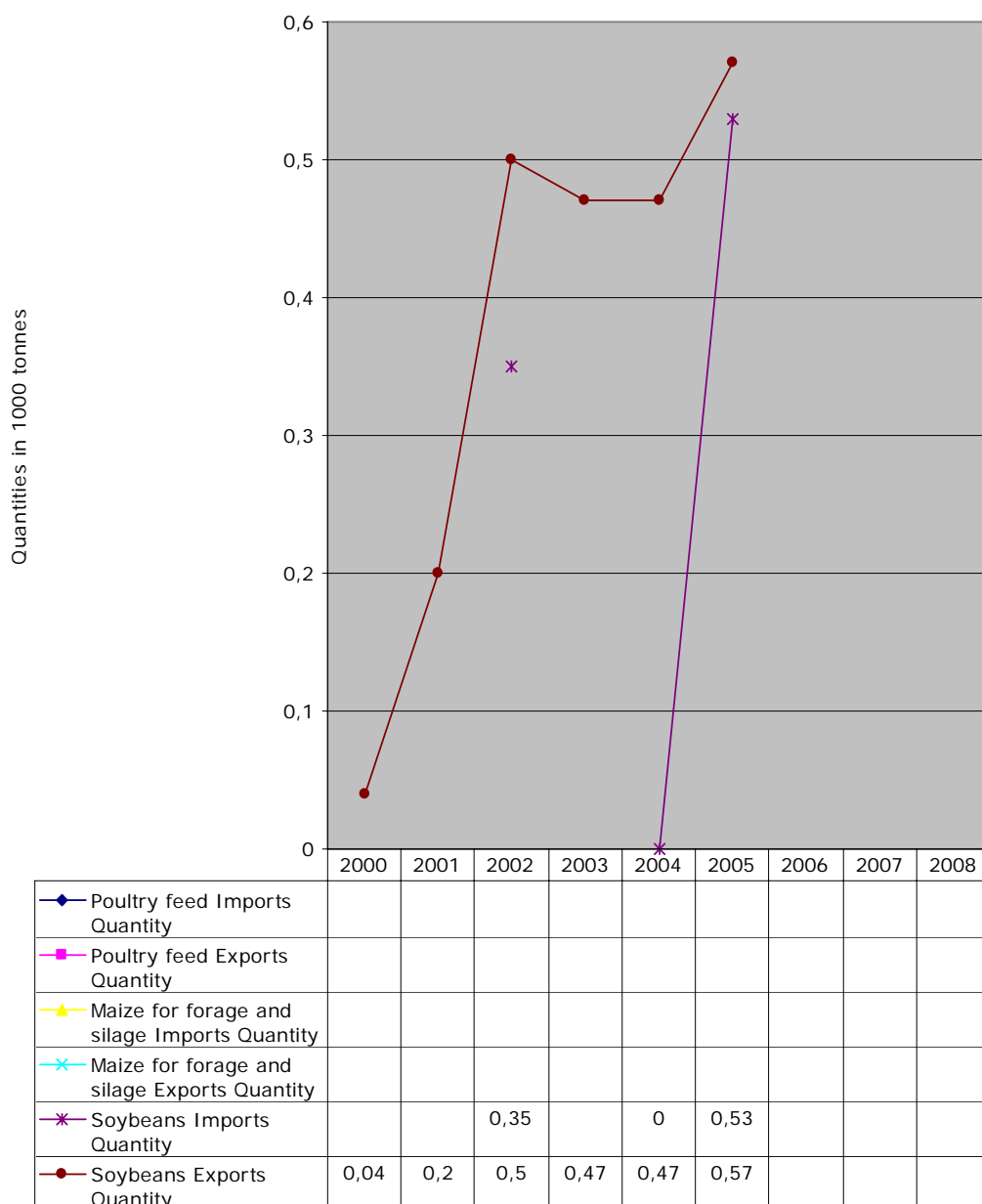
Source: FAOSTAT, May 2008

FIGURE 7.c: Import/Export of hen eggs with shells (including hatching eggs)



Source: FAOSTAT, May 2008

FIGURE 7.d: Import/Export of poultry feed and feed ingredients
(maize, soybeans)



Source: FAOSTAT, May 2008

2.6 PRICES

Figure 8: Producer price (US\$/tonne)

This information has not yet been sourced.

Figure 9: Consumer price (US\$/tonne)

This information has not yet been sourced.

Chapter 3

Poultry production systems

TABLE 2:
FAO classification of poultry production systems

Sectors (FAO/definition)	Poultry production systems			
	Industrial and integrated	Commercial		Village or backyard
		Bio-security		
		High	Low	
Sector 1	Sector 2	Sector 3	Sector 4	
Biosecurity	High	Mod-High	Low	Low
Market outputs	Export and urban	Urban/rural	Live urban/rural	Rural/urban
Dependence on market for inputs	High	High	High	Low
Dependence on goods roads	High	High	High	Low
Location	Near capital and major cities	Near capital and major cities	Smaller towns and rural areas	Everywhere. Dominates in remote areas
Birds kept	Indoors	Indoors	Indoors/Part-time outdoors	Out most of the day
Shed	Closed	Closed	Closed/Open	Open
Contact with other chickens	None	None	Yes	Yes
Contact with ducks	None	None	Yes	Yes
Contact with other domestic birds	None	None	Yes	Yes
Contact with wildlife	None	None	Yes	Yes
Veterinary service	Own Veterinarian	Pays for veterinary service	Pays for veterinary service	Irregular, depends on govt vet service
Source of medicine and vaccine	Market	Market	Market	Government and market
Source of technical information	Company and associates	Sellers of inputs	Sellers of inputs	Government extension service
Source of finance	Banks and own	Banks and own	Banks and private ²	Private and banks
Breed of poultry	Commercial	Commercial	Commercial	Native
Food security of owner	High	Ok	Ok	From ok to bad

Sector 1: Industrial integrated system with high level of biosecurity and birds/products marketed commercially (e.g. farms that are part of an integrated broiler production enterprise with clearly defined and implemented standard operating procedures for biosecurity).

Sector 2: Commercial poultry production system with moderate to high biosecurity and birds/products usually marketed commercially (e.g. farms with birds kept indoors continuously; strictly preventing contact with other poultry or wildlife).

Sector 3: Commercial poultry production system with low to minimal biosecurity and birds/products entering live bird markets (e.g. a caged layer farm with birds in open sheds; a farm with poultry spending time outside the shed; a farm producing chickens and waterfowl).

Sector 4: Village or backyard production with minimal biosecurity and birds/products consumed locally.

² Money lenders, relatives, friends, etc.

3.1 BACKGROUND INFORMATION

The high growth rate of the Ugandan population and increases in urban migration have increased demand for food. These factors have put pressure on land and other resources for food production and other necessities. This has led to a focus on farming systems and/or enterprises that maximise yield per unit area and input and poultry production has been identified as one of the enterprises that falls within this category. Meat consumption in Uganda is low and is estimated at 5.6kg compared to 50kg recommended by FAO and WHO. According to 1994 figures, there was a meat consumption gap of 800,000 tons. The annual rate of increase is projected to be 7.4% for beef and goat meat, 3.32% for pork and 4.87% for chicken.

Chicken production is the main type of poultry production in Uganda. Turkeys, guinea fowls, ducks, pigeons, geese and ostriches are also kept. Poultry production in the country is conveniently categorized into two; namely; commercial or free-range. There are wide variations within these two systems in terms of numbers, types of birds, bio-security and management. The commercial system covers production with improved hybrid breeds (and recently also with local breeds) under intensive confined management of uniform stocks and age-groups primarily for commercial purposes. Categorisation may also be based on management systems i.e. intensive, semi-intensive and extensive or free-ranging system. The intensive system, which is based on specialized breeds, constitutes less than 20% of the total poultry population in Uganda. This system is found mainly in urban areas, where there are markets for eggs and chicken meat. Producers in this production system aim at using the recommended standard practices, such as breed of choice depending on production objectives, appropriate housing, feeding and health and disease control programmes.

TABLE 3:
Characteristics of poultry production in Uganda

Characteristic	Commercial		Free-range (extensive)
	Intensive	Semi-intensive	
Breed and flock size	Specialized breeds (exotic or indigenous): 500–5000	Specialized and dual-purpose breeds: 50–500 or more	Local indigenous type: <50
Housing	Modern housing, generally with concrete walls and regulated internal environment	Varies from modern houses to simple housing made from locally available materials	Varies from bespoke houses, owner houses, trees, to nothing at all
Feed resource	Commercially compounded feeds either by self or by millers	Commercially compounded, home-made mixtures and free-range	Scavenging and occasional feeding with home grains and household refuse
Health programme	Standard and regular poultry health programme	Disease control and health programme at varying levels	No regular health programme of disease control measures in place
Markets	Varying from organised cold chain system for input-output distribution to informal	Input and output distribution is based on existing trading centres	No formal marketing channels
Infrastructure	Water, electricity and communication available	Modest infrastructure depending on proximity to urban centres	Under-developed infrastructure
Product storage and processing	Varies from refrigerated facilities for dressed birds and table eggs to none	Occasional dressing of birds depending on marketing chains	No refrigeration, sales of live birds and eggs

3.2 SECTOR 1: INDUSTRIAL AND INTEGRATED PRODUCTION

Intensive poultry farming was introduced in Uganda in the early 1950s, with the establishment of two government farms at Entebbe and Mbarara. The industry registered rapid development during the 60s, and the country had started exporting poultry products. However, it experienced a sharp decline during the late 70s and early 80s due to civil strife and political turmoil. Although the industry has not yet fully recovered, some progress has been achieved during the last ten years (UBOS, 2002). The map in Section 11 shows the distribution of exotic chickens in the country by 2002 projections with high densities around the capital city Kampala in the central region.

