



IOM International Organization for Migration

AVIAN AND HUMAN INFLUENZA LIVELIHOOD STUDY AMONG MIGRANTS IN KENYA

HEALTHY MIGRANTS IN HEALTHY COMMUNITIES

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Cover image: Instructions on the use of personal protection equipment at the IDSR AHI Training in Nairobi. IOM 2007

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EXECUTIVE SUMMARY

Background

This study sought to assess the impact of an avian influenza alert or outbreak on livelihood and food security among poultry and poultry products' transporters, traders and handlers in Kenya. This was done through mapping out migrant populations involved in poultry, identifying the knowledge, practices and existing gaps, and assessing business income from poultry. The study also addressed alternative income-generating activities and coping mechanisms available to the study population in case of an Avian and Human Influenza alert or outbreak.

Study methods

Review of literature identified gaps in policy and related studies. The field work was carried out in the Nairobi area, where 119 respondents were interviewed, and in Turkana District, where 51 respondents took part in key-informant interviews. Focus group discussions and a questionnaire were also utilized in the study.

Key findings

The results of the study indicate that despite limited poultry trade in Turkana, the poultry and poultry products' business is increasing in importance, especially in the main towns of Lodwar, Kakuma and Lokichogio. Most of the poultry and poultry products are transported from West Pokot and Trans-Nzoia districts, over distances ranging from 200 to 400 kilometres. In Nairobi, poultry trade is high, with poultry and poultry products being brought in from Kitui, Kiambu and Makuyu, but also from as far as Sotik and Makindu.

The study found that most poultry dealers in the Nairobi area and Turkana have heard of Avian Influenza (AI), with most of the dealers in Turkana having had AI awareness, prevention and control explained to them by a medical or livestock professional. In Nairobi, the training levels were much lower, with only 30 per cent of the dealers having received any AI training. We associated this difference with the high number of dealers and poultry in the Nairobi area relative to Turkana. Unsurprisingly, about 50 per cent of Nairobi poultry dealers reported not having put in place any measures to protect themselves from AI. In Turkana, the traders and handlers indicated they had all taken measures to protect themselves.

The study further showed that livestock movement directives, as stipulated in various veterinary service acts, are openly flouted in the case of poultry. For instance, humans and poultry are transported in the same vehicles, without any sanitation measures taken to separate the two. However, there has been some improvement since the 2005 Avian Influenza scare.

Poultry contributes considerably to food security and livelihoods, and millions of Kenyans are involved in this economic activity across the country. Moreover, most poultry traders and handlers in Nairobi rely on poultry as their main source of income. Monthly poultry earnings range from an average KES 2,700 from transportation of live birds, to KES 8,000 from handling, to KES 38,000 from trade. Egg businesses earn KES 6,600 from transportation and KES 19,000 from trade on average. Average monthly earnings in Turkana are KES 13,000 for transport of live birds and KES 12,000 for egg sales. An Avian Influenza poultry ban or alert would therefore severely impact the livelihoods of most poultry dealers in Nairobi and surrounding areas. However, the impact would be less severe in Turkana, where poultry businesses is much lower and is often combined with other economic activities.

Despite the 2005 Avian Influenza alert, most poultry dealers have not considered alternative livelihoods, for a variety of reasons. Over 40 per cent of Turkana respondents and 50 per cent of Nairobi respondents have secondary schooling. The poultry dealers are mainly 26-35 years (50%) and largely male (72%). Approximately 20 per cent of the Nairobi traders are members of various poultry business associations, while 10 per cent of the transporters have obtained business credit from commercial banks or farmer/trader associations.

Recommendations

The study recommends the following:

1. The creation of a poultry, poultry products and poultry dealers' census and database in Kenya to establish the poultry population and to enhance contingency planning in case of Avian Influenza.
2. Increased funding for training poultry dealers in Avian Influenza awareness and prevention measures, and for capacity building in bio-security issues. The Ministry of Livestock and Fisheries Development and the Food and Agriculture Organization would be the appropriate agencies to lead in these areas.
3. Capacity building for migrants, including transporters, on bio-security issues such as safe transportation and handling of poultry and poultry products. The International Organization for Migration, in association with other agencies, could undertake this activity in line with its mandate of promoting humane and orderly migration.
4. Support from relevant agencies in strengthening poultry business associations at an early stage, so that these bodies in turn can support poultry dealers in Avian Influenza prevention, or in the case of an outbreak.
5. The inclusion of poultry traders, handlers and transporters in the government's compensation plans in case of an Avian Influenza ban or cull.

INTRODUCTION

Background

This study forms part of the national and international collective response to the Avian Influenza pandemic. It falls under the UN System Consolidated Action Plan for Avian and Human Influenza framework, where agencies, funds and programmes pursue actions that link up with government initiatives to address Avian and Human Influenza. The study specifically focuses on the livelihoods of poultry and poultry products' transporters, traders and handlers. These categories comprise mobile populations moving with poultry from different points and parts of the country across district borders.

The International Organization for Migration (IOM) was established in 1951 and is the leading intergovernmental organization in the field of migration. The organization works closely with governmental, intergovernmental and non-governmental partners, and boasts 122 member states. Kenya became one of the first African states with IOM membership when it joined in 1985.

IOM is dedicated to promoting humane and orderly migration for the benefit of all, which it does through providing services and advice to governments and migrants. The organization works to help ensure the management of migration, to promote international cooperation on migration issues, to assist in the search for practical solutions to migration problems and to provide humanitarian assistance to migrants in need, including refugees and internally displaced people. Moreover, the IOM constitution recognizes the link between migration and economic, social and cultural development, as well as to the right of freedom of movement.

According to the International Organization for Migration, migration is the movement of a person or group of persons from one geographical unit to another across an administrative or political border, with the intention of settling indefinitely or temporarily in a place other than their place of origin. It includes the movement of refugees, displaced persons, and uprooted people as well as economic migrants. Internal migration is movement within the same country, from one administrative unit, such as a region, province, or municipality, to another (<http://www.iom.int>). Consequently, migrants are people who make choices about when to leave and where to go, even though these choices may be determined by exigent factors such as labour, trade, family, security and health. The focus population of this study, poultry transporters and traders, fall into the classification of internal migrants.

Avian Influenza (AI), or bird flu, refers to an infectious disease caused by viruses that normally infect birds. AI viruses are highly species-specific, but have, on rare occasions, crossed the species barrier to infect humans. In domestic poultry, infection with AI viruses causes two main forms of disease, distinguished by low and high extremes of virulence. The low pathogenic form commonly causes only mild symptoms (ruffled feathers, a drop in egg production) and may easily go undetected. The highly pathogenic form is far more dramatic. It spreads rapidly through poultry flocks, causes disease affecting multiple internal organs, and has a mortality rate that can approach 100 per cent, often within 48 hours. The current outbreaks of highly pathogenic AI, which began in South-East Asia in mid-2003, are the largest and most severe so far and were caused by the H5N1 virus strain (www.who.int/csr/disease/avian_influenza).

A 2008 Food and Agriculture Organization (FAO) report indicates that H5N1 highly pathogenic Avian Influenza has affected 61 countries in Asia, Europe and Africa since the beginning of the epizootic in animals. Of these, 30 experienced outbreaks during 2007, five of which reported outbreaks for the first time: Bangladesh, Benin, Ghana, Saudi Arabia and Togo. Except for a few outbreaks in wild birds (mainly in Hong Kong SAR and Europe), most of the confirmed outbreaks have been in domestic poultry, including diverse species such as chickens, turkeys, geese, ducks and quail (FAO, 2008). Other countries that have reported cases in Africa since 2006 include Burkina Faso, Cameroon, Cote d'Ivoire, Niger, Sudan and Djibouti (FAO, 2007). The World Health Organization reported 74 human cases (49 fatal) in seven countries in 2007: Cambodia, China, Egypt, Indonesia, Lao People's Democratic Republic, Nigeria and Vietnam (FAO 2008).

