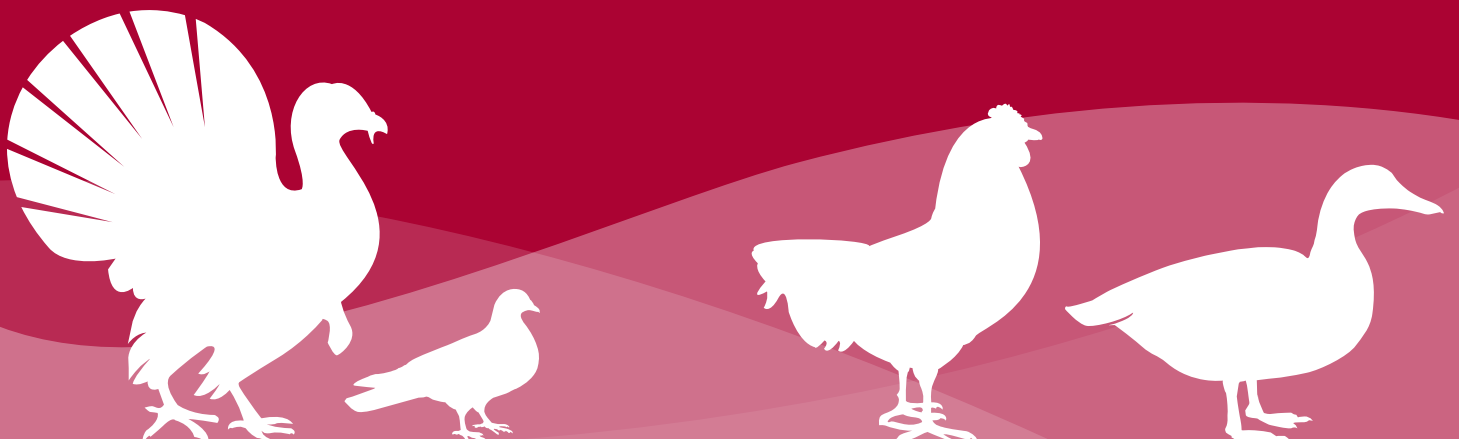




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FAO ANIMAL PRODUCTION AND HEALTH



livestock country reviews

POULTRY SECTOR

The United Republic of Tanzania

POULTRY SECTOR

The United Republic of Tanzania

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Foreword

The poultry sector continues to grow and industrialize in many parts of the world. An increasing human population, greater purchasing power and urbanization have been strong drivers of growth. A clear division is developing between industrialized production systems of large and medium size feeding into integrated value chains, and extensive production systems supporting livelihoods and supplying local or niche markets. The primary role of the former is to supply cheap and safe food to populations often distant from the source of supply, while the latter acts as a source of nutrition and livelihood safety net, often as part of a diverse portfolio of income sources. Understanding how poultry production systems and value chains work is essential in order to develop a country's poultry sector sustainably.

This review for the United Republic of Tanzania is part of a series of Country Reviews commissioned by the Animal Production and Health Division (AGA) of the Food and Agriculture Organization of the United Nations (FAO). The reviews aim to support sustainable and effective development interventions and policy recommendations and contribute to informed decision-making and investments in the poultry sector by:

- providing information and data about national poultry supply chains (with a special focus on poultry production);
- analysing strengths, weaknesses and prospects along the supply chain;
- identifying opportunities for poultry sector development.

This review is not intended to be exhaustive. Some topics are only partially covered or not covered at all and the document will be supplemented and updated on a continuous basis. Contributions and feedback are welcome by the author(s) and AGA¹.

¹ For more information please visit the FAO website at: www.fao.org/poultry-production-products or contact Poultry-Gateway@fao.org

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Acronyms and abbreviations

ACGG	African Chicken Genetic Gains
AMR	Antimicrobial Resistance
ASDP	Agriculture Sector Development Program
BoT	Bank of Tanzania
DADP	District Agriculture Development Plans
DOCs	Day old chicks
DVO	District Veterinary Officer
DVS	Direct Veterinary Services
EAC	East African Community
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GNI	Gross National Income
IFAD	International Fund for Agricultural Development
ILRI	International Livestock Research Institute
LSDP	Livestock Sector Development Program
LSDS	Livestock Sector Development Strategy
LTTP	Long Term Perspective Plan
LSDS	Livestock Sector Development Strategy
MLDF	Ministry of Livestock Development and Fisheries
NAPOCO	National Poultry Company Limited
NGO	Non-governmental organization
NLP	National Livestock Policy
NPS	National Panel Survey
TAFCO	Tanzania Feed Company
TAFMA	Tanzania Animal Feed Manufacturing Association
TASAF	Tanzania Social Action Fund
TFDA	Tanzania Food and Drugs Authority
TLMP	Tanzania Livestock Master Plan
TLMI	Tanzania Livestock Modernization Initiative
TPBA	Tanzania Poultry Breeders Association
TVLA	Tanzania Veterinary Laboratory Agency
TZS	Tanzanian Shilling
RIU	Research Into Use
URT	United Republic of Tanzania
USD	United States dollar
VCT	Veterinary Council of Tanzania

Executive summary

Over the past decade, the GDP has maintained an average growth of 7.52 percent for mainland Tanzania and 6.42 percent for Zanzibar. Whilst the population has been growing at an average of 1.2 million people annually, poverty has continued to be a major concern especially in rural areas, where about 80 percent of the total population live. Extreme poverty has however declined in recent years, from 11.7 percent in 2006 to 9.7 percent in 2012 in mainland Tanzania, and in Zanzibar by 4.5 percent since 2010.

The agricultural sector has continued to be the main employer of population (about 70 percent of the rural population) though its growth has been slow compared to the other main sectors of the economy. This can be attributed to many factors including low access and use of technology, low availability of extension services in many parts of rural areas, low access to financial services to boost investment, dependence on rainfall, etc. Women continue to be more involved than men in the agricultural sector. There has been noticeable growth in the livestock sector and its contribution to the national economy. Moreover, there is high potential for the sector to grow even further in years to come. Demand for livestock products has been increasing not only in Tanzania, but even in neighbouring countries.

The poultry sector is still at an infant stage. However, this review notes that in recent years there have been some considerable improvements in poultry production, extension service delivery, and policy and regulatory frameworks. Such improvements attracted private sector investment and involvement of other stakeholders, including development organizations. When comparing sector growth between rural, urban and peri-urban areas, the poultry sector is growing faster in peri-urban areas and especially areas surrounding major towns. A number of small- and medium-scale farmers in peri-urban areas and in the outlying towns rear small flocks of chicken in their backyard, mainly because of proximity to the market. Such farmers produce both eggs and meat, and supply to shops and kiosks in the urban center for the urban consumers.

Accurate and updated statistics on the chicken population are not available and even estimates vary significantly. According to the 2014/15 Annual Agricultural Sample Survey, during the 2014/2015 agricultural season the chicken population in both Tanzania mainland and Zanzibar was 40.6 million. Out of these, 38.1 million were indigenous and 2.5 million were exotic (1.6 million layers and 0.9 million broilers). In 2016, Tanzania had a total of 69 million chickens, 37.4 million indigenous and 32 million exotic (24 million broilers and 8 million layers). This is almost 50 percent increase from the 2015 estimates. The 2014/15 Annual Agricultural Sample Survey also shows that between 2014 and 2015 there were about 1.5 million ducks and about 200 000 turkeys in the country. Data shows that around 90 percent of the national flock is made by indigenous birds, raised by smallholder farmers under extensive, semi-intensive and small-scale intensive production systems. The chicken population is well spread throughout the country.

Family poultry production systems range from extensive scavenging to small-scale intensive systems (Appendix 1) and continue to be a good source of nutrition and income for the majority of households in Tanzania. Most family poultry producers in the country keep less than 50 chickens under scavenging conditions.

In spite of the relatively high price of poultry meat (higher than in most developed and emerging markets), the commercial sector does not dominate in Tanzania. As the sector is still developing, there are only a few medium and large-scale farms scattered in various regions. Most large-scale producers include breeding farms integrated with hatcheries and farms raising layers and broilers. Generally, they are located in urban and peri-urban areas with better access to inputs, services and markets. However, as more land is needed, investors tend to shift to rural areas. Both crossbred and exotic chickens are raised in medium and large-scale farms. Other poultry species (e.g. ducks, turkey, etc.) are kept in small numbers (National Bureau of Statistics, 2016b).

In Tanzania, production of feeds for poultry and other livestock is low and feeds are reported to be of poor quality. Maize production is occasionally not even enough to meet the food security needs of the country. This deficiency in supply of maize and other feed resources poses a serious challenge to poultry sector development. The actual number of feed mills in the country is not known. However, the Tanzania Feed Manufacturer Association (TAFMA) has 40 members (grown from 21 in 2012) which produce up to 80 tons per day. Most of the members use simple hammer technology to produce mash feeds and a few of them produce pellets. In addition to these 40 feed mills, the country has a significant number of small-scale unregistered millers producing up to a minimum of half-a-ton a day.

The success and expansion of the poultry value chain highly depends on availability of quality and affordable feeds, as it can account for about 60 –70 percent of the production costs in intensive systems. Farmers are generally concerned about the cost of feed (which has gone up in the past one to two years) due to limited availability of affordable raw materials. The price of poultry feed has remained stable between 2015 and 2017 due to a bumper maize harvest recorded in 2014/2015. Moreover, as an attempt to lower production costs and therefore stabilize feed prices, feed manufacturers are increasingly moving away from using fishmeal as a source of protein to soybeans. However, since there is very little production of soybeans in the country, feed manufacturers rely on imported soybeans and soybean cakes, which increase the cost of production. The high cost of raw materials, inadequate storage capacity and logistics challenges drive up production cost and caused a number of small producers and some feed manufacturers to go out of business.

The main markets for indigenous chickens are in urban areas and in particular Dar es Salaam as well as Arusha, Mwanza and other regional towns. Indigenous chickens are also sold to middle and high-income households, restaurants and more rarely to big hotels. Very little processing is done in urban areas where very rudimentary dressing is done. Dressing is offered by the retailers but done at the cost of the customer. Poultry producers' share of the end market price varies between 26 and 35 percent. Producers' price share increases as they operate further up the value chain by selling directly to consumers, food vendors, supermarkets or processors. Generally, traders in urban areas realize a bigger share of the end market price.

Egg production has been increasing over the past five years. The layers' subsector has recorded good and sustainable growth during the year 2014 and early 2015 due to an increase in the number of large-scale producers, which has led to prices being as low as TZS 4 000 (USD 2) per tray (30 eggs). Today, the average price of eggs is TZS 300 (USD 0.18) (MLF, 2017b). Egg prices fluctuate during the year in response to increases in demand, especially during seasonal holidays.

The per capita consumption of poultry meat and eggs in Tanzania has been increasing over the years due to the growing population (particularly the middle class), rising incomes and urbanization as well as to the growth of the mining and tourism sectors. As eating habits are changing and the economy is growing, disposable income is increasing and the demand for poultry products is likely to keep increasing. In rural areas, chickens and eggs are considered to be the cheapest source of animal protein. This is largely because most rural households keep chicken and consume about 70 percent of what they produce.

Marketing of poultry mainly occurs in local markets. The domestic market involves selling chicks, live chicken, meat, eggs and other processed products like sausages. The most important markets are urban markets, where most poultry products are sold. Rural households are the major market for chicken and eggs produced in rural areas, where access to markets is generally limited or difficult.

