Poultry in Ethiopia:

a survey of production, value chain and marketing of commercial poultry in Ethiopia.

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List of abbreviations

WUR	Wageningen University and Research.
CAH	Christian Agricultural Applied University
PTC+	Practical Training Centre
HAPP	Holland Africa Poultry Partners
EPPA	Ethiopian Poultry Producers Association
NABC	Netherlands African Business Council
GDP	Gross Domestic Product
MDG	Millennium Development Goals
AGP	Agricultural Growth Programme
PASDEP	Plan for Accelerated and Sustained End to Poverty
CRGE	Climate Resilient Green Economy
FTC	Farmer Training Centre
MOARD	Ministry of Agriculture and Rural Development
DA	Development Assistant
ATVET	Agricultural and Technical Vocational Education and Training
BOARD	Bureau of Agriculture and Rural Development
OOARD	Office of Agriculture and Rural Development
PADETES	Participatory Demonstration and Training Extension System
EIAR	Ethiopian Institute of Agricultural Research
SMS	Subject Matter Specialist
CVI	Central Veterinary Institute
FDRE	
CSA	Central Statistical Agency
FAO	Food and Agricultural Organisation
HPAI	High Prevalent Avian Influenza
LPAI	Low Prevalent Avian Influenza
NCD	New Castle Disease
CIA	Central Intelligence Agency
VC	Value Chain
VCA	Value Chain Analysis
DOC	Day Old Chick
VAT	Value Added Tax
EVA	Ethiopian Veterinary Association
NAHDIC	National Animal Health Diagnostic Investigation Centre
AU	African Union
PANVAC	Pan African Vaccine Institute
ILRI	International Livestock Research Institute
NGO	Non-Governmental Organisation
SWOT	Strength Weaknesses Opportunities Threats

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Preface

In February 2011 the Netherlands Africa Business Council organised a poultry trade mission to Ethiopia. Although the commercial poultry sector in Ethiopia is still small, the participants in the mission enthusiastically decided to continue collaborating with the poultry sector in Ethiopia. Back in the Netherlands, a consortium was formed consisting of companies in the poultry sector, knowledge institutes and NGO's. The Government of the Netherlands decided to support the consortium and in April 2012 the 2g@ there poultry Ethiopia project was officially launched.

The main objective of the consortium in this project is to strengthen the poultry sector in Ethiopia by carrying out research and training activities at all levels of the poultry value chain and to provide the necessary inputs needed to further professionalize poultry keeping in Ethiopia. The consortium will achieve this contribution to the poultry sector in Ethiopia trough

1) Carrying out the necessary research and analysis identifying bottlenecks in the commercial production system in Ethiopia

2) Organising and providing training activities at all levels in the poultry chain in Ethiopia

3) Providing the necessary inputs needed for a sustainable growth of the Ethiopian poultry sector.

This report summarizes the findings of various surveys of the poultry sector in Ethiopia, undertaken by the consortium with its Ethiopian partners in the period September – December 2012. The conclusions from the survey have already been put into action such as a support programme to strengthen hatcheries, setting up a training and demonstration unit in which practical training programmes for Ethiopian poultry farmers can be carried out as well as a support programme for veterinary poultry services.
From the Holland Africa Poultry Partners, we believe that there is a good future for poultry keeping in Ethiopia and we will support the growth through of the sector through a good collaboration with all stakeholders of the Ethiopian poultry sector.

Jan Kampschoer
Chairman Holland Africa Poultry Partners

Executive summary

With a GDP growth rate of 8.7, Ethiopia has over the past years been one of the fastest growing economies in Africa. With a relatively low urban population (17 %), agriculture is still the mainstay of the economy, contributing to 44 % of the GDP and 61 % of total exports. Through the Agricultural Growth Programme, the Government of Ethiopian stimulates enhanced market performance and value addition in various sectors.

Commercial poultry production is characterized by a large number of small scale farms, and a few medium to large scale poultry farms. Exact figures on the total volume of egg and broiler production are not available. Production is concentrated mainly in the Addis, Debre Zeit and Adama areas, with some small concentration around northern and southern rural towns. Of the 39 hatcheries in the country, 50 % are not working presently, 40 % perform below standards and only a few show good hatchability records.

Farmers lack basic knowledge on good poultry keeping practices and the inputs needed (feed, vaccines, drugs, hardware such as drinkers and feeders) are scarcely available. The demand for poultry is growing in a market which is characterized by seasonally fluctuating prices as a result of religious fasting periods.

The value chain for both eggs and meat production has been analysed, showing poor chain integration, complicated procedures to get loans and credit, low organisation rates (e.g. cooperatives) and a high dependency on import of various necessary inputs. A training needs assessment has been carried out, identifying needs for training in every part of the value chain. Practical farmers training is necessary, but also training for hatchery staff, extensionists and entrepreneurial or business development training for investors in the poultry industry.

Maintaining good poultry health is essential for a good growth of the poultry sector. There is a public role for preventing infectious diseases through field monitoring activities and vaccination campaigns. Prevention and treatment of diseases on farm are part of practical training activities.

It can be concluded that poultry production in Ethiopia shows good perspectives. Demand is growing, the physical climate in the country is conducive, but many points in the value chain as well as government facilitation, still need addressing as part of a further professionalization of poultry production. Cooperation within the value chain needs improvement, also to overcome seasonal fluctuations in demand.

Figure 1: Major commercial poultry producing areas of Ethiopia

1 Ethiopia in brief: economic developments and government structure.

Author: Adriaan Vernooij.

1.1 Economic developments in Ethiopia

Ethiopia, with a population of about 84 million (2012), is the second-most populous country in Sub-Saharan Africa. At US$390, Ethiopia's per capita income is much lower than the Sub-Saharan African average of US$1,165 in FY 2010, ranking it as the sixth poorest country in the world.

Agriculture is the mainstay of Ethiopia's economy providing employment to 85% of the population whereas industry contributes about 5% and services 10%. Livestock and agriculture contribute about 43.5% of the GDP and 61% of total export. Industry contributes to 13.4% and services 43.1% of GDP.

While Ethiopia's economy is expected to continue to grow at a healthy pace, its macro situation will remain under stress in the foreseeable future. Ethiopia made progress in tackling the 2008-2011 macroeconomic challenges, but the recent surge of inflation depicts the country's vulnerable macroeconomic condition. The annual end-of-period inflation, which stood at 16.5 % in February 2011, more than doubled reaching 36 % in February 2012. The food inflation rate increased from 13 % to 47 % while non-food inflation, moderately decreased from 22 % to 21 % during the same period. It is unlikely that inflation will rapidly fall towards the GTP goals of single digits within 2012. Monetary factors played a key role in driving the inflation rate in Ethiopia. For instance, reserve money used by the National Bank as monetary policy anchor grew by 51 % in February 2011. This was largely due to the accumulation of foreign exchange reserves without any offsetting mechanism and increased borrowing by public enterprises for infrastructure investment which in effect contributed to the increase in money supply.

Results by Sector.
Education: Primary school completion rate (grade 5) increased to 83 % in 2009/10, from 65 % in 2006/07.

Gender parity: For grades 1-4, the ratio of girls to boys went from 89 % in 2006/07 to 91 % in 2009/10; grades 5-8 increased from 76 % to 91 % over the same period.

Health: The child immunization rate increased from 70 (2005) to 82 % (2010).

Water: A total of 1.5 million people in rural areas and 150,000 in urban areas have been provided with access to improved water sources from 2004 to 2010.

Roads: The proportion of roads in good and fair condition as a share of total classified roads increased from 22 % in 1997 to 60 % in 2010.

Energy: The number of towns and rural villages with electricity access was 648 in 2004/05, has increased to 5,163 in 2009/10.

Development Challenges.
The main challenge for Ethiopia is to continue and accelerate the progress made in recent years toward the Millennium Development Goals (MDGs) and to address the causes of poverty among its population. The government is already devoting a very high share of its budget to pro-poor programs and investments. Large scale donor support will continue to provide a vital contribution in the near-term to finance the levels of spending needed to meet these challenges. However, even if donor support is increased, using aid effectively will require Ethiopia to improve governance, empower local authorities, and become more accountable to its citizens.

Over the past two decades, there has been significant progress in key human development indicators: primary school enrolments have quadrupled, child mortality has been cut in half, and the number of people with access to clean water has more than doubled. More recently, poverty reduction has accelerated. The poverty headcount measured by nationally representative household surveys was 44 % in 1999/2000, but fell to 39 % in 2004/05 and further down to 30 % in 2010/11.

These gains, together with more recent moves to strengthen the fight against malaria and HIV/AIDS, paint a picture of improved well-being in Ethiopia. Notwithstanding the progress in critical aspects of human development, Ethiopia needs considerable investment and improved policies to achieve some of the Millennium Development Goals by 2015, given the country's low starting point.

The Government of Ethiopia's current five-year development plan (2010/11-2014/15), the Growth and Transformation Plan (GTP), is geared towards fostering broad-based development in a sustainable manner to achieve the MDGs. The GTP envisions a major leap in terms of not only economic structure and income levels but also the level of social indicators. Key goals include:

- Rapid economic growth, targeted for 11 % per year at worst and, at best, to double the size of the economy by 2015, with GDP per capita expected to reach US$698 by 2015;
- Agricultural production is to double, to ensure food security in Ethiopia for the first time;
- An increased contribution from the industrial sector, particularly focused on increased production in sugar, textiles, leather products and cement;
- Foreign exchange reserves are projected to increase and the Birr is to depreciate by 5 % against the dollar each year;
- The roads network should increase from 49,000 km to 64,500 km by 2015;
- Power generation capacity will increase from the current 2,000 MW to 8,000 MW, and the number of customers from the current 2 million to 4 million by 2015;
- Construction of 2,395 km of railway line; and,
- Achievement of all MDGs.
  The plan also aims to reduce the maternal mortality rate by more than half from 590 per 100,000 to 267 per 100,000. While some aims are extremely ambitious, the directions of the GTP are consistent with the core priorities of the World Bank's strategy for Africa's Future and respond to the needs of the country. This plan will become the anchor for the Bank's new Country Partnership Strategy which is expected to be finalized in third quarter of 2012.

Table 1 Country facts

Area	Total: 1.104.300 sq km Land: 1 million sq. km
Terrain	High plateau with central mountain range divided by the Rift Valley
Land use	Arable land: 10 % Permanent crops: 0,65 %
Population	85 M, of which 85 % rural population
Population growth rate	3,2 %
Agriculture	Coffee, cereals, pulses, oilseed, cotton, sugarcane, potatoes, qat, cut flowers, hides, cattle, sheep, goats.
Export commodities	Coffee, qat, gold, leather products, live animals, oilseeds
Import commodities	Food and live animals, petroleum products, chemicals, machinery, motor vehicles, cereals, textiles.
Industries	Food processing, beverages, textiles, leather, chemicals, metals processing, cement
Natural resources	Potash, salt, gold, copper, platinum
Export partners	China 10.9 %, Germany 9.75 %, Saudi Arabia 7.4 %, US 7.2 %, Netherlands 6.4 %, Switzerland 5.3 %, Sudan 4.3 %, Belgium 4 %
Import partners	China 14.7 %, Saudi Arabia 8.4 %, India 7.6 %, US 4.3 %
GDP (2009 est.)	$ 77.47 Billion
GDP per capital	$ 900
GDP growth rate	8.7 %

The economic growth is largely driven by the agriculture and services sector. But also the rise in land prices (or rather the price of lease exchange in a country where all land belongs to the government and is given out in long term leases) is one of the driving factors behind the economic growth and is related to the current building boom in the country. Furthermore, government income is also highly dependent on the high import tariffs posed upon the importation of a variety of goods. As these aren't strong pillars that economic growth can sustainably be based upon, it is expected to negatively impact the growth rate in the near future.

1.2 Ethiopian government

1.2.1 Government structure.
The Federal Democratic Government of Ethiopia is divided into nine Regional States and two Administrative states (Addis Ababa City administration and Dire Dawa city council). The national regional states as well as the two cities administrative councils are further divided into various zones with in total eight hundred woredas and around 15,000 kebeles (5,000 Urban & 10,000 Rural)

The main legislative body is the house of people's representatives, with 547 delegates. Elections take place every five years.

In total there are 21 ministries, amongst the Ministry of Agriculture and Rural Development (http://www.moa.gov.et/), which includes livestock and veterinary affairs. Some further background information is available the Ethiopian Agricultural Portal (http://www.eap.gov.et/).

Largest cities or towns in Ethiopia (CSA[1] Estimates for 1 July 2012)

Table 2 Cities of Ethiopia

Rank	City name	Region	Population
1	Addis Ababa	Addis Ababa	3.040.740
2	Mekele	Tigray	273.601
3	Adama	Oromia	271.562
4	Dire Dawa	Dire Dawa	262.884
5	Gondar	Amhara	254.450
6	Awasa	SNNPR	212.665
7	Bahir Dar	Amhara	191.015
8	Jimma	Oromia	149.166
9	Dessie	Amhara	147.592
10	Jijiga	Somali	147.482

1.2.2 Government Policies.
The most important policy underlying agricultural development is the Agricultural Growth Programme (AGP). Apart from the AGP, the government has also formulated a plan for accelerated and sustained development to end poverty (PASDEP) by promoting, among other things, commercialization of agriculture and growth of private sector and infrastructure (especially roads, energy, and irrigation). Agriculture Growth Program (AGP) is aimed primarily at increasing agricultural productivity in a sustainable manner, enhancing market performance and facilitating value addition in selected targeted areas. AGP is a broad based program that attempts to improve the whole range of production, marketing and agro-processing of agricultural products through enhancing productivity, value addition, and market and irrigation infrastructure. The program will be implemented along the value chain dealing with stakeholders including producers, assemblers/traders, processors, distributors, exporters, retailers and finally consumers. Bottom-up planning process will be practiced to give greater power to kebele and woreda-level development initiatives with particular attention to ensuring equal and active participation of both women and men. The programme will however work in selected areas only, due financial resources available. Poultry improvement is also included and is implemented through the distribution of layer doc's and pullets.

The Ethiopian Government has recently initiated the Climate-Resilient Green Economy (CRGE) initiative to protect the country from the adverse effects of climate change and to build a green economy that will help realise its ambition of reaching middle income status before 2025.
The plan: To follow a green growth path that fosters development and sustainability.

1.2.3 Government extension service.
The Ministry of Agriculture and Rural Development (MOARD, www.eap.gov.et) is responsible for developing and refining the overall national agricultural and rural development strategies and policies for the country, with input from the regions and other stakeholders. Within this strategy, the MOARD establishes the overall national extension policy, providing financial support for the extension system and supporting the regions with training and other capacity-strengthening activities.

The actual provision of public agricultural extension and advisory services has been decentralized:

Regional Level
Each region has a Bureau of Agriculture and Rural Development, BOARD. The regions and their BOARDs are responsible for agricultural and rural development policy implementation, coordination, and evaluation. Each BOARD has a head and a number of technical and administrative staff, including department heads. These personnel provide technical and administrative support, as well as supervision and monitoring for the woreda- and kebele-level extension offices. Each region's agricultural advisory support is internally divided according to major agro ecological zones, providing more detailed technical and administrative support, especially for the large regions.

[1] Central Statistical Agency.

Woreda Level
The woreda (district level) Offices of Agriculture and Rural Development (OOARDs) are the main frontline administrative structures implementing agricultural extension.

The OOARDs are composed of five main sectors: agricultural development, natural resources, environmental protection and land administration, water supply and rural roads, and input supply and cooperative promotion. The largest sector, agricultural development, is responsible for extension services and is usually divided into crop production, livestock production, natural resource management, and extension teams (Gebremedhin, Hoekstra, and Tegegne 2006).

The OOARD represents a more operational level in terms of reaching smallholder farmers and pastoralists. They do so using a cadre of experts or subject matter specialists (SMSs, who are also found at the regional level). There are more than 700 urban and rural woredas (districts) in Ethiopia. There are, on average, about 30 or so agricultural officers in nine divisions or units within each woreda agriculture office, including (on average) about 10 or more SMSs who are expected to provide technical support and training to the DA staff at the kebele level. Most of these SMSs are assigned across the same technical areas as the DA staff, that is, crops, livestock, and NRM. In the past, most of the staff assigned to these SMS positions had begun their extension careers at least 5 to 10 years earlier.

Kebele Level
Currently, there are about 8,489 farmer training centers, FTCs, established at the kebele level, with roughly 2,500 of these FTCs reported to be fully functional at the present time (Ethiopia, MOARD 2009a). Established FTCs are those that have a building and DAs in place. However, they are not functional until they have started one component of training—either demonstration or training. The training may be modular training or may be short-term, based on demand. The target is to have one FTC per kebele.

In 2009 there were about 45,000 DAs currently on duty at the kebele level, of whom about 12 to 22 % are women, depending on the region (Ethiopia, MOARD 2009a). The number of frontline extension personnel is expected to increase to roughly 60,000 when all FTCs have been established and are fully functional. About 62,764 DAs have graduated from the ATVETs as of 2008, with 12 % of them being female (Ethiopia, MOARD 2009b). This overall total for DAs trained compared to DAs currently serving (45,000) indicates that some ATVET graduates have left the extension system since graduating from the ATVET system.

Given that there are approximately 21.8 million adults (ages 15–65) who are active in agriculture, it is estimated that when the extension system reaches its goal of 60,000 DAs placed in the field, there will be roughly 1 DA for every 476 farmers. This would then be one of the strongest extension agent–farmer ratios found in the world today.

Programmatic Components of the Ethiopian Extension System:
The four major components of the Ethiopian extension system put in place by the government as part of a five year plan (2005–2006) for accelerated and sustained development to end poverty include the following:

•Participatory Demonstration and Training Extension System (PADETES). The system
was introduced by the government in 1995 to provide a small amount of inputs through packages provided directly to farm households. Some 35 to 40 % of farm households are reached and served through the system with a low number of visits by public Das.

•Farmer Training Centers (FTCs). Roughly 8,500 FTCs have been built at the kebele
level. These centres are staffed with Development Agents (DAs) and are responsible for providing extension activities in rural areas.

•Agricultural Technical and Vocational Education. In 2000, the government invested in
agricultural and technical vocational education and training (ATVET) centres to train DAs charged with carrying out agricultural extension activities with farm households. By the close of 2008, the program had trained over 63,000 DAs at the diploma level.

•Institutional Coordination. The rapid expansion of the extension system has brought with it an administrative model to support an extensive set of responsibilities, adapting to 32 agro-ecological zones and to support a DA corps of over 60,000.

Extension services in Ethiopia until about 2002 were focused on increasing production and productivity in view of achieving food security. However, it had become apparent around 1996 that without integrating farmers into the market, sustained growth in the agriculture sector would not be realized. Perhaps as a result, the government policy on agricultural development has recently started to emphasize the transformation of subsistence agriculture into market orientation as a basis for long-term development of the agricultural sector. Such policy emphasis on market orientation has led to the recent establishment of a State Ministry of Agricultural Marketing within the Ministry of Agriculture and Rural Development (MoARD). Within this State Ministry, specific emphasis is given to the role of co-operatives for the supply of credit and input/output marketing services. The extension service will have to make proper linkages with the co-operatives (ILRI/IPMS, 2006).