Rationale

The current study is overdue. Poultry is the major expendable asset for the majority of Kenyan households. It provides cash and protein, supporting the livelihoods of millions of Kenyans in all parts of the country. It is especially significant to rural low-income households in areas of high population concentration. Equally important is the role of poultry in the trade chain, from transporters to traders and handlers, thousands of whom rely on poultry, either wholly or in part, to support their families. Any threat to the poultry business, therefore, threatens the lives of thousands of Kenyans.

The economic cost of Avian Influenza (AI) poultry-related deaths, culling, and export and marketing bans on livelihoods of local communities could be enormous. In countries where AI has struck, the effect has often included devastating economic losses affecting the entire poultry industry, including

small-scale producers and traders, who often have limited alternative livelihoods. Poultry also plays an important role in providing quick income for poultry keepers and traders.

The Rift Valley lakes in the Eastern Africa Region hold some of the most significant wetlands in the world. The region supports internationally important assemblages of plants and animals, which are a vital source of livelihoods and water. According to a Food and Agriculture Organization report, the area is about seven million square kilometres, of which 4.5 per cent is open water/wetlands, and is frequented by resident and migratory wetland birds (FAO 2005). The Nile, the longest river in the world, also influences the flyways.

Kenya's coordinates, which lie directly in the path of migratory birds' annual flyways from Europe to South Africa, render the country vulnerable to Avian Influenza (AI) outbreaks, as it offers several stop-over points for birds wishing to water. The migratory birds mix freely with local water birds, and local water birds mix freely with domestic poultry. Kenya is, therefore, categorized as a high-risk country for H5N1 AI. The threat of AI infecting indigenous wild birds and domestic poultry, and the danger of transmission of the virus from domestic birds to humans, is real. It is indeed alarming that two countries in the region, Sudan and Djibouti, have already presented cases of AI.

As in the case of birds, human migration is a potential danger for spreading Avian Influenza (AI). Mobile populations such as labour and agricultural migrants, traders, and transporters who often move with poultry and poultry products, are all in danger of contracting and spreading diseases. This study concentrates on poultry and poultry products' transporters, traders and handlers as one of the critical categories in the spread of AI among these migrant communities.

The case for reparation is currently under consideration in several countries. Although the potential for the avian H5N1 virus to cause a deadly global human pandemic has convinced the international community to mobilize resources to implement prevention, eradication and some compensatory measures in the poultry industry, little research has been conducted on the impact of these preventive measures on the poultry industry and on the livelihoods of smallholder farmers at country and regional levels (Liangzhi You and Xinshen Diao 2006). Even less attention has been paid to non-producer populations who are dependent on the industry. Among the few studies that have been carried out on Avian Influenza (AI) and the poultry industry in Kenya, the same principle holds. This study will thus contribute towards the mapping, knowledge base and economic impact of an AI-related ban on transporters, traders and

handlers. It will also provide additional useful information by bringing out the omissions and gaps in the current approaches that address AI.

Objectives

The overall objective of this survey is to assess and analyse the impact of an Avian Influenza (AI) alert or outbreak on livelihood and food security among poultry and poultry products' transporters, traders and handlers in Kenya. The specific objectives are:

- to map out migrant populations involved in poultry product trading, transportation and handling in Kenya and address their specific needs in relation to Avian and Human Influenza (AHI);
- to identify and analyse the knowledge, practices and existing gaps related to AHI among migrant poultry traders, transporters and handlers in Kenya;
- to identify and assess the impact of an AHI alert or outbreak on food security and the livelihoods of these target migrant populations in the country;
- to identify alternative income-generating activities and coping mechanisms available to this population in case of an AHI alert or outbreak;
- to recommend areas requiring intervention and methods of implementation.

REVIEW OF LITERATURE

Livelihoods

The term “livelihoods” refers to the total sum of ways people make a living. Considering the most common definitions, a sustainable livelihood can be defined as people’s capacity to maintain a living by surviving shocks and stress and enhancing their quality of life on a long-term basis, without jeopardising the livelihood options of others (Chambers, 1987).

Several agencies and institutions, including the Food and Agricultural Organization, OXFAM and the UK Department for International Development (DFID), have developed frameworks to analyse sustainability of livelihoods. Most of these frameworks are reasonably similar, as are the indicators used to describe people’s assets. DFID’s conceptual framework draws attention to measured changes in the different factors that contribute to livelihoods: five capital assets (human, social, financial, physical and natural or environmental), institutional process and organizational structure, resilience or vulnerability of livelihoods, livelihood strategies and outcomes (Pasteur, 2001). Numerous researchers, including Scoones (1998), Ashley (2000) and Pasteur (2001) , have used DFID’s framework as an analytical tool for addressing, monitoring and evaluating various livelihood resources at the micro and macro level, because of its versatility of application on different scales such as individuals, households, groups, villages, regions or nations. This study has considered the five capitals, particularly human, financial and natural capital, in regard to poultry dealers.

Development and poultry status in Kenya

Kenya has a population of approximately 35 million, of whom 80 per cent live in rural areas. The country has an income poverty level of 52 per cent. Nairobi, one of the focus areas for this study, has an estimated poverty level of 29.9 per cent (United Nations Development Programme, 2006). For persons living below a dollar a day, every extra cent and every source of protein is critical. Poultry fills this gap for millions of Kenyans.

Turkana has a population of 509,286, with a mean density of seven persons per square kilometre. It has varied economic activities, but approximately 75 per cent of the population are nomadic pastoralists. Poverty rates are high in the district, with approximately 62 per cent of the population classified as absolutely poor, rising to 72 per cent in Central Division (Central Bureau of Statistics Kenya). Natural calamities such as droughts, insecurity, cattle rustling and high illiteracy (40%) and unemployment (16.2%) are among

the major causes of the widespread poverty (Kenya Food Security Meeting, 2006).

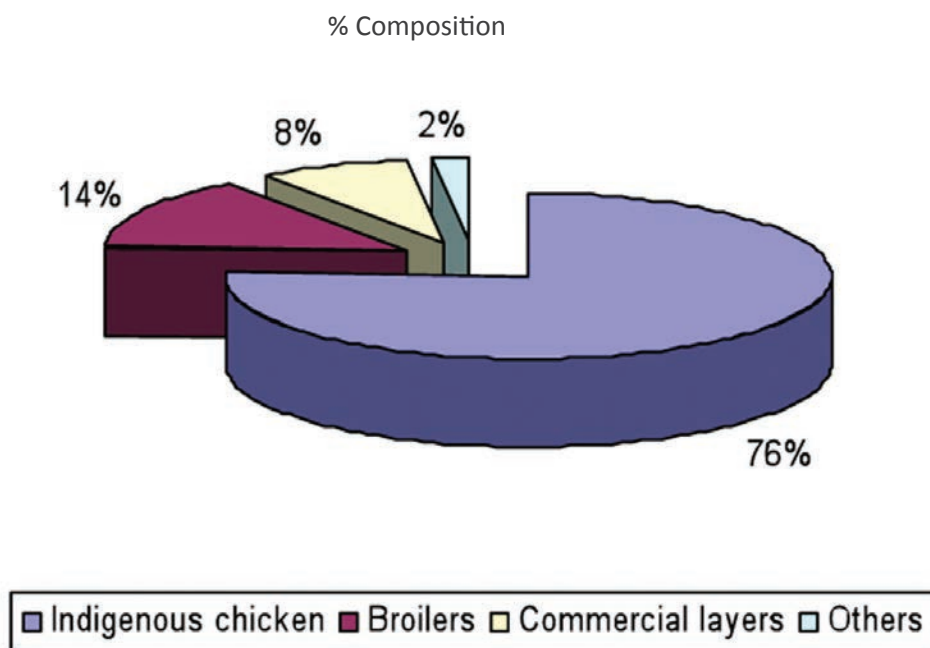
Kenya has an estimated poultry population of 28 million birds. According to official records, 76 per cent of the country's poultry population consists of free-range indigenous chicken, 13.2 per cent consist of broilers, while 8.6 per cent are commercial layers. Another 2.2 per cent is made up of other poultry species like ducks, turkeys, pigeons, ostriches, guinea fowls and quails, which are becoming increasingly important. The mean annual poultry meat production is about 19,000 metric tonnes, while egg production is 1,255 million eggs (Animal Production Annual Reports-2005, Ministry of Livestock and Fisheries Development). The table below shows poultry production by province and poultry type.