Currently only one farm (Ugachick) has the very high bio-security measures that qualify it to be classified as Sector 1 according to FAO. Ugachick is located near the capital city of Kampala and has major outlets in other main towns such as Jinja and Mbarara, where they also have “outgrower” farmers. The birds are housed and have no contact with other domestic or wild animals, the farm manufactures their own feed and has a well qualified veterinarian and a number of animal husbandry experts. They process and/or package their products for both export (DOC) and urban markets (DOC, poultry meat products, eggs and feeds). They are however dependent on the open market for inputs, including medicines and vaccines.

3.3 SECTORS 2 AND 3: OTHER COMMERCIAL PRODUCTION SYSTEMS

This system is characterised by a complete indoor housing system with commercial feeds from either feed suppliers or self-mixed.

The system can be classified into the following categories based on scale of production:

- Small-scale units categorised under FAO Sector 3. Mainly household/family owned farms of 100 – 500 layers or broilers or indigenous chickens. It is not uncommon to find one farmer keeping different types on the same farm in different houses. These farms are usually run by women with one or two assistants and much of the labour is supplied by members of the family.
- Medium-scale units owned by individuals, companies or farmers’ groups, with a capacity of between 500 – 5,000 layers or broilers and therefore more specialised in terms of production. This category also includes farms with a small parent breeding stock and hatching facilities. Bio-security levels are not high at these units and they would also be categorised as FAO sector 3.
- Large scale units which are mainly breeders with hatching facilities and a capacity of over 5,000. Currently, there are about three in this category, and only one – Ugachick – would qualify as Sector 1 while the other two (Biyinzika and Bukomo) would be categorised as FAO Sector 2.
- Breeding farms (hatcheries) whose main commercial activity is keeping parent stocks and selling of DOC. Almost all of them will also be involved in keeping commercial layers or broilers as well.

3.3.1 Breeding stocks and hatching eggs

The main commercial activity of breeding farms (hatcheries) is keeping parent stocks and selling DOC; almost all of them will also be involved in keeping commercial layers or broilers. The present national setting capacity for the hatcheries is 510,000 eggs per week. Table 4 lists the major hatcheries and their operational capacities.

Most of these eggs come from parent stock farms owned by the hatchery operators. However, contract hatching eggs production is becoming popular. In addition, due to the huge demand for DOC, several companies still import DOC and sell directly sell to farmers.

TABLE 4:
List of hatcheries and their operational capacities

Name	Installed capacity (per week)	Current% utilization	No. of chicks (per week)
Ugachick Magigye	120,000	100%	90,000
Bokomo	40,000	100%	48,000
Biyinzika Seeta	90,000	30%	24,000
Kigo Prisons	40,000	15%	6,000
LES – Entebbe	16,800	40%	5,000
Bulemezi Mukono	13,000	60%	7,000
Kiyita Kasangati	24,000	40%	8,000
Nsambya Catholic	12,000	60%	6,000
Senda -Mukono	11,000	67%	6,630
Kagodo Makindye	40,000	75%	23,000
Walusimbi Kira	12,000	45%	4,800
Kiwanuka Kabowa	4,000	50%	1,600
Gesica Namugongo	12,000	58%	6,000
Others	9,000	-	-

3.3.2 Broiler meat

Detailed information has not yet been sourced.

3.3.3 Hen table eggs

Detailed information has not yet been sourced.

3.3.4 Other species

Detailed information has not yet been sourced.

3.4 SECTOR 4: VILLAGE OR BACKYARD PRODUCTION

3.4.1 Chickens

The distribution of these species of poultry is shown in the maps in chapter 11. Indigenous poultry are found all over the country though the majority of these birds are found in the Eastern parts of Uganda (Ssewanyana et al., 2001).

Under free-range management systems, the birds scavenge for their food and seek shelter in the natural surroundings in trees and bushes. Others are provided with different forms of housing that vary from staying with the owners in the family houses to kitchens, in small shelters specifically made for them or roosting in trees.

Indigenous chickens are predominant in villages despite the introduction of exotic and crossbred types, because farmers are not able to afford the high input requirements of introduced breeds. In most villages, the birds have no regular health control programme, may or may not have shelter, and scavenge for most of their nutritional needs. They form part of an indigenous and integral part of the farming system, with short life cycles and quick turnovers, low-input production systems with outputs accessible at both inter-household and intra-household levels and a means of converting low-quality feed into high-quality protein.

Poultry in traditional village poultry systems provide scarce animal protein in the form of meat and eggs, and are available for sale or barter in societies where cash is not abundant. They are generally owned and managed by women and children. Village chickens also fulfill a range of other functions for which it is difficult to assign a monetary value. They are active in pest control, provide manure, are required for special festivals and to meet social obligations, they are essential for many traditional ceremonies (such as slaughter for important guests) and traditional treatment of illness. Any cost-effective strategy that increases the productivity of these birds will assist in poverty alleviation and the improvement of food security. The increased availability of village poultry and eggs should result in an improved

intake of protein by the population and increased access to cash and other resources. Poultry are often essential elements of female-headed and poor households. This is a particularly important contribution in areas where child malnutrition is common.

Households keep flocks of between 6 and 20 chickens per household excluding chicks and growers, with very few keeping over 50 birds. Chicks are hatched and reared by the hens. There are variations in numbers during the year because of the occurrence of certain diseases such as Newcastle disease, which wipes out 60-100% of the birds when it strikes. Farmers therefore sell many of the birds prior to such disease occurrence in order not to incur losses during outbreaks. This creates differences in the flock structures at different times of the year and thus the flock dynamics. Due to the vulnerability of the chicks to several problems of disease and management, the flock characteristics change the desired flock ratios. These are also influenced by egg production.

The hens produce about 2-4 clutches a year each of about 10 – 12 eggs (Byarugaba et al., 2002, Ssewanyana et al., 2003). While egg production and chick survival are the major determinants of flock productivity, chick mortalities account for very high losses in most villages (Kirunda and Mukiibi-Muka, 2003). Management practices that minimise chick losses therefore could be used to increase output from the scavenging chicken. Egg production also reflects the proportion of mature laying hens in the flock. The proportion of laying chickens in some studies was on average 24% of the flock. If the proportion of laying hens can be increased, this would increase egg production and hence output. The hatchability of the scavenging chicken has been considered to be low. Studies have shown hatchability of between 45-75% (Byarugaba et al., 2002) and this falls within the range reported on other countries. Some have even reported up-to 100% hatchability. Improved management such as provision of appropriate nests for laying could help achieve optimal hatching potential of these birds.

Women and children play a key role in their day today management (90%) with very little male participation (10%). Supplementary feeding is sometimes given in the form of leftovers from household surplus although the broad range of the available feed resources and in different periods of the year has not been documented in Uganda.

One of the major constraints to village poultry production in Uganda is undoubtedly the existence of various diseases (Ojok, 1993). The problem of diseases in village chickens is compounded by the interaction of different entities that are of significant importance to disease epidemiology. There are uncontrolled contacts in the villages between birds from different households as well as frequent introduction of birds from markets, gifts or other purchases. Such birds bought from markets and wild birds may be a source of infection.

Among the diseases most commonly recognised is Newcastle disease, which has been ranked the most important (Mukiibi-Muka, 1992). Besides Newcastle disease, there are also parasites - both external and internal - which are well recognised by the farmers (Kiddu-Makubuya, 1998, Lubwama, 2002). Some of the parasites such as stick tight fleas are known to cause serious losses especially in the chicks. In these villages, local remedies are usually used to treat many of these diseases such as use of paraffin to clean off external parasites and many herbs for internal parasites (Kirunda and Mukiibi-Muka, 2003). Because of the virtual lack of extension services, there is very little modern medicine used in disease control. As a result, Newcastle disease has continued to wipe out many of the chickens when it strikes, although vaccines are available. Rearing losses are very severe. It is estimated that the mortality of indigenous poultry under scavenging conditions is 70% and above in chicks up to 8 weeks of age (Kirunda and Mukiibi-Muka, 2003). These high cumulative levels of mortality influence the structure of the flocks whereby 30-50% of flocks are normally chicks. Efforts to increase productivity through improvements in health, feeding, housing, genetics and management have been minimal.

Semi-intensive production system (backyard system)

In recent years there has been a development in the extensive system with improvements in management, housing and flock size, especially in the urban and suburban middle class. These farmers also follow intensive-based health programmes for vaccination against common diseases and the general disease control methodologies practised in the intensive system. In this semi-intensive system, the birds are housed but have a wire mesh open enclosure where they can free-range for food. In addition, these birds are provided with good quality water and supplementary commercial feed. This has become popular with indigenous breeds which are targeted for the preferential market of indigenous breeds. The average numbers kept per household in this system are much larger than those kept under the

free-range system per household. Several farmers have organised themselves into an association called the Uganda Local Chicken Framers Association (ULCFA) that helps the farmers in hatching DOC as well offers training in improved management. The association currently has about 6,000 members in about 14 districts all over the country. The breeds under this vary from the indigenous breeds to cross bred as well as pure breeds.

There are also variations in management under this system. Some still leave the birds to scavenge without restriction but provide them with supplementary feeds, while others partially release them under enclosed wire mesh-enclosed compounds. Flock sizes in the semi-intensive production system are normally from tens to hundreds of birds.

3.4.2 Other species

Some households will also keep other poultry such as turkeys, ducks, geese, pigeons and guinea fowls. Ostriches are also very popular in the north-eastern areas of Karamoja.

3.5 POULTRY VALUE CHAIN ANALYSIS

The marketing of poultry in Uganda is not streamlined. Although the objectives of the PMA focus on increased incomes and market share and directly highlight the need for an efficient marketing system to enable farmers to gain from increased productivity, this has not yet been achieved.

3.5.1 Day-old chicks

This information has not yet been sourced.

3.5.2 Chicken meat

Marketing of local poultry

Whereas free-range poultry meat and eggs are generally perceived to taste better than broiler meat and commercial layer eggs, their prices are often higher and this may mean that consumers select from other protein sources available. There are several other sources of animal protein which compete more favourably in urban and suburban areas in terms of prices, for example beans, beef, broiler and fish.