Farmer Based Organizations and Cooperatives
Farmer cooperatives in Ethiopia do not provide extension services directly to their members; rather, they are a major source of both agricultural inputs and farm credits. They also provide grain marketing services and supply consumer good to members at prices that compete with local traders (Davis et al., 2009). Some cooperatives are involved in seed multiplication and distribution, training of members in para-veterinary services and distribution of veterinary medicines. Although the view among cooperative leaders is that these supposedly farmer-driven organizations are not free to set their own agendas since it is the government that sets the parameters within which cooperative programs operate (Mogues et al. 2009), these cooperatives have played a significant role in improving members' welfare.

Agricultural Research.
The Ethiopian Institute of Agricultural Research (EIAR) coordinates the decentralized agricultural research activities at federal and regional research centres, and through higher education institutions.

The Ethiopian Institute of Agricultural Research (EIAR) is the country's main agricultural research agency. The semiautonomous EIAR has the mandate to generate, develop, and adapt agricultural technologies that focus on the overall development and needs of users.

EIAR is responsible for the coordination of decentralized agricultural research activities at federal and regional research centres, and through higher education institutions, including 7 regional and 15 federal agricultural research institutes. It operates at the federal and regional levels.

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2 Poultry production in Ethiopia.

Authors: Adriaan Vernooij, Alberto Giani, Ernst Beitler, Hilde Duns.

2.1 Livestock production in Ethiopia.

The livestock population of Ethiopia is the largest in Africa and consists of 52 million cattle, 24 million sheep, 22 million goats, 6 million donkeys, 2 million horses, 0.4 million mules, 1 million camels and 45 million chickens (FDRE/CSA, 2012) The livestock sector contributes a considerable portion to Ethiopia's economy, and is central to the economic development of the country. Livestock products and by-products in the form of meat, milk, honey, eggs, cheese, and butter supply the needed animal protein that contribute to the improvement of the nutritional status of the people. Livestock also plays an important role in providing export commodities, such as live animals, hides, and skins to earn foreign exchanges for the country.

Livestock is primarily kept on small-holdings in the highland crop- livestock mixed farming system where it provides draught power for crop production, manure for soil fertility and fuel, and serves as a source of family diet and source of cash income (from the sale of livestock and livestock products) particularly when markets for crops are not favourable. This part covers around 40 % of the total land surface and is located 1500 m above sea level (a.s.l.). The highlands are situated in the Northern, North-eastern and central part of the country. It is featured by a mixed farming system where crop cultivation and livestock production are undertaken side-by-side complementing each other. The number of young animals sold from the highlands which are suitable for breeding or for further fattening is limited. The majority of the animals sold are old draught animals and barren cows. The highlands are a major source of sheep for slaughter in the cities.

The livestock population consists primarily of indigenous types that have not adequately been characterized and documented. They are mostly zebu. Main cattle breeds/populations identified and characterized include: Boran, Fogera, Horro, Sheko and the Afar. The Fogera and Horro, well known for their milk production, are reared around Lake Tana and Eastern Wellega regions, respectively. The Boran, a renowned beef breed/population, is found in the southern and eastern parts of the country, while the Sheko breeds/populations, which are considered to have tolerance to high tsetse challenge, are found in the southwest. European breeds, especially Friesian and Jersey, have been imported for many years and crossed with the indigenous cattle breeds. (NABC, 2010).

Table 3 Estimated number of poultry by type and breed

Type of poultry	All		Indigenous		Hybrid		Exotic	
	Number(1000)	%	Number(1000)	%	Number(1000)	%	Number(1000)	%
All poultry	44.893	100	43.304	96.46	256	0.57	1.332	2.97
Cocks	4.381	9.76	4.206	9.37	29	0.06	145	0.32
Cockerels	2.17	4.84	2.097	4.67	14	0.03	59	0.13
Pullets	4.125	9.19	3.97	8.84	27	0.06	127	0.28
Non-laying hens	1.393	3.1	1.340	2.99	8	0.02	45	0.1
Chicks	18.000	40.11	17.530	39.05	55	0.12	422	0.94
Laying hens	14.814	33	14.158	31.54	123	0.27	532	1.19

2.2 Poultry production in Ethiopia.

The most recent statistics on the number of poultry in the country come from the Central Statistical Agency (FDRE/CSA, 2012).

Most indigenous chickens are kept in the highlands. Chicken rearing is not common in the lowlands of Ethiopia i.e. the Somali, Gambella, Afar and Benishangul-Gumze Regional States, which collectively own only 3.24% of the total national chicken population.

The figures in the above table are mainly to be seen as indicative, given the daunting tasks of registering all poultry in a country as vast as Ethiopia. Furthermore, there is no indication of how commercially kept broilers are included, they cannot be distinguished from the classification types used by the Central Statistical Agency.

In 2005, a total of 736.000 doc's were imported into the country.

2.3 Poultry production systems.

FAO classifies poultry production systems into four different categories (FAO, 2008):

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. This sector is by far the largest production system in Ethiopia.

As in many other Africa countries, rural/village level or backyard production in Ethiopia contributes significantly (approx. 96 % according to the latest statistics) to the national egg and poultry meat consumption. However, very little research and development work has been carried out on indigenous chickens, despite its important contribution to protein supply.

Village level production aims have been described, in order of priority (Mullu, 2011):

- eggs used for home consumption
- farm gate sale of eggs for additional income
- meat consumption.

This production system is characterized as extensive scavenging management, absence of immunization programs, high risk of exposure of birds to disease and predators, and reproduction entirely based on uncontrolled natural mating and hatching of eggs using broody hens.

Farmers rate the adaptive traits of indigenous chickens, in particular the superior merits of indigenous chickens to high yielding exotic breeds, as most important. Reproduction traits, such as broody behaviour and high level of hatchability, were considered very important. The village production system is based on low input-output levels and is part of a balanced farming system that is economically efficient because although outputs may be low, inputs are even lower.
Most important risks are high chick mortality, unsuccessful brooding, and disease pressure due to poor immunization.

Figure 2 : Hay-box insulated brooder for first rearing of day old chicks.

The commercial sector in Ethiopia is divided over the three other sectors of the FAO classification.

There is a growing, though not exactly known, number of small-scale commercial (50 to 1000 animals) poultry keepers in the country.

This system of production is rapidly growing in the urban and peri-urban areas. Using hybrid stock and relatively modern management practices, these are an important source of income for many families. They usually sell their eggs either directly or through middlemen to kiosks, hotels and supermarkets. Chicken are kept indoors permanently and contact with other poultry or wildlife is prevented. Biosecurity risks are moderate, depending on the strictness of hygiene measures applied. Farms are usually run as family businesses, but highly dependent on irregular market supplies for their input (one-day old chicks, feed and medicines).

The total number of small scale commercial farms and their contribution to the national production is not known, but they do provide the largest share of eggs and poultry meat to the growing towns in Ethiopia (FAO 2008).

So far, there are only there are only approx. 15 medium to large scale poultry farms that can be classified as sector 2 poultry farms, as they process and distribute their own broilers or eggs: Elfora, Alema, Maranata, Almaz, Abebaw in Mojo, Mekelle Farms, Genesis, Fanta amongst others.

Recently (2012) a large scale high-tech broiler operation was started in Mojo, concentrating only on export to Dubai. Also in Mojo, a plot of 700 ha has been allocated to Israeli investors for setting up poultry production and growing crops for feed supply.

The production systems are linked in various ways. Efforts to improve productivity of village level poultry have always been done through the dissemination of hybrid stock. Initially these came from the government multiplication centres, which are currently operating at a limited scale and several are in the process of privatisation. The supply of day old chicks has now to a great extent been taken over by those large scale producers that also own hatcheries. The small scale commercial farmers also depend on the larger companies for their inputs of day old chicks. Frozen commercial broilers can be found in supermarkets next to frozen indigenous chickens, which are still highly valued by the urban population.Production systems in Ethiopia have been extensively described in a number of recent publications (FAO 2008, Nigussie Mullu, 2011, Nigussie Dana 2007, Wilson 2010, Demeke 2011)

Biosecurity risks: HPAI.

After the outbreaks of HPAI (Highly Pathogenic Avian Influenza) worldwide but in Egypt in particular in 2004-2006, contingency planning was also undertaken in Ethiopia. Various studies (Bush 2006, Demeke 2011, Pagani et al 2008) have been carried out to predict likely socio-economic impacts on farmers. Scenario studies and field interviews indicated that possible losses on the mainly opportunistic way of poultry keeping at village level would not lead to food insecurity, but women as the primary owners of village chickens would be most affected through reduced incomes.

So far, HPAI has not become a problem in Ethiopia yet.

2.4 Developments in commercial poultry keeping.

Whilst local village chicken are kept all over the rural highlands, most commercial producers are concentrated in the area covering Addis Ababa, Debre Zeit, Mojo and Adama. Commercial poultry farms are also coming up in other growing urban areas (Mekelle, Dire Dawa, Gondar, Awassa, Bahir Dar). Currently 17 % of the population live in cities and the expected urbanisation growth rate stands at 3.8 % (CIA, 2012). This means that urbanisation rates in Ethiopia are relatively low as compared to other African countries. Market growth will therefore be small initially, but is expected to still expand considerably throughout the coming decades

In the concentration area Addis – Debre Zeit - Adama, it appears a certain stratification has taken place in production. Broiler production is concentrated in Adama, Mojo and Debre Zeit, pullet rearing is heavily concentrated in Debre Zeit, whilst egg production is dominant in Addis Ababa. There is a large peri-urban poultry production in and around Addis, whereby even two-storey buildings have been put up.

Figure 3: Intensive (peri) urban poultry keeping: 900 layers in cages, double storey building for layers on ground floor system.

2.5 Observations during farm visits July 2012.

It is clear that the "average" commercial farm in Ethiopia does not exist. There is a variety of farms in terms of sizes, from 50 to 100.000 birds per farm. The vast majority of commercial poultry keepers can be classified as small scale (<1000 birds), there are 10 to 20 medium scale farms (1000 – 10.000 birds) and three farm with more than 20.000 birds.

During the farm visits, management levels and performance were assessed by visual observation, discussions with staff and/or owner and if available, by farm records. Visit reports were made, summarizing:

- general information (Farm name, Location, Name and contact details of owner, Name and contact details of manager, Economic activities, Farm typology)
- socio-economic and livelihood information (Age and family size of owner/manager, Number of people working on the farm, Ownership and benefit sharing, Livelihood strategies, Key uses of livestock (food, income, social), Percentage of income from poultry farming?, Coping strategies and indicators for hard times, Knowledge level of manager / workers / owner)
- farm production system (Number of animals, Breed of animals, Housing / facilities, Hygiene, Feed, Water, Temperature/climate, Performance, Mortality and morbidity figures, official records?, Vaccination management, Disease management, Extensionist and vet services,
  Other / general management issues, Input: animals, Input: feed, Input: vaccination and medication, Input: other, Type of products sold, Customers, Sales numbers -seasonality, numbers, prices-)
- other on or off-farm activities (Number of animals, Breed of animals)

For definition of farm sizes the classification of the FAO is followed;

< 50 birds
50-1000 small scale
10000-10.000 medium scale
>10.000 large scale.

It appears that there are few farmers who entirely specialise and depend on poultry production. For small to medium scale farmers, the income from poultry product sales is insufficient to make a living. This problem is aggravated by the insufficiently and highly irregular availability of doc's. As docs must be ordered long time in advance and the date of delivery is not known, it is hardly possible for a family business just to rely on poultry production only.

Large scale poultry farms are mainly started by investors, who equally do not rely on poultry as their sole source of income. Sometimes sector related activities are carried out, such as feed milling, slaughtering birds from other producers, brokering birds, but in many cases money is also invested in completely different types of activities (e.g. car spare parts, supermarkets, transport etc.).

Commercially produced feed is usually adequately available. However virtually no quality testing is done, hence the quality of feed does vary and levels of energy, protein etc. cannot be taken for granted. Furthermore, in order to reduce costs, many farmers "dilute" the purchased feed with their own raw materials, such as maize, nough cake, bone meal and do not add sufficient amount of extra pre-mixes.

Most of the housing constructions (basic structure) are usually fairly well developed. Often built with stone walls, but also houses with mud (rammed-earth) walls do suffice and can last up to 10 years. Ventilation is often an issue though, as many houses do not have appropriate facilities to stimulate a good airflow. Moreover, houses with enough air inlet capacity often have poor covers over the air inlet area which can result in strong temperature drops at night. Floor quality is usually rather poor: many holes in the concrete floor, preventing a proper cleaning and disinfection of the floors.

Many small scale (peri) urban farmers usually keep their birds in cages.

Doc's are usually received in clean houses with proper bedding (teff straw) and locally made brooders: iron sheet covers on a wooden frame with two 200 W bulbs. Timely heating up the house before receiving docs does not always happen and adjusting the height during the beginning of the growing period is not always done timely.

Figure 4: Small scale cages.

Figure 5: broiler rearing.

Vaccination is in virtually all cases done according to schedule. Some of the larger farms purchase their own vaccines from abroad, either directly or through local distributors. Locally made vaccines are only available from the National Vaccine Institute in Debre Zeit. Though no assessment could be made of the appropriateness neither of storage facilities, nor of the knowledge of proper vaccinate techniques, no major outbreaks of preventable diseases seem to occur on the commercial poultry farms in Ethiopia. There is however a permanent threat of new outbreaks of diseases from local birds in the surrounding. Outbreaks of NCD regularly occur, neither is the country free from other diseases such as Gumboro.

The rearing management of layer pullets is usually up to standards, in most rearing farms that were visited.

Broiler keeping however does not go without difficulties. The quality and health of broiler doc's is usually fairly good. However, due to a variety of reasons, after one or two weeks various problems start occurring on most of the farms: they appear to catch various diseases strongly affecting uniformity and growth rates. Well-kept broiler farms in Ethiopia are able to reach a live weight of over 2 kg in 45 days. In most cases, the fattening period takes one to two weeks longer. Most commonly occurring health problems are coccidioses and pulmonary problems. Too many non performing sick birds are kept for too long in the sick bay, leading to a waste of feed but they are also a continuous source of infection for the healthy ones. Reasons for the disease pressured are various: temperature control, ventilation, flooring quality (often too wet in the end), feed quality, poor water quality. Furthermore available drugs in the country are of a doubtful quality.

Manure is sold mainly to dairy farmers, either per 100 kg per bag or pickup load (latter costing 400 Birr per load).

Biosecurity measures in general are either hardly existing or poorly kept. Most farms do have some form of footbath, of which the effectiveness is doubtful to the most, given the dirty nature of most of the baths. No farm provides visitors with separate footwear.

2.6 Cost price calculations.

Cost price calculations are based on current prices for building material, equipment etc. Labour costs are worked out from existing examples of 6000 birds units.

Eggs.
Cost price calculation for a unit of 6000 laying hens, ground floor system.

Birds are bought as 12 week old pullets, are kept for a 60 week laying period. Average production 330 eggs.

Cost price broilers.
Cost price calculation for a 6000 broiler unit. Each round takes 10 weeks (approx. 7- 8 weeks fattening period + 2 to 2.5 weeks cleaning, repairs, preparation)

Table 4 Cost price of eggs

Purchase price pullet	**90 Birr**
Feeding during rearing period 12–22 weeks, 6 kg á 9 Birr	54
Layers meal, for 60 weeks (60 x 7 days x 0,12 kg x 8 birr)	403
Health (some medication, disinfection measures)	5
Various: water, electricity.	
Litter costs approx. 25 birr per bale (15 kg). Amount needed: 1 bale per 250 birds = 0,1 Birr per bird	5
Housing, equipment	
Housing: 100.000 Birr : 3000 = 33 Birr per bird, depreciation over a 10 year period = 3 Birr per bird	
Maintenance (2 Birr)	
Equipment (1 Birr)	6
Labour	0.5
Total costs	563.5
Returns: selling price old hen	50
Total	513.5
Cost price per egg	**513.5 : 330 =1.55 Birr**

Table 5 Costprice broilers

Purchase doc	**22**
Feed, 5 to 6 kg á 9 birr	50
Health (vaccinations, medication)	2
Various costs: electricity, water, litter	3
Housing, equipment[2]	5
Labour costs (staffing as with 6000 layer unit, but extra peak work for loading and cleaning make total daily wages 220 Birr)	3
Total	85
Cost price per kg (1.7 kg slaughtered weight on average) without labour costs	50 Birr per kg slaughtered weight.

[2] Housing costs were calculated based on the following prices for building materials:

- 1 truckload of sand, 16 m3 = 2000 Birr
- 1 iron sheet = 180 Birr
- 1 bag of cement = 250 – 300 Birr-1 wooden pole = 35 Birr
- 1 role of wire mesh (250 x 500) = 400 Birr
- 1 cement block (40 x 20 x 20 cm) = 6,5 Birr
- Labour costs to construct a basic house for 3000 birds is estimated at 5000 Birr

Using these prices, a 3000 birds' house with ground floor system will cost approx. 100.000 Birr.

[3] A 6000 layer unit efficiently run needs 4 day staff as poultry attendants (wages 25 Birr daily), 2 watchmen (20 Birr daily) and a manager (50 Birr daily). Total daily labour costs = 190 Birr x 490 days = 93.100 Birr: 6000 birds = 155 Birr per bird: 330 = 0.5 Birr per egg.

[4] 220 Birr daily wages x 70 days = 15.400 Birr : 3000 = 5,1 Birr per bird : 1.7kg slaughtered weight = 3.0 Birr per kg slaughtered weight.

These cost prices are based on fairly well managed units. Given current price and return levels, both layer and broiler keeping are profitable businesses. However, performance levels are often much lower than these assumptions.

Farm gate prices for eggs vary from 1.6 Birr in remote areas to 2.2 Birr for large scale farms near Addis. Broiler prices vary highly throughout the seasons: form 50 to 60 Birr in fasting seasons up to 120 Birr during religious feasts.

Feed determines almost 80 % (layers) or 60 % (broilers) of the cost price. Feed prices are based on best quality feeds available, cheaper (but poorer) feeds can be obtained to cut costs. But production will also be affected negatively.

Laying % achieved in practice is often poorer than possible under proper management circumstances. One example of a 900 layer unit visited had 60 week old birds with a production of 700 eggs daily. Ideally, the production of such young hens should be 100 eggs per day higher than this. For this farm it means a loss of daily income of 100 eggs = approx. 200 Birr. The 100 non-laying birds will still consume 12 kg of feed daily á 8 Birr = 96 Birr, for which no return is obtained.

Figure 6: Most broilers are slaughtered on farm, and stored in containers turned into deep freezers.

2.7 Checklist farm visits.

The following checklist was used during farm visits.

Checklist poultry farm visits. (Layers)

Owner
Age, family size and composition,

Farm
location, infrastructures available (electricity, water, roads), availability of extensionists/vet services, access to markets

Animals
- *number*
- *source: which hatchery*
- *availability*
- *prices*

Housing
- *type of housing: walls (types), ventilation, laying nests, watering points, cleanliness, storage space available, roofing type, electricity available,*

Feed
- *sources of feed*
- *what ratios being used*

Health
- *vaccinations*
- *disease monitoring*
- *treatments carried out*

Production
- *records being kept?*
- *laying % vs age of hens*

Quality of daily management
- *cleanliness*
- *adequate water available*
- *any dry hens?*
- *starting off young hens: facilities, temperature control, brooders available?*
- *mortality rates*
- *are records kept: laying % available?*

Socio economics
- *labor provision*
- *division of labor on the farm*
- *who owns the chicken*

Sales
- *to whom, buyers, how many at a time*
- *prices, seasonal variation*
- *market constraints?*

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3 Poultry Value Chain Analysis

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3.1 Introduction

In the 2G@There Poultry Ethiopia program a range of Dutch inves-tors in the poultry sector came together as the Holland African Poultry Partners. They wish to strengthen the country's poultry value chain (VC) by working on the improvement of local knowledge in the Ethiopian poultry sector and the application thereof in practice. In doing so, the partners are convinced that this will yield business opportunities for their consortium in Ethiopia.