Table 1: Kenya's poultry population by province

Province	Layers	BroilerS	IndigenousS	OtherS	Total
Rift Valley	437,140	257,790	5,622,500	128,090	6,445,520
Nyanza	230,920	96,570	5,682,740	46,840	6,057,070
Central	1,084,950	1,437,270	1,967,180	49,070	4,538,470
Eastern	164,950	112,640	3,864,760	22860	4,165,210
Western	113,110	17,770	2,644,150	236,430	3,011,460
Coast	230,000	637,320	1,947,060	94,240	2,908,620
Nairobi	188,100	1,607,800	141,400	10000	1,947,300
North Eastern	300	200	165,000	-	165,500
Total	2,449,470	4,167,360	22,034,790	587,530	29,239,150

Source: Animal Production Annual Reports-2006, Ministry of Livestock and Fisheries Development

Figure 1: Kenya's poultry population



Thus, the poultry subsector is one of the most important livestock enterprises in rural poor households, as it directly supports the livelihoods of many Kenyans. The subsector is a major source of readily available protein in the form of eggs and meat, and a source of cash for 90 per cent of rural households (Mbugua, P.N., 1990).

Avian and Human Influenza policy

In October 2005, the Government of Kenya set up a multi-sectoral National Avian Influenza Task force to deliberate and advise on the way forward in dealing with the threat of Avian Influenza (AI). The task force drew up a National Action Plan (NAP) with guidelines from the Food and Agriculture Organization and World Health Organization. The goal of the NAP is to have in place an adequate and effectively coordinated emergency preparedness plan and response to AI and pandemic flu.

The task force has six sub-committees:

- Epidemiological Surveillance Committee,
- Information, Education, Communication and Social Mobilization Committee,
- Case Management Committee,
- Laboratory and Research Committee,
- Infection and Control Committee,
- Coordination and Resource Mobilization Committee.

In addition, a secretariat of the National Task Force has been put in place. Both the Ministry of Health and the Ministry of Livestock and Fisheries Development have teams in place dealing with the specific coordination of Avian Influenza (AI) activities in their respective departments. They also have reasonable capacity to handle AI, although the technical capacity needs strengthening. The Food and Agriculture Organization and Government of Kenya are also implementing an Early Detection of AI Project.

The legal policy framework regulating or coordinating the poultry industry in Kenya is quite weak, and is only mentioned briefly in the Animal Diseases Act, CAP 364 of the Laws of Kenya . The act regulates the movement of poultry for disease control. The food, drugs and chemical substances Act, CAP 254 of the Laws of Kenya, deals with poultry as a food, stipulating how it should be handled, and also addresses the health of the handlers. The important aspects of policy in relation to Avian Influenza (AI), include movement (permits to control diseases) and compensation in case of culling due to disease outbreaks. Thus, it is a requirement that all livestock, including poultry, obtain a movement permit from the Department of Veterinary Services before being transported across districts. Moreover, it is also a requirement that livestock, including poultry, be transported in separately from humans. These issues need a more coordinated and efficient implementation by the various responsible agents. In

regard to compensation, the case for poultry and AI is not spelt out specifically, and has not been applied at any time.

There is currently an initiative to develop a poultry production policy by the Ministry of Livestock and Fisheries Development spearheaded by the Livestock Production Department with a policy task force already in place. The task force aims at producing a draft policy by mid 2008.

Socioeconomic impact of Avian Influenza

The few socioeconomic studies carried out in regard to the effect of Avian Influenza (AI) indicate the high volatility of the poultry industry to an AI scare. A recent survey in the country showed that poultry plays an important role in the livelihoods and food security of rural smallholder communities, and that an AI scare in 2005/2006 caused severe losses in jobs, poultry production and sales (Kimani et al, 2006). The study revealed a decline in orders for day-old chicks, while contract farmers had their payments delayed. Some farmers culled their layer flocks five months before they were due.

A marketing study at the Kenyan coast showed individual poultry keepers utilize three marketing nodes: at home, unsolicited brokers, or invited brokers (Mathuva 2005). During market days, poultry keepers have opportunities to sell to brokers who are positioned on the market access paths and/or to market traders based at the market. The tendency is to sell to brokers so as to offload the burden of waiting for market day and transportation of the chicken to the market.

The coast study further showed that prices vary by chicken size, season and sex. The price determination mechanism is not according to a calibrated scale – there is a tendency to weigh by lifting and assess by flesh composition of the chest. During harvest, the prices are higher as a smaller proportion of households are willing to sell. This also coincides with the time when chickens are relatively healthy. The number of birds in the market is higher during the dry period. Such times also coincide with disease outbreaks and severe food scarcity. Poultry keepers market their birds for two reasons – to address household financial needs, and if need be, offload the flock so as to shift the mortality burden .

In West Africa, the majority of rural households keep poultry. Although the birds are raised mainly for consumption purposes, many poor smallholders – particularly women – also use their poultry production to generate income for investing into other agricultural activities or their children's schooling. Medium-

scale production units are also, to a varying extent, found throughout the region. Regardless of the type and scale of poultry production within a given household, an outbreak of Avian Influenza, as well as initiatives to prevent such outbreaks, would have profound consequences for poultry production, commercialization and consumption within the region (West Africa Poultry Network, 2006).

According to a Food and Agriculture Organization (FAO) report, the future of small-scale poultry producers and traders is in the balance. Estimates based on data from Vietnam, Indonesia, Thailand and the Philippines indicate that poultry production will leave out small-scale producers and traders in the future, when the poultry sector is likely to contain live-poultry markets (wet markets) with upgraded infrastructure and better biosecurity, moved outside cities, and eventually, a smaller number of wet markets with fewer traders holding licenses.

The FAO report further states that this is already the case in Hong Kong, which has been successful in upgrading the biosecurity of wet markets; consequently the number of traders holding licences is decreasing. Centralized slaughtering takes place in large slaughterhouses, with sales through a larger number of supermarket outlets in cities, and there are fewer small producers and fewer traders, with more stringent inspection of their premises. Small commercial producers will be required to register for production licences and small traders for trading licences, contingent upon meeting certain conditions.

Village chicken production in Kenya has great potential for provision of poultry meat, eggs and cash to rural communities. However, the occurrence of diseases to which they are highly susceptible has been a major hindrance to the full exploitation of this potential. A study by Njue et al (2001) on diseases affecting poultry in two districts in Kenya (Kiambu and Makueni) showed that predominant diseases in descending order were: Newcastle disease, Salmonellosis, flea infestation, Helminthiasis and Coccidiosis. More than half of the farms were infested with fleas for the period of study. Other diseases diagnosed were fowl pox and nutritional deficiencies. The same study concluded that the productivity of village chickens is likely to be improved through appropriate disease control strategies that involve community participation.