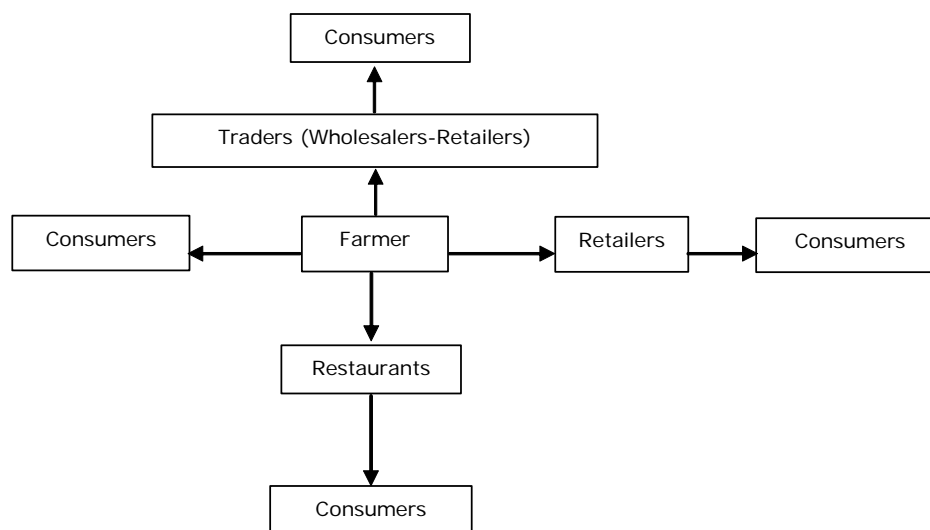
TABLE 5:
Prices of free-range chickens in different markets

Market type	Average Hen prices		Average Cock prices	
	Ug Shs	USD	UgShs	USD
Farm-gate price	3500	2	5000	2.9
Primary market	4500	2.6	6000	3.4
Secondary market	5500	3.1	7000	4
Urban market	7000	4	8500	4.9

Source: Mukiibi-Muka and Kirunda, 2005.

All male and female members of the household are involved in the marketing of free-range chicken. The women are involved more at farm gate level while the trade is mainly male-dominated in markets and in towns. Although there is a weight and size consideration both at sale and purchase, there is no established means of verification. Chickens are usually sold live to fellow farmers, retailers or consumers. The marketing chain (Figure 10) is simple and undeveloped with no market infrastructure apart from for some stalls in towns. The main marketing channels are from farmer to farmer or consumer (informal marketing), another is from farmer to retailer and then to consumers (primary marketing). Some farmers sell direct to restaurants while others sell to traders who take to secondary markets and urban areas.

FIGURE 10: Simple chicken marketing chain



There have been a few studies that have examined the gross margin analysis and the various beneficiaries in the marketing chain of chickens. The price competitiveness of the different poultry species and types with other available alternative sources of protein in the country has also been studied (Mukiibi-Muka and Kirunda, 2005). The quantity of chickens supplied and sold in the markets is known to be elastic and to vary significantly with sex and the month of the year. More cocks than hens are supplied in the markets and large quantities of free-range chickens are sold in holiday seasons as well during ND outbreak seasons when farmers prefer to sell them off than lose them to disease. Middlemen play a major role in the local chicken marketing chain and earn more profit of the total income generated in the local chicken marketing chain. It is however known that the profit margins realized by farmers and middlemen were significantly influenced by the months in which both parties sold chickens and the sex of the chickens, with cocks earning higher profits than hens.

Factors affecting the marketing of local chicken in Uganda

Seasonal availability of birds

The seasonal effects of price fluctuations depend on festive seasons, crop activities and disease outbreaks. Thus in a season when crops are likely to be destroyed by chickens or in a period when ND strikes, most farmers will sell most of their chickens (Mukiibi-Muka, 1992). At festive seasons such as Christmas the prices will be higher due to increased demand.

Transportation

Since there is no specialized transport of live chickens, the birds are bundled together either on strings or baskets and are transported on different means of public transport available such as motorcycles, lorries, buses or mini-buses together with passengers. Such kind of transportation is a risk factor for possible transmission of zoonotic infections.

Retailer output

When the retailer is selling roasted pieces of chicken, all pieces cost the same irrespective of the original size of the hen or cock. The output of the retailer will determine the type of chickens such retailers will buy.

Disease outbreaks

This affects both farmers and middlemen. When disease breaks out in an area, farmers will panic and sell their chickens cheaply. Similarly, the middlemen who buy the chickens cheaply may also lose a number of them due to disease.

Lack of information on prices

The farmers depend on information given to them by traders and often the traders will want to maximize their own profits by offering as low a price as possible.

Lack of streamlined marketing channels

Although farmers get information that chickens may fetch high prices in towns or if they sold to institutions, they lack the capacity and economies of scale to gather enough stock for such a transaction.

Marketing of commercial poultry and their products

The marketing of commercial broilers or eggs as well as other products is more complex. Some of the broiler and layer farmers have over time established reliable clientele such as hotels, restaurants or roadside roasted chicken sellers or middlemen who will always pick the products from the farms and transport them to the consumer points or to secondary retailers. Others also deliver the products directly to their clientele.

Some more organised companies such as Ugachick have introduced a contract farming scheme whereby farmers are given either broiler or layer DOC and pay as they get the returns back. Such systems help establish a clientele for the company and the farmers are also given support for their business in terms of training in poultry management and vaccinations. Some even sell their products back to the company for processing and subsequent marketing. Previously, the company produced all their broilers which they processed and packaged for sale but they introduced the contract farmers system as they realised that they would not sustain the rearing business. At the moment, the contract farmers take over 20,000 chickens per month. Besides the extension services provided by the company (such as visits by company veterinarians) the farmers are also assured a ready market for their produce.

3.5.3 Table eggs

This information has not yet been sourced.

3.5.4 Other species

This information has not yet been sourced.

Chapter 4

Trade, marketing and markets

4.1 DOMESTIC MARKET

Types of markets

Informal markets

These operate within the villages involving farmer to farmer or to retailers. Although the main purpose of selling is to raise income, sometimes fellow farmers who need a certain hen or cock for breeding may demand the purchase from a neighbor. Some farmers give their chickens to children to take to the roadside for sale in areas where there are main trunk roads. Often chickens are bartered for larger animals such as goats.

Primary markets

These are generally formed by several villages within a local area and are held on gazetted days of the week. They are often in fenced areas with few or no facilities. Traders may purchase chickens from several adjacent primary markets and transport them to destinations within or outside the country. This is where the majority of the rural farmers go to sell their chickens and also to buy various household items from the income.

Secondary markets

Secondary markets normally have a larger throughput than primary markets but also lack proper weighing, loading and hygienic facilities. Traders often come with trucks to buy a full load of chickens for immediate transportation to large centres such as Kampala. Animals are sold according to size, age and appearance through negotiations between sellers and butchers/traders/farmers. The number of farmers at secondary markets is small and is comprised of those who are close to the market. The level of taxes and those involved is also increased at this type of market. Sometimes the sellers are disadvantaged because there may only be a few traders present with whom to negotiate and because they normally do not know the prices of livestock in the urban centres. In addition, they are often selling under pressure, such as the need to meet an immediate cash need and they do not want to risk losing a sale. However, in the districts where large numbers of animals are available for sale and more traders exist, sellers are better able to bargain for fairer prices.

Urban markets

These are in larger towns and cities and there are often designated areas where makeshift chicken stalls are erected. Suppliers to such markets are traders who buy from secondary markets, place chickens on trucks and take them to towns. Consumers from such urban markets are hotels, restaurants and some affluent city dwellers. An ordinary farmer or consumer is not likely to buy from such a market because the prices are higher except on festive days like Christmas.

Table 6: Distribution of markets

This information has not yet been sourced.

4.2 IMPORT

All the hatcheries import their parent DOC from outside Uganda, as there are no grandparent stock farms in the country. These are imported from various countries including Holland, Mauritius, Kenya, Zimbabwe, UK, USA, France and Germany. Imports from a number of these countries especially in Europe such as UK and Germany, France, Holland were temporarily banned during the peak of HPAI H5N1 in Europe to prevent entry of the virus through imports. These import restrictions have since been lifted but there is continuous monitoring and the ban may be imposed at any time. MAAIF periodically reviews the

countries from which imports are allowed and issues import restrictions which are implemented through requirements for import permits of poultry or poultry products enforced by law.

4.3 EXPORT

Detailed information has not yet been sourced.

4.4 SLAUGHTERING FACILITIES

In terms of processing, only Ugachick has a slaughter plant. The rest of the slaughter is carried out in make-shift small slabs or in households or restaurants. The products therefore may not be professionally handled, resulting in a lack of grades and standards, inadequate market information and un-standardised products being presented to consumers.

4.5 POULTRY FEEDS

Poultry feeds under the commercial system constitute the highest cost of production, accounting for 60–70% of costs, particularly in intensive production systems. Several feed millers provide the farmers with already mixed feeds. However, because of the lack of sufficient regulatory policies, there have been issues with quality and most farmers have therefore resorted to buying the ingredients and mixing the feeds themselves. This is also usually a cheaper option. Besides the commercial feed factories there are several up-and-coming small-scale feed producers which are not mechanised but nonetheless play a large role in supplying feed to the various categories of poultry farmers.