The program is started with an inventory phase, looking at the production system in use, the poultry VC and the market opportunities for broiler meat and table eggs of exotic[5] origin. This inventory phase serves as the basis for the strategy for the full program.

This report deals with part of this inventory phase, namely the study on Ethiopia's poultry VC. For the other topics we refer to parallel reports prepared as part of the 2G@There Poultry Ethiopia program.

Objective
The objective of this research is:
To analyse the poultry value chain of broiler meat and table eggs of exotic origin, describing the current state of supply and processing and institutional barriers and opportunities for development of the sector.

The analysis specifically focuses on the two poultry concentration areas in Ethiopia: 1) Addis/Debre Zeyt/Nazareth and 2) Tigray (Mekelle, Aksum).

3.1.2 Methodology

The VC analysis is based on an analytical framework for inclusive agrifood market development developed by Wageningen UR.
This framework describes six activities of which the first two – mapping and understanding the value chain; mapping and understanding the institutional and policy environment – are performed in the current analysis.

Data is obtained through a combination of the following[6]:

- Desk research of available reports on the poultry value chain in Ethiopia
- Field visits of value chain actors in the two poultry concentration areas: in total 52 stakeholders were visited during a two-weeks mission
- Consultation with stakeholders in a joint working session

3.2 Poultry value chain structure

The poultry VC is displayed in figure 1. The blue boxes (top) refer to the VC of broilers, the green boxes (middle) to that of layers, the orange boxes (bottom) indicate the institutional and policy environment. Below the figure the structure of the value chain will be explained, following the functions, input and institutional and policy environment.

The VCs show a low level of specialisation, it has a limited number of actors per function and a high level of integration of functions at the larger scale production (covering several functions and input flow in the VC: e.g. feed, multiplication, hatching, production and retailing within one business).

Both VCs use the following classification[7] :
- Small scale commercial farms: capacity of 50 to 1,000 birds
- Medium scale commercial farms: capacity of 1,000 to 10,000 birds
- Large scale commercial farms: capacity of over 10,000 birds

In general, the number of actors on the different scales follows a pyramid structure, with only a few large scale farms, a bit more (e few tens) medium scale farms and many (a few hundreds) small scale farms.

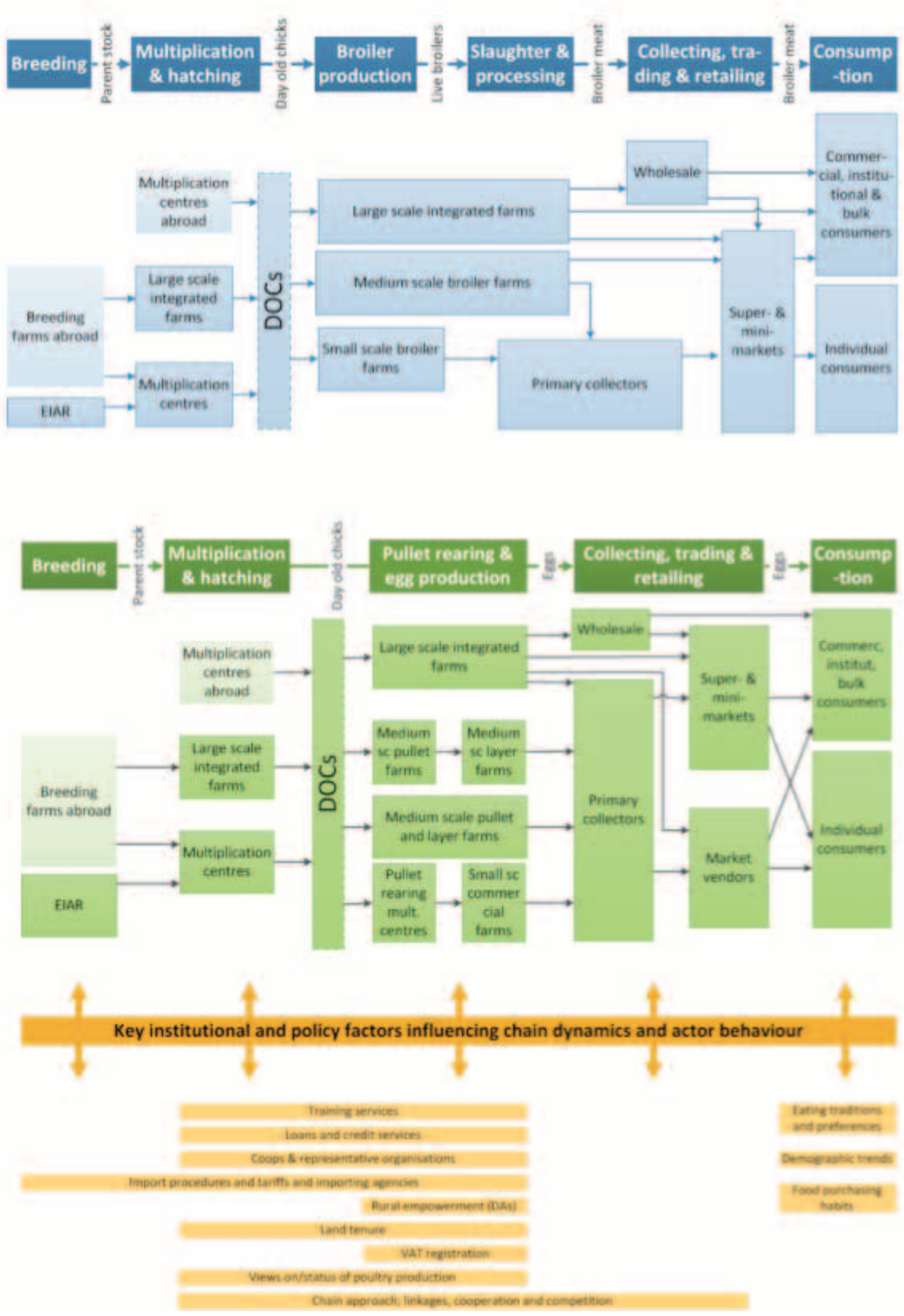

Figure 7: Value Chain map for exotic broilers (top, blue boxes) and table eggs (middle, green boxes) in Ethiopia, the institutional and policy environment is displayed at the bottom of the image (orange boxes)

[5] 'Exotic' meat and eggs are those products that are derived from imported or modern poultry flocks of hybrid birds. Throughout this report we use the terms 'exotic meat' and 'exotic eggs' to indicate the products of these types of birds. The traditional and prevailing type of birds kept in Ethiopia are so-called 'local birds', producing 'local meat' and 'local eggs'. Next to this, a variety of chicken branded 'Kuroiler' is introduced in Ethiopia (coming from India) in modest quantities. The Kuroiler chicken is meant for a resource-poor, foraging village environment and is kept for both its meat and eggs.

[6] Separate reports are available on the field visits and the joint working session

[7] This classification is based on a FAO report: FAO,2008. Poultry Sector Country Review: an Analysis of the Poultry Sector in Ethiopia.

3.2.1. Value chain functions

Breeding, multiplication and hatching
The input of DOCs shows a similar structure for both the VC of broilers and that of eggs. Most DOCs that enter the two VCs, both layers and broilers, are not bred in Ethiopia but obtained from multiplication centres in other countries such as the Netherlands, South Africa, Saudi Arabia or Egypt. The biggest importers of DOCs are the large and medium scale farmers. The minimum amount of DOCs that are imported at one time is 10,000 animals. Medium-scale farmers that operate below that capacity join forces when purchasing DOCs.

Secondly, layer and broiler DOCs are produced in the country. This is done by large scale commercial farms and multiplication centres. An overview of hatching activity of these actors in the country is given in the Appendix.

Several large scale farms have their own hatching (and sometimes also multiplication) facilities to produce DOCs. They mainly operate for their own production, but also supply medium and small scale farmers. These farms have their own, imported parent stock. In some cases, though not structurally, hatching eggs are imported.

For the flow of DOC from large farms to rural farmers, Development Agents (DA) step up as an intermediary. This is part of government policy on rural empowerment, with which government ensures distribution of DOCs and other VC inputs throughout the country and sometimes offering the animals at a reduced price.

There used to be about ten multiplication centres producing DOCS throughout the country, but as a result of privatisation only a few are currently operational. Multiplication centres have their own parent stock, which is either imported from breeding farms abroad or sourced from the Ethiopian Institute of Agricultural Research (EIAR). The source of parent stock from the EIAR is very limited though and doesn't reach commercial levels, since the EIARs main activity is to develop new or improved breeds of layers that are better adapted to the Ethiopian situation. The multiplication centres supply DOCs to medium and small scale farmers. Next to this, there is some activity in pullet rearing, for supply of layers to small scale farmers.

Next to these major sources of DOC, a few medium and small scale farmers have their own small incubators in which they hatch layer-DOCs themselves. They purchase the hatching eggs from multiplication centres and a few farmers are also rearing their own parent stock.

Production of broilers and eggs
For a full overview of the type of farms and their production systems, we refer to the farm systems analysis report that is part of the inventory phase of the 2G@There Poultry Ethiopia program.

A general notion on the production part of the VC is that the scale sizes of farms differ a lot along the VC; there are farms that keep a few dozen layer chickens and there are farms that keep a couple of ten thousands. There are approximately 15 medium to large scale integrated farms that keep poultry and that process and distribute their products themselves, to name a few: ELFORA farms, Alema Farms, Maranatha Farms, Almaz Farm, Abebaw Farm, Mekelle Farms and Genesis Farms. The number of players in exotic broiler production is much lower compared to exotic eggs production.

Recently, a few large-scale integrated farms that produce solely for the export market (e.g. Abu Diab) have been started.

All large scale layer farmers rear pullets themselves, mostly from their own or imported DOCs. However, some medium and most small scale farmers either choose for pullet rearing or for layer keeping. In order to provide layers for those who lack the ability or capacity to raise pullets in a proper way themselves, some multiplication centres keep some of their DOCs, raise them and sell them as layers.

Large and medium scale farms usually slaughter and process the birds themselves. Level of processing is low though; most birds are sold plucked, eviscerated and frozen and only some go into further processing for special cuts like legs, thighs or breast. Small scale farmers usually lack slaughtering facilities. They contact a broker who buys their chickens and brings a slaughterman to the farm. The broker then takes the carcasses to his own premises to dress and freeze them, ready for the market.

Collecting, trading and retailing
The eggs of large scale integrated farms follow several routes to the market. There is one wholesale (owned by ELFORA), which sell (their own) eggs in bulk to super- and minimarkets and to bulk consumers such as hoteliers, schools, universities, embassies, bakeries or restaurants. Some large scale farms sell their eggs in their own super- and minimarket or they sell to other super- and minimarket or to market vendors directly. The final route to the market is through primary collectors.

For small and medium scale farmers these primary collectors are the main gateway to the market. Since these farmers generally lack a VAT registration (which allows someone to engage into commercial activities involving the production and distribution of goods and the provision of services with 'added value'), they need an intermediary. Primary collectors visit the farms one by one to collect the eggs. After collecting, they trade the bulked eggs to market vendors or super- and minimarkets.

For consumers in search of exotic eggs, there are basically two options, either the local market or super- and minimarkets. Local markets are ubiquitous in many towns and cities. There, market vendors sell exotic eggs next to the local ones. They usually sell live local chickens as well. Super- and minimarkets are only found in bigger settlements. Some super- and minimarkets are owned by large scale farms. If there is no shortage of eggs such farm-owned super- and minimarkets sell only eggs sourced from their own farms. But if there is a shortage, they will also purchase from primary collectors.

Broilers are for the vast majority sold as deep-frozen whole chickens in supermarkets and minimarkets (we did see one retailer that sells fresh broilers and a few freezers stocked with some breasts, thighs and legs next to the whole chickens). This is the only outlet for chicken meat which is not still alive and kicking.

The ELFORA wholesale would be another place to shop for those that need broiler meat in large quantities.

Consumption
For an analysis of consumption patterns and market opportunities of exotic broiler meat and table eggs, we refer to the market analysis report that is part of the inventory phase of the 2G@There Poultry Ethiopia program. Some general notions on the VC structure can be given though.

In general it is safe to say that exotic broiler meat and table eggs only constitute a tiny portion of the market share of chicken meat and eggs in Ethiopia. Consumption of animal-derived products is low all-together, because of the fasting regime (more than 200 days a year) the Orthodox Christian consumers follow and because many households cannot afford to buy much animal products. If budget, tradition or religion allow animal protein to be eaten, preferences are for local eggs and for local chicken or other meat types than chicken.

Local eggs and local chicken are used in traditional dishes such as doro wat. It is generally felt that modern eggs and chicken are not suitable to prepare this dish. Exotic broiler meat and table eggs are mainly used by bulk consumers that serve an international audience such as hotels and restaurants. Exotic table eggs are preferred, also by Ethiopians, over local eggs for use in pastry.

3.2.2 Value chain inputs

Feed
There are a few commercial feed producers that produce specialised poultry feed in the country. Feed mills generally use locally produced raw materials. However, premixes and concentrates are usually imported since there is no or insufficient production of good quality premixes and concentrates in the country.

Vaccines and drugs
For an analysis of the veterinary health system in Ethiopia, we refer to a study performed in parallel with the 2G@There Poultry Ethiopia program[8].

Equipment
Poultry farm equipment is available through several farm equipment distributors. All equipment is imported as there is no production in Ethiopia. The distributors have close relationships with several companies abroad (based in multiple countries, such as Belgium, Italy, The Netherlands, India, China, etc.). Customers are farmers at all scales. Small and medium scale farmers mostly buy drinkers and feeders, while large scale farmers need more comprehensive solutions including hatchery and climate systems.

3.3 Institutional and policy environment

Training services
For an analysis of training services and training needs, we refer tothe training needs assessment report that is part of the inventory phase of the 2G@There Poultry Ethiopia program (chapter 5 of this report).
In general, we can say that some trainings on technical aspects of farming are given at many levels and that training specifically on poultry farming is present as well. However, training on business development is lacking and needed.

Loan and credit services
Loan and credits are available for farmers at each level, collateral/ capital of 30% of the total investment is needed. Interest rates are between 8 and 12.5 % and are dependent on e.g. the location of the client (urban or rural). Farmers need to have a business plan to apply for a loan. At most crediting agencies farmers are assisted in developing their business plan. Some agencies discourage relatively poor people with limited financial means of their own to start up a small scale poultry farm because of prior negative experiences with this.

Crediting for small and medium scale enterprises falls under the government policy to improve the country's food security.

Crediting for large scale enterprises (projects of over 1 million birr) on the other hand falls under the policy to increase influx of foreign currency into the country.

Cooperatives and representative organisations
There are few farmers' cooperatives and only a few per cent of farmers are represented in a cooperative. Recently, the EPPA (Ethiopian Poultry Producers Association) has been established, to represent the interest of the Ethiopian poultry farmers. No clear objectives and work plans have been decided upon yet, thus the operationalization and implementation lags behind.

Import procedures
The poultry sector is highly dependent on import, since there is no or not enough in-land production of parentstock, DOCs, equipment, vaccines and drugs for instance. Imports run through a limited number of stakeholders, making others dependable on their operations. Import procedures are lengthy and complex and the offices through which import application need to go through do not ensure a smooth and quick handling.

Rural empowerment
Ethiopia has a tiered government system consisting of a federal states, zones, districts (woredas), and neighbourhoods (kebele). This makes it possible to deliver policies, such as those on rural empowerment, up to the woreda and kebele level. Each kebele has its own development agents. These DAs are responsible for agricultural extension services. They facilitate e.g. distribution of DOCs and animal feed, sometimes DOC can be purchased by poor farmers at a reduced price

Land tenure
When a farmer wants to start a farm, he need to apply for land at the district office. Land can be leased or rented for a long period (up to 99 years).

VAT registration
If a farmer wants to sell his products directly to consumers, he needs a VAT registration. These are expensive and therefore hard to get for most small and medium scale farmers. As a result they are dependent on brokers (primary collectors) in order to get their product to the market. These brokers charge a fee for their services, which presses on the farmer's profitability.

Views on and status of poultry production
It is believed by many that anybody could start a poultry farm and keep chickens successfully. It is not seen as something that need skill, knowledge and training. Many people start a poultry farm without any knowledge or without a solid business plan and with the expectation to make quick and easy money. The result is that many fail in their efforts. Because of this, there is a high turnover of entrepreneurs in the poultry business which adds to market and chain uncertainties.

Eating traditions and preferences
As said before, exotic broiler meat and table eggs constitute a tiny portion of the market share of chicken meat and eggs in Ethiopia and consumption of animal-derived products is low all-together, because of the Orthodox Christian fasting regime and the weak buying power of many Ethiopians.

[7] Claassen, I. 2012. Mission report, Poultry Veterinary Health strengthening Ethiopia

The preference for local chicken and eggs over the modern variety probably has its origin in the way chicken is prepared and eaten. There is one national traditional dish containing chicken meat and eggs, called doro wat. Outside doro wat, Ethiopians do not eat much chicken meat. Doro wat requires cooking the chicken meat for a long time. The traditional chicken, with its tougher meat-structure, is more fit to this. The dish is considered special; it is eaten on special occasions, it needs special attention in cooking and requires special (and expensive) ingredients. As a result of this status, chicken is not seen as something you can eat every day and which can be prepared simple, quick and easy. In addition to this, the more western modes of preparing chicken are not common in Ethiopia and chicken is not considered fast and cheap food as in many other countries. Since chicken can only be bought (or at least, mostly) as a whole animal, a fairly big investment is needed for this. Other types of meat, such as cattle, can be bought by the gram, making it possible for those with a smaller grocery budget to eat meat.

Demographic trends
The country sees a population growth and urbanisation. This might have an impact on the demand (types and quantities) for chicken products. Looking at past trends and other countries, increasing population, greater purchasing power and urbanization led to a rise in demand for livestock products and in many countries this demand was filled with pig and poultry products[9].

Food purchasing habits
Ethiopian consumers prefer to buy their groceries on the local market. They prefer to buy a live chicken and kill it themselves. Consumers perform extensive quality control on the product (chicken) they are about to buy, something which is more difficult in a modern supermarket on processed or dressed meat wrapped in foil.

Chain cooperation
There is little chain cooperation, there is not a chain approach and no chain director. There are a few very large companies with a very high influence on the sector and the market. They have the power to control prices and sometimes they dump products at a very low price on the market (an oligopoly)

[9] FAO, 2006. Livestock's Long Shadow: Environmental Issues and Options.