METHODOLOGICAL APPROACHES AND PRACTICES

The research team concentrated on two districts selected for the study. Turkana District is one of Kenya National Action Plan Avian Influenza (AI) priority areas. The district also borders Sudan, a country that has already presented cases of AI. Moreover, it has a high migrant community of about 94,680 refugees (Office of the United Nations High Commissioner for Refugees, 2005), of whom many are mobile within Kenya and even across the border.

The Nairobi area is the epicentre of both external and internal migrants, with movement of poultry fundamental to their migration. It is also the country's leading market in poultry trade and consumption, due to its high population concentration of approximately 3 million people. Kakamega District, formerly proposed due to its leading role in small-scale poultry trade and transportation, was left out due to time and financial constraints.

Three main tools were utilized for data collection in the field. Key informant interviews were carried out in both Nairobi and Turkana districts with leading industry players. The interviewees included the chairperson of Kenya Poultry Stakeholders Association, Nairobi- and Turkana-based staff from the Ministry of Livestock and Fisheries Development, and leading poultry traders and transporters in both areas. The discussions with the key informants helped establish the locations and markets with high concentration of poultry and poultry products' transporters, traders and handlers.

Focus group discussions were held in both study areas. In Nairobi, group discussions were held with transporters at the Machakos Country Bus Station and in Wangige market. In Turkana, group discussions were held with migrant communities and traders in Lokichogio and Kakuma. The focus group discussions helped bring out the bigger picture in poultry trade, transport and handling, especially for issues that were difficult to capture through individual interviews.

A questionnaire containing both structured and semi-structured questions was administered in both Nairobi and Turkana District. While a sample size of 35 was proposed in each category and town, the figures differed considerably depending on availability of interviewees. A total of 212 questionnaires were administered in seven major markets in Nairobi and surrounding areas and four markets in Turkana District. Some six supervised enumerators were involved in

the interviews, three in Nairobi and three in Turkana.

Interviewees were selected at two levels. Firstly, markets with a high concentration of traders, transporters and handlers were identified. At the selected markets, individual interviewees were identified, with a deliberate effort to skip specific number of traders or handlers where large numbers were available. Transporters posed the greatest challenge, as they are generally mobile. In most cases, all available transporters were interviewed. Sometimes transporters were interviewed at off-loading points that were some distance from the markets or bus stations.

Various sites around seven main markets were visited for interviews in Nairobi. These were Wangige Market, Pangani, Machakos Country Bus Station, City Market, Kariokor, Burma and Maziwa markets. Four locations were visited in Turkana District. These were Lokichogio, Kakuma town, Kakuma refugee camps and Lodwar.

There was a deliberate attempt to include the various socioeconomic strata by including various categories of traders, handlers and transporters. Large-scale industry players were not included as part of the study, as the focus was on internal migrants, and time and resources were limited. Data was consequently entered and analyzed in SPSS.

FIELD FINDINGS AND DISCUSSIONS

Overview

This section presents the major field findings. Descriptive statistics are presented to show the respondents' demographics, mapping of migrant populations, knowledge of Avian Influenza, and alternative livelihoods. A quantitative analysis shows the revenue, costs and profits made by transporters, traders and handlers dealing in poultry and poultry products in Nairobi and Turkana District.

The study sample comprised 119 poultry dealers in Nairobi and 51 dealers in Turkana. Women made up 26 per cent of the dealers in Nairobi and 22 per cent in Turkana. Traders were most accessible and made up 48 per cent of the respondents in Nairobi and 67 per cent in Turkana. It is noteworthy that many traders double as transporters. The respondent and gender categories are shown in Tables 2 and 3 below.

Table 2: Respondent category and proportion

Respondent Category	Nairobi		Turkana	
	Frequency	%	Frequency	%
Transporter	40	33.6	4	7.8
Trader	57	47.9	34	66.7
Handler	22	18.5	13	25.5
Total	119	100.0	51	100.0

Table 3: Gender categories by proportion

Respondent Category	Nairobi		Turkana	
	Frequency	%	Frequency	%
Male	93	78.2	29	56.9
Female	26	21.8	22	43.1
Total	119	100.0	51	100.0

FIELD FINDINGS AND DISCUSSIONS

In order to aid in gauging the ability of respondents to adjust to alternative livelihoods without adverse consequences in case of an Avian Influenza poultry ban, the study sought the education level, age of respondents and dependency burden. Most of the poultry dealers fall into the category of under 35 years of age, with over 40 per cent having high school education. Approximately 60 per cent of the Nairobi respondents support zero to three family members, while the same proportion supports four to eight family members in Turkana District.

Tables 4 and 5 show the proportion of respondents by education level and by age respectively, while Table 6 shows the dependency load.

Table 4: Education category by district proportion

Education	Nairobi %	Turkana %
University	0.8	3.9
Certificate-Diploma college	5.0	5.9
High School	53.8	41.2
Primary School	40.3	45.1
No formal education	-	3.9
Total	100.0	100.0

Table 5: Age category by district proportion

Age	Nairobi %	Turkana %
Up to 25 years	14.3	23.5
26 - 35 years	51.3	39.2
36 - 45 years	25.2	31.4
Above 45 years	9.2	5.9
Total	100.0	100.0

Table 6: Dependency – family members dependent on respondent's income

Family Members	Nairobi %	Turkana %
0-3	59.7	27.5
4-8	37	60.8
Over 8	3.4	11.8
Total	100.0	100.0

Mapping of poultry transporters, traders and handlers

The study sought to establish the locations of major poultry trade and movement. It recognizes that specific areas are classified as medium-risk areas, while other parts of the country are classified as high-risk areas. The impact of a poultry ban is likely to be of different magnitude in the two areas. The maps below show the medium and high-risk areas, and it is worth noting that both Nairobi and Turkana fall into the high-risk areas.

Approximately 40 per cent of the transporters interviewed regularly deal with local chicken, while 35 per cent of the transporters regularly move eggs. Most traders sold local chickens, while equal numbers handled similar numbers of local chickens, broilers and cull layers. There are hardly any egg handlers that are separate from the traders and transporters, as shown in Table 7 below.