Upcountry traders located in upcountry towns, and traders in Dar es Salaam, retail to households or sell chickens in bulk to mini supermarkets or households. There are also contracted suppliers, supplying chicken to food service sectors. Roadside vendors, mini supermarkets and traders based in Dar es Salaam markets and upcountry urban centres retail chicken. Some of the households consuming indigenous chicken prefer dressed chicken, while others prefer live chicken. Mini supermarkets sell dressed chicken and the food service sector sells chicken meals (mainly soup and roasted chicken).

Since 2006, Tanzania has maintained a hard line position on its ban on imports of frozen or fresh chilled chicken and poultry products from the US. Tanzania has used the ban to protect its poultry farmers from what it sees as unfair competition posed by cheap imports of chicken. Imports are exclusively 'upmarket' processed and value-added products mainly from Kenya and aimed at the resident expatriate and tourist markets. According to FAO, poultry meat imports rose from 4 tonnes in 1995 to around 500 tonnes in 2005 and over 1800 tonnes in 2016. On the other hand, and in spite of the enormous potential to export poultry meat and eggs that exists, Tanzania has yet to produce a sufficient amount to provide an exportable surplus (Wilson, 2015a).

Poultry has high potential to improve livelihoods in both rural and urban Tanzania. Most poultry keepers are poor households, and poultry are generally owned and managed by women. Poultry products are a good source of animal protein for most of the population. The poultry value chain has a high potential to generate jobs. The existing domestic and regional markets give the industry huge potential for growth supported by the current political will to develop the industry and the favourable natural resource base and climate, which allows poultry keeping all over the country and throughout the year. Furthermore, industry stakeholders are increasingly mobilized for capacity building and policy lobbying. Networks linking rural poultry producers with urban input suppliers and marketers are also emerging, as more households are producing for the market. Breeding and hatching are now promoted as specialized activities even among smallholders, which can be regulated to ensure that farmers access good chicks.

The main challenges facing the poultry sector include: low availability and high price of poultry feed and veterinary services; poor access to good quality water sources and effective disease control and surveillance systems; inconsistent supply of quality feed resources; malpractice and poor quality of chicks caused by the overwhelming demand for hatcheries and production

of quality day old chicks; insufficient poultry production infrastructures; low capacity to control (contagious) poultry pest and diseases (layers and broilers); poor provision of technical support devices and extension services; and weak poultry farmer organizations. If investment is increased to address these challenges, poultry production could make a significant contribution to poverty eradication in Tanzania, especially in rural areas.

1. Introduction

This section presents a brief overview of the Tanzanian economy and agricultural sector over the past 10-year period. It is divided into two subsections: (i) country profile which describes the geographical location, economy indicators, population dynamics and poverty status; and (ii) status of the agriculture sector including livestock, its role in the economy, production and consumption of animal-source foods, and information on agro-ecological zones.

COUNTRY PROFILE

1.1.1. Country overview

TABLE 1. Geographic location, land area, population and economy

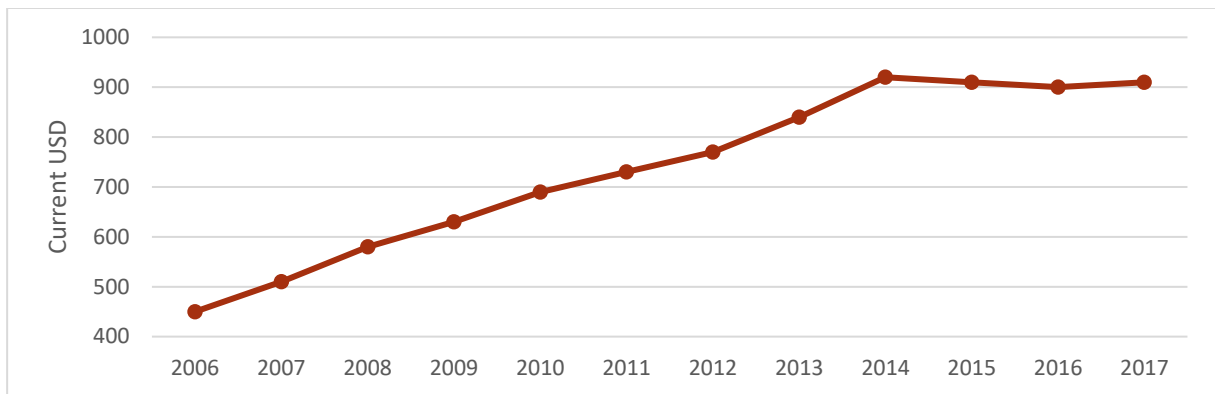
Region	Eastern Africa
Total area (sq. km)	947 300 (FAO, 2016)
Land area (sq. km)	885 800 (FAO, 2016)
Population, total (thousand, 2017)	57 310 019 (World Bank, 2018a)
Population, growth rate (annual %, 2017)	3.1 (World Bank, 2018a)
Economy group	Low-income economy (World Bank, 2017a)
GDP (current USD, billions, 2017)	52.09 (World Bank, 2018a)
GDP growth rate (annual %, 2017)	7.1 (World Bank, 2018a)
GDP per capita (current USD)	936.3 (World Bank, 2018a)
Human development index (HDI, 2015)	0.531, rank 151 (UNDP, 2016)

The United Republic of Tanzania (URT) is a country made of the union between Tanzania mainland and the Zanzibar islands. It is located in the East African Region between Longitudes 29° and 41° East, and Latitudes 1° and 12° South. Mainland Tanzania borders Uganda and Kenya to the North; Zambia, Mozambique and Malawi to the South; Rwanda, Burundi and the Democratic Republic of the Congo to the West; and the Indian Ocean to the East. Zanzibar is located in the Indian Ocean around 32 km off the mainland, consisting of the islands of Zanzibar or Unguja, Pemba, and neighbouring smaller islands.

URT is the second largest economy in the East African Community (EAC) and the twelfth largest in Africa. The country is largely dependent on agriculture for employment. The sector accounts for about 66 percent of the employed workforce (ILO, 2018).

As shown in Figure 1, the Gross National Income (GNI) of Tanzania mainland has increased between 2006 and 2014 but started dropping from 2015. The little reduction experienced between 2015 and 2016 contributed to increasing imports of goods and services rather than exports.

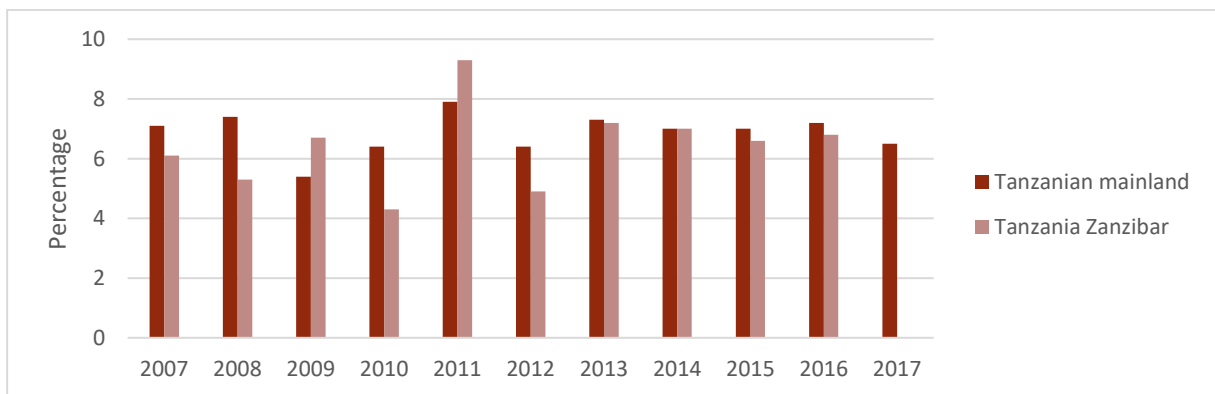
FIGURE 1. Gross national income (GNI) per capita, Atlas method (current USD)



Source: World Bank, 2018

On the other hand, the GDP data during the last decade shows an average annual growth of 6.9 percent for mainland Tanzania and 6.5 percent for Zanzibar (Figure 2).

FIGURE 2. GDP growth rate (annual %) at constant 2007 USD prices



Source: Bank of Tanzania, 2017a

1.1.2. Intra-trade in SADC and EAC Regions

Tanzania is a member country of both the Southern African Development Community (SADC) and the East African Community (EAC). Between 2014 and 2016, Tanzania sustained the highest average growth rate (7 percent) in the SADC region (Table 2.a.).

TABLE 2.A. Real GDP growth (annual %) in the Southern African Development Community Region (SADC)

Country	2012	2013	2014	2015	2016
Angola	5.2	6.8	4.8	3.0	-0.7
Botswana	4.5	11.3	4.1	-1.7	4.3
DRC	7.1	8.5	9.5	6.9	2.4
Lesotho	5.3	3.6	3.4	2.5	2.4
Madagascar	3.0	2.3	3.3	3.1	4.2
Malawi	1.9	5.2	5.7	2.9	2.3
Mauritius	3.2	3.2	3.6	3.5	3.9
Mozambique	7.2	7.1	7.4	6.6	3.8
Namibia	5.1	5.6	6.4	6.0	1.1
Seychelles	3.7	5.0	6.2	5.7	4.5
South Africa	2.2	2.5	1.7	1.3	0.3
Swaziland	3.5	4.8	3.6	1.1	0.0
Tanzania	5.1	7.3	7.0	7.0	7.0
Zambia	7.6	5.1	4.7	2.9	3.4
Zimbabwe	10.6	4.5	3.8	1.4	0.7
SADC average	5.0	5.5	5.0	3.5	2.6

Source: Bank of Tanzania, 2017a

According to the Bank of Tanzania, the real GDP in the EAC declined in 2015 after a pick-up in 2014. Output growth stabilized in Tanzania, increased in Kenya and Uganda, and decreased in Rwanda and Burundi (Table 2.b.). Growth in Kenya and Uganda came from performance in investment, industrial activities, services and construction (Bank of Tanzania, 2015).

Table 2.B. Real GDP growth (annual %) in the East African Community (EAC) Region

Country	2011	2012	2013	2014	2015	2016
Kenya	6.1	4.6	5.7	5.3	5.6	5.8
Tanzania	7.9	5.1	7.3	7.0	7.0	7.0
Uganda	6.8	2.6	4.0	4.9	5.0	2.3
Burundi	4.0	4.4	4.5	4.7	-4.1	-1.0
Rwanda	7.8	8.8	4.7	7.0	6.9	5.9
EAC average	6.5	5.1	5.2	5.8	4.1	4.0

Source: Bank of Tanzania, 2017a

In 2017, Tanzania's total intra-EAC trade volumes declined by 8.7 percent to USD 667.3 million, largely on account of imports. According to the Bank of Tanzania and the Tanzania Revenue Authority, the major exports to the EAC region were beans, maize grains, sisal rope, tea and mosquito nets, while imports were medicine, soap, confectionery products, salt margarine, diesel and crown corks (Bank of Tanzania, 2018).