3.4 Overview of hatcheries in Ethiopia

Operational hatcheries

Name	Capacity
Alema Farms	200,000
Sululta	56,800 + 19,200
Abebaw	28,080
Addis	22,000
ELFORA	Unknown
Mekelle Farms	Unknown
Awassa	Unknown
University Alema Farms	Unknown
University Debre Zeyt	Unknown

Hatcheries being established or expanded

Name	Targeted capacity
Samson	56,800
Golden Poultry Farm	10,500 + 56,800
Nagash	22,000
Elere Farms (Fanta Terefe)	Unknown

Non-operational hatcheries

Name	Capacity
Genesis	64,000
Adama	37,000
University Awassa	37,000
Three Lakes Poultry Farm	22,000
University Ambo	18,000
Kombolcha	Very little production
University Jimma	Unknown

Hatcheries with unknown status

Name	Capacity
Gethu Alema Farms Poultry Farms	38,000
Bahir Dar	22,000
Adele	18,090
Bedele	18,090
Fanta	16,000
Beke Poultry Farm	8,400

All hatcheries have their own parentstock, which they import.

In general, the knowledge on hatching processes is low and management standards at most of the hatcheries are poor. This leads to low hatching percentages. E.g. one hatchery started off with 80 % initially one year ago, but gradually the hatching percentage went down 25 % early this year. With some provisional improvements the percentage has gone up to approx. 50 % again, still far too low.

Hatching results are influenced both by parentstock management as well as the management of the hatchery itself. Managing parentstock is more difficult than managing layers or broilers. E.g. feeding broiler parentstock is rather sensitive, as they need to be fed strictly according to schedule to prevent them growing too fat. The parentstock farms observed clearly lacked good management: animals were not always uniform, cocks often too fat, dry hens are not culled and many birds suffer from diseases and external parasites.

On most of the parentstock farms, there is no candling equipment available to test fertility of the eggs. Furthermore, hatching of both layer and broiler parentstock are often put together in the same batch, which is far from ideal, as layer hatching eggs are more sensitive to disturbances in the hatching process.

A structural problem with all the hatcheries in Ethiopia is the altitude on which they are built. All are on higher altitudes, where the oxygen concentrations are lower. This leads to higher mortalities between days 15 and 20 of the hatching process, when chicks gradually need more oxygen.

The total output of the hatcheries currently is too low to meet the demand for doc's. This leads to long waitinglists for poultry keepers and empty, unoccupied houses for periods sometimes up to 7 months or longer. This makes poultry production a risky venture and as a result, many people drop out of poultry keeping and turn to other ways of income.

4 Poultry Veterinary Health strengthening in Ethiopia

Author: Ivo Claassen, with assistance from Hilde Duns.

4.1 Introduction

This chapter reflects the findings of a survey of the author conducted in Ethiopia from 8-13 July, 2012.

4.2 Summary of main findings.

In parallel with the development of the Ethiopian poultry industry the veterinary health systems that are necessary to support poultry health should be developed. Currently the commercial poultry sector in Ethiopia is very small, and of minor economic importance, especially in relation to the cattle and small ruminant sector. As a consequence, there is limited knowledge on poultry management, disease diagnosis and disease control systems.

From discussions with Ethiopian researchers, veterinarians and representatives of international organizations, in combination with own observations the following can be concluded:

- The training of graduates from the veterinary schools is very generalist. Consulted veterinarians and the Ethiopian Veterinary Organization (EVA) describe the level of graduates as poor, but do not put forward any solutions.
- In the past 10 years the number of vet schools has increased from 1 to 9. This has had an enormous impact on the quality of education, in a negative way, and subsequently on the level of knowledge of graduates. Also the number of graduates has increased enormously. This has led to an oversupply of veterinarians and a devaluation of the profession. Many graduates find jobs elsewhere.
- There are no specialized poultry veterinarians. Post graduate training to fill this gap is not foreseen in the near future. It is generally acknowledged that expertise on poultry health issues among veterinarians is limited.
- The most important veterinary diagnostic institute, NAHDIC, is unable to diagnose important poultry diseases like Marek, Coryza and others, due to a lack of reagents and technical experience with these diseases. The institute relies heavily on the use of commercial assays which are hard to get, and have not been shown to be suitable for the Ethiopian situation. Research on HPAI, a disease that has not occurred in Ethiopia is consuming resources.
- There are 14 regional laboratories that are responsible for diagnosis of veterinary disease. They are linked to the Agricultural bureaus. The diagnostic possibilities of the laboratories are varying and limited Training programs by NAHDIC exist as well as annualmeetings of the managers of these laboratories.
- Disease surveillance is largely based on passive surveillance. There are some programs on monitoring for HPAI in wild birds.
- NVI produces a number of vaccines for poultry. Live and inactivated Newcastle disease, IBD, Fowl pox, and Fowl typhoid. Other important vaccines are not available from local producers. Vaccination programs are nonexistent but commercial producers do have regular vaccination against the most important diseases. There is no data available on the efficacy of vaccination in the field. There is no organized cold chain management. Vaccination is used as a control tool during outbreaks of disease.
- Research on poultry in Ethiopia seems to focus on the selection of robust cross breeds and on feed composition. ILRI has some research projects focussing on animal health issues in village and backyard poultry
- AU-PANVAC plays an important role in vaccine testing. This institute has excellent facilities for vaccine analysis and the development of reagents. It has the potential to play an important role for improving vaccine quality on the African continent. However the institute is lacking a good mandate and appears to be understaffed. It tests approximately 100 vaccine batches per year, whereas many more are produced, imported and used on the African continent. The following recommendations can be made on the basis of the finding;
- Development of a training program for interested government and industry veterinarians on poultry health issues. This program could be developed in cooperation with local partners such as industry or universities.
- Improve and increase diagnostic capacities to diagnose poultry infectious diseases. The responsible institute NAHDIC is the reference institute and therefore the most logical target for this activity. However, it is important that commercial farms are involved as well
- Start monitoring programs for infectious diseases, especially in commercial farms and surrounding areas
- Training on vaccination protocols and vaccine administration
- Training of farmers/ owners on poultry health issues and infectious diseases. The default reaction of farmers is to use antibiotics if they suspect a disease problem. A proper diagnosis of the problem is not made in most cases.

The focus of this mission has been very much on the technical capability of the Ethiopian veterinary infrastructure to diagnose and control poultry infectious diseases that are relevant for commercial poultry development. Universities have not been visited so the information on research and the quality of education stems from secondary sources. It is therefore recommended that future visits of experts include visits to universities and regional diagnostic laboratories to complete this picture.

In summary, poultry health management in Ethiopia can only be described as weak at all levels. There exist ample opportunities for improvement and the recommendations made in this report can serve as a basis to set priorities.

4.3 Key players in poultry health.

National Veterinary Institute (NVI), Debre Zeit
The NVI produces vaccines to protect Ethiopian livestock against infectious diseases. According to the information provided they produce app. 120 million vaccine doses annually. The majority of these vaccines are intended for cattle and small ruminants. Animal facilities and the research laboratory were visited. The actual production building was only seen from the outside but from the explanation it can be concluded that many different types of vaccines are produced in a single building. Bacterial and viral vaccine production is separated within the building.

Development of vaccines is limited and there are no intentions to develop poultry vaccines at this moment.

The vaccines are sold on site to the customers. There is no guaranteed cold chain after the vaccines leave the NVI. Also there are no data available on the quality of vaccines used in the field. Also NVI does not investigate the effectiveness of the vaccination programmes.

Vaccination is usually carried out during outbreaks.
Poor vaccine quality and or poor vaccine application in the field are serious concerns and they would go unnoticed in the absence of preventive vaccination programs.

All vaccine batches are retested by AU-PANVAC.
A small laboratory for process development was built with EU funding and GALVmed support over the past two years. Two suites for bacterial and viral product and process development are present.
NVI and PANVAC will use the facility together in the future.
At the moment of visit the unit was not in operation.

Food and Agriculture Organization (FAO), Addis Ababa
FAO representatives confirm the lack of poultry health knowledge in Ethiopia. When HPAI H5N1 was diagnosed on the African continent several parties invested in upgrading diagnostic capacity. A BSL 3 laboratory was established at NAHDIC funded by FAO. According to FAO the main problems in poultry are NCD and Gumboro. FAO has no ongoing poultry projects in Ethiopia.

A general problem for the veterinary services is the absence of budgets and decentralization. When there are budgets available poultry receives a low priority. NCD incidence is reported in a passive surveillance program.

Increasing awareness of biosecurity amongst farmers and veterinarians should be a priority. According to FAO, Gumboro was introduced 10 years ago by import of DOC from outside Ethiopia. General extra training of veterinarians is needed.

FAO sees the potential of the poultry industry to grow in size. Bringing down costs, strengthening biosecurity and vaccination programs are essential. In the current situation with over 95% of the birds held as backyard poultry, the only potential market for commercial poultry is seen in the larger cities (app. 20 million consumers). Growth can only be realized if poultry health management is taken seriously.

International Livestock Research Institute (ILRI), Addis Ababa
According to ILRI staff there is a national research program on poultry. ILRI collaborates with the Debra Zeit National Agricultural Research Centre. Most of the research focuses on nutrional value of feed but at Debra Zeit University animal health issues are addressed.

Results are published in scientific journals but there is no communication strategy to support implementation of usable results. The role of t

he private sector is very low and negligible in research.
It is acknowledged that there is a lack of qualified people for both farm management and veterinarians. ILRI is setting up a small research laboratory in collaboration with EIAR.

ILRI recommends that veterinary health training is set up as ToT (training of trainers) program, and works closely with researchers and existing education systems in veterinary schools. Also they recommend that training is focused on "serious" companies, for which ILRI can provide a list. Basic veterinary health skills should be trained to both veterinarians and poultry managers.

ILRI also indicates comprehensive poultry disease control program should be developed.

Pan African Laboratory for Vaccine Control (AU-PANVAC), Debre Zeit
PANVAC was originally founded in 1986 for the independent Quality Control of Rinderpest vaccines. Nowadays the institute is responsible for testing all vaccine batches that are produced, imported and used on the African continent. It is unlikely that they are actually reaching this goal since only 100 batches per year are tested. Other activities include training, reagent and diagnostic kit development and harmonization of testing protocols. OIE guidelines are leading. Testing focuses on safety, sterility, potency and identity testing and is in principle a repeat test of what the manufacturer is doing. However, PANVAC claims that they also test vaccines from the field and from outlets.

PANVAC is being funded by the African Union and it can be seen everywhere that funding is apparently not an issue. There are good facilities for laboratory testing (Bacteriology, Virology, and Molecular Biology), reagent development, and a one year old state-of- the-art BSL3 laboratory. The animal facilities include breeding facilities for rabbits, mice and guinea pigs. The premises are clean and well organized. The scientific staff is of high quality.

PANVAC ambitions are high but they appear to be understaffed, with only 15 people including management. As everywhere else, the focus appears to be on cattle and small ruminants and not on poultry.

The staff was very open and willing to discuss future collaboration.

Ethiopian Institute for Agricultural Research (EIAR), Debre Zeit
EIAR is doing some research on poultry breeding and feed research.
A small diagnostic laboratory is being established in collaboration with ILRI for research purposes. This laboratory is clearly in development and has very limited possibilities. The focus appears to be mainly on development of rural poultry management and as yet there appears to be no collaboration with commercial farms.

National Animal health Diagnostic and InvestigationCentre NAHDIC), Sebeta
NAHDIC is the most important laboratory for veterinary disease diagnosis in Ethiopia. In Ethiopia there is a network of 14 regional laboratories with limited diagnostic capacity. Samples are therefore send to NAHDIC for further diagnosis. This may take up to two to three days from remote areas.

The facilities are outdated but a new laboratory building is under construction. This building will house the virology, serology and molecular biology department. FAO has funded the construction of a BSL3 building on the compound for the detection of HPAI.

A separate poultry animal unit is under construction. NAHDIC has ambitions to maintain an SPF flock for the production of eggs for research,

A lot of equipment was found to be out of order and it was indicated that repair and maintenance of equipment was a serious problem.

The diagnostic capabilities for poultry diseases are limited. For serological assays usually kits are used, mainly ELISA's. Obtaining these is very difficult because of bureaucratic procedures. It was indicated that there were suspicions of Coryza and Marek's disease in poultry but that in fact the institute was unable to confirm this. Training on poultry diagnostic procedures would be necessary to improve the technical capacities and capabilities of the staff.

Data on NCD via passive surveillance are available. Also, there have been programs to monitor for HPAI and LPAI in poultry and wild bird. LPAI viruses have been isolated and identified.

Collaboration with health institutes in Ethiopia exists to support a One Health policy.

NAHDIC sends samples to OIE reference labs in Europe regularly if they are unable to make a diagnosis.

There is an annual meeting of the heads of the diagnostic laboratories (NAHDIC and regional). Also NAHDIC organizes technical training for the regional laboratories to increase the diagnostic capacity.

NAHDIC staff was very open to possible future e collaboration.

4.4 Improvement of poultry health delivery services in Ethiopia.

Introduction.
Poultry production is rapidly growing in Ethiopia due the strong rise in demand. Demand concerns both rural chickens at village level, but also in growing urban centres. These are mainly supplied by small scale producers operating near population concentrations in the urban centres. Both eggs and poultry meat are in high demand and the current level of production is insufficient to meet the demand.

A future rise in production will inevitably lead to higher densities of chickens on individual farms but also in (sub)urban areas. This growth in number poses certain risks of spreading poultry diseases. Furthermore, more inexperienced people will get involved in the poultry sector, who are not adequately trained in poultry management, and certainly not in preventing, diagnosing en treating diseases. Therefore, there is a clear need to improve on poultry health delivery services.

Present situation.
Currently, there are various elements of an infrastructure providing poultry health delivery services in place in Ethiopia. NVI provides a large number of vaccines for all animal species, including poultry. PANVAC is resposible for quality control testing of all vaccines that are produced, imported and used in the African continent. National Animal Health Diagnostic and Investigation Centre are in a position to do post mortem diagnosis, also for poultry. Limited laboratory diagnostic assays are available. However, not much use is being made of this facility due to a lack of awareness, and a lack of local veterinary staff monitoring the poultry health situation and stimulating diagnosis.

The effectiveness of the present poultry health delivery services is limited due to a lack of awareness amongst farmers, inadequately trained veterinary staff which leads to a suboptimal functioning of the system. Outbreaks of diseases are common, certainly amongst non-vaccinated local poultry, which can lead to losses up to 70 %. Inadequate diagnosis has led to a fear of HPAI (Avian Influenza) outbreaks in the country, which however turned to be Gumboro, a preventable disease. Newcastle disease and Gumboro are common diseases amongst rural and commercial poultry.

Vaccination programmes do not exist and vaccination is used as a tool to control disease during outbreaks. There are no comprehensive systems to guarantee cold chain storage and handling of vaccines. Data on field effectiveness of vaccination are not available.

Steps forward.
In order to improve the situation, focus should be in several areas:
- effective vaccination campaigns
- improving diagnosis of diseases.
- Training of veterinarians on poultry health issues

Improving effectiveness of vaccination campaigns.
Currently enough vaccines, against NCD, Gumboro, Fowl pox and Fowl typhoid are produced at the NVI to meet the demand of commercial poultry producers. Other vaccines for poultry have to be imported. Vaccines can only be obtained at the Institute in Debre Zeit, but poultry farmers from all over the country do buy vaccines, either through local government services and where these lack, they usually organise themselves to send a representative to Debre Zeit to obtain the vaccines. Individual private poultry advisers are also active in organising vaccinations campaigns.

Local birds are however hardly reached at all. This poses a threat to outbreaks of diseases putting commercial producers at risk and reducing potential food and income for local families. The NVI intends to start an awareness and training programme to reach more local village level poultry in 2012. Discussions have started on how the Dutch poultry initiative can collaborate in carrying out these awareness campaigns and trainings on vaccinations.

Improved monitoring will also lead to potentially lower use of antibiotics in poultry production in Ethiopia.

Improving disease monitoring.
Effective disease monitoring is necessary to register potential outbreaks already in its early stages. This requires professional veterinary services and laboratories, but more adequately trained staff able to recognise diseases at an early stage, both on farms, on markets and in slaughterhouses. Diagnostic capabilities, knowledge of epidemiology, extension to poultry farmers are all equally important components of a strategy to improve disease monitoring.

The planned activities will be fully planned with and imbedded in existing veterinary infrastructure in Ethiopia. No new organisations of facilities will be set up by this programme.

Planned activities.
The following activities will be implemented

1 Inventory mission/ Gap analysis.

Assessments will be made of available knowledge and infrastructure at the Ministry of Agriculture, veterinary services, diagnostic laboratory, vaccine production/distribution/imports, veterinary research, general veterinary training, registration/distribution veterinary drugs, cold chain facilities, available epidemiological knowledge, present and targeted surveillance, consultation with donors and other support programme targeting veterinary health in Ethiopia.

2 Veterinary services including training epidemiology, risk assessment and prioritization

Two training missions will be organised to train the veterinary services in epidemiological methods and in a work shop set-up to determine a risk assessment of most important diseases. This will lead to a possible strategy to prioritise the combat of most important diseases

3 Laboratory training including Quality management, test protocols and field diagnostics.

Trainings will be organized to strengthen veterinary services and veterinary laboratories. Field staff will be trained to recognise and diagnose diseases, good vaccination practices, extension to poultry keepers.

Laboratory training will a.o. focus on improving laboratory quality systems with on-site trainings.

Working out proposals for a system of local disease management.

4 vaccination and farm management

A mission will be dedicated to the proper use of vaccines and the development of vaccination schedules.

5 Final report and Drafting 3 year development plan for veterinary service

A final report will be drafted this report will include proposal for a 3 year development plan to strengthen the veterinary infrastructure of Ethiopia as well as the Ethiopian poultry sector.

5 Training needs assessment for the Ethiopian poultry sector.

Authors: Ernst Beitler, Helmich van Rees.

5.1 Introduction.

The technical and economic performance of the small scale poultry farmers/ entrepreneurs need improvement and are currently below professional standards. This is amongst others due to poor availability of day old chicks and a lack of good quality feed, together with a poor underdeveloped poultry health system and extension service. Management levels of small scale farmers is farmers are poor and they do not use the full potential of their poultry.

Poultry keeping knowledge and management levels require intensive support to raise production and subsequently family income levels. Therefore a sub-study focussing on the need for training and training delivery services was conducted.

The original objective of this survey was to make a first assessment of training needs in the commercial poultry sector in Ethiopia and to assess training needs and training delivery capacity both on farm and in the poultry value chain.

The study can be divided into four different sub-objectives:

1 To assess on-farm training needs

2 To assess farm management training delivery capacity

3 To assess poultry chain training needs

4 To assess poultry chain oriented training delivery services

The results of the assessments will be used to strengthen on-farm production levels and to strengthen various parts of the poultry chain essential to a productive poultry sector in Ethiopia.

1 **On-farm training needs:**
- assess knowledge levels on poultry farming of small scale, medium scale and large scale commercial farms of both farm owners and workers/family members. What are the general education and literacy levels, how many farmers have received practical training on poultry keeping
- assess management levels by observing on-farm performance levels
- analyse division of labour on farm
- how much training is needed on other aspects apart from practical farm management
- what part or percentage of poultry farmers do receive some form of training support

2 **Farm management oriented training delivery services.**
- available in Ethiopia: government, NGO's, from commercial companies
- what kind of training activities are carried out currently and which organisations and trainers are involved.
- in which areas are most training activities carried out
- on what locations are poultry training activities carried out
- which international organisations are active in poultry training programmes in Ethiopia

- what poultry training activities are currently (or have been in the recent past) carried out by consortium members

3 **Poultry chain training needs. (part of the chain analysis)**
- as part of the poultry chain analysis, describe management performance levels of the various key players in the poultry chain
- analyse the need for training support; to what extend do they need to know more about poultry keeping, of do they require support at other levels such as general management, financial administration, logistics etc.