Table 7 below shows the major feed mills producing poultry feeds for commercial purposes

TABLE 7:
List of commercial feed factories in Uganda

Name	Installed Capacity	Present Production
Creda Africa	40 tons/wk	Not known
Liberty Trading Co. Ltd	200 tons/wk	Closed
Formula feeds	40 tons/wk	15 tons per week
Catholic Secretariat	42 tons/wk	6 tons/wk
Engano Millers Ltd.	60,000 MT/per annum	1,100 MT/per annum
Bulemezi Farm Enterprises	32 tons/day	5 tons/day
Ugachick Poultry Breeders	10 MT/hr	6-7 MT/hr
Kagodo Farm	45 tons/day	20-22 tons/day
Hill Top	1.5MT/hr	1.5 MT/hr

While poultry feed production has increased from 32,000 MT in 1993 to the current production of 80,000 MT, the present capacity utilisation is still low at around 40 -45% of installed capacity. Most feed factories are located in and around Kampala and Jinja far from areas of high cereal and other input production. Since most inputs and poultry feeds themselves are bulky, transport makes the final products expensive. The output of feed mills varies considerably from season to season, resulting in irregular supplies and prices for farmers. Quality is inconsistent between various manufacturers and also within the same company from season to season. Generally, there is a lack of technically qualified staff in feed processing and laboratory facilities for regular quality monitoring. The feed regulatory act has not yet been enacted by parliament.

Chapter 5

Breeds

5.1 EXOTIC BREEDS

This information has not yet been sourced.

5.2 LOCAL BREEDS

Free-range poultry keeping is based on local indigenous breeds kept around peasant village households and a few sub-urban homesteads and comprise about 80% of the total population in the country (UBOS, 2002). Village poultry production systems are based on the scavenging indigenous breeds, chicken being the predominant species in the sector. These local chickens are predominant in villages despite the introduction of exotic and crossbred types, because farmers have not been able to afford the high input requirements of introduced breeds. However, cross breeding of local chickens with exotic chicken breeds has also been taking place and one frequently finds mixed breeds as a result of target improvement programmes by different organisations such as the SAARI chicken breeding project (Sorensen and Ssewanyana, 2003) or on individual level.

The genetic resource base of indigenous poultry in Uganda is rich and has great potential for genetic improvement and diversification to produce well adapted breeds that can be used in genetic improvement programmes for tailored production systems (Ssewanyana et al., 2003). However, information on the genetic make-up of the indigenous poultry in Uganda is very limited. There is no information on the use of the morphological marker genes for genetic improvement available. Efforts for genetic preservation and biodiversity is planned by the National Animal Genetic Resources and Data bank (NAGRIC & DB) but has not yet started. This would be an opportune time to undertake such characterization and biodiversity conservation efforts in light of the threats of HPAI that would require depopulation for controlling the disease in cases of outbreaks. This would result in loss of the genetic biodiversity resources of important traits of the local poultry resources. Continued cross-breeding programmes in rural poultry which do not consider gene preservation aspects may also lead to the erosion of the indigenous germplasm.

Chapter 6

Veterinary health, public health, biosecurity measures

6.1 HIGHLY PATHOGENIC AVIAN INFLUENZA

Uganda is at risk of the introduction and spread of HPAI (A/H5N1) not only because of low bio-security measures in poultry production but also because of the following factors:

- Uganda lies along two north-south migratory bird route major flyways (Black Sea/Mediterranean; East Africa-West Africa Flyway) and has many water bodies which offer a preferred sanctuary for migratory birds
- Free-range backyard poultry, widely kept for food and revenue purposes can be exposed to infected peri-domestic and migratory wild birds, posing a risk to humans
- There are many bird species in the country (e.g. ducks, geese, wild birds) that could be reservoirs of the H5N1 virus.
- Increase in global travel and tourism
- Increased trade in poultry and poultry products which in many cases are not transported and handled hygienically.
- Accommodation is shared with poultry due to poverty and low levels of awareness
- Commercial poultry production is concentrated in urban and peri-urban areas where there is a high human population density
- Unregulated marketing of poultry and poultry products in the country and across borders

The majority of poultry production in Uganda is free-range and the low bio-security measures in management mean that the impact of HPAI is unpredictable. High bio-security measures can easily be adhered to in larger commercial poultry farms (Sectors 1 and 2), extra effort is required in the case of small commercial farms (Sector 3) but it is extremely difficult to enforce in free-range production systems (Sector 4), where flocks forage outdoors. A clear link has been established between the concentration of domestic birds, and therefore trade, the spread of the disease and endemicity (FAO, 2006). In the conditions prevailing in free-range poultry production in Uganda - with prolonged hot dry seasons and extensive low-density poultry populations primarily in dispersed village production systems - it is possible that the AI virus would spread more slowly than it has in several Southeast Asian countries. This seems to have been the case in Niger, Northern Cameroon, Sudan and Burkina Faso. However, the situation in Egypt and Nigeria proves the contrary and the evolution of the African HPAI situation is therefore impossible to predict. Furthermore, it is envisaged that HPAI is approaching enzootic status (endemicity) in the two countries in Africa (UNDP, 2006). Since there are many potential wildlife reservoirs, in the worst-case scenario the HPAI H5N1 virus could become permanently established within wild bird reservoirs, in African waterfowl and perhaps shore-bird species, and thus could also be a continued possible source of virus to domestic poultry and people.

Producer and Consumer responses to recent animal disease outbreaks

The HPAI outbreak - especially when it came closer to Uganda in Juba, Sudan - created general panic amongst the public. This panic led to an initial boycott of poultry products, resulting in a slight decline in sales and prices that was later calmed by effective communication messages by the NTF, which re-assured the public that the disease was not yet in the country and that poultry could still be consumed safely. The indirect short-lived economic losses to all those involved in poultry production have not been quantified. If

widespread outbreaks had persisted in neighboring countries without rapid and adequate control measures, production in Uganda would have been severely disrupted.

The farmer and consumer responses in Uganda varied from those who did not react to those who temporarily halted their production. The variations in response were mainly influenced by fears amongst middlemen, who did not want to risk buying birds and losing their investment. The negative impact of AI in Uganda seems to have been saved by the rapid response given by the professionals in communicating to the consumers and farmers. This effective communication strategy generated confidence among the farmers, who then continued production uninterrupted in the majority of cases. The fact that no single case was ever reported in the country also served to further generate confidence among the farmers and the consumers. However, there were a few alarming situations when many birds died around the period when there were reported outbreaks in Juba, Sudan. Some of the farmers would then call the MAAIF officials who would instruct local veterinarians to take samples for analysis, all of which turned out negative.

National Response to HPAI

In response to the HPAI risk, the Government of Uganda established a multi-sectoral national task force (NTF) in October 2005 to undertake a risk assessment and the development of an Avian and Human Pandemic Influenza Preparedness Plan. The NTF has multi-sectoral representation from the Wildlife and Tourism sector, Veterinary sector and Human Health and Disaster Management perspectives. It has also representation from development partners, with technical support from the World Health and the Food and Agriculture Organisation. The objective of the Plan is to guide national preparedness and the response to avian/human influenza in Uganda by strengthening existing structures and their capabilities.

The Plan is to serve as a tool to guide preparations to enable the country to handle outbreaks caused by the Avian Influenza viruses should they occur in Uganda. The plan recognises that strong surveillance in both animal and human populations is a critical component for early detection of the disease and timely response in order to minimise the extent and impact of potential outbreaks and widespread transmission of the virus. The Plan aims to build on existing infectious disease surveillance systems in the various lead ministries.

Uganda's Preparedness and Response Plan for Avian and Pandemic Influenza (2005-2007) (MOH, 2006) was developed largely according to actions recommended by WHO, OIE and FAO. The framework of the plan is organized along six strategic areas as follows, clearly defining the key objectives and actions for each of them:

- Planning and coordination
- Surveillance and situation analysis
- Prevention and containment
- Case management
- Communication
- Monitoring and evaluation
 - The government managed to secure funding of USD 1,210,700 (6.8% of the budgeted USD 17,678,000) (MOH, 2007) to support various programmes in the plan including:
 - Undertaken co-ordination of national avian and pandemic influenza preparedness and response activities through the inter-sectoral collaboration of key stakeholders within and outside government.
 - Undertaken surveillance of wild birds, domestic poultry and humans and training and provision of logistics to strengthen field surveillance and laboratory capacity to diagnose the H5N1 influenza virus.
 - Carried out public awareness and advocacy and development and implementation of a communication strategy on AI targeting various levels of interest groups such as technical/professional staff, policy makers, poultry farmers and the general public.

- Assessed the Food Safety Control systems, containment of spread of infection and policy issues related to vaccination of poultry and compensation of farmers in case of culling. A compensation policy is being drafted
- Developed and implemented a drugs and supplies strategy by identifying and recommending best practices in procurement & distribution of AI drugs such as Tamiflu, chemical disinfectants and virucidals against the HPAI virus. 1000 doses of tamiflu were purchased and stocked for potential first cases.
- Undertaken orientation and training of health staff - including private practitioners - on HPAI case management and infection control. Developed and implemented guidelines on treatment centres, referral system and creation of isolation units & recommend best practices in AI case management for bird flu patients.
- Mobilised resources in the form of funds or in kind from different partners namely: Swedish Embassy through Health Partnership Fund, FAO, UNICEF, USAID, WHO, CDC, DANIDA, UPHOLD and other development partners, as well as Makerere University Walter Reed Project.

The following projects are aimed at improving the level of preparedness, knowledge and response to the HPAI virus and other circulating influenza viruses in the Ugandan environment:

- The FAO/MAAIF Project whose main objective was to strengthen the local capacity for emergency preparedness planning against the eventuality of HPAI being introduced into Uganda, through trade (legal and illegal) and migration of wild birds.
- The Influenza Surveillance UVRI and CDC-Uganda Project was expected to strengthen UVRI as a National Influenza Centre (NIC), to support the national avian influenza preparedness plan and to establish a sustainable influenza surveillance network in Uganda. The NIC was strengthened by upgrading the lab to BSL 3 and provision of diagnostic equipment and supplies
- The Avian Influenza and Human Influenza Surveillance (AIFI) Project. This is a collaboration between Makerere University Walter Reed (MUWRP), School Institute of Public Health, Faculty of Veterinary Medicine, Nature Uganda an NGO. Funding was received from the global emerging surveillance systems (GEIS) to put in place a laboratory-based surveillance system at specific sentinel surveillance programmes for influenza viruses both in humans (seasonal and pandemic) and animals in the country.