TABLE 3. Tanzania's share of trade with EAC partner states (in percent)

		2013	2014	2015	2016
Exports	Kenya	54.2	74.6	84.8	72.9
	Uganda	15.8	12.3	5.8	13.5
	Burundi	10.7	7.2	4.5	12.1
	Rwanda	19.3	6.0	4.8	1.5
Imports	Kenya	84.5	92.7	85.1	89.1
	Uganda	14.6	6.8	14.1	10.2
	Burundi	0.4	0.1	0.4	0.3
	Rwanda	0.4	0.5	0.4	0.4

Source: Bank of Tanzania, 2018

1.1.3. Population

In 2012 the population in Tanzania was 44.9 million people (23 million females, 21.9 million males) showing a growth of 30 percent from 2002 (33.4 million) (Table 4). The current population is estimated at 51.5 million people of which 26.4 million are females. This is about four-fold increase since 1967 when the population was 12.3 million people (National Bureau of Statistics, 2016b). Although the growth rate for the 2012/2017 period is not yet determined, the population shows an increasing trend, with about 1.2 million people being added to the population annually. The increase is mainly attributed to the persistent high level of fertility (5.5 percent as per Population and Housing Census (PHC) of 2002/2012), reduced mortality rate and low international net migration. The average household size is 4.7 with the average size of male and female headed households being 3.5 and 7.4, respectively (National Bureau of Statistics, 2016b).

TABLE 4. Key indicators from the 2002 and 2012 Population and Housing Censuses, Tanzania

Indicators	2002			2012		
	URT	Mainland	Zanzibar	URT	Mainland	Zanzibar
Total population (million)	34.4	33.4	1	44.9	43.6	1.3
Young population, < 15 years (%)	44.2	44.2	44.3	43.9	43.9	42.5
Sex ratio (males per 100 females)	96	96	96	95	95	94
Life Expectancy at birth	51	51	57	61.8	61.7	65.2
Life expectancy at birth (male)	47	47	46	59.8	59.7	63.3
Life expectancy at birth (female)	50	50	49	63.8	63.7	67.1
Households without toilets (%)	9.2	8.6	34.4	7.8	7.5	19.3
Annual growth rate	2.9	2.9	3.1	2.7	2.7	2.8
Literacy rate	71	70	73	71.8	71.5	80
Child orphan hood (%)	1.1	1.1	0.4	7.7	7.7	5.8
Floor materials (mud) (%)	73	74	46	60	60.9	28.6
Persons with disability (%)	2	2	1.4	9.3	9.3	7.3
Children population, < 5 years (%)	16.4	16.5	15.7	15.2	15.2	13.3
Youth population, 15-35 years (%)	-	-	-	35.1	34.9	42.2
Working age, 15-64 years (%)	51.8	51.8	52.7	35.1	34.9	42.2
Elderly population, 60+ years (%)	5.7	-	-	5.5	5.5	4.3
Elderly population 65+ years (%)	3.9	-	-	3.8	3.8	2.9
Urban population (%)	23.1	22.6	-	29.6	29.1	46.3
Rural population (%)	76.9	77.4	-	70.4	70.9	53
Male headed households (%)	67.3	67.2	70.2	66.6	66.5	68.9
Female headed households (%)	32.7	32.8	29.8	33.4	33.5	31.1

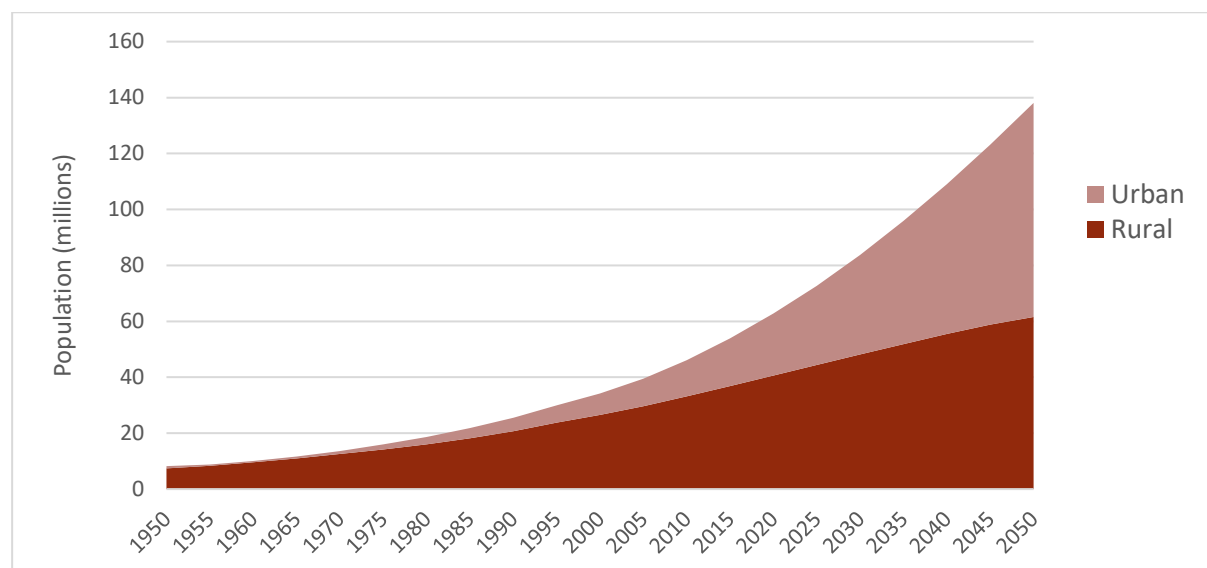
Source: Population and Housing Census, 2002 and 2014 (Cited in National Bureau of Statistics, 2011, 2014)

When the two National Census (i.e. 2002 and 2012) are compared, the rural and urban population trends show an increased rural–urban migration. This is reflected by a percentage decrease and increase in rural and urban populations respectively. The Tanzania National Bureau of Statistics (TNBS) argues that the above situation might be attributed to the growing tendency of rural dwellers searching for viable sources of livelihoods in urban centres than in rural areas. This is because rural areas are hit harder by poverty than urban areas (National Bureau of Statistics, 2014). According to the Ministry of Agriculture and Food Security, the rural-urban population ratio decreased from 75:25 in 2006 to 68:32 in 2016 (URT, 2017a). Migration was caused by youths moving in search of non-agricultural jobs in urban centres where apart from earning incomes there are better social services. However, despite the migration, the rural population is still high in Tanzania.

According to the Population Division of the Department of Economic and Social Affairs of the United Nations (UNDESA) report of 2018, the increase in urban population in Tanzania became significant towards 2006, and even a more significant increase is projected towards 2050.

Figure 3 shows that despite the projected increase in the urban population, there will be more Tanzanians living in rural areas than in urban. This means for poverty to be eradicated, investment to create jobs, services and improve rural livelihoods remains of paramount importance for Tanzania.

FIGURE 3. Population in rural and urban Tanzania between 1950 and 2050



Source: UNDESA, 2018

1.1.4. Poverty

Poverty in Tanzania is overwhelmingly high, especially in rural areas and among female-headed households (IFAD, 2014). Generally, poverty is highest among agricultural households expressing a concern for the urban-rural disparities in living standards. According to the World Bank poverty assessments of Tanzania mainland (World Bank, 2015a) and Zanzibar (World Bank, 2017b), 28.2 percent of the population lives below the basic needs poverty line in Tanzania mainland and 30.4 percent in Zanzibar. The reports also show that extreme poverty in Tanzania has declined in recent years, from 11.7 percent in 2006 to 9.7 percent in 2012 in the mainland, and from 11.7 percent in 2010 to 10.8 percent in 2015 in Zanzibar.

Poverty and livestock keeping

A direct correlation exists between poverty and livestock keeping in Tanzania. According to the 2012/13 National Panel Survey (NPS), about 60 percent of poor households keep livestock vis-à-vis 48 percent of the non-poor livestock-keeping households. Furthermore, over 86 percent of livestock-keeping households live in rural areas where poverty is overwhelmingly high. This makes livestock keeping a largely rural phenomenon (United Republic of Tanzania, 2016).

There are many differences between rural and urban livestock-keeping households. For instance, urban households tend to keep more animals than rural ones, mainly because of the size of the chicken flock. Livestock make a larger contribution to income in rural areas. Urban livestock-keeping households are more likely to consume animal-source foods than their rural counterparts (particularly beef and eggs) (United Republic of Tanzania, 2016).

AGRICULTURAL SECTOR

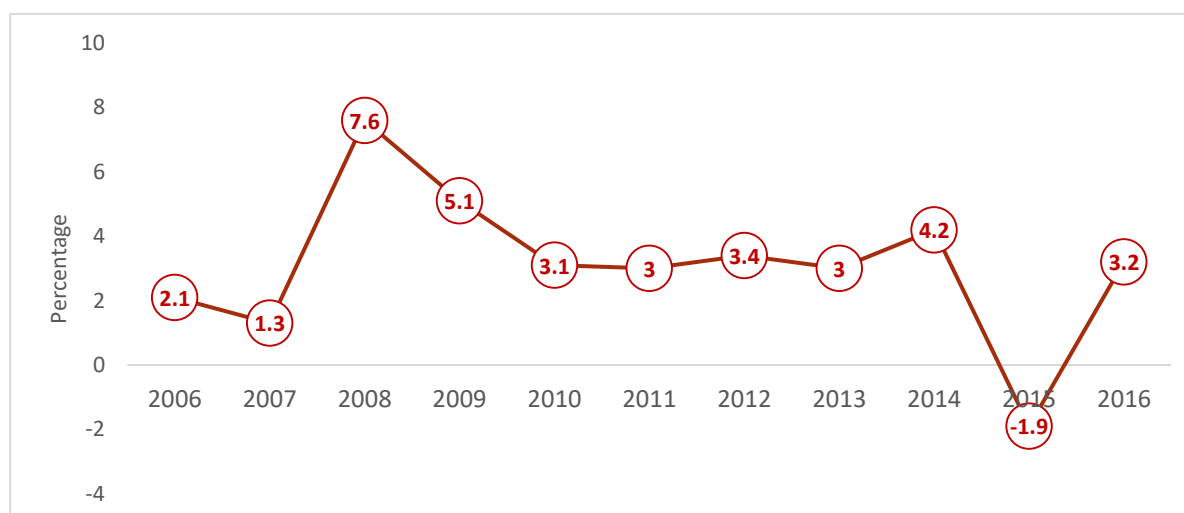
Agricultural land (% of land area, 2015)	45 (FAO, 2018a)
Agriculture, value added (% GDP, 2016)	31.5 (World Bank, 2018a)
Employment in agriculture (% , 2017)	67 (ILO, 2018)
Employment in agriculture, female (% , 2017)	70 (ILO, 2018)

Agriculture continues to be the mainstay of about 70 percent of households, and has continued to experience a slower annual growth rate than the population growth. The agricultural sector, composed of a majority of smallholders, has not benefited from the same momentum as other sectors and is still in need of investment and modernization (URT, 2017a).

The country has 88.6 million ha of land, of which 45 percent (or 39.7 million ha) are classified as agriculture land and 15 percent (or 13.5 million ha) are arable. About 80 percent of production comes from subsistence farmers relying on the hand-hoe and rain-fed production, with limited areas under medium and large-scale farming. Smallholder agriculture is labour intensive, with little use of modern technologies and inputs, and highly vulnerable to unpredictable weather patterns. The country imports significant volumes of cereals and pulses, which could be produced nationally (IFAD, 2016).

The agricultural sector contributes about one quarter of GDP and provides employment to 66 percent of all Tanzanian workers (ILO, 2018). Historically, agriculture (including both crop and livestock production and excluding forestry and fishing) has been contributing significantly to the GDP, especially in the 1970s and 1980s. However, the contribution of agriculture to the GDP is decreasing (Bank of Tanzania, 2018).