4 **To asses poultry chain oriented training delivery services.**
- identify training parties active in service delivery aspects of the poultry chain: hatchery, animal health/vaccination, business development.

5.2 Approach

The training needs survey aimed at identifying the needs for training and to identify one or more organizations in Ethiopia which are able to invest in training / production facilities for the poultry production chain and which can operate in such a manner that all types of normal managerial duties like monitoring, recording, analysis and evaluation can be practised. The production/training facilities will be exemplary as far as infrastructure, production levels and management are concerned and will allow for training in the appropriate technology. The following points are guidelines for the assessment:

- what is needed to upgrade the skills of farmers/ participants and to improve their theoretical knowledge and above all their practical skills in modern poultry production.

- in transferring adapted knowledge and new technologies and in upgrading skills, a practical approach is strived for to improve skills and competencies for farmers or at any level.

- the practical training concept requires well equipped training facilities so as to enable the management and training staff to offer optimal practical training to its target groups.

- the training facilities should be adapted to the objectives of the different training programmes (such as professional / educational level of the participants and farmers) and should be representative of the Ethiopian poultry production chain, taking into consideration current and expected developments.

- most likely there are different target groups to be trained and educated in Ethiopia wher NGOs, agricultural research and universities offer training programmes at different levels. Although the principles are the same, each group (full-time students and professionals) requires a specific approach, methodology, and training programme and facilities.

The required information in this training needs assessment has been gathered through interviews, field visits, farm reports, information from government officials etc.

5.3 Identified Training Needs around Debre Zeit

Introduction
To carry out the survey, the Debre Zeit and Addis Ababa (town and surroundings) areas were visited from 2 to 7 July 2012.

Description of Target Area
The main geographical areas of the first part of the analysis/ assessment are the poultry and feed production sites located in the city of Debre Zeit and surroundings. The location of this area is inthe East Shewa Zone of the Oromia Region, and has a latitude and longitude of 8°45′North 38°59′East with an altitude of 1,920 meters. Oromia Region has the largest size and one of the 9 ethnically based administrative regions, which covers 353,632 square kilometers extend from the western border, curving to the southwestern corner of the country. The central part of the country is almost entirely covered by this region.

Poultry developments and knowledge gap identified
The number of commercial poultry farmers in the area is very high, though unknown, also by government statistics. Most farmers do have a medium size farm between 500 and 4000 birds. The limitation for farm development is mainly due to the absence of day-old-chicks and the poor availability and high price of good feed. During the assessment phase it was established that farmers are mainly focussing on maintaining and caring for their current flock, but are not operating as entrepreneurs. They need to be further trained in farm economics and analysis.

There are some large scale farms, like Genesis Farm, Maranatha farm and Alema farms and they know how to source the necessary knowledge and skills even from abroad. The workers on their farms however also need to be further trained in modern poultry keeping before they are able to work in modern poultry farms. It is possible, albeit with certain limitations, to make use of the facilities of the large scale farms to conduct a training for farmers and extension workers in the poultry sector.

Small scale farms/ backyard farmers with a few number (5-50) of chickens are many. In all cases, poultry is not the main source of income. Agricultural services like the Ethiopian Institute for Agricultural Research (EIAR) and NGOs like PassionConnect do provide training to farmers on the basic managerial aspects of poultry keeping before the farmers do get some chickens (rearing pullets of 12 weeks old) through the government at subsidized prices. In some cases the farmers are monitored by the agricultural extension worker. Technical en economic knowledge about commercial poultry keeping is virtually absent in case of most rural farmers.

EIAR and agricultural livestock extension staff focus on small scale farming and not so much on medium or large scale farming. Poultry is 2nd in terms of importance of livestock species in Ethiopia and thus the level of involvement of the government is limited as compared to cattle and other ruminants.

The EIAR has facilities for layers, broilers, parent stock, hatchery and feed mill and some are used for training. They do have a well trained staff concerning poultry production.

Prospects and opportunities for Poultry
Farmers experience a good market for their products in the vicinity of Addis Ababa and anticipate a fast growing market. Most of their product are bought by middle man selling eggs and meat in Addis Ababa and Debre Zeit. Some farmers supply the local market and some producers do have their own shops for meat and eggs around Addis Ababa.

PassionConnect Ethiopia is an NGO in the region. The training facilities for horticulture and the hostels are located 9 Km from Debre Zeit. The head office is in Debre Zeit. To supplement the practical training facilities they have built a hostel for 30 participants and have a conference room. They do have serious plans to construct a house for layers. Apart from that, they intend to start a rearing unit for pullets. This development will have a good prospect for the poultry business because next to a lack of capital, knowledge and skills in poultry production are the biggest challenge.

Several times during the year prices of meat and eggs fluctuate due to fasting period and religious celebrations. Since the government wants to stimulate poultry development and reduce on the number of cattle, mentioned in the strategic plan for 2012 through 2020, it seems to be very promising to start and invest in poultry farming. Farmers should not get experience by the " trial and error method" but by proper training and monitoring of farmers. In this region prospects for poultry are very promising.

Present level of knowledge and skills on poultry production
The visits that were made to poultry farmers in this region and other stakeholders like a chicken broker, local feed mill, processing plant, hatchery e.g. confirmed that there is a big knowledge gap in technical /practical knowledge and skills and in entrepreneurship in poultry production and poultry feed at every level.

Poor production results, high mortality and relatively high uses of antibiotics are more rule than exception. On large scale farms and poultry enterprises the results are better than on the medium scale farms as far as records are present and can be analysed.

A start into mall scale poultry farming is subsidized and promoted by government but the result of this programme, providing 5 chickens only to a rural farmer has limited effect son the knowledge and management level of his poultry.

Training needs
As mentioned before the training needs are felt on every level of education. A complete curriculum designed for every target group with their specific needs and points of attention would be appropriate. From the medium scale farmer up to the large companies. From the college graduate up to the Bachelor and Master level.

Target Groups
The target groups for the training activities are various, and come from different levels:

- Entrepreneurs in poultry production, broilers, layers, hatchery and feed milling
- Farm managers and poultry farm workers; active and potential poultry producers
- National Agricultural research Centre, extension officers. Bureau of Agriculture; extension officers and veterinarians

Potential Training Partners
The 4 potential partners below all have an interest in developing the poultry sector in the region and have strong links with the farming community.

- National Agricultural research Centre; have already 5 day courses for farmers who wants to start the small business. They do have research facilities which are used for practical training. They also have training on marketing of agricultural products
- Passion connect Ethiopia who has a strong link with passion connect in the Netherlands; has already training facilities and had experience in organizing training for local farmers with other stakeholders. They do have a training in value chain.
- Addis Ababa University, Faculty of Veterinary Medicine. Has training and education up to DVM level including a module on poultry production. A small poultry unit for research is present.

Bureau of Agriculture; home of the government veterinarians and extension workers

5.4 Identified Training Needs around Shire

Introduction
In the context of 2g@there Ethiopia, the woreda of Shire (town and surroundings) was visited from 8 to 10 July 2012. The town of Shire has about 50,000 inhabitants and is located one hour's drive from Axum to the East.

The area receives heavy rainfall during June, July and August, after which rainfall is absent for nine months. Since a few years however, farmers are constructing wells and an indication for the positive effect of these can be seen on the large number of new wells appearing everywhere in the landscape.

The area appears to be rich in iron and gold and recently mining company are settling in the area. The road infrastructure is also recently improved and some entrepreneurs are anticipating trade opportunities with the nearby countries Sudan and Eritrea.

Poultry developments
The number of commercial poultry farmers in the area is limited to a few dozen at most. The number of chickens on these farms does not exceed a few thousand at the moment. The limitation is mainly due to the absence of day-old-chicks and feed.

Farmers experience a good market for their products and anticipate a fast growing market, now that the income is increasing in the area because of the wells.

Prospects and opportunities for poultry
Probably the only active NGO in the region, the Well foundation (www.thewellfoundation.nl), is constructing a feed mill that will also produce poultry feed. Apart from that is has a suitable rearing unit for pullets and has plans to construct a hatchery as well.

The vice-president of Aksum University, that has a branch in Shire as well, is Dr. Aklilu Hailemichael, who is an active promoter of poultry. At Aksum University he initiated poultry units and intends to start a modest feed mill for his poultry as well. Both him and Dr. Seare Tabeje Desta, the Dean of the College of Agriculture of the branch of Aksum University in Shire, intend to consider the farming community in their academic programmes.

These developments together with the economic development is the region indicate that prospects for poultry are promising.

Present level of knowledge and skills on poultry production
The visits that were made to poultry farmers and other stakeholders confirmed once more that practical knowledge and skills are absent, resulting in poor production results, high mortality and abuse of antibiotics. There was one exception however, a farmer who had been working in poultry production in Saudi Arabia. Not just the farmers were lacking knowledge and skills, but also local extension workers and veterinarians admitted to lack knowledge and skills on poultry.

Training needs
Considering the present level of knowledge and skills in and around Shire a complete poultry curriculum for many would be most appropriate. Below the suggested target groups are mentioned and the most urgent topics are listed

Target Groups
- Farm managers and workers; active and potential poultry producers
- Teaching Staff of Aksum University, Agricultural College; those teaching to students and to farmers
- Bureau of Agriculture; extension officers and veterinarians

Topics to be included in training programmes:
- Health and Hygiene
- Basic bio-security principles and practices
- Vaccination techniques
- Disease diagnosis
- Feed
- Poultry nutrition
- Feeding broilers, pullets, layers
- Raw materials
- Housing
- Capacity
- Design
- Climate control
- Equipment
- Recording
- Design of recording system
- Calculating technical parameters
- Analysing technical parameters
- Improvement plan
- Economics
- Cost price calculation
- Analysis economic result
- Improvement plan
- Applied Management
- Daily, weekly and periodic work plan
- Acquisition of specific skills

Potential Training Partners
- The three potential partners below all have an interest in developing the poultry sector in the region and have ties with the farming community.
- Aksum University & Agricultural College; have already courses for farmers, there student also link with the farming community.
- The Well Foundation; has training facilities and had experience in organizing training for local farmers with other stakeholders
- Bureau of Agriculture; home of the government veterinarians and extension workers

6 SWOT Analysis

Authors: Jessica Cornelissen, Adriaan Vernooij, Alberto Giani, Hilde Duns.

SWOT Analysis of the Ethiopian poultry sector

The current situation in the poultry industry in Ethiopia can be summarized in the following SWOT analysis. The SWOT analysis applies to both the layers as well as the broiler chain. Focus is both on the internal environment (within the value chain) as on the external environment (external factors affecting the value chain).

Internal environment

Strengths

1 Poultry keeping well known (be it on village level only)
2 Good source of income for small scale farmer
3 Investment opportunities exist
4 Conducive physical climate
5 Low disease pressure (no HPAI)
6 Poultry production is concentrated in a few poultry hubs in the country

Weaknesses

1 Irregular supply of one day old chicks (irregular supply from abroad, low national production)
2 Poor hatching conditions and management.
3 No reliable statistics and market information on poultry production and demand.
4 Lack of trained workers, little training capacity available
5 Poultry development policies at village level not adapted to circumstances.
6 No veterinary monitoring
7 Poor management on farm leading to high morbidity and mortality
8 The lack of know-how for the use of technical equipment like hatcheries
9 Lack of knowledge on all types of management factors (health care, feeding and growing chicks)
10 Lack of marketing options and market access
11 Lack of knowledge of regulations and requirements for getting a loan to invest''
12 Lack of competition in the value chain (monopoly position of some big farms)
13 There are many small scale producers, a lot of which are at distant locations from services and supplies
14 The importance of quality feed for growing quality chicken and eggs is often not recognized
15 No national production of premixes and concentrates, these need to be imported
16 EPPA is dormant/not yet operational
17 Many small and medium scale farmers are dependent on primary collectors/middlemen to get their product to the market, as they have no means/money to obtain a VAT registration
18 There is hardly any infrastructure to bring fresh broiler meat (unfrozen) on the market
19 Low level of product differentiation of broiler meat
20 Poultry farming is seen as an activity that anybody could do without prior knowledge or experience. As a results many start-up a business and fail after a while. This leads to a high turnover of entrepreneurs in the poultry business which adds to market and chain uncertainties
21 No/low domestic production of veterinary drugs and vaccines.
22 Some large scale farmers dump their products on the markets

External environment

Opportunities

1 Export opportunities to Middle East (although: competition from Brazil)
2 Feed ingredients adequately available in the country (although export of ingredients is growing)
3 Large and growing domestic (urban) market (but a rise in demand will only emerge if consumption patterns/preferences change in favour of modern eggs and chicken)
4 Good feed conversion as compared to beef (intensive production)
5 The use of modern eggs in pastries and cookies (non-table eggs)
6 Bulk consumers (hotels, restaurants, etc.) show a growing tendency to purchase modern eggs and chicken, this group is growing
7 Support and attention from (business) development programs, both national and from abroad
8 Current farms can potentially have a big increase in efficiency/output by applying rather simple management measures
9 EIAR is searching for breeds that are adapted to the local situation
10 Broad outreach to rural farmers through DA's

Threats

1 Poor cooperation culture amongst farmers and lack of representative farmers' organisation
2 Strategies of chain actors are rather short term (actors are not likely to invest big sums for profits that are to be expected over a longer time period, actors are not likely to take big risk in investing in their business)
3 Illiteracy among primary producers
4 No possibilities to evaluate feeding value of raw materials, most feed used in of unreliable and uncontrolled quality
5 Credit is inadequately available
6 Bureaucratic procedures for investors require good knowledge of administrative and regulatory affairs and building up good relationships.
7 Water and electricity inadequately available
8 Poor coordination in value chain.
9 Land tenure system: no title deeds can be obtained.
10 Fluctuation in demand, especially the fasting periods bring down consumption radically
11 Import regulations: especially tax free regulations
12 "Government officials themselves lack the knowledge of the specific regulations in the poultry sector. Besides their way of working is highly bureaucratic''
13 The position of modern meat and eggs in the eating culture is currently not good, traditional meat and eggs are preferred
14 Most households purchase their food on traditional markets and rarely visit a supermarket (only relevant for broiler VC)
15 Start-up of large-scale integrated farms that produce solely for the export market and that compete for resources with the producers that produce for the domestic market.

7 Consumer research and chicken eggs.

Author: Saskia Cloezeman.

Tables

7.1 Background

Ethiopia is a landlocked country in East Africa, surrounded by Eritrea, South Sudan, Kenya, Somalia and Djibouti. The country currently contains around 82 million people of which 15% is living in urban areas. In recent years the Government of Ethiopia decided to strongly focus on economic development in order to fight poverty and meet the Millennium Development Goals. Through a clear guideline it is also possible for foreigners to invest in Ethiopia as a foreign company, or in partnership with an Ethiopian national as a joint venture. As Ethiopia has been closed from the outside world for many years, a lot of business opportunities have opened up in various sectors. One of these sectors is the poultry industry, an industry that is very underdeveloped. For this purpose the Holland Africa Poultry Parners would like to obtain more information about this specific sector in Ethiopia, as well as on customer behavior. Having a clear idea about opportunities for investments in this specific sector will also need a clear overview of the Potentials on the domestic market.

7.1.1 Scope of the research

The research conducted by North South Consulting should provide:

- Information on the usage (both quantitative and qualitative data) of chicken and eggs in Ethiopian culture for:
  a Ethiopian Orthodox
  b Muslims
  c Protestants
- Additional information
  a Information from vendors about
  1 Consumers of chicken and eggs
  2 Consumer preferences
  3 Inflation/devaluation of the product
  4 High season and low season

7.1.2 Methodology used

In order to obtain this information 3 different questionnaires have been developed (ANNEX 1) in order to abstract the information at local markets. Due to time constraints we were limited to do a short research in Addis Ababa. The data collectors were able to cover 8 local markets questioning at each market 20 customers and 15 traders in 2 weeks. Furthermore, the data collectors were asked to find information from some known hotels, restaurants and pastries in Addis Ababa to understand more about quantities needed and problems that are being faced in supplies if there are any.

Additionally, in order to obtain some final consumer information another slightly adjusted questionnaire was designed (ANNEX 1b). For the part of the research, we selected 7 different local markets in Addis Ababa and at each of them we questioned 20 consumers on their consuming behavior of poultry products, which added another 140 questioned respondents to this market research.

7.1.3 Limitations

Traditional fasting days have been a limitation on the practical data collection on local markets, as no chicken sellers or consumers are present on the market on these days. Moreover, a non compulsory fasting period of two weeks took place during the data collection period.

The study was limited to Addis Ababa; moving through the country obtaining data from local markets in a similar way needs a proper preparation of data collectors and would need more time and additional finances.

Setting up a network in poultry for Ethiopia is also time consuming, and will need more effort in the future.

7.2 The culture of chicken and eggs in Ethiopia

In the past years the prices of chicken and eggs have been increasing drastically. In January 2005[10] it was possible for people to buy 4 eggs for 1 Ethiopian Birr and at these times the price of one chicken at the local market would go from 20 up to 25 Ethiopian Birr. At that time a bread could be bought for 0,50 Ethiopian Birr and 1 kilo of tomatoes for 2 Ethiopian Birr. It is common knowledge that in Ethiopia the economic development is facing inflation of the currency and on top of this devaluation. It means that as well the value of money is reducing while at the same time prices of various food items are rising.

[10] Personal shopping basket list Saskia Kloezeman 2005 to provide information to VSO Ethiopia on market prices. During this year € 1,00 was exchanged for 8 Ethiopian Birr.

For many years there has been an assumption that chicken and eggs are scarce on the markets in Ethiopia. In this research we will pay more attention to the issue of scarcity. In order to understand the relevance for this product to exist and expand it is important to have more background information on Ethiopian culture and the role of chicken and eggs. Ethiopia has a rich, traditional, ancient culture, where animals do take a prior place in different traditional sayings, music, dancing as well as on the traditional menu. Talking with Ethiopians about chicken and eggs nowadays provides people with a huge arena to complain about the situation.

7.2.1 Background of Ethiopian culture and tradition.
Ethiopia is a Christian country found in the Horn of Africa. Together with Liberia it is the only country in Africa that has not been colonized and has been able to keep its ancient traditions, language and religion.

Ethiopia is relevant in the world's Christian history as well as in Muslim history. Because of this historical background Christians and Muslims are living peacefully together with estimated percentages of around 60% Ethiopian Orthodox, 25% Muslim, 10% Protestant Christians and 5% nature religions. During the holidays related to religion, people from different religions will celebrate this together. Of course the new year is celebrated by everybody at the same time.

7.2.1.1 Relevant traditions in the Ethiopian Orthodox Church related to food.
In the Ethiopian Orthodox Church the people are living according to the strict rules of the Old Testament, which implies that there are restrictions on the food they eat. Ethiopians eat only chicken, fish, beef, goat or sheep; no other animals should be eaten. In some areas some types of bird are eaten, as they are related to chicken.