These projects will provide critical information that will help the country in preparedness plans. A country programme has also been submitted to the World Bank and is expected to support preparedness for any eventuality if approved.

6.2 OTHER MAJOR POULTRY DISEASES

For regularly updated information on the status of notifiable and other transboundary poultry diseases, please refer to:

The FAO Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases available at www.fao.org/aq/againfo/programmes/en/empres/home.asp

The OIE World Animal Health Information Database (WAHID) available at www.oie.int

6.3 BIOSECURITY MEASURES

Currently only one farm (Ugachick) has the level of bio-security measures that would qualify it to be classified as Sector 1 according to FAO.

The majority of commercial farmers fall within Sector 3, keeping a few hundred birds in housed indoor facilities. The bio-security on these farms is very low. Although there may be variations in access, the majority are accessible to most household members who participate in the management and frequently do not have disinfection procedures before access to the premises. Others are in garages or structures next to the main human habitation and no vermin control or control of wild animals.

The hatcheries usually keep bigger numbers of birds and will often have more restricted access by visitors and have systematic disinfection procedures before entry into the premises qualifying them to be grouped as Sector 2. However, some of them receive eggs for contract hatching from other farmers and this exposes them to possible contamination of the premises and particularly the incubators to foreign agents outside the farms.

In the free-range poultry production systems, bio-security is not observed. Species of birds are frequently mixed and poultry scavenge for their food in the surroundings, thus interacting with all sorts of other animals in the vicinity including pigs and wild birds etc. Under this system, there is free unselected breeding, and flock sizes are small averaging 10 indigenous birds per flock. There is no or little restriction of movement and birds are out most of the day but normally kept inside at night while some may sleep out. Birds come into contact with other domestic and wild animals all the time. There is also a mixture of birds brought in from markets.

Chapter 7

Current policies, legal framework

The Animal Diseases Act 1964: CAP 218

The control of all animal diseases in Uganda is regulated by the Animal Diseases Act of 1964. This act contains the rules and regulations concerning disease control and compensation for purposes of disease control as well issues pertaining to procedures for import and export of animal and animal products. The act also sets out the roles of the different officers in disease control such as the Commissioner of Veterinary services, Veterinary Officers, Law enforcement agents and the powers of the Minister in the determination of contraventions. It empowers the Minister to make regulations on importation, exportation and the management of any disease outbreak of national economic importance by control or eradication measures including movement restriction.

Definitions

Under this Act “**animals**” mean stock, camels, and other ruminating animals, cats, and dogs but does not include any other animal except such as declared by the minister by statutory instrument to be included in the term animals for the purposes of the Act. “**Stock**” includes cattle, sheep, goats, mules, donkeys, swine and poultry. Under statutory instrument 218-1 animals was re-defined to include apes, monkeys, psitacine birds, rats, mice, guinea-pigs and all other rodents.

“**Diseases**” covers cattle plague (rinderpest), anthrax, pleuro-pneumonia, trypanosomiasis, tuberculosis, foot and mouth disease, rabies, sheep-pox, sheep scab, goat scab, goat pox, swine fever, swine erysipelas, glanders, farcy mange(scabies) in horses, mules and donkeys, dourine, ulcerative lymphangitis, epizootic lymphangitis, and blackquarter but does not include any other disease except such as may be declared by the minister by statutory instrument to be included in the term diseases for the purposes of this Act. Under statutory instrument 218-2, disease was re-defined to include brucellosis, trichomoniasis, vibriosis, epi-vaginitis, Johne’s disease, all tick-borne diseases, lumpy skin disease, atrophic rhinitis of pigs, and Newcastle disease.

It is interesting to note that no other diseases are defined under this Act. Although poultry are defined among the stock, the only poultry disease included under this Act to date is Newcastle disease. The implications for the current threat of HPAI H5N1 is that to be recognized as a disease, the Minister would have to make a statutory declaration as per this Act which takes time. This is besides the fact that Uganda is a member country to the world Animal Health Organization (OIE) that categorizes various diseases according to their impact (including all list A diseases where AI is listed) and requires the member countries to make update regulations regarding decisions made at the international committees of the organization to operationalise the decisions made by the organization. The OIE develops normative documents relating to rules that member countries can use to protect themselves from the introduction of diseases and pathogens, without setting up unjustified sanitary barriers. The main normative works produced by the OIE related to disease control including avian influenza are the Terrestrial Animal Health Code and the Manual of Diagnostic Tests and Vaccines. Under these guidelines, each member country is obliged to undertake to report the animal diseases that it detects on its territory. The OIE then disseminates the information to other countries, which can take the necessary preventive action. This information also includes diseases transmissible to humans and intentional introduction of pathogens. Information is sent out immediately or periodically depending on the seriousness of the disease. This objective applies to disease occurrences both naturally occurring and deliberately caused.

There have been several efforts to make amendments to the Act to align it with global developments in the livestock industry, but progress has been slow and this is yet to be done. This notwithstanding, the Act and other regulations and related Acts (such as the Animal Prevention of Cruelty Act and the Public Health Act) contain several provisions that have enabled MAAIF to respond to animal disease threats including the recent threats of

H5N1. The Animal Prevention of Cruelty Act provides for modes of transportation which not only prevents cruelty to the animals but protects the animals against exposure to diseases during transportation as well as would be the case with AI.

Statutory instrument 218-4 underlines the regulations regarding importation and exportation of animals, animal products and biological products, imposing/removing quarantines, examination of animals, places of import. It outlines the requirements for permits to this effect which MAAIF has used to impose bans on importation of poultry following threats of AI from countries that reported AI or to lift the ban. It also outlines the powers of all persons involved in regulating the system such as inspecting officers, the commissioner of veterinary services and the courts of law etc.

The Act provides for manned control and monitoring posts which are listed in schedules, and stipulates sanctions for contraventions. It provides for disposal of carcasses, compensation at the discretion of the veterinary officer, as well as communication to farmers in the area about outbreak of diseases and responsibilities of the local authorities. Although in the current act issues regarding compensation are superficially handled, it is indicated that the farmers will be compensated if their animals are slaughtered for purposes of disease control. A comprehensive policy for compensation with regard to avian influenza is being drafted with assistance from FAO. Copies of several policy documents, strategies, regulations, statutory instruments and Acts are available with MAAIF.

Chapter 8

Analysis

8.1 CURRENT STRENGTHS AND WEAKNESSES OF THE POULTRY SECTOR

Despite the potential of poultry to alleviate poverty and improve the quality of life of low-income earners, the rural poor and their children, little attention has been paid to it as demonstrated by the limited funding and expertise in the sector. Poultry is also not regarded as an area of importance in terms of political aspects or scientific prestige in many countries including Uganda (Sorensen, 1999). Research in the area of both free-range and commercial poultry has gained momentum recently, although it is yet to create an impact on the livelihoods of beneficiaries. The development of the commercial sector is also still limited by the occurrence of disease, expensive feeds and inefficient management.

The following are the key constraints to the poultry industry in Uganda:

Breeding

As stated earlier, the poultry industry in Uganda is dominated by indigenous breeds. While these breeds are cheaper to manage (they require less feed and are more adapted to the environment), their productivity is low in terms of growth rate, carcass weight and egg production. So far research efforts to produce local breeds or crossbreds with high productivity traits have not been successful (Sorensen and Ssewanyana, 2003). Hence commercial poultry production has tended to rely on exotic breeds.

Supply of these exotic breeds, in the form of day old chicks, has for a long time not satisfied demand because of the dependence on imports. Attempts have been made to establish hatcheries. However, the hatcheries are constrained by the following:

- Low installed capacity (in some cases)
- Under-utilisation of the installed capacity for various reasons
- Lack of proficient management skills
- Lack of capital especially to purchase and manage parent stock

The result is that the supply of day old chicks to commercial farmers is inadequate and irregular.

Feeds and Feeding

The key constraints regarding the feeding of poultry are feed availability, feed quality and feed costs. Under the extensive system of management, farmers always assume that the birds will receive adequate feed supply by scavenging around the homestead. This is not necessarily true and it affects the productivity potential of these birds. As for commercial poultry production, the availability of compounded feeds is constrained by competing use of the feed ingredients (cereal grains, fish as human food, brewing industry, feed for other animals) and seasonal variation. In addition, while the installed physical capacity of the feed mills for the moment is enough for the current number of commercial poultry, growth in demand could soon not be easily met as most feed owners are constrained by lack of capital and qualified personnel to run large output factories.

Poor quality feeds has been one major factor that affects the productivity and therefore the profitability of the poultry industry. This is due to the lack of regulations relating to feed policy, legislations and standards. There are many small-scale feed mixers, which are often unskilled and insufficiently equipped to manage feed milling operations. These produce sub-standard quality feeds leading to poor growth rates and production. There is need for an institutional and legal framework to regulate the industry.

Poultry Diseases

The most prevalent diseases among poultry include Newcastle disease, respiratory disease complexes, fowl pox, diarrhoea, salmonellosis, colibacillosis, fowl cholera, Gumboro, Avian leucosis, coccidiosis and several parasitic conditions both internal and external. The prevalence of these diseases varies between the various sectors although little data is available. However this largely depends on the preventive measures and management practices in the different sectors. For example in free-range where no vaccinations are carried out, Newcastle disease is the most prevalent causing from 8-100% deaths (Mukiibi-Muka, (1992). In free-range, rearing losses are especially severe especially due to high mortalities (70%) in chicks up to 8 weeks of age and infectious diseases are reported to be the main cause of death. Knowledge of the epidemiology and management of important diseases in poultry is essential in order to improve the production and health of poultry and is critical to improvement of the livelihoods of the rural poultry farmers. The resistance and survival of turkeys during Newcastle outbreaks has been observed although it requires further investigations (Butungi, 2002). If the findings are favourable, turkeys may be another poultry species which could be promoted as it fetches higher prices and its meat has less cholesterol.