FIGURE 4. Tanzania mainland agricultural GDP growth rates (annual %, USD current 2007 prices)



Source: Bank of Tanzania, 2017

Tables 5.a. and 5.b. show that while the contribution of the agriculture sector to the GDP remained almost the same in 2015 and 2016 (i.e. at 29 percent), its contribution to the GDP growth dropped from 7.8 percent in 2015 to 6.6 percent in 2016. In Tanzania, the agricultural sector accounts for around 28-30 percent of total value added, approximately one fifth of which originates in the livestock subsector. In 2016, the livestock subsector grew by 2.6 percent in real terms compared with 2.4 percent in 2015. This was mostly due to the increase in the number of livestock sold through registered markets (Bank of Tanzania, 2017). During

the last ten years, government policies towards the agricultural sector focused on improving irrigation, rural roads, and markets infrastructure, as well as increasing efficiency in the use of land resources. Policies also targeted increasing the provision of agricultural services as well as improving access to fertilizers and animal breeding services.

TABLE 5.A. Contribution to GDP by selected activities (2015 and 2016)

Activity	Contribution to GDP (%)	
	2015	2016
Agriculture, forestry and fishing	29.0	29.1
Construction	13.6	14.0
Wholesale and retail trade; repairs	10.7	10.7
Public administration and defence	6.4	6.3
Manufacturing	5.2	5.1
Mining and quarrying	4.0	4.8
Transport and storage	4.3	4.3
Financial and insurance activities	3.6	3.6
Real estate	3.2	3.0
Education	2.5	2.3

Source: Bank of Tanzania, 2017

TABLE 5.B. Contribution to GDP growth by selected activities (2015 and 2016)

Activity	Contribution to GDP growth (%)	
	2015	2016
Construction	23.9	20.3
Transport and storage	7.2	10.7
Wholesale and retail trade; repairs	11.5	9.9
Information and communication	7.4	8.3
Manufacturing	6.9	8.2
Agriculture, forestry and fishing	7.8	6.6
Financial and insurance activities	7.0	6.6
Public administration and defence	4.4	6.2
Mining and quarrying	4.4	5.7
Education	2.9	3.7

Source: Bank of Tanzania, 2017

Despite the robust economic growth of about 7 percent over the past five years, poverty is still rampant especially in the rural population, which largely depends on agriculture as the major source of livelihood. In real terms, the value added in this sector grew by 2.1 percent in

2016 compared to 2.3 percent in 2015. The slow growth (0.2 percent) of the agriculture sector was caused by insufficient rains in some parts of the country during the 2015/16 crop-season. The situation affected crop production and access to sufficient water and feed for livestock, (Bank of Tanzania, 2017). To address this situation, the Tanzania Government and other Development Partners need to consider more investment in the agricultural sector both at commercial and subsistence levels in order to increase household incomes as well improve agricultural contribution to GDP.

1.1.5. Agriculture, employment and gender

In Tanzania mainland, agriculture, forestry and fishing employ almost 67 percent of the total workforce. The sector employs 70 percent of all employed females as compared to 64 percent of males (Table 6).

TABLE 6. Distribution of employed persons, Tanzania, 2017

Sector	Male		Female		Total	
	No. of employees	%	No. of employees	%	No. of employees	%
Agriculture	8 443 000	63.9	8 717 000	69.8	17 160 000	66.7
Industry	1 207 000	9.1	328 000	2.6	1 535 000	6.0
Services	3 577 000	27	3 451 000	27.6	7 028 000	27.3
Total	13 227 000	100	12 496 000	100	25 723 000	100

Source: ILO, 2018

Generally, the agricultural sector is considered riskier than other sectors of the economy mainly because crop production is weather dependent and profit margins are affected by fluctuating market prices. Women are therefore argued to be more exposed to poverty as they continue to dominate the employment in a risky agriculture while men dominate the services and industry sectors. This calls for more investment in agriculture (including livestock, fishing and forestry) to minimize these risks (Lokina *et al.*, 2016).

THE LIVESTOCK SECTOR

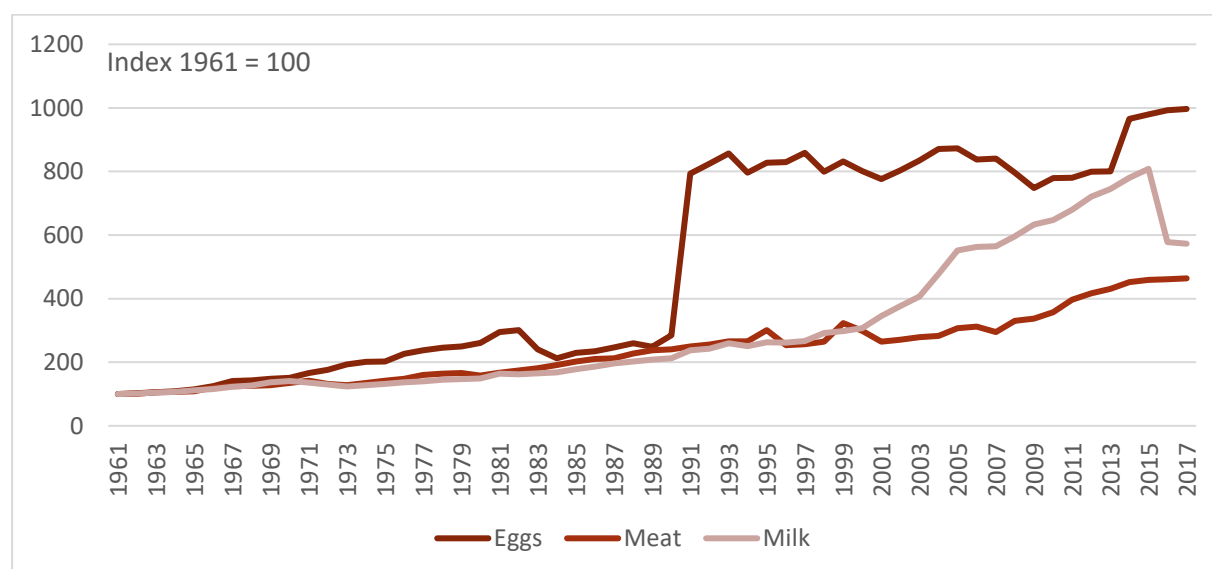
This section presents information on the status of the livestock sector in Tanzania. It highlights the salient features of the sector and its performance between 2007 and 2017. The information presented in this section is from Tanzania mainland only.

1.1.6. Overview of the livestock sector

Livestock production is one of the major economic activities in rural areas providing livelihood support to 37 percent (1 745 776) of the 4 901 837 agricultural households in Tanzania (United Republic of Tanzania, 2016). It contributes significantly towards achieving the development goals of Tanzania's National Strategy for Growth and Reduction of Poverty (NSGRP). According to the Tanzania Livestock Master Plan (TLMP) of 2017, the country has about 28.8 million cattle (11 percent of the African cattle population), 16.7 million goats and 5 million sheep, 2 million pigs, 37.4 million indigenous chicken and 32 million exotic chickens (24 million broilers and 8 million layers) (MLF, 2017b).

As shown in Figure 5, since 1961, the growth in eggs production has been higher than the one of milk or meat. In the early 90s, while the production of meat and milk increased only gradually, egg production increased sharply, almost fourfold. The production of eggs remained high throughout the nineties to 2010 when it slightly declined. During this period, milk production also increased as significant public investment in improved dairy (and poultry) production through cross breeding with exotic breeds was made. In poultry, cock exchange started and promoted crossbreeding with indigenous hens in rural areas. It was also about the same time when integrated large-scale poultry producers (such as Interchick, Kibo and Polo Italia) emerged. Importation of eggs and chicken meat was also high since domestic supply could not meet demand (see Section 3.2.2).

FIGURE 5. Production of meat, eggs and milk in the country (1961-2017)



Source: FAO, 2018a

The livestock sector accounts for 7.4 percent of Tanzania's GDP (MLF, 2017a). The sector grew by 2.6 percent in 2016 and by 2.4 percent in 2015 (Bank of Tanzania, 2018). The slow growth of the livestock sector is mainly due to low investment, high mortality rates, low reproductive rates and poor quality of the final products. The sector (including poultry) has long been based on traditional livestock practices and indigenous breeds. Small-scale producers have limited access to inputs and services, including improved genetic stock, extension services (especially in rural areas), financial services and output markets. All these challenges result to supply not being able to meet growing demand (MLF, 2010; URT, 2015). Nonetheless, the World Bank livestock production index shows that Tanzania's livestock production rose by 33 percent during the 2008-2013 period, exceeding Sub-Saharan Africa's average livestock production growth rate of 11 percent during the same period (Tanzania Invest, 2018).

By 2022, the contribution of the dairy, red meat (cattle, sheep and goats), poultry and pig industries to the agricultural GDP could increase by 75, 82, 182 and 83 percent, respectively (MLF, 2017a). This is expected to be achieved through the Tanzania Livestock Master Plan investment program worth about USD 478 million. Around 70 percent of the planned investment is allocated to poultry, 19 percent to dairy, 5 percent to red meat and 6 percent to the pig sector. The proposed investment in poultry is much higher than in other livestock species mainly because of its anticipated role in poverty reduction.

Introduction

In the Livestock Master Plan (MLF, 2017a), the livestock sector was divided into four commodity value chains as follows:

1. *Dairy production systems (dairy cattle and goats)*. Out of the 28.8 million cattle in Tanzania, about 783 000 are dairy cattle; mainly crosses of Friesian, Jersey, and Ayrshire breeds with the Tanzania Shorthorn Zebu. The total annual milk production is currently estimated at 2.09 billion litres. About 70 percent of the milk produced comes from the traditional sector (indigenous cattle) kept in rural areas, while the remaining 30 percent comes from improved cattle mainly kept by smallholder producers. The TLMP divides dairy production systems into three major sub-systems: (i) traditional cow meat-milk; (ii) improved family dairy; and (iii) commercial specialized dairy.
2. *Red meat production systems (cattle, sheep and goats)*. Tanzania produces about 493 000 metric tons of red meats, whereby 83 percent is beef and the remaining amount comes from sheep and goats. Most of the produce (97 percent) come from pastoral and agro-pastoral communities. Red meat production system in Tanzania are further divided into three major sub-systems: (i) traditional cattle system which currently involves 29.5 million cattle, 5.1 million sheep and 17.7 million goats; (ii) ranching system which holds about 73 000 cattle (goats and sheep are not included); and (iii) feedlot system involving about 340 000 cattle (again no goats or sheep). (MLF, 2017a).
3. *Pig production systems*. This is a less developed industry (value chain) involving approximately 2 million pigs. This herd represents less than 4 percent of the national population of meat-producing animals. Some 99.5 percent of pigs are kept by small producers in units averaging 3.04 animals (range 2-48). About 18 percent of households with livestock own pigs. Scavenging is the main feed source and maize bran is the principle supplement. However, some owners provide oilseed cakes and minerals. Domestic pigs are not indigenous to Tanzania and there have been few imports of breeding stock since 1961 (Wilson and Swai, 2014). More than 60 percent of national pigs are reared in the Southern Highlands regions of Iringa, Mbeya and Ruvuma. Morogoro, Dodoma and Kilimanjaro Regions also have considerable numbers of pigs. Pig production in Tanzania falls in two categories, those are: (i) traditional pig production system; and (ii) commercial pig production system.
4. *Poultry production systems (chickens, turkeys, ducks, etc.)*. In Tanzania, the poultry sector is still at an infant stage both in the commercial and traditional subsector. The current population of chicken is estimated at 69 million, of which 37 million are said to be indigenous (backyard chicken) and the remaining 32 million are commercial poultry (24 million broilers and 8 million layers). Among the existing 4.7 million agricultural households in Tanzania, 3.7 million households keep chicken. According to TLMP, the poultry industry in Tanzania is divided into two major sub-systems namely, (i) the traditional poultry production, and (ii) the commercial poultry production. The Tanzania poultry industry is described in detail in the next section.