Ethiopians living according to the rules of the church are fasting around half the time of the year. If they are very strict, this fasting is a vegan diet. They are not allowed to consume meat, dairy products or eggs during fasting time, . The longest consecutive fasting period is the one before the Ethiopian Easter (1 week after Western Easter), when people fast for 56 days. Another relevant fasting period starts around 45 days before the Ethiopian Christmas, which is on 7th January. In the evening of breaking the fasting, people spend the night in the church, while at home the mothers with their oldest daughter are preparing the Ethiopian specialty ´Doro Wat`; a chicken stew, which has a preparation time of around 7 hours.

During the non fasting period, people will fast on every Wednesday and Friday.

7.2.2 Eggs in the Orthodox Church
In general the egg is very important in the Orthodox Church as it symbolizes fertility. This is related to the connection that exists between the Russian, Greek and Ethiopian Orthodox Church, which all constitute the same root. In the Russian Orthodox church, filigraine and nicely decorated eggs are very famous and can be seen in the collection of the Hermitage in St. Petersburg and Amsterdam. In the Greek Orthodox church eggs are being used as a symbol of fertility, just as in the Ethiopian Orthodox Church.

In Ethiopia you can find the 7 Ostrich eggs on the roof of the Orthodox churches, as representation of the Heavenly and Earthly angels. Some authorities claim that they are used in recognition of the fact that the ostrich always guards its eggs most solicitously, and their eggs, it is

hoped, will similarly at all times protect the faithful. During special holidays people visit monasteries and provide each other with presents afterwards; these can be very beautifully painted Ostrich egg.

7.2.3 Cultural decorations
The role of chicken is very relevant as women in the Northern parts of Ethiopia do like to decorate themselves with different tattoos for religious purposes. People are for example decorated with crosses on their face, around Gondar, North Wollo and Bahir Dar. In addition, the women have tattoos which show a pattern of chicken feathers around the neck. The tattooing is an ancient tradition performed by few elderly people in the community. They use a little needle to make small incisions and then rub it with charcoal to get the color in. Often women also tattoo their gums to make their teeth look more white. All these traditions of body decorations are painful, but do have their own traditional function. In local traditional societies one of the aspects to value the women are these decorations.

7.2.4 Cultural dance and chicken
In the local traditional dance from the North, especially Gondar but also some of the other areas around Lake Tana, the dance of women is to imitate the behavior of a chicken. She is doing this by holding a scarf and waving her skirt or scarf pretending to be the wings and moving her shoulders accordingly, which is giving the effect of a chicken shaking its feathers. Moreover she will shake and move her head like a chicken that is trying to drink water or pick grain. The chicken in the traditions described above are related to fertility rituals.

7.2.5 Traditional sayings
The saying ´kesbekes, enkulal be igru yehedal´ means: slowly the egg will get legs and will start walking. This is a saying used in many, many different situations to express the concept of time. Things do need time and then they will go by themselves, as not everything should be pushed. A very African saying and core to describe cultural assumptions in many different ways and situations.

7.2.6 Traditional food
As in every country, also in the Ethiopian traditional kitchen there is a first class dish, which is made of chicken. The preparation time of this dish takes around 7 hours and is called ´Doro Wat´ (chicken stew; recipe ANNEX 2). The cooking by itself is full of different rituals which start with the slaughtering of the chicken, while prayers should be said and the chicken should be killed by a mature man (never by a woman). Buying a chicken alive is very important as it is the only guarantee for a family that slaughtering follows the appropriate customs. Cleaning the chicken and cutting it into 12 pieces is the work of the women. Preparation of onions, spices and spiced butter to cook in also takes time, which makes the process for preparation long.

7.2.7 Current situation on chicken and eggs
During the Ethiopian Orthodox holidays (ANNEX 3) all orthodox Ethiopians prepare ´Doro Wat´, which needs a minimum of 1 chicken and at least 1 egg for every person in the household. In many situations these holidays are also celebrated by protestants and in some situations Muslims as well, as these are normally national holidays. As Ethiopia has a population of currently around 82 million citizens, with around 6 people per household, there are around 13,500,000 households of which 60% are orthodox, 25% are Muslim, 10% are protestant and 5% have another religion. This means that the need for chicken and eggs is high throughout the year with a peak around the special holidays. The low season is during the fasting period in the orthodox religion, when there is a fasting period of two consecutive months (56 days).

In Ethiopia the share of exotic chicken in total annual poultry meat and egg production has increased by 118% over the last 20 years. While during the 1970s and 1980s 1% consisted of imported exotic breeds, the estimation was that in 2004 2.18% of the total national poultry population consists of exotic chicken (CSA, 2004-2005).

According to Solomon Demeke (FAO, Animal production and health division, 2008), the total poultry population has been declined by 64% over the last 50 years. This decline has mainly been caused by periods of epidemics, when mortality rates as high as 80% have been recorded among the local poultry population (Yami and Dessie 1997). As a consequence, the share of exotic imported chicken used for commercial production has relatively grown. Although the total poultry population declined, demand especially for exotic fertile eggs, chicks, culled layers and pullets / cockerels is very high (FAO, Animal production and health division, 2008).

Except for Addis Abeba, the greater part of the poultry production and (potential) consumption takes place in these areas. Addis Abeba, Debre Zeyt and Nazreth, all situated in the region of Oromiya region, cover 95% of commercial poultry production of the country. In total, Oromoiya region has around 34,4 % of the national chicken population and contributes 36 % of the annual national egg and poultry production (FAO, Animal production and health division, 2008).

7.2.8 Ethiopian Holidays
The Ethiopian Calendar starts at the end of the rainy season with a New Year on the 11th of September, which they name the 1st Meskerem. Names of months are different, as well as there are 13 months in a year.

11th September 2012 is in Ethiopian Calendar 1st Meskerem 2005.

28th September: Meskel celebration

6th October – 15th November: Tsege fasting (9 days to commemorate the flight to Egypt)

26th October: Eid al-Adha (Arafa)

15th November: Islamic New Year

24th November – 7th January: Gena fasting (45 days fasting of the prophets)

7th January: Ethiopian Christmas

19th January: Ethiopian Ephiphany

20th January: Ethiopian Ephiphany for St. Mikael church

24th January: Birthday of Prophet Mohammed

25th February – 27th February: Naneway fasting (3 days for commemorates the mission of Jonah)

11th March – 5th May: Abey fasting (55 days until Ethiopian Easter)

28th April: Palm Sunday (Hosana)

4th May: Ethiopian Good Friday

5th May: Ethiopian Easter

13th June: Ascension day

23rd June: Pentacost

24th June – 12th July: Fasting of the Apostelles (18 days of fasting, not compulsory)

26th June: Dehnet fasting (start fasting every Wednesday and Friday)

9th June – 8th August: Ramadan

7th August – 22nd August: Filseta fasting (16 days to commemorate the ascension of Mary)

This shows 146 fasting days with all the additional 96 Wednesdays and Fridays, except for 6 weeks after the Easter fasting. The total amount of fasting days for strict Ethiopian Orthodox people is around 242 days, which leaves the people with 114 days of non-fasting.

For the Muslim people the Ramadan is as everywhere in the world and restricts people during 1 month from eating at daytime, but they do eat in the evening all dishes they like.

The people that are Protestant in Ethiopia, they do not participate on fasting, they can eat meat, dairy, eggs and so on the whole year through.

General national holidays, not related to religion:

8th December: Nations, Nationalities & People day

2nd March: Victory of Adwa

1st May: International Labour Day

5th May: Patriots Victory Day

28th May: Downfall of the Derg regime

Source: Tesfa Ethiopian Calendar 2005 E.C.

7.3 Research results

The consumer research has been limited to the different areas of the capital city Addis Ababa. Addis Ababa contains people from all areas of Ethiopia and also has a large international community.

7.3.1 General information on Addis Ababa

Addis Ababa is the Federal capital of Ethiopia and a chartered city; having three layers of government: City Government at the top, 10 Sub City Administrations in the middle and 116 woreda's Administrations at the bottom. The 10 subcities[11] are:

Arada, Cherkos, Gulele, Kolfe Keranio, Akaki Kaliti, Nifas Silk-Lafto, Lideta, Bole, Addis Ketema, Yeka. Some additional subcities will be added in the near future as Addis Ababa is expanding rapidly and many more residential areas are being constructed (e.g Bethel, Hayat).

Addis Ababa is geographically located between 8055' and 9005' North Latitude and between 38040' and 38050' East Longitude and covers around 54,000 hectares, with a population of more than 5 million people. The average elevation is 2,500 meters above sea level, with a fairly favorable climate and moderate weather conditions.

The city was established in 1887 by Emperor Menelik II and Empress Taitu. During Emperor Haile Selassie it expanded more and became the capital of the Organization for the Unity of Africa, for which the building of the Economic Commission of Africa has been constructed which is now facilitating various offices of the United Nations ECA. Currently the cities blueprint has been developed and roads have been expanded in order to provide a better access to different areas. Various business centers and residential areas are currently being constructed.

7.3.2 Organization of the research

The 4 data collectors were selected from a group of graduate students at St Mary University College from the stream Marketing Management. The induction and orientation for the research has lasted half a day. They had 10 days in Addis Ababa to collect all the necessary information. Within these 10 days they had to consider the fasting days, which reduced the amount of days collecting data to around 6 days, when respondents were available on the local markets to provide information. The data collectors were able to visit 8 different markets and questioned 160 buyers and 120 sellers of chicken and eggs. They were also able to work on visiting 30 larger buyers like restaurants, supermarkets, café´s and hotels in Addis Ababa.

The 8 markets visited are Kera, Gurd Shola, Cherkos, Sheromeda, Simien Shola, Shola, Saris and Akaki (also see the map in ANNEX 4). The markets are spread throughout the city; both richer and poorer areas of Addis Ababa have been included in order to provide a proper reflection on differences between markets.

During data collection the research team has been facing problems which directly relate to and are relevant for the outcomes of the research, most prominently two fasting days a week from the Ethiopian Orthodox church, on Wednesday and Friday. Just before and on the fasting days hardly any people were available to sell chicken or eggs(and consequently also hardly any buyers of poultry products). Some of the non-orthodox people asked during these fasting days would have liked the products for them to be available.

Another big problem for the research team has been the fear people have to provide information on prices and amounts sold because of the behavior of the Ethiopian Inland and Revenues offices. On the local markets a traditional system of selling is still in place, in which people do not pay tax over the goods that are being sold. Since last year the government has been hunting people that are trading goods without having a Tax Identification Number (TIN) and don't pay taxes by putting them in prison or charging them huge amounts of money in fines.

7.3.3 Characteristics of the participants

In total four different groups of people have been questioned about their preferences and ideas about purchasing chickens and eggs. The biggest group of respondents were 160 local customers and 120 local market sellers. Of this last group, 40 are little shop owners. Furthermore, 30 larger hospitality and retail companies in different areas of Addis Ababa have been interviewed.

7.3.3.1 Customers local markets

The 160 individual customers questioned can be divided in religion, educational background and home situation. The religion has a huge impact on the consumers' behavior in the poultry industry. Educational background provides an indication on the income level of a person or household and related opportunities of having a better paid job. The home situation indicates the amount of children, and how many households are accepting additional relatives living within the household. Housekeepers that are living with families have not been included, as they are not participating as a family member inside the household. The amount of additional relatives living within a household indicates the spending capacity of the household. Also information on the differences in price and availability can be provided for the different locations. Moreover, all customers asked on the local markets were Ethiopian women, as it is in the Ethiopian tradition that women select the chicken and eggs to be bought on markets.

[11] City government of Addis Ababa http://www.addisababacity.gov.et

Table 6 General data on market customers

	1 Kera	*2* Gurd Shola	*3* Cherkos	*4* Sheromeda	*5* Simien Shola	*6* Shola	*7* Saris Market	*8* Akaki Market
Income generated by								
husband	45%	30%	55%	20%	40%	70%	60%	45%
wife	0%	10%	15%	25%	10%	5%	10%	25%
both	55%	60%	30%	55%	50%	25%	30%	30%
family size								
children	3.25	2.65	3.55	2.2	3.5	3	3	2.5
families with additional relatives or servants	8	6	6	5	8	12	8	5
education								
no education	15%	10%	20%	0%	10%	5%	20%	30%
primary school (grade 1 up to 7)	15%	15%	10%	20%	0%	10%	30%	25%
secondary school (grade 8 up to 12)	30%	25%	40%	55%	55%	30%	20%	10%
Diploma (10 +1 and up)	25%	40%	25%	15%	20%	35%	15%	15%
Degree from University	15%	10%	5%	10%	15%	20%	15%	20%
Religion								
orthodox	75%	65%	60%	60%	60%	70%	35%	70%
muslim	15%	15%	35%	35%	35%	0%	50%	15%
protestant	10%	20%	5%	5%	5%	30%	15%	15%

In figure 1 some general information has been provided on the people that are buying chicken and eggs. This is a random impression of 8 markets in different areas of Addis Ababa. Some of the areas are visited by the more well off people, while other markets have more customers from the lower economic segments of society.

The majority of the participants (46%) stated to be housewives with a husband generating income. Another 42 % of buyers was part of a family in which both partners are having an income, , working most often as merchants, civil servants or some sort of private employment. This private job implies most often being a maid or having a small other job over which no income tax is paid. The amount of family members is on average above 2, with 1 family that stated to have 9 children in Cherkos and 2 families with 8 children in Cherkos and Simien Shola.

Of all the participants, 33% attended secondary education, 24% have a diploma, 16% attended primary education, 14% obtained a degree and the other 14% stated to have no education.

The participants that have been questioned reflect the religious deviation in Ethiopia. From all participants 62% is Ethiopian Orthodox, 25% is Muslim and 13% is Protestant. One market shows a higher population of Ethiopian Orthodox people and on another market you see a higher amount of Muslim people. This can be explained by the location, as for example Saris has a high population of Ethiopian Somalians, while in Kera and around Shola you find some of the main Ethiopian Orthodox churches in Addis Ababa.

7.3.3.2 Local market sales person

In this chapter general data of chicken sellers and small shop owners is provided. The small shops in general sell eggs beside all kind of other products. On local markets in Ethiopia you see a huge amount of fixed little shops, while during daytime you will also find on special open areas temporary salesmen, only coming to the markets if they have something to sell. At local markets, chickens are sold by people that don't have a permanent shop. Often, these chicken sellers also sell eggs in big hand-woven baskets.

Eggs are being sold in many different ways. There are shops that always sell eggs at the side of their assortment of food and household items. Then there are irregularly people coming to local markets to sell a basket full of eggs.

Table 7 General information local market salespersons

	1 Kera	2 Gurd Shola	3 Cherkos	4 Sheromeda	5 Simien Shola	6 Shola	7 Saris Market	8 Akaki Market
How many chicken sellers at this market	11	9	10	20	15	20	16	10
How many egg sellers at the market								
only eggs	1	2	6	10	5	10	4	6
little shop with many other items	10	many	15	10	20	10	many	40
From where do you get the chicken?								
d/t local farmers	50%	70%	80%	0%	100%	100%	0%	100%
big organization	0%	0%	20%	0%	0%	0%	100%	0%
Other	60%	60%	0%	0%	0%	0%	0%	10%

The markets visited do have fixed shops, of which many of them are selling eggs on the side. Adequate information on prices, supply and quantities will be obtained from this group of participants.
Most of the egg sellers are getting their supplies from different individual local farmers; there is one market in Saris that gets all its supply from a large organization. At some of the markets the supply comes through middlemen from the countryside. There are also shops that have some of their supply via middlemen and the rest of supply through direct contact with local farmers.

When asked what major problems are being faced on the supply side, most of the sellers stated:

1 Eggs are broken upon arrival. This is due to transport problems; the eggs are not being properly packed. Most of the eggs arrive in big handmade baskets.
2 Eggs are rotten. The moment eggs have been collected upon the time they are being provided to the market has taken too long. No cooling is being used.
3 There are not enough eggs provided. Sometimes sellers only get half of the amount they ordered due to lack of produce.
4 Chickens arrive dead, also due to transport problems. Chickens are being hanged upside down on the side of public transport means, or being carried in special cages, with too many in one case.
5 Chickens that arrive have diseases. See point 4.
6 Sometimes the sellers don´t get chicken at all, as the middlemen have run out of supply). This one was the case at the Akaki market and could be the case for some other markets at the outskirts of Addis Ababa.

7.3.3.3 Larger consumers of chicken and eggs

Besides the local consumers and sellers it is important to identify the larger consumers that do need a steady supply for their business. Different groups of larger consumers have been identified. For this research we approached 6 different hotels as they do provide breakfast with eggs. Also 5 known café´s were included that provide products to their customers in which they use eggs or chicken. Then there are 8 different restaurants which provide different types of international food in order to understand the regular supply that is not depending on the Ethiopian calendar. Finally there is an overview of 10 known supermarkets in Addis Ababa that sell chicken meat and eggs.

Table 8 General information hotels and café´s

	Hotels 6x						Café´s 5x				
Name organization	Hilton Addis Ababa	beshebele Hotel	Jupiter International Hotel	Destiny Addis Hotel	Harmony Hotel	Intercontinental Addis	Lime Tree Cafe Bole	Bole Mini	Red Bean Café, Restaurant	Bon Café & Restaurant	Raizel Café
Year established	1970	1964	2008	2004	2010	2004	2003	1970	2009	2008	1998
How many branches			2				4			2	2

The Wabeshebele and Hilton Hotel have been established during the time of the rein of Emperor Haile Selassie. In recent years the amount of quality hotels is growing rapidly and more hotels are being added very fast. From the existing hotels some of them do have a branch in Addis Ababa or are planning to open one.

One of the first Café or Diners (American Style) is Bole Mini. In recent years many other café´s have opened. They are providing mainly coffee, tea and drinks, but do offer at the side different cakes and snacks.

Table 9 General information restaurants

	Restaurant 8x							
Name organization	Stockholm Restaurant	Amsterdam Restaurant	Lebanese Restaurant	Romina Restaurant	Serenade	Chicken Hut	Jewel of India	East Dragon Chinese
Year established	2008	2005	2004	1980	2004	2010	2007	2005
How many branches				2		5		

Addis Ababa is known for its international character of restaurants. It is possible to taste international cuisine on an acceptable standard. In recent years many restaurants have been added of which a couple are specialized in preparing chicken. For this research we selected the Chicken Hut, but also restaurants as Zebra Grill and Mama´s Grilled Kitchen are known for their grilled chicken.

In Ethiopia it is not possible to find a franchise of McDonald´s or Kentucky Fried Chicken, as the chicken meat that is being provided to restaurants, hotels and to supermarkets does not carry the HACCP certificate. At the moment of research no abbatoirs or meat processing factories have been established that are able to fulfill the HACCP criteria. One entrepreneur[12] does have the intention to construct this facility and start producing HACCP certified meat, but this is currently in a preliminary stage.

[12] The entrepreneur does not want to be mentioned yet, as they are working on finalizing some procedures.