FIELD FINDINGS AND DISCUSSIONS

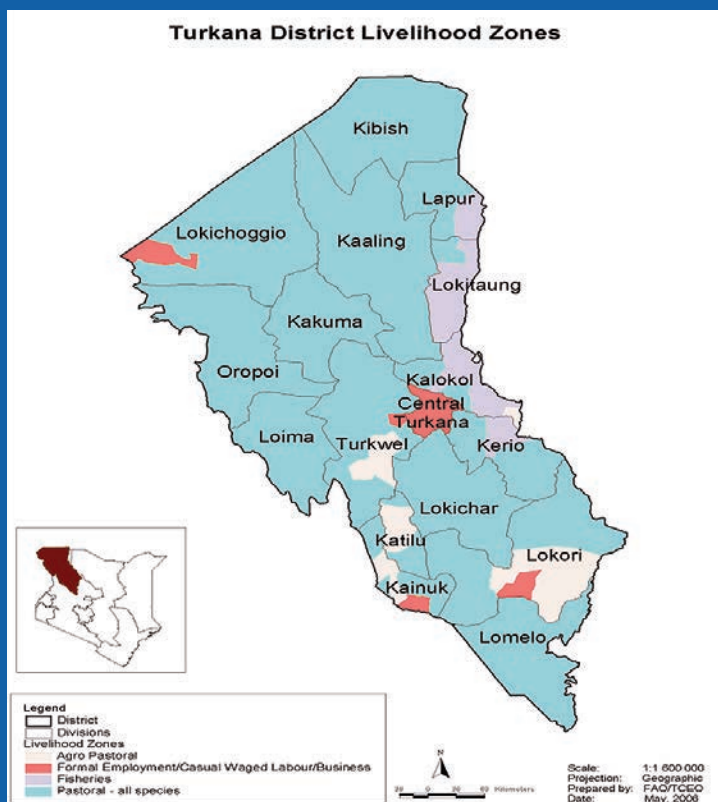
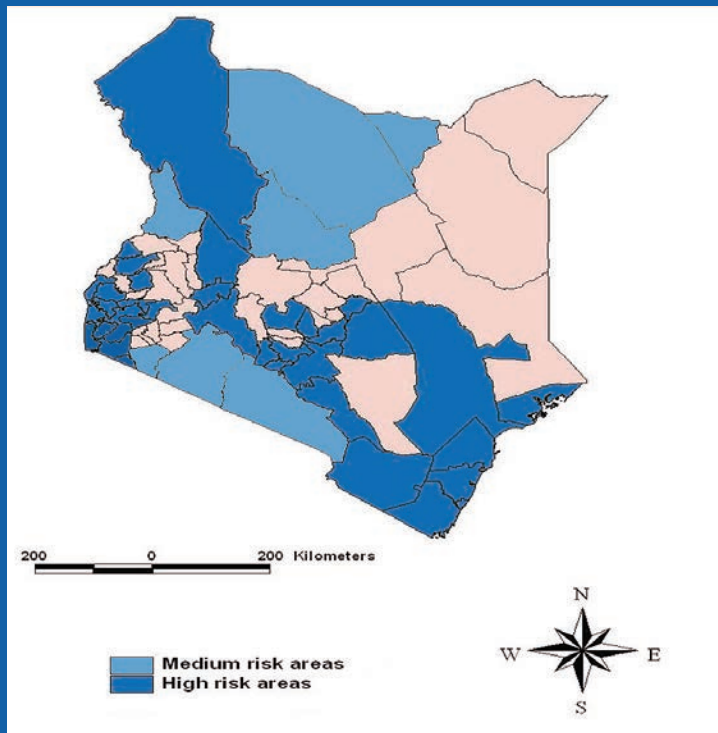


Table 7: Poultry products regularly dealt with in Nairobi

Category	Transporter %	Trader %	Handler %
Local Chicken	40.4	41.1	31.5
Broilers	15.4	20.0	33.3
Cull layers	9.6	18.9	33.3
Eggs	34.6	20.0	1.9
Total	100	100	100

Most of the poultry and eggs sold in Nairobi are brought in from districts that neighbour the city. However, some traders purchase eggs from Burma, Kariokor, Eastleigh and City Market within the city. A good amount of poultry comes from distant markets, some of which are 100 to 300 kilometres outside Nairobi, such as Sotik, Makindu and Mwingi. In the main Turkana markets, poultry is also brought in from similar distances, from Ortum, Kitale and Cherangany, as shown in the table below.

Table 8: Major poultry and poultry products – source/buying markets

Nairobi	Transporters	Traders	Handler
Local Chicken	Wangigi	Wangigi	Kahawa
	Kariokor	Makindu	Kariokor
	Mwingi	Sotik	Eastleigh
	City Market	Makutano	City Market
	Kerote	Muthithi	Kangemi
	Kangemi	Burma	-
	Kasikeu	Kariokor	-
	Ngecha	City Market	-
	Mbitini	Kerote	-
	Kabuti	Kangemi	-
Katse	Makindu	-	
Broilers	Kariokor	Kasikeu	Kahawa
	-	Makuyu	Kariokor
	-	City Market	Eastleigh
	-	Kerote	City Market
Cull Layers	Burma	Kenchick Farm	Kangemi
	Kandara	Wangigi	-
	Thika	Kiambu	-
	Mwingi	Burma	-
	-	City Market	-
Eggs	Wangigi	Kerote	-
	-	Maziwa	-
	-	Wangigi	-
	-	Sotik	-
	-	Eastleigh	-
	-	Limuru	-

The table shows the major end or sale markets where the respondents sold or deposited their poultry and poultry products.

Table 9: Major poultry and poultry products end/selling markets

Nairobi	Transporter	Trader	Handler
	Hotels	Maziwa	Eastleigh
	Eastleigh	Hotels	Kariokor
	Kariokor	Githurai 44 & 45	City Market
	Ngara	Kariokor	Dagoretti
	Westlands	Burma	-
Local Chicken	-	City Market	-
	-	Ruiru Market	-
	-	Dagoretti	-
	-	Gikomba	-
	-	Rongai	-
	-	Madaraka	-
	Hotels	Githurai 44	Eastleigh
	-	Kariokor	Kariokor
Broilers	-	City Market	Westlands
	-	Dagoretti	Dagoretti
	-	Gikomba	-
	Hotels	Maziwa	Maziwa
	Ngara	Kahawa West	Kariokor
Cull Layers	Westlands	Kariokor	Westlands
	-	Githurai 45	Dagoretti
	-	City Market	-
	Eastleigh	Maziwa, Individuals	-
	Kariokor	Githurai 44, Kahawa West	-
	Wangige	U.O.N	-
Eggs	Kibera	Eastleigh, Kariokor	-
	South C	Zimmerman	-
	-	Dagoretti	-
	-	Wangige	-
	-	Gitaru	-

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Turkana	Transporter	Trader	Handler
Local Chicken	Turkana North	Turkana North	Turkana North
	-	Turkana South	Turkana South
	Lokichoggio	Lokichoggio	Lokichoggio
	-	South Sudan	Lodwar
Broilers	-	Lodwar	-
	-	Kakuma	-
	-	Refugee camp	-
	Lodwar	Lokichoggio	Lodwar
Eggs	Kakuma	Lodwar	-
	-	Kakuma	-
	-	Refugee camp	-

Knowledge, practices and existing gaps related to Avian and Human Influenza among migrant poultry traders, transporters and handlers in Kenya

This study sought the knowledge and practices among poultry dealers, and set to establish the existing gaps. Respondents were asked to name the poultry diseases they are aware of. The most commonly known disease is Newcastle disease, with over 60 per cent of respondents in Turkana and over 70 per cent of respondents in Nairobi familiar with it. The number of Nairobi traders that were aware of Gumboro, Coccidiosis and Fowl Typhoid was relatively low, ranging from 10 per cent for Fowl typhoid to 19 per cent for Gumboro. Awareness was generally higher in Turkana.

Only 12 per cent of traders and 18 per cent of handlers mentioned Avian Influenza (AI) when asked the main poultry diseases they were aware of, although this changed drastically later on in the interviews. The symptoms the dealers gave for AI included drowsiness, chest congestion, red spots on the legs, and swollen comb. The table below shows the main diseases poultry transporters, traders and handlers were aware of.

4.4.1 Effect of diseases on dealers' businesses

Diseases	Nairobi %			Turkana %		
	Transporters	Traders	Handlers	Transporters	Traders	Handlers
Newcastle	77.5	89.5	72.7	75	67.6	61.5
Gumboro	37.5	19.3	27.3	-	-	7.7
Coccidiosis	32.5	15.8	27.3	25	38.2	46.2
Fowl Typhoid (Salmonellosis)	30	10.5	13.6	25	41.2	53.8
Others: AI	-	12.3	18.2	-	-	-
Others: Water-berry	-	-	4.5	-	-	-
Others: Fowl Cholera	-	1.8	-	-	2.9	7.7

Respondents were asked whether any of the diseases had affected their businesses in the past two years. The results are shown in the table below:

Table 11: Proportion of businesses affected by poultry diseases

	Nairobi %			Turkana %		
	Transporters	Traders	Handlers	Transporters	Traders	Handlers
Affected	22.5	38.6	13.6	25	23.5	-
Not affected	77.5	61.4	86.4	75	76.5	100
Total	100	100	100	100	100	-

Respondents were asked whether they knew of any poultry diseases that affected humans. Over 60 per cent of transporters and traders knew of poultry diseases that affect humans. Over 50 per cent of Nairobi poultry handlers were not aware of any disease that affects both poultry and humans.