BOX 1. Gender in the livestock sector

In Tanzania, despite constitutional proclamations of gender equality and many laws that promote equal opportunities for both men and women, it remains the case that on both small- and large-scale farms, men and women carry out different types of work, have different levels of access to resources, and are unequally rewarded for their contributions to the agricultural system, with women typically having less access and lower incomes.

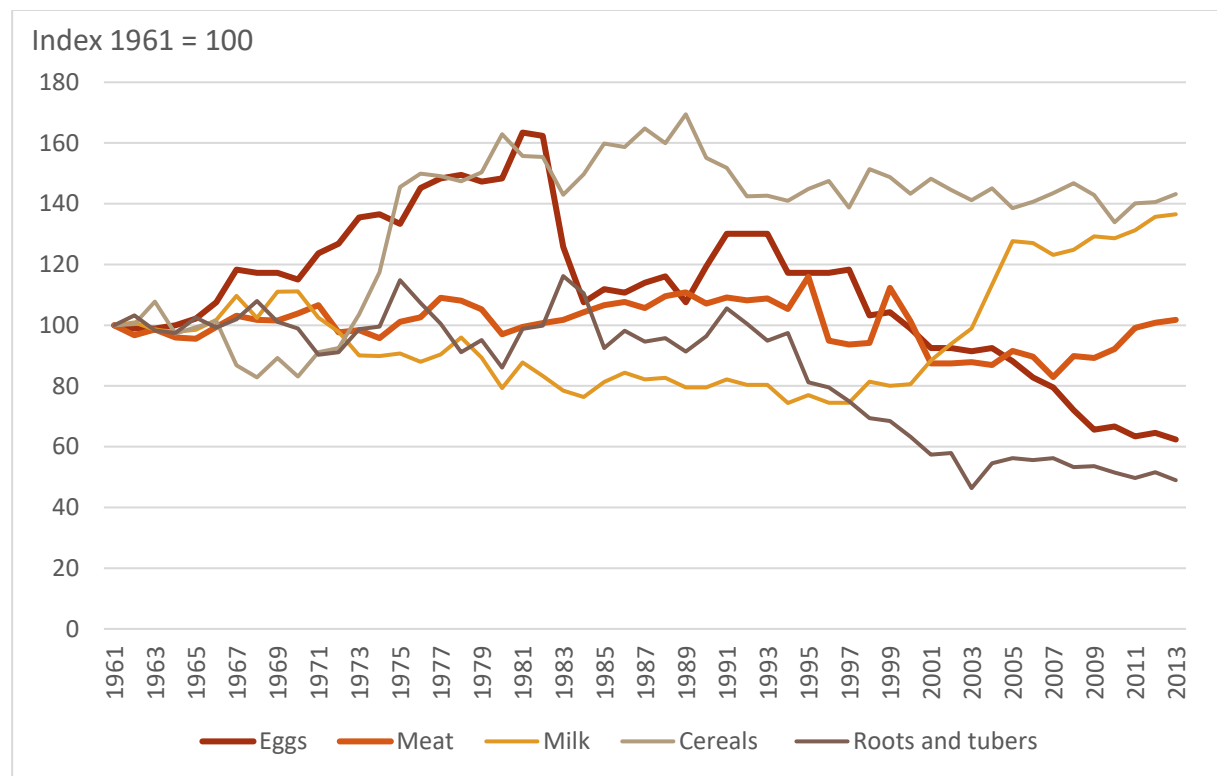
- Some 65 percent of male-headed households participate in livestock activities, while only 51 percent of female-headed households do so.
- Female-headed households have herds that average about two-thirds of the size of those owned by male-headed households. The difference is most marked in cattle ownership but is smaller for goats and sheep (and even further for poultry).
- Female-headed households tend to have relatively more small animals than large ones.
- Women managing livestock earn less from them and are significantly less likely to use key inputs such as labour and vaccinations.
- Households with only female livestock managers are not completely disadvantaged in terms of market access (40 percent sell livestock).
- When considering the scale of production, female managers are significantly more commercially oriented, with 37 percent of their total livestock production being sold on the market (compared with only 30 percent sold by male managers). This highlights the fact that despite the obstacles faced by women in the livestock sector, commercialization of production may not necessarily be affected.

Source: Wilson, 2015b

1.1.7. Consumption of animal source foods

Overall, and for three decades now (i.e. after the mid 80s), the per capita consumption of milk, meat and eggs in Tanzania continued to be lower than that of cereals. Figure 6 shows that, unlike it is for the consumption of milk which picked up in the late 90s, the per capita consumption of eggs and meat has not significantly increased during the last 3 decades. The increasing milk consumption is mainly due to significant public investment in dairy production started in the late 80s by introducing crossbreeds of improved dairy cattle, promoting small scale dairy production systems and conducting country-wide annual milk drinking campaigns (MLF, 2017b; Njombe and Msanga, 2007). Poultry has not enjoyed the same extent of structured government campaign after the general health campaigns done in early 70s through to early 80s where the government encouraged Tanzanians to consume more chicken, eggs, fish and vegetables. The campaign was also meant to break taboos that prohibited women from consuming certain foods like eggs while pregnant.

FIGURE 6. Per capita consumption of major food items in Tanzania (1961-2013)



Source: FAO, 2018a

2. Current status of poultry production and supply chains

HISTORICAL BACKGROUND

Since Tanzania got its independence in 1961, the country's poultry sector has evolved, together with other sectors of the economy. This section intends to give a brief overview of key processes, decisions, and progresses made. The highlights are not meant to be exhaustive.

The overview is grouped in six periods from 1961 to 2017:

1. Unregulated and subsistence-based (1961-1967)

Prior to independence in 1961, the poultry sector in Tanzania was entirely dominated by the extensive scavenging production system, where households kept a few indigenous birds in rural areas for household consumption and social purposes. Breeding was natural and feeding was entirely based on scavenging. In this system, women played a very important role in poultry production. In rural areas, women were responsible for chicken while men were responsible for larger animals like cattle and goats.

2. Commercial exotic breeds introduced as a public activity (1967-1977)

The Government started to regulate poultry production in 1967 focusing on introducing and promoting commercial breeds (Research Into Use Programme, 2011). In this period, the government established public-owned commercial farms managed under a public parastatal National Poultry Company Limited (NAPOCO). Through NAPOCO, the government set up commercial poultry farms, breeder farms and imported parent stock. Later, the public feed company TAFCO (Tanzania Animal Feed Company) was created to manufacture feeds and distribute to commercial farms. Commercial poultry production was therefore introduced as a government activity not involving the private sector, and parallel to the traditional system. Later in the 1970s, production of eggs and meat increased and the government embarked in a campaign to promote consumption of meat and eggs. This involved changing deep-seated taboos surrounding the consumption of eggs. When the consumption increased, the supply of eggs from the public farms became limited. This triggered change in the traditional breeding system, as market demand for table eggs increased, and fewer eggs were available for breeding.

During this period, investment in commercial poultry production, animal health service, delivery, feed supply and marketing of eggs and meat was done by the government. Private sector production was mainly subsistence-based and localized in rural areas.

3. The public sector collapses and a weak private sector emerges (1977-1987)

During this period, the Tanzanian economy underwent fundamental transformations towards a market-based economy. The macro-policy reforms necessitated a redefinition of the roles of the public and private sectors in livestock development. NAPOCO collapsed in the mid-80s and private small to medium-scale commercial producers with exotic and hybrid chickens emerged both in urban and peri-urban areas. This intensified the importation of day old chicks from neighbouring countries including Malawi, Zambia, South Africa and Uganda. This happened because up to its collapse, NAPOCO was the only company importing parent stock

and producing chicks. The government later encouraged private businesses to establish hatcheries to cater for the increased demand of day old chicks. Only Interchick Company, Ruvu JKT and Kibaha Education Centre managed to establish hatcheries. As their supply of day old chicks was still not enough to meet the demand, importation continued (Mugittu, 2016).

It was during this decade, that the private sector started being involved in commercial production of exotic breeds in response to the growing demand from urban and peri-urban dwellers. Rural poultry production continued to be promoted by the government and donor programs as a subsistence activity.

4. Demand for eggs and meat overwhelms the private sector (1987–1997)

The first Agriculture and Livestock Policy was developed in 1997. The policy recognized that indigenous poultry constituted about 70 percent of the poultry flock, supplied all the poultry meat and eggs consumed in rural areas, and 20 percent of the poultry meat and eggs in urban areas. The policy also recognized that indigenous chickens offered opportunities for a relatively quick increase in poultry productivity if the genetic potential of the flock was improved through cross-breeding as well as through improving disease management and poultry husbandry skills among rural communities.

Commercial poultry production was in its infancy but growing to fill the gap left by NAPOCO. During this period, private commercial production was mostly practiced in urban and peri-urban areas, and in confined production systems. Integrated large-scale poultry producers (such as Interchick, Kibo and Polo Italia) emerged, but domestic production of commercial poultry was generally lower than demand and importation was therefore very high.

5. Production increased but the quality of livestock services dropped; regulating the industry became a necessity (1997-2007)

A Sample Census of Agriculture was conducted in 2002/2003 and indicated that there were 34 827 676 chickens on the mainland. Out of these, 32 559 208 were indigenous or local chickens kept predominantly in rural areas. Exotic or improved birds included 589 563 broilers and 1 222 267 layer chickens kept by smallholder farmers, and 456 638 birds (both broilers and layers) on large-scale farms (RIU, 2012). Between 1995 and 2003, the total chicken population on the mainland increased at a rate of 2.6 percent per annum. This growth was mainly associated with increased indigenous chicken population, which was estimated to have grown at the rate of 4.3 percent per year between 1999 and 2003 (RIU, 2012).

The extensive scavenging system continued to dominate the industry, accounting for almost 94 percent of the national flock in 2007 (FAO, 2007). Poultry keeping continued to be widely practiced in rural Tanzania as part of income diversification strategies adopted by most households in the country. Women continued to be the most involved in keeping indigenous chicken as a backyard activity. As small-scale commercial system which raised broilers and layers started to emerge, women engagement was less as their roles in such systems were even less. To rural households, keeping poultry birds was both an additional source of household income and a cheaper source of animal protein.

Private sector investment in commercial poultry production increased, especially in small-scale broiler and layer production. Investment in private service delivery also increased significantly, particularly in veterinary services, veterinary drugs supply, feed manufacturing and in the supply day old chicks. However, the investment in the supply of inputs (e.g. chicks,

parent stock, fertilized eggs, veterinary drugs, and vaccines) and animal health services was outmatched leading to a sharp decline in the quality of inputs and services. During the period most inputs were imported from outside the country which also justified the need for regulations to control the quality of inputs entering the market. Regulation was also necessary for international trade and control of animal diseases, especially the zoonotic ones.

6. Purchase of chicks, supplementary feeding and routine vaccination were introduced in the traditional system (2007-2017)

The period between 2009 and 2015 was very formative to the history of rural poultry in Tanzania. It is during this period when interventions in the rural poultry sector introduced rural households into buying crossbred day-old-chicks from specialized hatcheries. Chick feeding alongside brooding and routine vaccination were also introduced. Through contracts and 'buy-back' agreements with off-takers (pre-arranged buyers), rural farmers started to interact with high end markets on a regular basis through contracts with off-takers and pre-arranged buyers (Match Maker Associates Limited, 2013; Match Maker Associates Limited, 2006).