Table 10 General information supermarkets

Name organisation	New York Supermarket	Belonias Supermarket	Fantu Supermarket	Bambi´s Supermarket	Central Supermarket	Fresh Corner	Abader Supermarket	Day to Day Supermarket	Shoa Supermarket	Friendship Supermarket
Year established	2002	1999	2002	1998	1998	2006		2007	1998	2003
How many branches			2			5	2		4	

Table 11 Customer preference local markets

	1 Kera	2 Gurd Shola	3 Cherkos	4 Sheromeda	5 Simien Shola	6 Shola	7 Saris Market	8 Akaki Market	
You buy chicken mostly at									
local market	90%	100%	100%	100%	100%	85%	100%	100%	97%
local shop	0%	0%	30%	30%	25%	5%	0%	0%	13%
Supermarket	10%	5%	0%	0%	5%	15%	0%	0%	5%
You buy eggs mostly at									
local market	50%	60%	80%	100%	95%	30%	100%	100%	77%
local shop	100%	95%	75%	80%	95%	65%	50%	55%	77%
supermarket	10%	5%	0%	5%	0%	5%	0%	0%	3%
grow own chicken	0%	0%	0%	0%	0%	0%	5%	5%	1%
Amount of eggs for the holiday									
Range	2 - 20	5 - 20	5 - 30	5 - 25	5 - 30	10 - 40	8 - 20	5 - 16	
Mediate	10,7	12,63	15,05	12,8	13,65	18,85	13,85	9,6	
Buy chicken									
alive	95%	100%	70%	85%	85%	95%	90%	95%	89%
dead and cleaned	10%	10%	50%	20%	20%	10%	30%	45%	24%

As spending power is growing as a consequence of economic growth in recent years (ANNEX 5), more people are attending supermarkets. For this purpose many supermarkets have been expanding their existing facilities, started a branch, next to the sprouting of new supermarkets in Addis Ababa. One of the most famous and older supermarkets is Bambi´s, mainly because of their large amount of foreign imported items. They attract a large amount of the expat community and the diaspora as customers. Some other supermarkets also started importing goods. All supermarkets sell chicken and eggs and provided sufficient information on prices and customer preferences.

7.3.4 Research outcomes

Above some basic relevant information on the supply chain of chicken and eggs has been provided together with information about the participants in this research. It shows the attitude towards these products for Ethiopia. In this part we will go into more detail on preferences of customers and the prices that have been paid before and are being paid currently.

7.3.4.1 Consumers preferences

As in Ethiopia it is tradition for people to kill their own chicken following the necessary rituals in order to make an excellent Doro Wat, it can be assumed that people prefer to buy chicken alive. Also, there seems to be a clear preference for local eggs. In general a capital city of a country will show the first change in traditions, so people deciding to buy dead and cleaned chicken saving time, seems most likely to happen in Addis Ababa. We asked respondents where they prefer to buy their chicken as well as their eggs.

Ethiopians are known to be conservative in the way they prepare their food and in their use of basic ingredients. One of the assumptions is also that Ethiopians prefer to buy Ethiopian chicken with less meat, and local eggs, which are smaller and have a relatively dark yolk.

All customers agreed that local eggs are more tasteful than larger commercial eggs. For chickens, the same principle applies; rather small and with a lot of bones instead of larger and more meat. This implies that people find taste more relevant than quantity. Of all the people asked, 89% is purchasing chicken alive, while 11% buys chickens that are dead and cleaned. Around 13% of all respondents sometimes buy chicken alive and sometimes already dead and cleaned. In Cherkos at least 30% of the questioned people are always purchasing dead and cleaned chicken. In other areas this percentage is lower, although in Akaki 45% of the questioned people stated to buy sometimes alive chickens and sometimes chickens that are dead and cleaned.

People stated that they would like to buy chicken dead and cleaned on more occasions throughout the year as it saves them a lot of time preparing food. Most of these respondents are both working fulltime. It was also noted that non-orthodox respondents commented on the lack of availability of poultry during orthodox fasting times, as they would like to buy poultry products also in these periods.
In general 97% of respondents prefer to buy their chicken on the local market, while eggs are equally bought at the local market as well as in local shops.

During holidays on average 13 eggs per family were bought. Some respondents stated that if the products would be cheaper somehow, they would buy more, but also more regularly. Some respondents select to celebrate their holidays only once or twice a year by preparing Doro Wat; throughout of the year they can not afford to prepare this special dish.

Chicken and eggs are not only being used during holidays or in a Doro Wat dish. Especially Muslim participants stated to be using chicken for soup or as ´arosto´, which means fried or grilled chicken. Eggs are also often used for breakfast as an omelet, scrambled or in a sandwich.

Table 12 Customer preference according to local market vendors

	1 Kera	2 Gurd Shola	3 Cherkos	4 Sheromeda	5 Simien Shola	6 Shola	7 Saris Market	8 Akaki Market
Who is buying chicken								
Local buyers	100%	100%	100%	100%	100%	100%	90%	100%
Foreigners	0%	0%	10%	0%	0%	0%	30%	10%
Restaurants/hotels	0%	0%	10%	0%	0%	0%	10%	60%
What is the best chicken								
local	100%	100%	100%	100%	100%	100%	90%	100%
Ferenj	10%	0%	0%	0%	0%	0%	20%	40%
What is the best egg								
Local	100%	100%	100%	100%	100%	100%	90%	100%
Ferenj	0%	0%	0%	0%	0%	10%	20%	40%

Table 13 Customer preference large consumers

Large consumers	Hotels	Café's	Restaurants	Supermarkets
Who is buying eggs?				
Foreigners	83%	80%	88%	60%
Diaspora	50%	80%	50%	50%
Ethiopian higher income	67%	100%	63%	90%
Who are buying chicken?				
Foreigners	100%	100%	88%	80%
Diaspora	67%	80%	63%	40%
Ethiopian higher income	67%	100%	75%	90%
What does the customer prefer?				
Local chicken	50%	0%	38%	50%
Ferenj chicken	83%	100%	88%	90%
What does the organization buy?				
Whole chicken	17%	0%	0%	100%
Specific parts	83%	100%	100%	70%

The chicken sellers were asked who their customers are as they were assumed to be Ethiopians, but at some markets, like for example Saris, 30% of the buyers are foreigners, while in Akaki 60% of the buyers were restaurants and hotels.

While consumer respondents, reached a 100% score on the preference for local chicken and local eggs, the same question to sellers had a slightly different result with 9% of the sellers stating that there is a preference for foreign chicken as well as foreign eggs. These answers were mainly provided at the Saris market, where foreigners are also buying poultry.

The large consumers belong to a different kind of community than the ones that are buying on the local markets. Many of the products of large consumers have already been processed before being sold. The supermarkets do state that in general around 45% of better off Ethiopians do buy eggs and chicken in their facilities, against 20%/25% of the diaspora and 30%/40% of the foreign community. In the supermarkets they do sell mainly ferenj chicken. At all supermarkets interviewed whole chickens are sold, while in 70% of the supermarkets it is possible also to buy specific parts of the chicken.

The majority of hotels, cafés and restaurants are using the ferenj chicken. The main reasons given for this choice:

1 More meat on the chicken
2 Hygiene, as the local chickens are not always properly cleaned or might have had a disease.

Cafés and restaurants only require specific parts of the chicken, while 17% of the hotels are purchasing the whole chicken.

7.3.4.2 Prices of chicken and eggs

In recent years many prices of basic food products have been rising quickly, while at the same time the value of money went down. This problem of devaluation and inflation has been managed by the Ethiopian government by fixing exchange rates and introducing price caps, by for example setting maximum prices for staple food products, tomatoes and onions.

Understanding the increase of prices in relation to the emotions of consumers is part of this research. The data collectors asked about prices of last year, so had to depend on their respondents memories and their concomitant feelings about the perceived price rise.

Table 14 Prices paid by consumers

	1 Kera	2 Gurd Shola	3 Cherkos	4 Sheromeda	5 Simien Shola	6 Shola	7 Saris Market	8 Akaki Market
How much do you pay for chicken								
Range	70 – 120[13]	70 – 110	80 – 150	90 – 120	100 – 140	60 – 160	65 – 120	60 – 120
Mediate	91,5	96,25	115,75	115,25	119,75	107,5	96,5	90,5
How much did you pay last year for a chicken?								
Range	120 – 170	70 – 130	60 – 120	70 – 150	75 – 110	65 – 140	75 – 130	60 – 125
Mediate	141	97,5	97,5	99,5	99,5	102,25	109,25	85,25
What is the maximum you paid for a chicken?								
Range	120 – 170	120 – 170	110 – 170	120 – 160	130 – 160	110 – 160	110 – 160	100 – 160
Mediate	147,5	154,25	138,5	144	145,75	133,25	145	136
How much do you pay for an egg now?								
Range	2,10 – 2,40	2 – 2,20	2,3 – 2,6	2,15 – 2,5	2,40 – 2,50	from 2 – 3	from 2 – 3	2 – 2,5
Mediate	2,215	2,115	2,455	2,3825	2,445	2,4125	2,4475	2,225
How much did you pay last year for an egg?								
Range	1,70 – 2,10	1,70 – 1,90	1,75 – 2,2	1,5 – 2,1	1,65 – 2,45	1,65 – 2,3	1,75 – 2,1	1,7 – 2
Mediate	1,8525	1,805	1,9725	1,8675	1,8425	1,9325	1,9375	1,95

[13] €1,00 = 22 Ethiopian Birr (July/August 2012)

During the research we received different information concerning the prices for chicken and eggs. As prices on local markets are never fixed, the prices people pay are related to their own negotiation skills as well as the type of chicken they buy. There are younger and older chickens for sale, as well as bigger and smaller ones, which all influences the price. This is why besides showing the mediate price of chicken and eggs per market we also show the minimum and maximum prices paid to help understand the range and the prices people are willing to pay. Some markets have customers from higher income classes, while at other markets many consumers from the lower income classes are purchasing their goods.

The information related to last year's prices is according to respondents' memory, which is less reliable. Additionally, we have been able to retrieve information on inflation rates which is attached in ANNEX 5 in order to understand the last years' increase of prices, monthly increase of prices and also the expected increase of prices in the future. During the holidays prices of chicken and eggs are skyrocketing and consumers sometimes pay double prices for a chicken in comparison with regular days on which chicken is available. Ethiopians do complain about this, but at the same time pay the necessary amount of money as being stated.

As salaries are still low in Ethiopia, it has to be understood that not everybody can afford to purchase a chicken for each holiday. Respondents identified scarcity of poultry products as one of the major reasons why prices during holidays go up, while the greediness of merchants is provided as a second explanation for temporary increases of prices.

Table 15 Prices and sales indication local sellers

	1 Kera	2 Gurd Shola	3 Cherkos	4 Sheromeda	5 Simien Shola	6 Shola	7 Saris Market	8 Akaki Market
Chicken sellers								
Maximum sold per day	8,8	8,6	12,4	18,5	33,5	37	8,4	14,5
Maximum price chicken	106,5	116,00	119,00	117,00	114,00	132,00	89,00	146,50
Maximum price egg	2,29	2,275	2,48	2,555	2,48	2,505	2,19	2,2
Enough chicken for selling	70%	80%	100%	0%	90%	50%	0%	50%
Enough eggs for selling	80%	70%	60%	80%	60%	80%	0%	50%
Local shops (eggs only)								
Maximum price egg	2,68	2,4	2,46	12,5	2,53	2,42	2,37	2,36
Enough eggs for selling	20%	0%	20%	60%	60%	40%	60%	60%

For this research it was relevant to obtain sales prices from sellers as well. They provided prices that show no big difference from what consumers stated to be paying.

In addition we wanted to check the explanation of scarcity, which at some markets has not been a problem, while at other markets it certainly has. Most sellers stated that during holidays there are serious problems of supply of chicken and eggs and that they sell out too quickly.

In one market it was stated that as they are the last point to be supplied by the merchants, they sometimes don´t get any chicken or eggs to be sold at all.

Concerning greediness, some of the local small sellers are making only small profits, because of transport expenses and bad products (rotten eggs, dead chicken etc.); this has to be taken into account when calculating the price. As they are also confronted with price fluctuations they sometimes have to sell their products below the prices they bought them for, while at other instances making a nice profit. Many of the temporary sellers obtain a small loan or micro credit in order to purchase eggs and chickens to start up their sales business.

Table 16 Prices and sales indication large consumers

Large consumers	Hotels	Café's	Restaurants	Supermarkets
Chicken per day (sales/usage)				
Local	0			4
Foreign	40	6,3	50	19
Price of chicken				
Local	0		128	76
Foreign	98	67	110	83
Eggs per day (sales/usage)				
Local	0	100	25	100
Foreign	233	350	25	305
Price of eggs				
Local	Na	Na	Na	3
Foreign	Na	Na	Na	3

The larger consumers do sell their products regularly throughout the year, being less influenced by traditional holidays. Their prices are in general higher than on the local markets, although the price of dead and cleaned chickens are below the prices of chicken that can be bought alive on local markets. This is one of the most remarkable outcomes of this research.

The larger consumers did not have any problem with supply as they are supplied mainly by Alema or Elfora farms, which are able to guarantee a continuous supply of chicken and eggs. There are a few large producers (ANNEX 6) of chicken and eggs working on a professional level to provide for the local market. Based upon the information Mrs. R. Duns obtained during her research, it was found out that for these larger producers it is not interesting to intensify production to increase profits. They reason that if they intensify production, prices of their products will go down, while their production costs stay the same.

7.3.5 Prices of chicken, chicken meat and eggs in Debre Zeyt and Nazareth

For a comparison on prices between Addis Ababa and other larger cities in the Oromiya region, Ms. R. Duns acquired additional data in Debre Zeyt and Nazareth.Figure 12 and 13 give an overview of the prices of commercial and local chicken (meat) and eggs among different groups in the retail sector in these cities. Prices are stated in the last weeks of July 2012, just after the Ethiopian Orthodox fasting time in which there is possible demand increase. It has to be noted that in case of the price of chicken (meat), the price is identified per whole chicken and not per kg. To give an indication of the weight of local and commercial chicken, the slaughter weight at 12 months for a local chicken is on average 1.5 kg while the slaughterweight at 8 weeks for a commercial chicken is already 1.8 kg. In case of eggs, average weights for respectively local and commercial eggs are 38 and 56 grams (CACC 2003 and Alemu Yami 1997).

Figure 12 shows that the commercial cleaned and frozen chicken is relatively cheap compared to the alive local chicken sold on the local market. Figure 13 shows that in supermarkets, commercial eggs are often cheaper than local eggs, although in Debre Zeyt and Nazareth it does not beat local eggs on the local market.

When compared with Addis Ababa prices, it becomes clear that they are a little lower in Debre Zeyt and Nazareth. Furthermore, in Debre Zeyt and Nazareth no local clean and frozen chicken were found. During field research in Awassa (begin July 2012), which is located 270km south of Addis Ababa and has a population of 258,808 (CSA,2007), cleaned and frozen chicken were found in several shops. Several women from Awassa established their own trade in cleaned and frozen local chicken. These women made part of their house available for freezers in which they kept frozen local chicken. Supermarkets, hotels, restaurants and Ethiopian households buy these.

Table 17 Prices of local and commercial chicken in Debre Zeyt and Nazreth, July 2012

	Debre Zeyt	Nazareth
Local chicken (alive on local market)	74 - 78	76 - 78
Commercial chicken (cleaned and frozen)	87	98

Table 18 Prices of local and commercial eggs in Debre Zeyt and Nazreth in Birr, July 2012

	Debre Zeyt	Nazareth
Local egg on local market	1.95 – 2.17	1,84 – 1,95
Local egg supermarket/ minimarket	2,6 – 2.82	2,6
Commercial egg supermarket/ minimarket	2,39 - 2,6	2,39

7.4 Additional Consumer Research

In order to obtain final consumer information a slightly adjusted questionnaire was used to also gain data on the quantities of purchased poultry products. We selected 7 different local markets in Addis Ababa, and at each of them we questioned 20 consumers on their consuming behavior of poultry products, which added another 140 questioned respondents to this market research. This research clarifies the buying behavior of poultry products in Addis Ababa and provides an indication for other cities in Ethiopia, although prices there might be slightly different. The amount of consumption is significantly different per market area and does not provide hints for other parts of Ethiopia.

7.4.1 Organization of the research

The 7 additional markets visited in October 2012 were Bethel, Kolfe, Gerji, Bole Rwanda, Asco, Lafto and Simien Masegadga, which can also be found on the map in ANNEX 4. The markets are spread throughout the city, which created a good addition to the location of the first research and has provided for a strong coverage of Addis Ababa. The richer and poorer areas of Addis Ababa have been included more or less equally in order to provide a proper reflection on differences between markets.

The same data collectors as in the first research were involved to obtain the information from these markets. They only surveyed consumers, which reduced the amount of work and the amount of days they needed in order to finalize the data collection. In this report we will display the average outcomes of this research. Moreover, we will display the average outcomes of the first research in the last column of every table.

7.4.2 Characteristics of the participants

This additional research has been covering 7 local market places in Addis Ababa, where at every market 20 female buyers have been questioned according to the instructions and questionnaire provided. The 140 individual customers questioned can be again divided in religion, educational background and home situation.
The religion has a huge impact on the consumers' behavior in the poultry industry. Educational background provides an indication on the income level of a person or household and related opportunity to having a better paid job. The household situation indicates the amount of children, and additional relatives living within it. Housekeepers living with families have not been included, as they are not participating as a family member inside the household. The amount of additional relatives living within a household indicate the spending capacity of the household. Furthermore, information on price differences and availability can be provided for the various markets. Moreover, all customers asked on the local markets were Ethiopian women, as it is Ethiopian tradition that women select and buy chickens and eggs on local markets.

In figure 1 some general information has been provided on consumers of poultry products in Addis Ababa. This is a random impression of 7 markets in different areas of Addis Ababa. Some of the areas are visited by more well off people and other markets have more customers from the lower economic segments of society. In addition, we calculated the average of these 7 markets and reflected this with the average of the other 8 markets from the 1st research.

The majority of participants 62% stated that in their household, husband and wife are both working and generating incomes, with 39% running a household in which only the man gains an income. This is a slight difference with the 1st research and can be explained by the city's outskirt locations of the markets. The average amount of family members was approximately 2, with a maximum of 5 children per family. Of all participants 21% attended secondary education, 31% have a diploma, 8% attended primary education, 16% obtained a degree and the other 24% stated to have no education. The respondents reflect religious deviation in Ethiopia; 55% is Ethiopian Orthodox, 33% is Muslim and 17% is Protestant.

Table 19 General data on market customers

	1 Bethel	2 Kolfe	3 Gerji	4 Bole Rwanda	5 Asco	6 Lafto	7 Simien Masegadga	Average	Average 1st research
Income generated by									
husband	40%	35%	20%	5%	40%	90%	80%	39%	46%
wife	0%	0%	15%	20%	10%	5%	20%	10%	13%
both	60%	65%	65%	75%	50%	40%	80%	62%	42%
Family size									
children	2	2	2	2	2	3	1	2	3
additional relatives or servants	11	7	5	4	8	9	3	7	7
Education									
No education	40%	30%	0%	40%	10%	5%	40%	24%	14%
Primary school (grade 1 up to 7)	0%	0%	5%	20%	0%	10%	20%	8%	16%
Secondary school (grade 8 up to 12)	10%	10%	5%	20%	55%	30%	20%	21%	33%
Diploma (10 +1 and up)	25%	40%	70%	10%	20%	35%	20%	31%	24%
Degree from University	25%	20%	20%	10%	15%	20%	0%	16%	14%
Religion									
orthodox	35%	35%	80%	60%	60%	30%	50%	50%	63%
muslim	35%	40%	20%	35%	35%	35%	30%	33%	25%
protestant	30%	25%	0%	5%	5%	35%	20%	17%	13%

4.3 Research outcomes

In this part we will go into more detail on preferences of customers and prices that are currently being paid. The first research has already shown more extensively the increase of prices for chicken and eggs in recent years. This research will focus more on the quantity of poultry products people state to consume per month or per year.
We differentiated the participants according to religion because the expectation is that consumer behavior between the different religious groups can be significant.