Table 12: Awareness of poultry diseases that affect human beings

Disease Awareness	Nairobi %			Turkana %		
	Transporter	Trader	Handler	Transporter	Trader	Handler
Aware	67.5	66.7	45.5	75	85.3	100
Not Aware	32.5	33.3	54.5	25	14.7	-
Total	100	100	100	100	100	100

Respondents were then asked whether they had ever heard of bird flu and whether the implications and dangers of Avian Influenza (AI) had been explained to them. Over 90 per cent of the respondents in Nairobi and over 75 per cent of the Turkana respondents had heard of AI. However, less than 32 per cent of the Nairobi respondents reported having had the implications and dangers of Avian and Human Influenza (AHI) explained to them by a professional. In Turkana, over 50 per cent of respondents had had the dangers of AHI explained to them. Table 13 shows dealers who are aware of AI, while Table 14 shows dealers who have had the implications and dangers of AI explained to them.

Table 13: Poultry dealers who are aware of AI

Awareness	Nairobi %			Turkana %		
	Transporter	Trader	Handler	Transporter	Trader	Handler
Aware	100	98.2	95.5	75	97.1	100
Not Aware	-	1.8	4.5	25	2.9	-
Total	100	100	100	100	100	100

Table 14: Dangers explained to dealers

Dealer Category	Nairobi %			Turkana %		
	Transporter	Trader	Handler	Transporter	Trader	Handler
Explained	17.5	31.6	18.2	50	55.9	69.2
Not Explained	82.5	68.4	81.8	50	44.1	30.8
Total	100	100	100	100	100	100

Poultry dealers have received advice on the dangers of Avian Influenza (AI) through various media. Meat and public health inspectors were cited as the primary source of AI information in Nairobi, while those in Turkana elicited their information from newsletters and brochures. Table 15 displays the sources of messaging through which the dealers heard about AI.

Table 15: AI information dissemination messaging

Media	Nairobi %			Turkana %		
	Trans- porter	Trader	Handler	Trans- porter	Trader	Handler
Workshop, seminar, conference	42.9	12	-	-	-	-
Baraza	14.3	20			21.7	9.1
Newsletters, brochures	-	24	-	100	52.2	63.6
Meat inspectors, public health inspectors	42.9	44	100	-	26.1	27.3
Total	100	100	100	100	100	100

Dealers have taken a number of measures to protect themselves from AI, with over 67 per cent of Turkana dealers and over 40 per cent of Nairobi dealers having taken some protective measures. One trader reported that he is always listening to the radio for alerts on AI. The table below shows the proportion of dealers who have taken various measures to protect themselves.

Table 16: Measures taken against AI by dealers

Control Measures	Nairobi %			Turkana %		
	Trans-porter	Trader	Handler	Trans-porter	Trader	Handler
None	53.3	56.9	50	33.3	3	-
Buying- transporting- handling healthy	26.7	25.9	23.1	33.3	45.5	52.4
Avoiding contact with wild birds	4.4	-	-	-	21.2	19
Improve hygienic standards	15.6	17.2	26.9	33.3	30.3	28.6
Total	100	100	100	100	100	100

Impact on Food Security and Livelihoods of Migrant Populations

The study looked at profitability for three categories of small- to medium-scale poultry dealers: the transporters, traders and handlers. Transporters interviewed in Nairobi and Turkana deliver poultry and poultry products from various districts covering distances ranging from a few kilometres to about 300 kilometres. They use buses, matatus, and to lesser extent, handcarts and bicycles.

The traders included in the study can be divided into four categories by goods traded: local chickens, broilers, cull layers and eggs. Local chicken refers to indigenous breeds that often graze in open backyards; broilers are hybrids that are sheltered and grown for a specific number of days for their meat, often on a larger scale than local chicken; and cull layers are egg layer hybrids that have completed their economic laying cycle and are disposed of for their meat. Eggs are from both local and exotic breeds.

The study noted that local chicken traders were also likely to trade cull layers. However, the traders rarely traded both eggs and chicken. The two groups of traders are often found in separate sections of the markets or in different markets.

The handlers' category basically comprised persons who slaughter and dress chicken. They are found next to persons who sell local chicken and cull layers. They are also found in specialized markets like City Market, where they add value by chopping up already dressed chicken, and also close to restaurants.

Effect of diseases on dealers' businesses

Transporters

Movement of livestock and livestock products alongside human beings in the same vehicles is illegal in Kenya (CAP 364). Moreover, all movement of livestock is supposed to be cleared with a movement permit issued by the Director of Veterinary Services, Ministry of Livestock and Fisheries Development. Movement of livestock, under this directive, covers poultry and poultry products.

For many years, the guidelines on movement of livestock have not been strictly adhered to in the case of poultry. Since the 2005 Avian Influenza scare, however, this directive has been revisited and there is evidence that rules of movement are being followed to some extent. For instance, most of the established bus companies are refraining from carrying poultry alongside passengers. For the less-organized and individually owned public and private vehicles, these rules are flouted openly.

The study found that the movement of poultry and poultry products fluctuates during the year. The movement can, however, be categorized into two general cycles. The peak period commences in August, with October to December being the apex, while the low period is from January to July. The peak period is mainly associated with the festive season. However, school holidays have relatively good chicken sales. The low season is likely to be associated with the cold season and the generally low economic activity in other sectors during this period.

Two main categories of poultry transporters were identified in Nairobi: long-distance transporters and local Nairobi transporters. Moreover, live chicken transporters were unlikely to transport eggs, as eggs required specialized transport means. The long-distance transport vehicles are mainly buses and big matatus for live chicken, and pickups and specialized vans for eggs.

From the sample of this study's respondents, live chicken transporters in Nairobi make an average KES 2,760 per month, fluctuating between KES 3,000 during the peak period and KES 2,500 during the low period. This mainly applies to long-distance poultry transporters moving poultry between places like Makueni and Eldoret to Nairobi. The low-end transporters, such as handcart poultry transporters, make much lower profits, and mainly operate on the outskirts of Nairobi, in places like Ruiru. Egg transporters, on the other hand,

make an average KES 6,600 per month, as shown in the table on the next page.

Table 17: Poultry transporters' income in Kenya Shillings (KES)

Poultry Type	Nairobi			Turkana		
	Peak	Low	Average	Peak	Low	Average
Local Chicken	3,012	2,504	2,760	14,600	14,600	14,600
Broilers	3,568	3,368	3,468	-	-	-
Cull Layers	1,460	1,160	1,312	-	-	-
Eggs	6,612	6,572	6,592	11,640	11,640	11,640

In Turkana district, the transporter category had very few respondents due to low poultry activity in the district. Local chicken transporters make an average KES 14,600 per month, while egg transporters make an average KES 11,640 per month. The higher income from poultry transport in Turkana is due to the long distances travelled. In addition, transporters pointed out that transport of poultry is only part of their long-distance passenger and cargo business.

While transport margins are relatively low, it is important to note that those operating long-distance vehicles combine transport of poultry with transport of human passengers or other cargo and earn much higher profits. Transport of poultry is not the major activity for these vehicles, but is important in complementing the rest of the transport income.