During this period the government stopped distributing improved indigenous cocks, i.e. hybrids of exotic and indigenous chickens to villages and concentrated on supporting the emerging specialized breeding farms and hatcheries who produced improved indigenous chicks (Ministry of Agriculture and Food Security and Cooperatives, 2011). By 2011, there were 14 specialized hatcheries producing improved indigenous chicks and as the demand increased the number of hatcheries reached 26 in 2015 (SAPA, 2016).

A study conducted by Match Maker Associates (2010), established that the practice of keeping an average of 100 day-old-chicks bought from specialized hatcheries was growing among rural households in Singida, Manyara, Dodoma, Morogoro, Iringa and Pwani Regions. The chicks were raised in 3 to 4 month-cycles and sold for meat. These developments are linked to the introduction of two improved breeds, 'Sasso' and 'Kuroiler', which are slower growing commercial alternatives to standard exotic broiler/breeders, and can perform well in semi-scavenging production systems

The changes happened to the sector between 2007 and 2017 are profiled in the rest of the report. These include producers buying indigenous day-old-chicks from specialized hatcheries, supplementary feeding to gain the required market weight within a relatively shorter period and following a recommended vaccination regime to control diseases. Such producers have therefore passed from the scavenging system to a more market-oriented small-scale-intensive system. Most of these farmers reach the market through aggregators who buy from rural producers and sell in urban markets.

THE POULTRY FLOCK

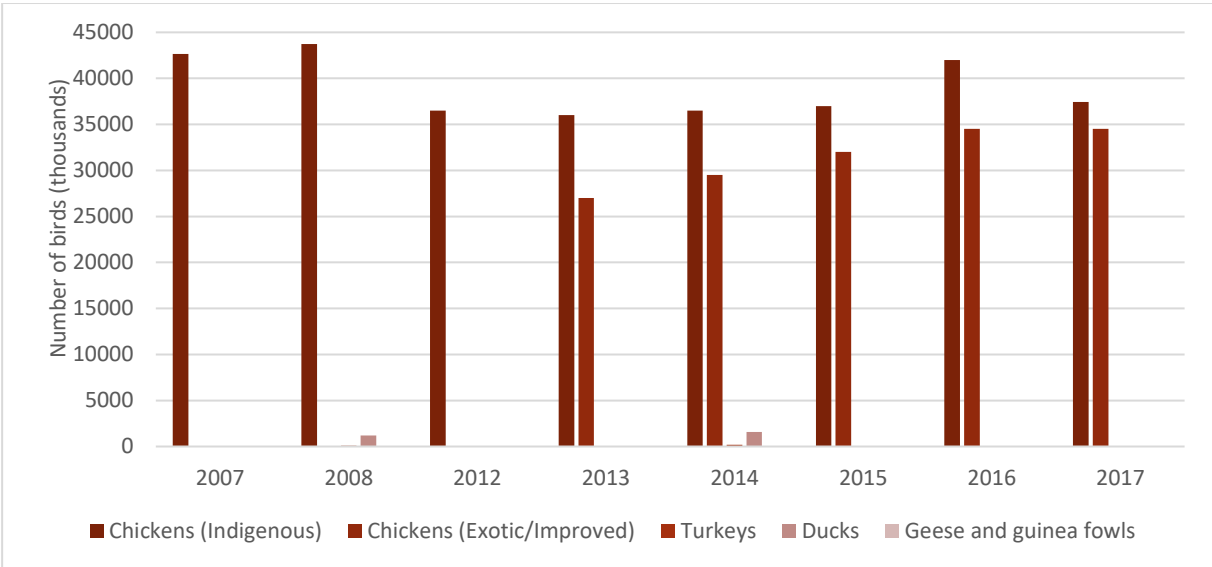
Accurate and updated statistics on the chicken population are not available and even estimates vary significantly. Most estimates and secondary information are based on the livestock census of 2002/3 (published in 2004); the 2012/13 National Panel Survey (NPS) livestock data disseminated by the Tanzania National Bureau of Statistics (NBS); and the 2014/15 Annual Agricultural Sample Survey (published in 2016).

According to the Annual Agricultural Sample Survey carried out during the 2014/2015 agricultural season, the chicken population in Tanzania was 40.6 million, around a million of

which were raised in Zanzibar (Table 7). Out of the total number of birds, 38.1 million were indigenous and 2.5 exotic (1.6 million layers and 0.9 million broilers), respectively. On the other hand, the Tanzania Livestock Master Plan (TLMP) reports that in 2016 Tanzania had a total of 69 million chickens, 37.4 million indigenous and 32 million exotic (i.e. 24 million broilers and 8 million layers). This is a significant increase from the 2015 estimates. The Annual Agricultural Sample Survey also shows that between 2014 and 2015 there were about 1.5 million ducks and about 200 000 turkeys in the country. Data from both the TLMP and the National Annual Agricultural Sample Survey, indicate that around 90 percent of the national flock is dominated by indigenous birds, raised by smallholder farmers under extensive (scavenging), semi-intensive (semi scavenging), and intensive production systems.

Figure 7 shows the continuing dominance of the indigenous birds since 2007, as well as the significant low numbers of other types of poultry birds like turkey, ducks and geese. It also shows that the number of exotic chickens has been steadily increasing since 2013 while that of indigenous chickens decreased slightly after 2008, when it picked up again in 2016.

FIGURE 7. National poultry population, 2007-2017



Source: Annual Agricultural Sample Survey, 2016; MLF, 2017a, 2017b; National Bureau of Statistics, 2012

2.1.1. Geographical distribution of poultry flocks

According to the 2014/15 Annual Agriculture Sample Survey, chickens are well spread throughout the country. The regions of Tabora (2 636 692), Mbeya (2 524 782), Shinyanga (2 125 199), Mwanza (2 120 469), Morogoro (2 085 468), Geita (2 078 319), Dar es Salaam (1 827 337), Kilimanjaro (1 756 396), Mara (1 757 070), Tanga (1 756 396) and Simiyu (1 744 993) account for almost 55 percent of the total chicken population in Tanzania (Table 7).

TABLE 7. Regional distribution of poultry in Tanzania (agricultural year 2014/15)

Location	Chickens					Ducks	Turkeys
	Exotic		Indigenous	Total	%*		
	Broiler	Layers					
Dodoma	97 487	355 739	1 208 459	1 661 684	4.1	29 679	156 205
Arusha	0	111 288	1 045 960	1 157 248	2.8	4 316	0
Kilimanjaro	17 211	116 513	1 622 672	1 756 396	4.3	16 326	0
Tanga	0	0	1 707 878	1 707 878	4.2	162 369	0
Morogoro	49 969	66 624	1 968 875	2 085 468	5.1	118 622	0
Pwani	27 960	55 920	1 581 651	1 665 531	4.1	58 755	0
Dar es Salaam	96 306	134 773	1 596 258	1 827 337	4.5	91 088	0
Lindi	0	0	1 140 269	1 140 269	2.8	3 141	0
Mtwara	0	0	1 450 682	1 450 682	3.6	18 008	0
Ruvuma	0	0	1 442 164	1 442 164	3.5	21 305	3 568
Iringa	0	0	1 489 083	1 489 083	3.7	37 848	6 380
Mbeya	5 954	0	2 518 828	2 524 782	6.2	69 842	0
Singida	61 836	66 079	1 469 356	1 597 271	3.9	42 252	0
Tabora	0	145 862	2 490 830	2 636 692	6.5	67 730	0
Rukwa	198 962	295 200	566 814	1 060 976	2.6	30 001	2 184
Kigoma	0	0	658 382	658 382	1.6	0	0
Shinyanga	0	25 980	2 099 219	2 125 199	5.2	135 176	0
Kagera	0	56 841	1 090 950	1 147 791	2.8	59 471	0
Mwanza	59 566	31 568	2 029 335	2 120 469	5.2	184 206	5 466
Mara	51 611	12 510	1 692 949	1 757 070	4.3	138 871	6 254
Manyara	1 113	2 784	1 211 649	1 215 546	3.0	0	0
Njombe	0	0	841 599	841 599	2.1	0	0
Katavi	0	0	556 590	556 590	1.4	0	0
Simiyu	155 523	22 084	1 567 386	1 744 993	4.3	84 294	0
Geita	62 065	36 000	1 980 254	2 078 319	5.1	131 631	0
Mainland	885 584	1 570 406	37 028 092	39 484 082	96.8	1 504 931	180 057
Kaskazini Unguja	10 927	31 404	169 379	211 710	0.5	23 013	812
Kusini Unguja	14 543	11 146	192 056	217 745	0.5	12 773	244
Mjini Magharibi	19 993	142 614	283 224	445 831	1.1	19 967	200
Kaskazini Pemba	0	77 831	196 898	274 729	0.7	0	0
Kusini Pemba	0	0	186 261	186 261	0.5	2 226	256
Zanzibar	45 463	262 995	1 027 819	1 336 276	3.3	57 979	1 512
Total	931 026	1 798 760	38 055 910	40 785 696	100	1 562 910	181 569

*% of the country total, i.e. both mainland and Zanzibar.

Source: Annual Agricultural Sample Survey, 2016

2.1.2. Breeds

Indigenous breeds

Identifiable common ecotypes of indigenous chicken found in Tanzania and their genetic characteristics are listed below:

1. Large body sized (*Mbego Kuza*): good for meat, with mature cockerels weighing up to 5 kg and hens 2.5 to 3 kg.
2. Frizzle (*Njachama, Sasamala*): chickens with appearance of ruffled feathers.
3. Short Shank (*Nambutu, Ntewa*): distinctive with short legs. Known as good mothers and for laying eggs. It is considered as endangered indigenous chicken.
4. Tail-less chicken (*Kapera, Bukini*): common in northern Tanzania (Mwanza, Musoma) and known for its tasty meat. Bared neck (*Kishingo*) no feathers on the neck.
5. The Mozambique dwarf: common in southern Tanzania (Mtwara and Lindi) although not very popular because of their small body size, which makes rearing them commercially unsuitable; and
6. *Kisunzu*: hair on the head, now very difficult to find.

Other ecotypes which are less common and less distributed in the country include: *Mbeya, Morogoro-medium, Ching'wekwe, Kouchi, and Singamagazi*. Studies show *Singamagazi* and *Kouchi* as significantly heavier, with longer shanks and heavier eggs than the other ecotypes (Match Maker Associates Limited, 2010; Msoffe *et al.*, 2010). The different ecotypes differ in both productivity and potential for disease resistance.

Dual-purpose hybrids

Two dual-purpose breeds of chicken have been introduced in Tanzania with the objective of providing a better alternative to small-scale producers keeping indigenous chicken commercially. The two breeds are 'SASSO' and 'Kuroiler'.

SASSO: The SASSO bird is distributed in Tanzania by Silverland Tanzania, a breeding company located in Iringa Tanzania with exclusive rights to distribute the breed. According to Silverland Tanzania, SASSO chickens exhibit far better qualities for commercialization than the indigenous chicken as it has slow-growing genetics; it can be slaughtered at 70 days; produces 240 eggs per annum; and weighs over 2.5 kg at slaughtering age. Silverland Tanzania conducted trials with various SASSO varieties and the results indicated that the preferred bird for Tanzania is the *X Rainbow* variety. The SASSO bird has been extensively tested by the African Chicken Genetic Gains (ACGG) program in Tanzania, Nigeria and Ethiopia. However, since the bird has not been raised in Tanzania for long, more research and analysis may be useful.