With the introduction of the privatisation of farm input supply, the supply of poultry drugs, vitamins, minerals and vaccines has improved but is still limited to major urban centres. The quality of these inputs is of a low standard, especially for those that require a cold chain such as vaccines. The cost of the inputs is often high because they are packaged in volumes (such as 1000-5000 dose vaccines) that are not suitable for use by small-scale farmers. Another constraint to disease control is that the laboratory diagnostic facilities are not available in up-country areas and where they are available, they are expensive. In addition, there are very few extension workers trained and skilled in the diagnosis and treatment of poultry diseases

Lack of knowledge and skills

Although the Ugandans have kept poultry for a long time, their knowledge and skills in improved management may be limited in some cases. There are few trained, knowledgeable and skilled extension workers. Consequently the delivery of advisory services to farmers for commercial production is still weak. Improving production in rural poultry requires community participation through farmer training programmes by extension agents for increasing management skills and control of diseases as well as organising appropriate marketing channels that do not exploit the farmers.

Inadequate Capital

Like the other sub-sectors in agriculture, the poultry industry is constrained by lack of capital investment. Conventional financial institutions are reluctant to give loans to farmers. This limits the numbers that most farmers can keep and this in turn limits their ability to maximise the profit associated with larger-scale production.

Marketing

There is generally a lack of organised marketing infrastructure. Only Ugachick has a slaughter plant. This means that products on the market are unprofessionally handled, resulting in a lack of grades and standards, insufficient market information and expensive products being presented to a market dominated by low incomes and therefore low purchasing power.

Power Supply

Uganda largely depends on hydro-electric power. Following environmental changes in the region that have resulted in less rainfall and lower levels of water for the supply of hydro-electric power, there have been increases in electricity tariffs which affect the cost of production, especially for those that rely on electricity such as feed millers. Electricity supplies are also unreliable.

Availability of factory logistics

There is a difficulty in acquiring spare parts for factory implements. In most cases these have to be imported and they are taxed which makes them very expensive.

Infrastructure

There is a poor road network in both urban and rural settings. This makes it difficult to transport raw materials (eg feeds from manufacturers), DOC and finished products such as eggs or meat products.

This desk review revealed significant gaps in data regarding the poultry sector in Uganda. It is therefore recommended that more comprehensive and well designed studies be undertaken in the following areas:

- Collect accurate data on records of poultry numbers, the different species, the production systems, households and actors and their contribution in the different systems
- Assess the socio-economic contribution of the different poultry sectors to the national economy in terms of per capita contribution to GDP, the role in food security and role in the livelihoods of the people. This will enable formulation of strategies for supporting the industry to support the national development objectives for poverty eradication.
- Revision of the current policies, laws and regulations (some of which are outdated) in order to align them to current trend in the poultry industry in the world
- Undertake studies in production constraints and current marketing chains with the aim of developing strategies for improvements that will boost production
- Review and institute sustainability strategies for poultry improvement programmes that will have a long-lasting positive impact on beneficiaries especially the poor and marginalized

8.2 PROSPECTS OF THE POULTRY SECTOR OVER THE NEXT FIVE YEARS

This chapter has not yet been developed.

Annex I

Who is who (contact list)

This information has not yet been sourced.

Annex II

List of major projects – poultry sector

Over the years there have been various government and non-government interventions for poultry improvement in the country through direct government and community support programmes. These programmes have supported improved breeds, policies, research, and extension programmes, all of which have contributed to improvements in the poultry sector in the country in form of improved management systems, new technologies such as high yielding breeds, improved housing, concentrate feeding and disease control.

Major developments in the sector have been mainly supported by the private sector. Currently the largest poultry farm is a private farm (Ugachick), which has invested heavily in the production of DOC, feeds and also supports outreach programmes for farmers covering training, financing, vaccination, and marketing. Besides Ugachick, other private farms listed previously also have invested heavily in the industry and offer some form of support to their farmers.

Regarding government support, the African Development Bank has funded the National Livestock productivity improvement programme (NALPIP) over the last five years. This programme has several components that include amongst other things provision of vaccines for the control of Newcastle disease. This project has benefited the districts in the cattle corridor. However, the programme will also be supporting a comprehensive livestock census that will include poultry and will provide accurate figures about the poultry population that will enable planning for the sector. There are also other programmes with autonomous organisations such as NAGRIC, universities and research organisations such as the National Agricultural Research Organisation (NARO) which have received support from various development partners (such as DANIDA, DFID, IAEA) for research, especially on free-range poultry. Other government programmes such as the Northern Uganda Social Action Fund (NUSAF) have directly been giving support in the form of providing DOC, training and infrastructure to conflict-affected communities in northern Uganda. Unfortunately, visits and interviews with extension agents in the region indicated that these programmes have not been sustainable and have frequently disintegrated after a few cycles.

Some non-governmental organisations have supported vulnerable communities with poultry programmes such as church-based programmes in the Teso region, and the NGO Send a Cow which provides chickens and training support to communities.

Annex III

Role of poultry in household food security

Although reliable data is not available in Uganda, the importance of poultry in the national economy and its role in improving the nutritional status and incomes of the population is well recognised. Free-range (village) poultry production forms a large proportion of the poultry sector, despite the fact that it does not rate highly in mainstream economic importance because of the lack of measurable indicators of its contribution to macro-economic indices such as gross domestic product (GDP). Economic evaluation of poultry at household and national level is complicated by the multiple functions of poultry in the economy. Moreover, estimating the value of rural poultry is even more difficult than for other livestock because of the lack of reliable production data.

The economic and nutrient contribution of indigenous free-range poultry has not been evaluated but is estimated to contribute over 80% of the per capita consumption of poultry meat and eggs while the 20% is by the commercial poultry sector. In the livestock sub-sector, the poultry industry has the following outstanding attributes:

- It contributes to improved human nutrition and food security by being a crucial supplier of high quality protein in form of eggs and meat.
- It increases peoples' incomes and improves their welfare through the sale of poultry and poultry products.
- It acts as a key supplement to revenue from crops and other livestock enterprises, thus avoiding over-dependency on traditional commodities with inconsistent prices.
- It has the potential to generate foreign exchange earnings through export of poultry products to neighbouring countries. Some of the big companies have been exporting DOC and some products to Rwanda, Burundi, Sudan, Democratic Republic of Congo, and Kenya. Some of this market has been affected by scares of influenza
- Poultry is highly prized in many social-cultural functions such as dowry and festivities.

Poultry production has special advantages over other agricultural enterprises:

- Poultry requires less land than crop agriculture and other livestock enterprises. This is particularly important for peri-urban and urban farmers.
- It requires relatively smaller capital investment and is therefore suitable for disadvantaged groups such as women, youth and the disabled.
- It is less labour demanding.
- It has high feed conversion rates. You need 2 kg of feed to produce 1 kg of meat compared to 7 kg of feed to produce 1 kg of beef.
- It has short generation interval and therefore quicker returns on investment. Broilers are ready for market within 6 to 8 weeks. Layers start producing eggs at 19 to 23 weeks of age.
- Poultry products are accepted in many cultures and religions.
- Poultry droppings can be recycled as organic fertilizers for sustainable crop production, or as a source of non-protein nitrogen feeds for ruminants (cattle, goats and sheep).
- It converts cheap agro by-products such as maize bran into high value meat and eggs.
- It stimulates growth of other related industries such as feed milling, baking industry and building industry, thus contributing to creation of employment.

Many of the above indirect benefits are often not quantified and therefore do not feature in the mainstream economic contribution by the poultry sector.

Village poultry are particularly valuable assets to local populations as they contribute significantly to food security, poverty alleviation and the promotion of gender equality, especially in disadvantaged groups in rural Uganda. Management of poultry has been associated with women and children for various historical and social factors. Women and children dominate most activities except for shelter construction and marketing. Family poultry is easily managed within homesteads, and in rural areas this is the main resource where women farmers have access to benefits accrued.

While poverty reduction interventions that the rural poor especially women and children can profitably undertake are difficult to identify, there is a high positive impact on women's and children's lives recorded in impact studies of the various poultry models developed and applied in projects in different regions in developing countries such as Bangladesh (Alam, 1997). Improving the village chicken production systems in Uganda would result in increased opportunities and more equitable distribution of food and income within and amongst households, especially in villages. Chicken products are among the few agricultural products directly accessible to women in rural areas and increased food production from chickens will improve household food security and is often easily combined with other household activities such as gardening because of the proximity of the chickens to homesteads.

In commercial poultry production, poultry contributes significantly to the incomes of both urban and suburban farmers. It is quite common for urban dwellers to keep poultry from which they derive additional income in addition to other sources. On the other hand, the big commercial producers derive most of their income from the sector as their primary business.