Traders

This study concentrated on small- and medium-scale poultry and poultry products' traders. Nairobi respondents make approximately KES 38,000 on live chicken, KES 59,000 on broilers, KES 18,000 on cull layers and KES 19,000 on eggs each month. Broiler traders in Nairobi deal with relatively large volumes, hence the higher margins. However, the local chicken trader is generally different from the broiler trader and separate from the egg trader. The table below shows the revenue earned by poultry traders.

Table 18: Poultry traders' income in KES

Category	Nairobi			Turkana		
	Peak	Low	Average	Peak	Low	Average
Local chickens	48,292	28,284	38,288	15,660	11,236	13,448
Broilers	69,760	48,044	58,900	-	-	-
Cull Layers	22,136	14,800	18,468	-	-	-
Eggs	23,996	14,396	19,196	13,284	11,844	12,564

In Turkana district, local chicken traders made an average KES 13,338, while egg traders made an average KES 12,564. There was hardly any trade observed in broilers and cull layers. However, it was pointed out that most of the chicken consumed in the Lokichoggio camps that serve Southern Sudan operations are imported directly from Nairobi by air and do not affect the local market.

Handlers

The handlers' category of poultry dealers are mainly involved in the slaughter and dressing of chicken. Every council market has a chicken slaughter slab. However, the study found that many handlers slaughter chicken around kiosks and smaller markets where there is no slab and no running water. Moreover, disposal of feathers and unwanted parts was often too close to the markets, raising hygiene concerns.

Handlers of local chicken in Nairobi made an average KES 6,532 per month, an amount that is much less than the traders. Their earnings ranged from KES 7,828 during the peak period to KES 5,232 during the low period. The handlers of broilers made an average KES 9,112, while the handlers of cull layers made an average KES 8,536, as shown in Table 19.

Table 19: Poultry handlers' monthly income in KES

Category	Nairobi			Turkana		
	Peak	Low	Average	Peak	Low	Average
Local Chicken	7,828	5,232	6,532	4,824	4,400	4,612
Broilers	9,312	8,912	9,112	-	-	-
Cull Layers	8,736	8,336	8,536	-	-	-
Eggs	-	-	-	-	-	-

Handlers of live chicken in Turkana made approximately KES 4,612 per month. It is worth noting that poultry consumption is very low in Turkana. Turkana residents are largely pastoralists who own and consume goat, sheep and cattle, but do not consume a lot of chicken. Chicken is mainly consumed in the large towns of Lodwar, Kakuma and Lokichoggio.

For a family of five, a combined income of KES 10,500 per month equates to less than a dollar a day. Thus the income from poultry contributes over 50 per cent of the minimum cash necessary for handlers to survive above the poverty line. For traders, their earnings from poultry and poultry products would enable them to stay out of poverty, while for transporters, the contribution is approximately 30 per cent of the cash required to stay out of absolute poverty.

Record keeping

Record keeping is necessary for business accounting and increasingly for traceability. Approximately half of the respondents keep records. About 40 per cent of transporters in Nairobi and 75 per cent of transporters in Turkana keep business records. Over 60 per cent of the traders in Nairobi and 38 per cent of the Turkana traders keep records. However, only 4.8 per cent of the Nairobi handlers and 38 per cent of the Turkana handlers keep records as shown in the table below.

Table 20: Dealers keeping business records

Record Keeping	Nairobi %			Turkana %		
	Transporter	Trader	Handler	Transporter	Trader	Handler
Keep records	40	64.3	4.8	75	38.2	38.5
Do not keep records	60	35.7	95.2	25	61.8	61.5
Total	100	100	100	100	100	100

Alternative income-generating activities

The study sought out alternative income-generating activities and coping mechanisms available to poultry dealers in case of an Avian and Human Influenza alert or outbreak. All the Turkana dealers currently carry out alternative income-generating activities. This is possibly due to the low consumption of poultry among the local community, and the long distances over which poultry is generally transported. In contrast, only 35 per cent of traders and 14 per cent of handlers had alternative income-generating activities in Nairobi, as shown in the following tables.

Table 21: Dealers with other income generating activity

Income Activity	Nairobi %			Turkana %		
	Transporter	Trader	Handler	Transporter	Trader	Handler
Have activity	67.5	35.1	13.6	100	97.1	100
Lack activity	32.5	64.9	86.4	-	2.9	-
Total	100	100	100	100	100	100

Table 22: Additional income-generating activities by dealer category

Other Income Activities	Nairobi %			Turkana %		
	Trans-porter	Trader	Handler	Trans-porter	Trader	Handler
Formal employment	-	5.6	-	-	-	-
Casual labourer	13.6	-	-	-	-	38.5
Other business	68.2	72.2	100	100	100	61.5
Farming	18.2	22.2	-	-	-	-
Total	100	100	100	100	100	100

A number of Nairobi poultry dealers have not considered alternative income-generating activities they would possibly take up if there were a ban on poultry. However, a number reported they would take up activities, including farming, selling clothes, matatu tout, and keeping kiosks or shops. Currently, they consider the poultry business as one of the most lucrative. Still, they face several challenges in the poultry business. The biggest challenge is increased competition, followed by the high cost of transport. Table 23 lists the various challenges transporters, traders and handlers cited as affecting the poultry business.

Table 23: Challenges in poultry business and % affected

Challenges	Nairobi %			Turkana %		
	Transporter	Trader	Handler	Transporter	Trader	Handler
None	1.8	16.7	11.5	60	8	5.4
High cost of transport	23.7	19.7	-	20	24.4	10.8
High cost of trading licenses	15.8	1.5	-	20	9.8	13.5
Increased competition	30.7	36.4	42.3	-	18.7	24.3
Increased poultry prices from source	16.7	15.2	7.7	-	19.5	21.6
Disorganized marketing structure	9	4.5	11.5	-	14.6	18.9
Lack of business insurance	1.8	-	-	-	8.1	2.7
Harassment by traffic police/council	9	-	-	-	-	-
Disease	1.8	1.5	3.8	-	8	-
Breaking eggs	1.8	-	-	-	8	-
Lack of ready market	9	-	-	-	-	-
Unhygienic market	9	-	-	-	-	-
Egg shortage	1.8	-	-	-	-	-
Selling bad eggs hence losses	9	-	-	-	-	-
Job insecurity- unreliability	-	4.5	23.1	-	-	-
Death during transportation	-	-	-	-	8	-
Theft	-	-	-	-	8	-
Post-election violence	-	-	-	-	-	2.7
Total	100	100	100	100	100	100

One of the ways of overcoming the challenges faced in the poultry industry, particularly marketing and financing, is joining associations. None of the Turkana poultry dealers belong to poultry-related associations, while 20 per cent of the Nairobi traders belong to such associations. The table below shows the percentage of poultry dealers who belong to poultry associations.

Table 24: Poultry business association membership

Member of poultry Association	Nairobi %			Turkana %		
	Transporter	Trader	Handler	Transporter	Trader	Handler
Member	5	19.3	4.5	-	-	-
Non-Member	95	80.7	95.5	100	100	100
Total	100	100	100	100	100	100

Access to business capital is critical for business success and would enhance adaptability to alternative livelihoods in the case of an Avian Influenza alert or ban on poultry. Among this study's respondents, one's own savings were the main source of business capital for 60 per cent. Relatives and friends were the next category, with over 20 per cent of respondents having obtained capital from this source. Less than 2 per cent of traders had obtained business loans from banks, with 3 per cent of traders and 6 per cent of transporters having obtained loans from farmer or trader associations, as shown in the table below.