Silverland has partnered with the World Poultry Foundation to implement the African Poultry Multiplication Initiative programme in Tanzania. The program will distribute SASSO day-old chicks to farmers in mainland Tanzania. The intention is to provide improved genetics to the small-scale rural farmer together with technical assistance and training, and also help with marketing through establishing agents in different zones who collect market information and promote the breed (for more information see section 4.2.1.). Silverland also shares market information with farmers and traders who want to sell or buy eggs and live birds for meat.

KUROILER: Kuroilers were developed in India by Keggfarms Private Ltd and introduced on the market in the early 1990s. They have many indigenous traits, but grow faster and lay more

eggs than indigenous chicken. Hens attain 2.5 kg within 12 months, begin laying eggs at five to six months, and then lay 150 eggs per year. Kuroilers are low-maintenance scavengers that thrive on household and agricultural waste.

This breed has been introduced in Uganda and Tanzania by the Nzua & Msigani Joint Venture (N&MJV). The venture was set up by Nzua Enterprises and Msigani Poultry Farms and Hatcheries, both local poultry enterprises (Dessie and Getachew, 2016.). During distribution, the venture has partnered with Keggfarms. The partnership involves Keggfarms providing Kuroiler parent stock, along with expertise and training on topics such as housing, growing, breeding and production. N&MJV are the official distributors of the Kuroiler in Tanzania.

Exotic hybrids

Hybrids of Black Australorp, Hi sex, Bovan Brown, Rhode Island Red, Light Sussex, Plymouth Rock are commonly available, especially with local hatcheries and therefore are no longer imported. NGO programs and local government programs, such as the Tanzania Social Action Fund (TASAF), Agriculture Sector Development Program (ASDP) and District Agriculture Development Plans (DADPs), have introduced and encouraged cross breeding as a way to improve quality of indigenous chicken breeds.

Exotic pure

Most common types of broiler chicken available in the country include Cobb from Tanzania Poultry Farm, Aboeka from Amadori, Cobb from Mkuza and Interchick, and Ross from Ideal Poultry Breeding Farm Inc. Farmers often prefer Cobb and Aboeka breed types because of their low feed conversion and good growth rate (Match Maker Associates, 2013). Few companies are producing layers. The most common types of layers include: Kasira, Shavers (from Zambia and Kenya) and Bovan from Holland and Kenya (Match Maker Associates, 2013).

TABLE 8. Common exotic breeds raised in Tanzania

Breeds	Characteristics
Hi sex, Shavers (I, II, III), Bovan Brown, Bovan Gold Line and Nera	These are raised for commercial purpose and mainly imported from Kenya, Uganda, South Africa, Zimbabwe, Malawi, Mauritius, Egypt, the United Arab Emirates, Israel, France, Germany, the Netherlands and the United Kingdom.
Hybro (now Cobb), Arbor Acres, Kasila, Ross 308, Hubbard	
White Leghorns, Rhode Island Red, Light Sussex and Plymouth Rock	These exotic breeds are crossbred with indigenous chickens to improve growth rate and egg production

Source: Match Maker Associates, 2010; 2013; MLF, 2017b

POULTRY PRODUCTION SYSTEMS

The Tanzania Livestock Master Plan classifies poultry production systems in two major categories: (i) traditional family poultry production and (ii) commercial poultry production (Table 9).

TABLE 9. Categorization of poultry production systems as per the Livestock Master Plan

Traditional family poultry production
<ul style="list-style-type: none"> - Largest share of the national flock. - Mostly indigenous breeds (including crosses and hybrids) under scavenging or semi-scavenging (extensive or semi-extensive) systems. - Mainly raise chickens (90 %) and a few ducks, ostriches, pigeons and geese. - Supply all the poultry meat and eggs consumed in rural areas and 20 percent of those consumed in urban areas. - Input use is medium to high, mainly day-old-chicks, industrial feeds during first 1-2 months and veterinary drugs (mostly vaccines). - The Government is working to increase commercialization.
Commercial poultry production
<p>The commercial chicken production systems are further divided into three subcategories:</p> <p><i>1. Improved family system</i></p> <p>Found mostly in rural areas as the first stage towards commercialization of their poultry enterprises. Currently, it is supported mostly by NGOs and development projects which facilitate access to most inputs as the private sector in rural areas is not able to support them. The scale of production vs cost of production is also a hindrance.</p> <ul style="list-style-type: none"> - Produce both for household consumption and market. - Keep between 25 and 150 birds under semi-intensive system. - Input use is relatively low. - Keep indigenous breeds and crosses. - Buy DOCs and feed commercial feeds for the first 30 days. - Basic vaccination but not comprehensive. - Occasionally use vet drugs. - Low biosecurity. <p><i>2. Tropical improved chicken</i></p> <p>An emerging production system found mostly in urban (particularly small towns in rural areas and peri-urban). The system stands on the fence between improved traditional family system and the specialized commercial system which keeps layers and broilers. The total number of birds kept under this system is still less than a million.</p> <ul style="list-style-type: none"> - Found mostly in urban & peri-urban areas. - Keep between 200 and 1 500 birds under semi-intensive or intensive system. - Produce for the market with a relatively higher input use. - Keep improved indigenous breed (crossbreeds). - Buy DOCs and feed commercial feeds throughout. - Comprehensive vaccination. - Use vet drugs. - Moderate biosecurity. <p><i>3. Expanded specialized/commercial chicken</i></p> <p>This system is generally found in urban and peri-urban areas. However, some large farms are found in rural areas where there is sufficient land. These are specialized farms keeping exotic breeds of layers and broilers for either meat or eggs. They practice intensive farming including battery cage system. The scale can be small, medium or large.</p> <ul style="list-style-type: none"> - Produce only for the market. - Keep from 200 to over a million birds. - High input use. - Most medium and large-scale farms are vertically integrated. - Higher biosecurity. - Some of access to private veterinary, diagnosis and laboratory services.

Source: MLF, 2017a

Table 10 links the classification of production systems of Tanzania's Master Plan with that used in FAO Poultry Sector Reviews (Appendix 1).

TABLE 10. Links between the FAO and Tanzania Livestock Master Plan categorizations

Classification of poultry production systems		
Tanzania Livestock Master Plan (MLF, 2017a)		FAO Poultry Sector Reviews (Appendix 1)
Traditional production system		Extensive scavenging
		Small extensive scavenging
Commercial production system	Improved family poultry production	Semi-intensive
	Tropical improved chicken	Small-scale intensive
	Expanded specialized/commercial chicken	Industrial and integrated/medium and large-scale intensive system

2.1.3. Poultry production systems and their distribution

Poultry production in Tanzania is still dominated by family poultry systems with less than 50 chickens who feed by scavenging. Therefore, in spite of the relatively high price of poultry meat, the commercial sector does not dominate in Tanzania (World Bank, 2018b). Generally, the commercial production system is more common in urban and peri-urban areas (Table 11), with better access to inputs, services and markets. However, as more land is needed, investors tend to shift to rural areas.

TABLE 11. Poultry production systems and their distribution in Tanzania

Production system	Where it is mostly found in Tanzania
Extensive scavenging	Everywhere especially in rural areas
Small extensive scavenging	
Semi-intensive	In small rural towns and peri-urban areas. Mostly in areas where poultry improvement programs were implemented like in: Dodoma, Singida, Arusha, Pwani, Manyara, Mwanza, Tanga, Shinyanga, Tabora, Mtwara, Morogoro, Arusha, Mbeya, Ruvuma, Mara, Njombe, Simiyu, Kigoma, Geita, Pemba and Unguja.
Small-scale intensive	In major towns and cities, including: Mbeya, Njombe, Tanga, Dodoma, Mara, Manyara, Geita Simiyu, Dar es Salaam, Mwanza, Arusha, Pwani, Kilimanjaro, Iringa, Songea, Morogoro, Manyara, Mtwara, Arusha, Kaskazini and Kusini Unguja and Mjini Magharibi.
Industrial and integrated/medium- and large-scale intensive system;	In major cities and towns and in Regions with missionary and former state farms, including: Dar es Salaam, Mwanza, Arusha, Pwani, Kilimanjaro, Iringa, Ruvuma, Morogoro Kaskazini Unguja, Kusini Unguja and Mjini Magharibi.

Source: Annual Agricultural Sample Survey, 2016; National Bureau of Statistics, 2012, 2016a; United Republic of Tanzania, 2016

2.1.4. Industrial and integrated/large and medium-scale intensive

Commercial chicken production in Tanzania is still developing. There are only a few medium and large scale farms located in various regions of Tanzania, mostly in urban and peri-urban areas. Both exotic and improved indigenous chickens are raised in such farms (Table 12). Other poultry species like ducks, turkeys, etc. are kept in small numbers (National Bureau of Statistics, 2016b).

TABLE 12. Distribution of chicken population in large-scale farms in Tanzania

	2002/03	2007/08	2012/13	2015/16
Total number of chickens kept in large-scale farms	456 638	494 866	277 545	693 000
Chicken population in large-scale farms by region and breed in 2012/13				
Region	Exotic (broilers and layers)		Improved indigenous (dual-purpose)	
	No.	%	No.	%
Pwani	186 393	73.5	6 126	73.5
Dar es Salaam	18 250	7.2	9 400	7.2
Iringa	14 000	5.5		
Ruvvma			6 736	
Tanga	9 634	3.8		3.8
Other	25 188	10		10
Total	253 465	100	24 080	100

Source: National Bureau of Statistics, 2016a

According to the large-scale farms survey report on Tanzania mainland (National Bureau of Statistics, 2016a), the total number of chickens reared in large-scale farms in 2012/13 was 277 545 of which 179 439 were layers, 74 026 were broilers and 24 080 were of improved indigenous breeds. The population of other poultry kept in large-scale farms was not established. However, other reports show that ducks are usually kept in larger numbers compared to other species like turkey and guinea fowl (National Bureau of Statistics, 2016b).

The total number of chickens in these farms increased by 8.4 percent from 456 638 in 2002/03 to 494 866 in 2007/08; then decreased by 43.9 percent to 277 545 in 2012/13; and increased by almost 60 percent to 693 000 in 2016. Out of the total number of chicken kept on large-scale farms in 2012/13, the largest number was in Pwani (192 519, 69 percent), followed by Dar es Salaam (27 650, 10 percent), Iringa (14 000, 5 percent) and Tanga (11 166, 4 percent) (Table 12). Raising dual purpose chickens in medium and large-scale farms is a recent phenomenon, which started in the late 2010 (MLF, 2017a). In 2012/13, the total number of indigenous chicken reared on large-scale farms was 24 080, which is equivalent to 8.7 percent of the total chicken population raised in large-scale farms. Between 2002/03 and 2007/08, the number of indigenous chicken in large-scale farms increased by 2 548 (11.4 percent) from 22 423 to 24 971. The number decreased by 3.6 from 24 971 in 2007/08 to 24 080 in 2012/13 (National Bureau of Statistics, 2016a).

The number of industrial and integrated intensive farms is higher in Pwani Region because of its proximity to the Dar es Salaam market. The Region also accounts for the highest number of hatcheries. Regions like Tanga and Morogoro are also attracting investment in intensive poultry farming because of land availability close to the Dar es Salaam market. In 2010, the medium and large-scale intensive systems were served by 12 hatcheries located in 5 different regions: Dar es Salaam (4), Coast region (4), Arusha (1), Kilimanjaro (2) and Iringa (1). Their total production capacity was 1.5 million chicks every three weeks (Table 13). According to the TLMP, the number of breeding farms/hatcheries increased to 26 in 2016, each keeping between 2 000 and 100 000 chickens per flock of both exotic and improved breeds.