4.3.1 Consumers preferences

Ethiopians are known to be conservative in the way they prepare their food and what they use as basic ingredients. Moreover, the assumption is that Ethiopians prefer to buy local chickens (with less meat) and local eggs (which are smaller, but have a more colorful yolk).

Table 20 Customer preference local markets

	1 Bethel	2 Kolfe	3 Gerji	4 Bole Rwanda	5 Asco	6 Lafto	7 Simien Masegadga	**Average**	**Average 1st research**
You buy chicken mostly at									
local market	55%	70%	100%	100%	100%	100%	100%	**89%**	**97%**
local shop	5%	10%	70%	5%	25%	0%	0%	**19%**	**13%**
Supermarket	75%	85%	30%	20%	5%	15%	0%	**38%**	**5%**
You buy eggs mostly at									
local market	35%	35%	95%	80%	95%	100%	80%	**74%**	**77%**
local shop	80%	95%	95%	100%	95%	100%	100%	**95%**	**77%**
Supermarket	70%	60%	0%	0%	0%	45%	0%	**25%**	**3%**
grow own chicken	0%	0%	0%	0%	0%	0%	0%	**0%**	**1%**
Amount of eggs for the holiday									
Range	15 - 30	10 - 20	4 - 40	10 - 40	7 - 20	10 - 45	5 - 40	**4-45**	**6-50**
Mediate	20	16	18	20	13	20	16	**17**	**13**
Buy chicken									
Alive	55%	65%	100%	100%	85%	100%	100%	**86%**	**89%**
dead and cleaned	65%	65%	15%	20%	20%	85%	20%	**41%**	**24%**

All customers agreed that local eggs are more tasteful than larger commercial eggs and backyard chickens more tasteful than dead and cleaned commercial chickens. This seems to imply that people find taste more relevant than quantity. Of all respondents, 86% are purchasing their chickens alive, while 41% (also) buys chicken that is dead and cleaned. In Lafto 85% of respondents are sometimes purchasing dead and cleaned chicken. In other areas this percentage is lower, although in Bethel and Kolfe also 65% responded to do so.

Respondents, most of them in a full-time occupation, stated they would like to buy chicken dead and cleaned on various occasions throughout the year, as it saves them a lot of food preparation..

It was also noted that people commented on the lack of availability of poultry during orthodox fasting times.

In general 89% of respondents prefer to buy their chicken on the local market, while 38% stated to sometimes buy chicken in the supermarket. Chicken is hardly bought (and available) at local shops. Foreggs, 95% are bought at local shops, 74% of participants stated to buy them also at local markets and 25% mentioned to sometimes buy eggs in the supermarket.

During holidays people buy on average 17 eggs per family (in the first research this was 13. Respondents stated that, if poultry products would be somehow cheaper they would buy more, but also more regularly. Some people select only one or two holidays to prepare Doro Wat, as for them it is too expensive to prepare it each holiday.

Table 21 Amount of chicken and eggs bought per household

	1 Bethel	2 Kolfe	3 Gerji	4 Bole Rwanda	5 Asco	6 Lafto	7 Simien Masegadga	**Average**	**Average 1st research**
How many chicken do you buy a year									
Range	18-48	15-40	5-30	6-40	4-20	5-40	6-40		
Average	28	29	12	14	11	12	19	**18**	**24**
How many eggs do you buy per month									
Range	70 -160	24-200	15-100	30-100	20-55	6-120	10-100		
Average	91	124	46	50	39	47	50	**64**	**39**

7.4.3.2 Consumers behavior

In this second round of market research, more specific questions were asked in relation on the amount of chicken and eggs that people are using. The numbers obtained from consumers are estimates and some of the consumers actually were not able to provide exact amounts, as they had no accurate idea of how many poultry products they are consuming.. Some participants again stated that the consumption of poultry products is related to their financial situation and income security.

The average consumption is 18 chickens per household per year, with a maximum average of approximately 29 chickens and a minimum was average of only 11 chickens per year.

On average, people stated to consume around 64 eggs per month with a maximum of 124 in Kolfe and a minimum of 39 eggs in Asco. Kolfe is an area near Mercato, where many traders can be found. Most of these traders are Muslim and thus non-fasting, which explains the higher consumption of poultry products. In Asco many poor people reside, which explains the lowest consumption of poultry products in this market research. In Bethel, many relatively wealthy people are currently constructing houses or already reside here.

As figure 8 shows, Muslims use on average most poultry products. This is obviously to a large extent caused by fasting customs among orthodox Ethiopians. For the difference with protestants no clear explanation could be found.

Table 22 Consumption per religious group

	Chicken per year	Eggs per month
Orthodox	18	57
Muslim	20	66
Protestant	13	58

4.3.3 Consumption of poultry related to religion

In this additional survey we also specified the consumption of poultry products per religious community. Some differences were identified, but the buying power of customers also here seems the most important determinant of the quantity of consumption of poultry products. Some respondents stated (just like in the first research) that they would like to buy more poultry products, but that they find them extremely expensive.

Table 23 Specified overview on usage per religious group

	1 Bethel			2 Kolfe			3 Gerji			4 Bole Rwanda			5 Asco			6 Lafto			7 Simien Masegadga		
	%	ch	eggs	%	ch	eggs	%	Ch	eggs	%	ch	eggs	%	ch	eggs	%	Ch	Eggs	%	ch	eggs
orth	35	30	77	35	32	114	80	10	43	60	9	31	60	15	55	30	15	43	50	13	35
musl	35	24	82	40	26	101	20	18	54	35	17	57	35	8	10	35	13	61	30	35	100
prot	30	29	101	25	30	175	0	0	0	5	6	50	5	11	38	35	8	32	20	7	10

Table 24a Chicken consumption

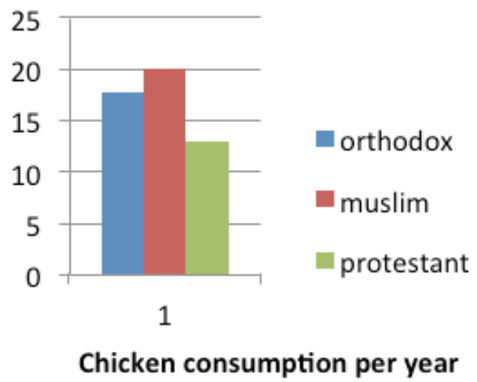

Table 24b Egg Consumption

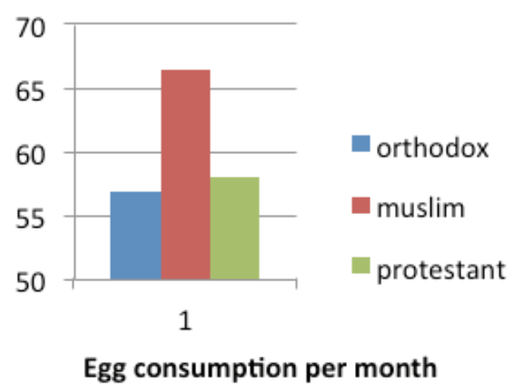

Table 25 Prices paid by consumers

	1 Bethel	2 Kolfe	3 Gerji	4 Bole Rwanda	5 Asco	6 Lafto	7 Simien Masegadga	**Average**	**Average 1st research**
How much do you pay for chicken									
Range	70 – 100[14]	80–100	120–150	80–95	70–100	60–100	140–160		
Mediate	85	92	140	86	87	83	153	**104**	**104**
What is the maximum you paid for a chicken?									
Range	110–190	75–200	140–200	85–180	130–160	110–170	170–200		
Mediate	153	165	172	116	144	140	190	**154**	**143**
How much do you pay for an egg now?									
Range	2,6 – 3	2,6 – 3	2,4 – 2,5	2,5 – 2,6	2,7 – 2,8	2,45–2,6	2 – 2,6		
Mediate	2,86	2,75	2,48	2,58	2,78	2,48	2,46	**2,63**	**2,34**

[14] €1,00 = 22 Ethiopian Birr (July/August 2012)

For each town district, we were able to identify the demographic composition. For every market we specified an average consumption of poultry products, related to religion. A diverse picture was gathered; in some markets orthodox consume most chickens and eggs, while in other markets, Muslims or protestants are consuming most poultry products.

We took the total averages of these 7 markets and divided it into the different religions. For both chicken and eggs it is clear that the Muslim population is a relatively high consumer of both products.

It is important to keep in mind that during the orthodox fasting season and when religious holidays are approaching, it is very hard for people to obtain chicken. Eggs are available throughout the year, although around holidays scarcity exists as more people want to buy eggs.

7.4.3.4 Prices of chicken and eggs
We also asked salesmen and large consumers to provide us with prices of poultry products in order to verify people's feelings and thoughts about price rises. Also in Ethiopia traditions are slowly eroding and the government is stricter on controlling VAT payments. More often people are punished when not fulfilling their tax obligations. However, when implementing and starting to enforce taxation laws, the Ethiopian government did not provide time or proper information to local sellers, which creates uncertainty and anxiousness among them

When the research was carried out different information about prices for poultry products was gathered. As prices on local markets are never fixed, the prices people pay are determined by their own negotiation skills as well as the type of chicken they buy. Moreover, variables like age and size of the chicken influence the price. There, besides median prices also the minimum and maximum prices paid per market are presented.

During holidays prices of chicken and eggs are skyrocketing and people do pay sometimes double prices for a chicken compared to non-holidays. As salaries are still low in Ethiopia not everybody can afford to purchase a chicken each holiday. People identify scarcity and greediness of merchants as major reasons of price rise during holidays.

7.5 Conclusion

This consumer research aims to provide a better insight in the different types of consumer in Addis Ababa and the attitude towards buying chicken and eggs. Different cultural traditions in which chicken and eggs are playing a crucial role have been discussed. The research furthermore shows market prices and what people are willing to pay. Different indications for improvement have been provided by final consumers, as well as by final sellers. This might contribute to a more professional poultry industry in Ethiopia. On different parts of the value chain suggestions have been provided, which could be added to the Value Chain Analysis performed by the Wageningen University & Research Centre.

7.5.1 Local markets
For this consumer research, information has been collected from Ethiopian consumers on their consumption patterns of chicken and eggs from the local markets. They also provided information on preferences, and their opinion on the current situation as well as the quality of poultry products.

7.5.1.1 Poultry usage
In Ethiopia there are an estimated 13,500,000 households, of which around 830,000 (5 million people) are based in Addis Ababa. Consumer behavior for poultry products differs per market area, religion and even per family. It is related to cultural customs, buying power or income security.

Through a calculation based upon population rates and this research, estimations on household usage can be made. In a regular month, an Ethiopian family in Addis Ababa uses around 64 eggs. Eggs are not only used for boiling or frying, but in Ethiopia it is very normal that people use their eggs for homemade pastries as well.

For holidays, some people purchase 2 or 3 chickens in order to prepare enough food for their family, while others can only afford it for 1 or 2 holidays a year. From the 8 different markets the median of all of them was taken, which led to an estimated average of 13 eggs per holiday per household.

In one year an Ethiopian family in Addis Ababa consumes around 18 chickens. This is an average of all religious groups taken together. In the figure below we were able to specify the usage of chicken and eggs per religion, in order to provide a clear insight in different customs. Muslims use on average most poultry products. This is obviously to a large extent caused by fasting customs among orthodox Ethiopians. For the difference with protestants no clear explanation could be found.

For one orthodox holiday in Addis Ababa, if all orthodox inhabitants (60% of the population) would decide to make Doro Wat, 498,000 chicken and 6,474,000 eggs are needed (based upon 13 eggs per preparation as a mediate amount). There are around 5 big Orthodox holidays (Meskel, Epiphany, Christmas, Easter and New Year) throughout the year when people try to obtain a chicken and all necessary ingredients to prepare Doro Wat. Of course not all households will be able to do so and many will select one or two holidays per year for preparing this special dish.

A national orthodox holiday in Ethiopia takes the lives of 8,100,000 chicken and needs around 105,300,000 eggs in order to make sure that there is enough for Orthodox Ethiopians to celebrate this holiday with the famous Doro Wat.

celebrated New Year celebration by all religions implies the consumption of 13,500,000 chicken and 175,500,000 eggs on that very day!

A normal orthodox family eats around 12 chicken stews (24 chickens)and 312 eggs throughout the year.
Many Ethiopians stated to prepare also other dishes with chicken and eggs.

7.5.1.2 Customs in a regular Ethiopian family
People in Ethiopia are willing to pay a reasonable price for a good product. Eggs are being sold, even if people have to pay 3 Ethiopian Birr (€ 0,14per egg, while you can buy a bread for 1,20 Ethiopian Birr (€0,06) only.

In Ethiopian culture it is very important to buy chicken alive, for which people are willing to pay up to 170 Ethiopian Birr (€ 7,39) for a healthy animal. In certain occasions people are slowly starting to use chickens that are already dead and cleaned, even amongst Orthodox Ethiopians. A dead and cleaned chicken can be bought for 85 Ethiopian Birr (€ 3,70) and even when the chicken is cut into pieces and ready for use, the price is still 90 Ethiopian Birr (€ 3,91) only.

A chicken dead and cleaned is cheaper to purchase than a chicken bought alive at the local market. This is for most consumers not a reason to buy a dead chicken.

Besides a preference for local chicken, the respondents in this research also prefer the local chicken and eggs more than the so called ´ferenj´ products. Almost all participants stated that they preferred the taste of local chicken and eggs, as it has more flavor. Moreover, the color of the ´ferenj´ egg is white inside, while the color of the local eggs has a nice yellow egg yolk.

7.5.1.3 Opinions about scarcity
Many respondents stated that not enough chicken and eggs are available, especially during the holidays. They also see this as the explanation for the price increase of poultry products on these occasions.

They also mentioned that chicken farmers might produce more, but are not willing to do so in order to keep prices high.

They stated that in the future an increase of production would be good for both the producer as the customer. Respondents hoped the government will intervene strongly in the industry to break the monopoly of merchants and wholesalers.

Sellers of poultry products on the local market lastly mentioned several transport problems. Especially transport of living animals has not been properly developed in Ethiopia, as animals are for example being transported on top of (mini)busses or trucks for long distances.

7.5.2 Larger consumers
The international community is buying their poultry products mainly in supermarkets rather than at local markets. Also various restaurants prefer supermarkets or retailers rather than local markets. Main reasons mentioned are related to the quality of the product and hygiene.

As for some of the restaurants chicken is their main dish supply and quality need to be guaranteed. Most of the restaurants questioned are providing to the international community or Ethiopians from the higher income segment.

Larger consumers also stated that for them it is relevant to have a regular supply throughout the year, since they are much less depending on the Ethiopian Orthodox tradition. The Hotels, restaurants and café´s prefer Ferenj poultry product because of their larger volumes and their higher quality standards. In contrast with local markets, prices from large producers do not fluctuate so much, which guarantees less risks of having to revise prices on menu´s too often.

Companies like McDonalds, Kentucky Fried Chicken and others are not able to establish a franchise in Ethiopia yet, due to lack of HACCP qualified meat production facilities. An initiative is being established in the near future which will attract the big food chains to set up franchise businesses in Ethiopia as well.

7.6 Questionnaires

1.a Consumer Research 1

Market Name:	
1 Income	
	husband
	wife
2 Family size	
	children
	additional relatives
3 Subcity & Kebele	
4 Education	
5 Current job	
6 Religion	
7 You buy chicken mostly at	
	local market
	local shop
	supermarket
	grow own chicken
	other
8 You buy eggs mostly at	
	local market
	local shop
	supermarket
	grow own chicken
	other

9 Buy chicken	
	alive
	dead and cleaned
10 How much do you pay for a chicken now?	
11 How much did you pay last year for a chicken?	
12 What is the maximum you paid for a chicken?	
13 How much do you pay for an egg now?	
14 How much did you pay last year for an egg?	
15 How much is the maximum of eggs you need during holidays?	
16 How do you use chicken	
17 How do you use eggs	
18 Do you have chicken at home?	
19 When yes, for what do you use them?	
eggs	
meat	
other	
20 Other remarks	

THANK YOU FOR YOUR COOPERATION!

Market Name:	
1 Income	
	husband
	wife
2 Family size	
	children
	additional relatives
3 Subcity & Kebele	
4 Education	
5 Current job	
6 Religion	
7 You buy chicken mostly at	
	local market
	local shop
	supermarket
	grow own chicken
	other
8 You buy eggs mostly at	
	local market
	local shop
	supermarket
	grow own chicken
	Other
9 Buy chicken	
	Alive
	dead and cleaned

10 How much do you pay for a chicken now?
11 How many chicken do you use per year?
12 What is the maximum you paid for a chicken?
13 How much do you pay for an egg now?
14 How many eggs do you use per month?
15 How much is the maximum of eggs you need during holidays?
16 How do you use chicken
17 How do you use eggs
18 Do you have chicken at home?

19 When yes, for what do you use them?	
	eggs
	meat
	other

20 Other remarks

THANK YOU FOR YOUR COOPERATION!

5 shops that sell eggs
10 sellers of chicken/eggs

1 Name market:	
2 Subcity:	
3 How many chicken sellers at this market:	
4 How many egg sellers at the market	
	only eggs
	little shop with many other items
5 From where do you get the chicken?	
	d/t local farmers
	big organisation
	other
6 Maximum sold in 1 day	
7 Maximum price received for a chicken	
8 Maximum price received for an egg	
9 Who is buying chicken	
	local people
	foreigners
	restaurants/hotels
10 What is the best chicken	
	local
	ferenj
11 What is the best egg	
	local
	ferenj
12 When do you sell most of the chicken	
13 When do you not sell chicken	

14 When do you sell most of the eggs
15 When do you not sell eggs
16Can you get enough chicken to be sold
17 Can you get enough eggs to be sold
18 What are problems in consumption for	
eggs	
chicken	

1 Name organisation main or branch:	
2 Year established:	
3 How many branches:	
only AA	
also other areas in Ethiopia	
4 From where do you get your supply?	
5 Who is buying from you your eggs?	
	foreigners
	diaspora
	ethiopian higher income
6 Who are the major customers for chicken?	
	foreigners
	diaspora
	ethiopian higher income
7 Can you get enough chicken regularly	
	yes
	no (why?)

8 Can you get enough egg regularly	
	yes
	no (why?)
9 What does the customer prefere	
	local chicken
	ferenj chicken
10 Do customers by a whole chicken or specific parts?	
11 What are problems in consumption for	
eggs	
chicken	
12 How many chicken do you sell per day?	
local chicken	
ferenj chicken	
13 What is the price of a chicken at the moment?	
	local chicken
	ferenj chicken

14 How do you see the future of selling chicken?				
15 How do you see the future of selling eggs?				
16 How many eggs do you sell per day?				
local egg				
ferenj egg				
17 What is the price of an egg at the moment?				
	local egg			
	ferenj egg			
18 Other comments to be added				

7.7 Research site

Research 1

1 Kera
2 Gurd Shola
3 Cherkos
4 Sheromeda
5 Simien Shola
6 Shola
7 Saris
8 Akaki

Research 2

9 Asco
10 Simien
11 Kolfe
12 Bethel
13 Bole Rwanda
14 Gerji
15 Lafto