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Table 25: Source of business capital

Sources of Capital	Nairobi %			Rift Valley %		
	Trans-porter	Trader	Handler	Transporter	Trader	Handler
None	2.9		20	-	-	18.2
Relatives/ friends	14.3	31.3	-	20	28.6	9.1
Farmer or trader associations/ cooperatives	5.7	3.1	-	20	2.9	-
Commercial banks	5.7	1.6	-	-	-	-
Thrift and loan societies	-	1.6	-	-	2.9	-
Sold cattle assets	-	1.6	-	-	-	-
Own savings	71.4	56.3	73.3	60	62.9	63.6
Credit	-	1.6	-	-	-	-
Employed	-	3.1	-	-	-	9.1
No capital needed	-	-	6.7	-	-	-
Casual work	-	-	-	-	2.9	-
Total	100	100	100	100	100	100

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Mapping

- This paper focuses on three categories of internal migrants who deal with poultry and poultry products: transporters, traders and handlers. Field work was carried out in the Nairobi area and Turkana District, Kenya. In the Nairobi area, the most important egg markets are Wangige and Gitaru, while the most important live bird markets are Burma and Kariokor. City Market is important for dressed broilers.
- Although only a few traders are engaged in the poultry sector in Turkana, poultry and poultry products are increasing in importance, especially in the towns. The main poultry traders and handlers are found in Lodwar, Kakuma and Lokichogio.
- Most of the poultry consumed in Turkana is transported from West Pokot and Trans-Nzoia Districts, a distance ranging from 200 to 400 km. Transporters move poultry once or twice a week. In Nairobi, there is heavy and constant movement of poultry and poultry products within and around the city. There is minimal transportation of poultry between Kenya and Sudan.
- Approximating the number of poultry dealers is difficult, as there is no poultry dealer's database in the Ministry of Livestock and Fisheries Development, either at the headquarters or in the districts. The poultry populations available are estimates and may not reflect the real situation.

CONCLUSIONS AND RECOMMENDATIONS

Avian Influenza knowledge and practices

- Most poultry dealers in both the Nairobi area and Turkana have heard of Avian Influenza (AI). In Turkana, most of the dealers have had AI awareness, prevention and control explained to them by a professional. However, in Nairobi, less than 30 per cent of the dealers have had training on AI.
- The report concluded that the Turkana health and livestock staff have been able to better reach poultry dealers in the main towns due to the low numbers of dealers in the district. It would be easier to enforce regulations for the same reasons. However, the practices observed did not necessarily reflect understanding of AI.
- Poultry transportation in Turkana is not specialized, and both chickens and eggs are carried in passenger buses and general transport lorries. Nairobi has specialized poultry transport, but also vehicles that carry both poultry and humans.
- About 50 per cent of Nairobi poultry dealers reported not having put in place any measures to protect themselves from Avian Influenza. In Turkana, traders and handlers indicated that they have all taken measures to protect themselves.
- The sanitation standards maintained among poultry and poultry dealers in both Nairobi and Turkana are grossly inadequate and current regulations are not strictly followed or enforced.

Likely impact of AI outbreak/alert on food security and livelihoods

- An Avian Influenza poultry alert or ban would severely impact the livelihoods of most poultry dealers in Nairobi and surrounding areas. However, the impact would be less severe in Turkana where poultry trade is much lower and is often combined with other economic activities.

CONCLUSIONS AND RECOMMENDATIONS

- Poultry and poultry products make up a significant proportion of the dealers' income, contributing greatly to food security. In Nairobi, transporters earned an average monthly income of KES 2,700 from live chicken and KES 6,600 from egg movement. Traders earned KES 38,000 from live birds and KES 19,000 from eggs, while handlers earned KES 8,000 from handling live chickens. In Turkana, transporters earned KES 14,000 from live birds and KES 12,000 from eggs. Traders earned KES 13,000 from live birds and KES 12,000 from eggs, while handlers on average made KES 2,010 from chicken.
- Most Nairobi poultry and egg traders and handlers rely on poultry as their main source of income, while for transporters this is a secondary source of income. In Turkana, traders and handlers all have an additional source of income to supplement their poultry earnings.
- Most respondents had not considered the alternative means of livelihood they would engage in were an Avian Influenza ban on poultry to be enforced. However, the income earned by all dealers provides them with a relatively decent livelihood, and as such a ban would endanger their livelihoods and possibly plunge them into poverty.
- The ease with which those who engage in poultry businesses are able to transfer to other businesses will determine the effect of Avian Influenza (AI) on their livelihoods. It is worth noting that 53 per cent of Nairobi and 41 per cent of Turkana respondents have secondary schooling, while 5 per cent have post-secondary schooling, indicating a relatively flexible human capital. About 51 per cent of Nairobi and 39 per cent of Turkana respondents are between the ages of 26 to 35 years. Approximately 20 per cent of traders and 5 per cent of transporters in Nairobi are members of poultry-related business associations, an important social capital which makes it possible to share ideas and pass on information on AI and other diseases, and can also provide social and financial support in case of an AI alert or poultry ban. None of the Turkana respondents were members of such groups. Financial capital is weak, and only 5 per cent of Nairobi traders and 10 per cent of transporters been able to access loans from commercial banks or farmer/trader associations. There is a need to support poultry dealers' access to capital for their businesses to be able to adjust to the effects of an AI alert.

CONCLUSIONS AND RECOMMENDATIONS

Recommendations

- The study recommends the creation of a poultry, poultry products and poultry dealers' census/survey and database in the country to establish the accurate population of poultry and poultry dealers in the country, so as to enhance planning for the sector and contingency planning for Avian Influenza (AI).
- The study recommends more dedicated funding for training poultry dealers on AI, sanitation, and disposal, particularly in areas with high poultry trade and a high AI risk.
- The Ministry of Livestock and Fisheries Development (MoLFD) should work with other government agencies to enforce movement of livestock according to the Animal Diseases Act, CAP 364 of the Laws of Kenya. Transporters should all be sensitized on the dangers of carrying animals in the same vehicles with humans and other goods. MoLFD should also work with the relevant government departments to enforce the Public Health Act in regard to food handlers.
- There is an urgent need for capacity building in bio-security issues such as the use of separate vehicles for transporting animals, caging of birds during transport and in market places, separating live chicken from other kiosk commodities, isolation of sick birds, disinfection of equipment, holding sheds and vehicles that handle both live and dressed chicken, as well as separation of clean and dirty areas.
- The study recommends that the International Organization for Migration build the capacity of migrants, including transporters, on bio-security issues such as moving poultry separately, in line with the organization's mandate of promoting humane and orderly migration. This would protect passengers from contracting zoonotic diseases.
- Strengthening poultry business associations would be an effective way of channelling financial as well as human capital to support livelihoods in case of an Avian Influenza outbreak. These associations could also help in improving marketing structures, transportation facilities and providing storage facilities during periods of price volatility. This should go hand-in-hand with making loans accessible to poultry businesses.

CONCLUSIONS AND RECOMMENDATIONS

- There is a need to study the evolving global and East Asian poultry markets, where the trend is to go for large-scale outfits for both producers and traders, as discussed in the literature section. This would help prepare for the gradual reduction of small-scale businesses, instead of waiting until Avian Influenza strikes.
- This study recommends the inclusion of poultry traders, handlers and transporters in the government compensation plan. This could involve amending CAP 364, Section 2 to include these categories, in case of an Avian Influenza (AI) ban or cull, or developing additional regulations. Due to the importance of poultry in the livelihoods of small-scale poultry dealers, as found in this study, they would be adversely affected by an AI alert or outbreak, severely compromising their livelihoods.

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