Annex IV

Pictures

Village primary markets dealing in different poultry species



Transportation of local chickens from village primary markets to urban markets



Transportation and sale of commercial poultry



Free-range birds in various environments interacting with other animal species

Annex V

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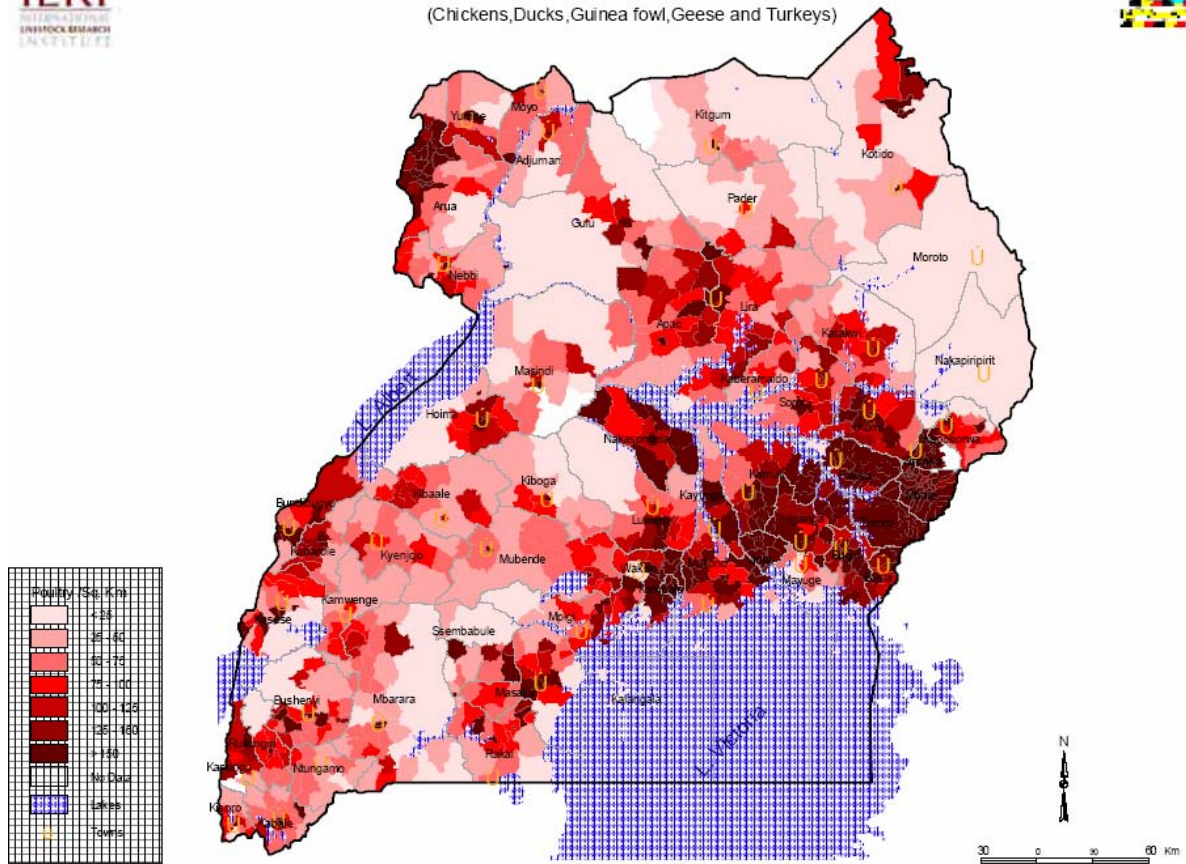
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Annex VII

Maps



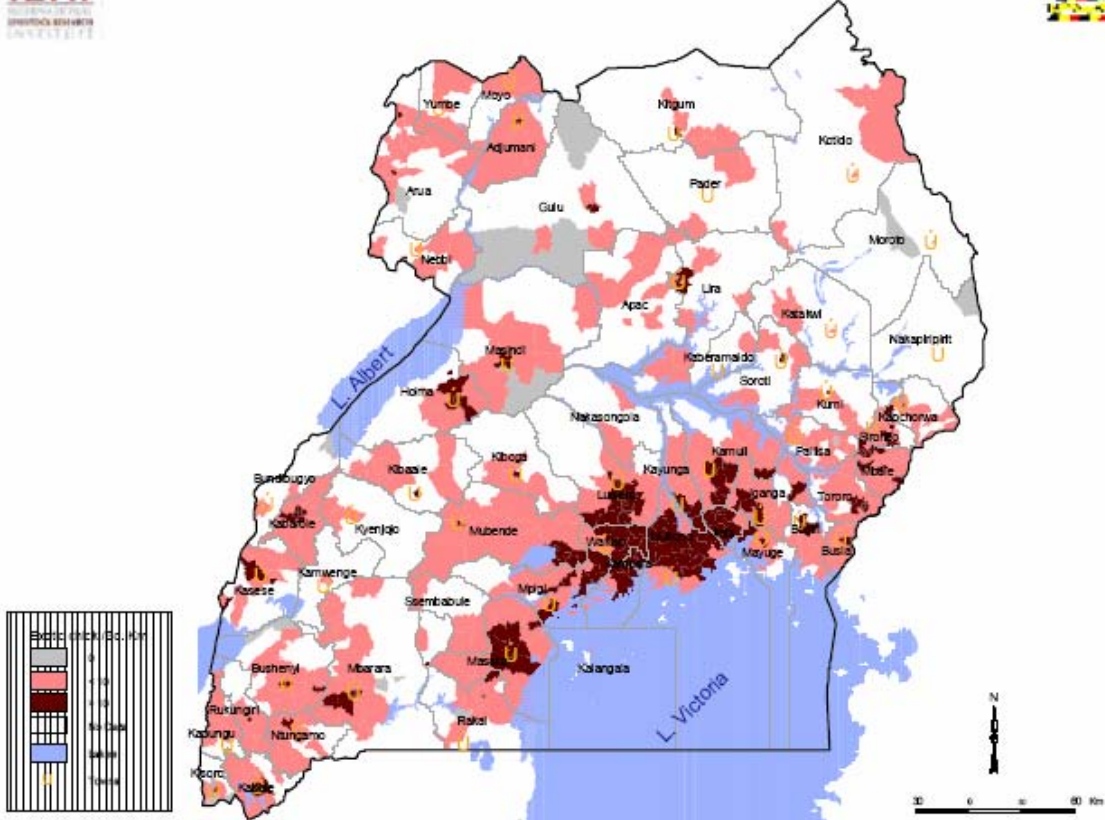
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(Chickens, Ducks, Guinea fowl, Geese and Turkeys)



Source: UBOS/ILRI



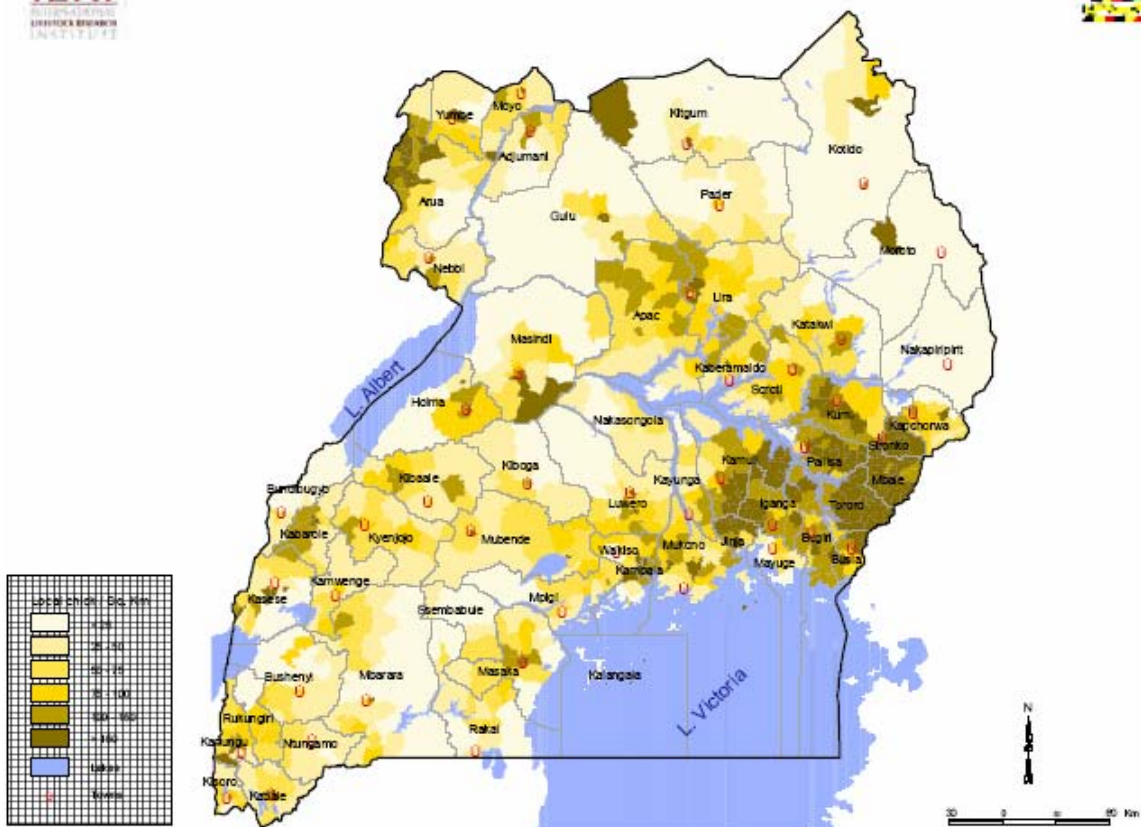
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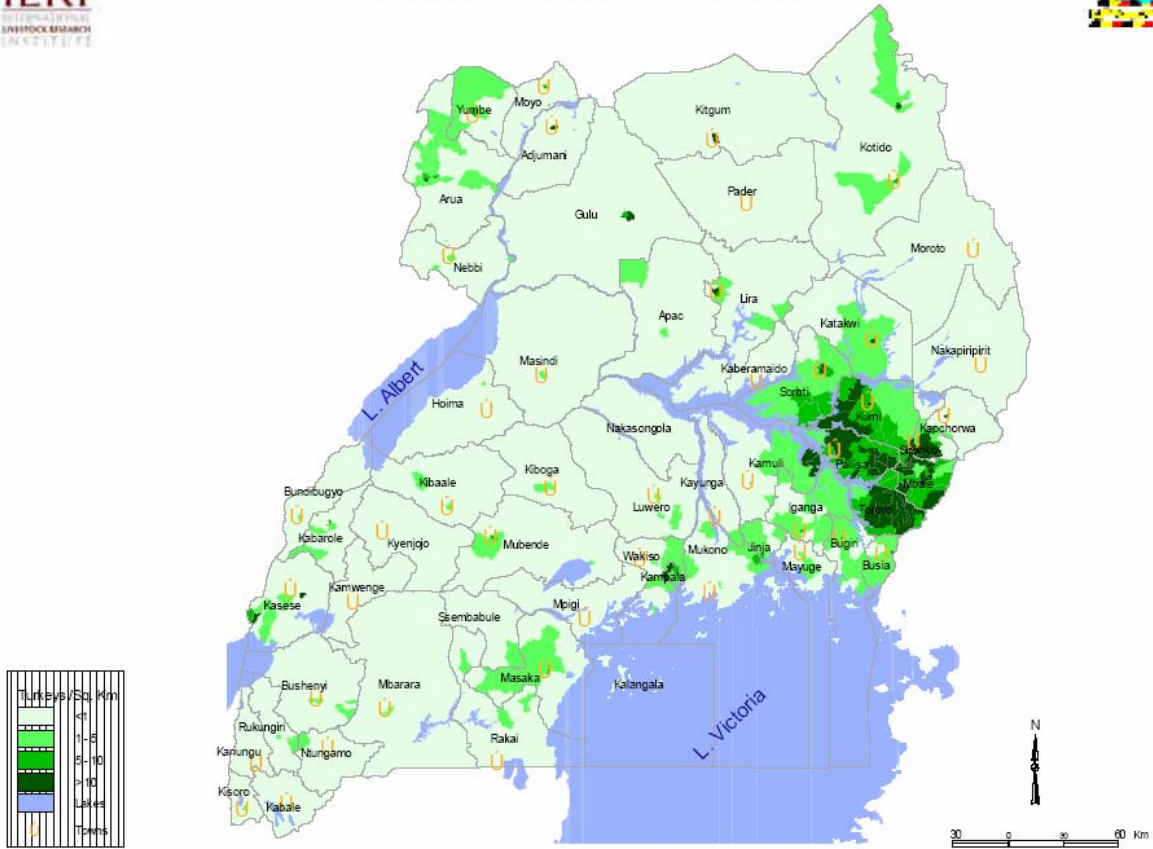


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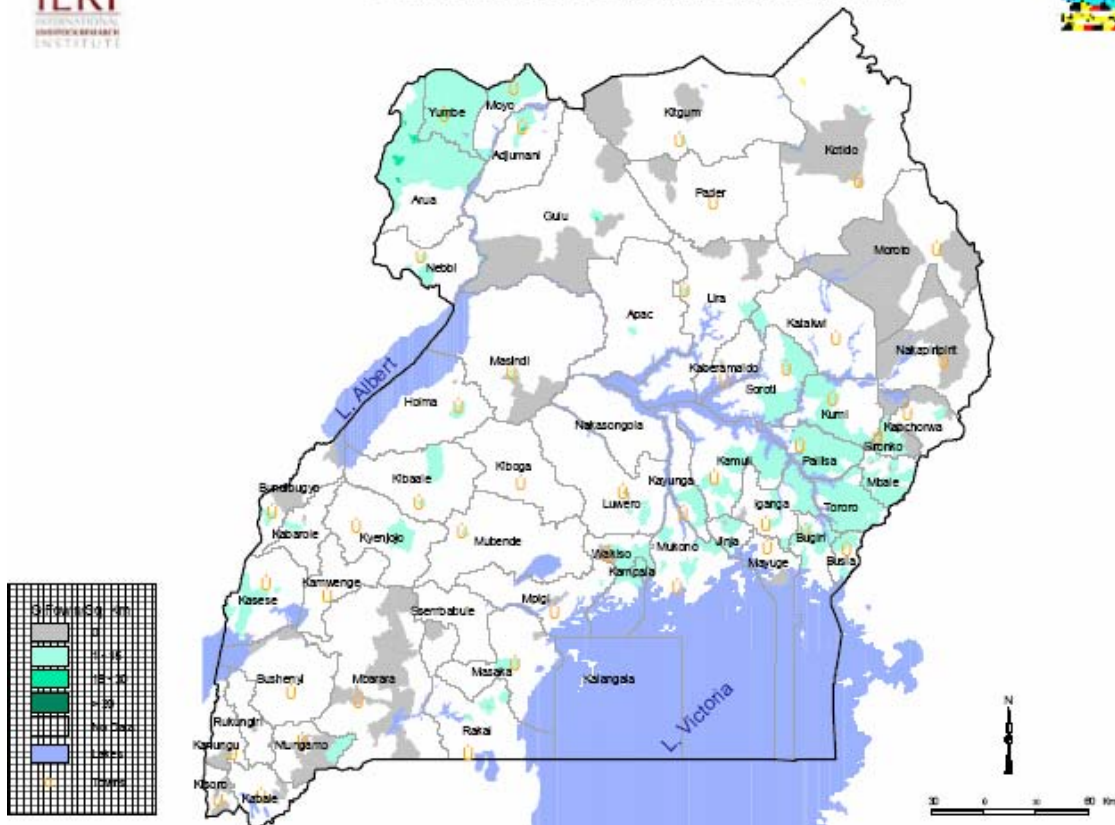




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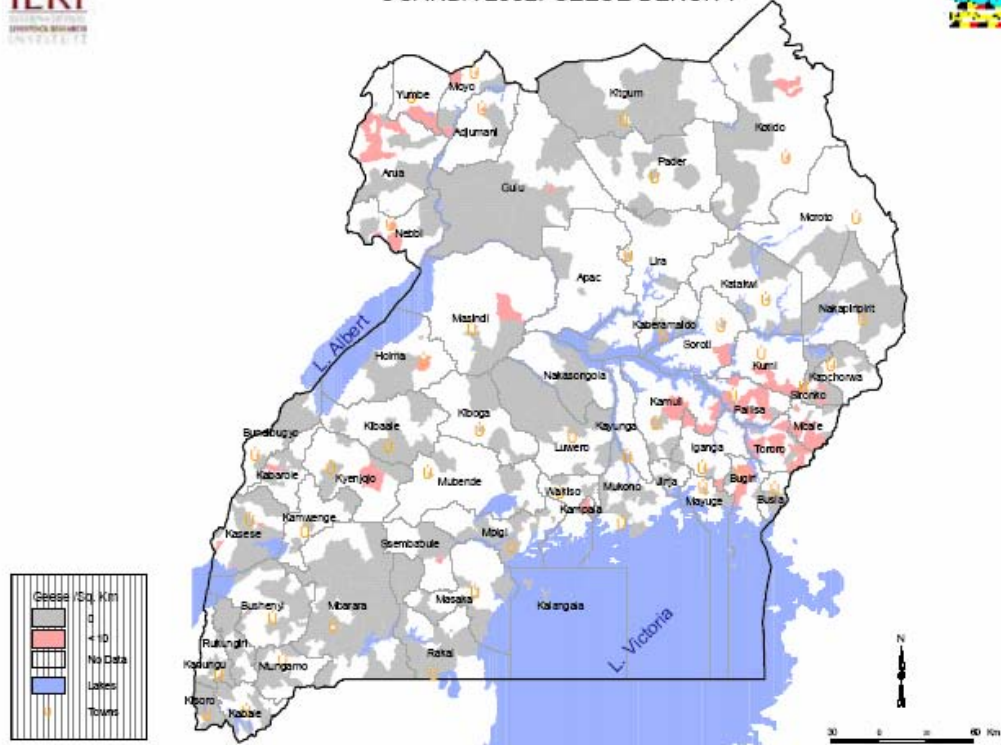


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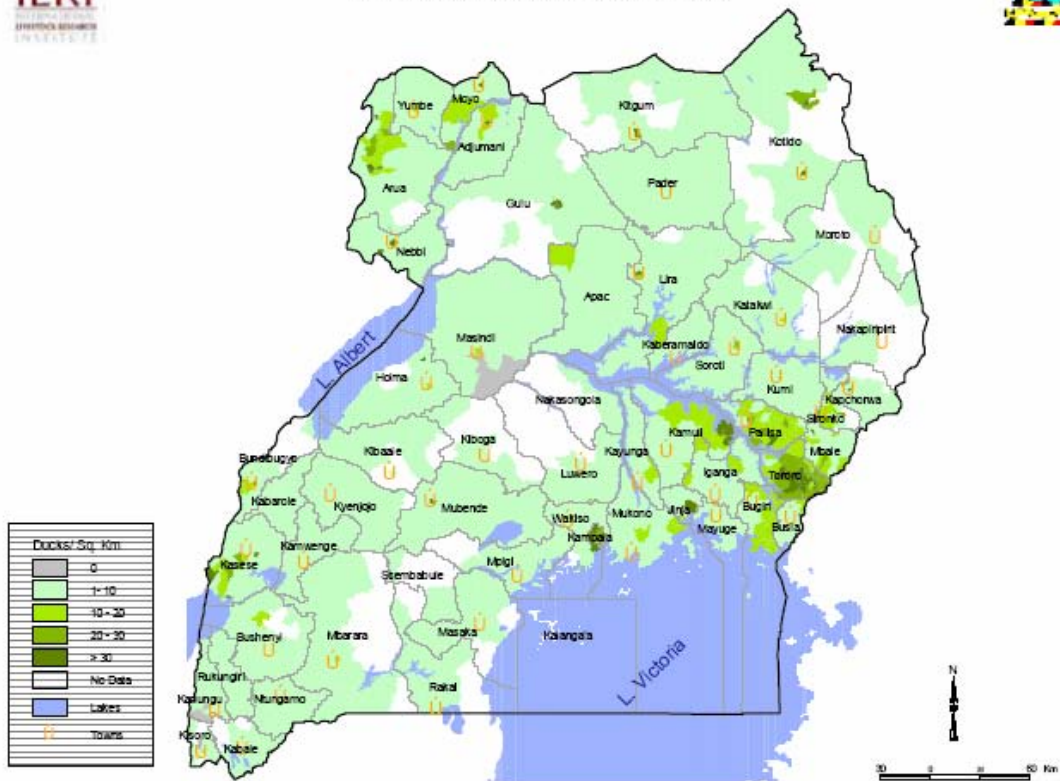




UGANDA 2002: GEESE DENSITY



UGANDA 2002: DUCK DENSITY



Source: Agricultural module of the Uganda census 2002. Reproduced with permission from ILRI and UBOS