TABLE 13. Registered hatcheries in Tanzania (2010)

	Region	Hatchery	Capacity (no. of chicks/3 weeks)
1	Dar es Salaam	Amadori/Polo Italia	160 000
		Interchick	260 000
		Twiga Hatcheries	120 000
		Ideal chicks	120 000
2	Coast	Kibaha Education centre	120 000
		Mkuza Chicks	360 000
		Ruvu JKT	30 000
		Kiluvya Poultry Products	30 000
3	Arusha	Tanzania Popultry farms	180 000
4	Kilimanjaro	Kilacha	30 000
		Kibo Hatcheries	60 000
5	Iringa	CEFA/Matembwe Njombe	30 000
Total			1 500 000

Source: MLF, 2010

Government reports show that there are about 10 registered medium-to-large scale intensive poultry famers each keeping over 50 000 birds (MLF, 2017a). Between 2009 and 2010, 35.6 million chicks were produced in the country while 251 503 chicks and 6.03 million hatching eggs were imported.

Table 14 shows that most companies keep both broilers and layers, and only two keep the dual-purpose birds. Most of these companies keep between 15 000 and 244 000 birds, and are either in Dar es Salaam or in Pwani. Out of the 17 companies listed, 10 are in Dar es Salaam and Pwani Regions. As mentioned earlier in the report, availability of poultry data is very big challenge in Tanzania.

TABLE 14. Vertically integrated poultry production enterprises in Tanzania (as at December 2017)

Name of company / farm	Location (Region)	Capacity per week					
		Number of birds			Processed / packaged		
		Broilers	Layers	Dual-purpose	Total	Eggs	Meat (tons)
Europoultry	Dar es Salaam	90 000	0	N/A	90 000	No data	No data
Organia	Pwani	No data					
Animal Care	Pwani	20 000	N/A	0	20 000	N/A	N/A
Kukupoa	Mwanza	50 000	N/A	0	50 000	N/A	N/A
Kingchick	Dar es Salaam	100 000	No data	No data	100 000	No data	No data (meat cuts)
Nine Hills	Dar es Salaam	N/A	No data	N/A	No data	No data	N/A
Interchick	Dar es Salaam	220 000	24 000	0	244 000	No data	50 (meat cuts)
Mkuza Chicks	Pwani	70 000	5 000	0	75 000	5 000	5 (meat cuts)
Silverlands	Iringa	63 000	14 000	63 000 (SASSO)	140 000	No data	N/A
Tanzania Poultry	Arusha	120 000	24 000	0	144 000	No data	N/A
Misenani	Mwanza	15 000	10 000	5 000	30 000	No data	N/A
Kibo Poultry	Kilimanjaro	100 000	0	0	100 000	0	N/A
Songwe	Mbeya	0	20 000	0	0	No data	N/A
Mkiu Farm	Pwani	0	0	0	0	630 000 (buy & sell eggs)	No data
Morning Fresh	Pwani	0	0	0	0	420 000 (buy & sell eggs)	No data
Afro Farm Ltd	Pwani	N/A	N/A	N/A	N/A	147 000 (buy & sell eggs)	No data
Kili Agro	Arusha	No data					

Notes

N/A — Not applicable (i.e. the company does not perform the activity).

No data — The company performs the activity but no data was available.

Source: Tanzania Meat Board, 2018 (data collected by consultant)

Housing and management

Poultry houses are often built using commercial materials and equipment, including semi- or fully automated drinking and feeding systems. Some farms use battery cages. They all manufacture their own feed and breed or import their own chicks. They control diseases through routine vaccination and usually employ a fulltime veterinarian, or on part-time basis. Such producers often sell their products (including processed products) directly to the market.

Vertical integration

About 15 firms are practicing vertical integration in Tanzania (Table 14). These are mostly located in peri-urban and urban areas, mainly in Dar es Salaam and its surroundings and regions like Pwani and Morogoro. However, in most of these firms integration is usually incomplete. They usually engage in all or some of the following activities: growing or importing feed ingredients (especially soybean meal from India as it is de-fatted, of better quality, more reliable in supply and cheaper than Tanzania-produced full fat meal); milling and compounding feeds; producing broiler and layer day-old chicks; selling day-old chicks; growing out broilers to slaughter weight; slaughtering; processing (to various degrees); and conducting wholesale or retail marketing of birds and bird products (Wilson, 2015a).

Production in these farms is primarily based on imports of parent stock either as day-old chicks or hatching eggs. Imports of broiler grandparent stock for production of parent stock took place in the past but proved impossible to maintain to the required standards, imports of grandparent stock were abandoned in the early 1990s (Wilson, 2015a).

CASE STUDY 1. Access to finance is key for poultry business to grow and comply with animal biosecurity standards and food safety regulations



Kingchick Poultry is a Tanzanian business company founded by Rose Sweya in 2010. The business operates a farm raising over 130 000 broilers a year in Kigamboni Dar es Salaam. Rose started by growing only 200 birds per cycle in a small chicken house. In order to expand her business and access better markets (e.g. big tourist hotels, export), Rose had to comply to biosecurity standards and food safety regulations related to poultry farms, hatcheries, feed manufacturing and meat processing.

In July 2017, Kingchick received a 225 000 USD loan from the UK-based social impact agribusiness investor AgDevCo to expand its broiler production facilities. Over the next five years, the company plans to expand its outlet network from one to over ten stores and to develop a certified processing facility for slaughtering and dressing. Kingchick is investing in modern facilities including for housing, feeding, health control, feed milling, storage, slaughtering, meat processing, packaging and marketing. It has also expanded into growing over 30 000 birds per cycle and integrated vertically into hatching its own chicks and producing its own feed.



Kingchick sells both live chickens and processed meat. The meat processing capacity is now between 500 and 3 000 broilers per day, and is expected to increase in the next five years. Kingchick processed products include dressed whole chicken and cuts prepared through a partnership with one of the largest poultry meat processors in Dar es Salaam. Live broilers and processed products are sold through agents, supermarkets and their own outlet stores. The company also sells table eggs, day old chicks and poultry feeds. In 2017, Kingchick employed 25 people and produced about 100 000 birds for the local market.

Sources: AgDevCo, 2018; King Chick, 2018

2.1.5. Family poultry production systems

About 86 percent of all livestock-keeping households in Tanzania raise chicken under family poultry production systems (see Appendix 1), accounting for almost 90 percent of the national poultry flock. Scavenging family poultry systems are still common in the country. In such systems, indigenous chickens provide food for household consumption and a small income to meet family needs. In rural areas, indigenous chicken are mainly owned and managed by women, together with their children. These are often essential elements of female headed households' and an important source of income for women (Goromela, 2009). However, a growing number of households are raising larger flocks of improved indigenous chickens under semi-intensive systems (MLF, 2017a; World Bank, 2018b).

The productivity of chickens in family poultry production systems in Tanzania is low, mainly due to diseases, poor quality of feeds and feeding, inadequate technical and farmer support services and low genetic potential (where indigenous breeds and their crosses are used). The productivity is generally below optimal levels even in market-oriented family systems. For example, the productivity of layers raised under small-scale intensive production systems is about 235 eggs per hen per year compared to expected levels of 280 – 300 eggs per year per hen; and time to sexual maturity is longer (168 days instead of approx. 126 days). Broilers reach the market weight in about 82 days instead of approx. 28 – 35 days (World Bank, 2018c).

Family poultry production systems are considered to be very important to develop the poultry industry in Tanzania. Indeed, the Government is targeting small-scale poultry production systems in its plan to develop the sector. Based on the analysis made during the preparation of the Tanzania Livestock Master Plan (TLMP) in 2017, it was established that investing in the current small-scale poultry enterprises will be more impactful than increasing the number of large and industrial poultry farms (MLF, 2017a). It is argued that if interventions in the areas of animal health, genetics, marketing and processing and policies proposed in the TLMP are implemented, small-scale commercial poultry production would increase the contribution of the national poultry sector to gross national product by 182 percent to nearly USD 324 million over the 2017–2022 period (MLF, 2017a).

The number of poultry raised under scavenging family poultry systems is expected to decrease in the coming years as the Government continues to support market-oriented family poultry production through improved breeding and input intensification programs. At the same time, the number of semi-intensive and small-scale intensive systems is expected to increase.

CASE STUDY 2. Msigani Poultry Breeding Farms & Hatcheries

Location: Vigwaza Bagamoyo and Msigani Ubungo Dar es Salaam

Msigani Poultry Breeding Farms & Hatcheries is a registered small-scale poultry breeding business located in the outskirts of Dar es Salaam city. The business produces crossbred chicks between indigenous breeds and Black Australop and Rhode Island Red, and recently made a venture to produce Kuroiler chicks in Tanzania.

The company is a family business owned by Mr Manase Mrindwa and his wife, Lucy Mrindwa. They are supported by few casual workers and two experts in hatchery and breeding stock management. Most inputs used in the farm (including commercial feeds, veterinary drugs and vaccines) are purchased.

The hatching business started informally in 2007 with a small breeding stock of about 500 birds. It was registered/certified as a breeding farm and hatchery in 2016. In 2007 and 2008, the business could produce a maximum of 200 and 300 chicks of indigenous breeds per week, respectively. In 2009, the demand for indigenous crossbred chicks (specifically the Rhode Island Red and Black Australop cocks crossed with indigenous hens) was increased thanks to a rural poultry commercialization program. The business was supported to increase its capacity to produce 2 700 chicks per week. The same program later supported Mr and Mrs Mrindwa to invest and increase the production capacity to 7 000 chicks per week. Currently, the incubation capacity is of up to 33 900 eggs per cycle. The business operates on a 30 acre site with facilities to raise about 3 500 birds.

Since September 2017, three acres are dedicated to raising Kuroiler parent stock. The production of Kuroiler chicks is managed under a partnership venture with Nzua Enterprises called Nzua & Msigani Joint Venture (N&MJV). The joint venture then partnered with Keggfarms, the Indian poultry breeding organisation that developed the Kuroiler breed. This partnership venture aims to officially introduce the Kuroiler chicken into Tanzania to improve income generation and food security for smallholders. It involves Keggfarms providing Kuroiler parent stock, along with expertise and best practice in areas of Kuroiler management and N&MJV acting as the official distributor of the Kuroiler in Tanzania.

According to Mr and Mrs Mrindwa, their hatching business faces the following major challenges:

Inconsistent market for chicks: The increase in feed prices experienced between 2016 and 2017 made poultry keeping unprofitable. As a result, a good number of poultry farms were closed and hatching business suffered. The increase in feed prices was caused by increased cost of producing feed due to higher taxes, electricity problems, and more importantly the VAT imposed on feed ingredients. Transportation and logistics of delivering chicks to remote farms is also a challenge.

Poor supply and high cost of utilities: The URT Law and Regulation require that breeding farms and hatcheries are isolated from other public activities. As a result, such businesses end up in areas underserved in services, such as water supply, roads and electricity. N&MJV is forced to buy water on a daily basis and to transport it to their breeding farm located 22 km from the main water supply. The farm is also in an area not yet serviced by the national grid so they use a diesel generator which makes electricity very expensive for them.

Poultry-unfriendly financial markets: Financial institutions in Tanzania are argued to be very risk averse and hence not poultry friendly. The Financial institutions in Tanzania are argued to be using frameworks which pin on poultry mortality rates and volatility of eggs and meat market prices as reasons for rating the activity too risky. Apparently, Msigani company has been relying on grants from development programs which do not support capital investment to levels required to build a good hatching business.

Source: M. Mrindwa, personal communication, 2018

2.1.6. Feed resources

The scavenging base is scarce

The scavenging feed resource base is scarce in most parts of the country due to a number of factors, including the increasing size of flocks and density of human settlements in both urban and peri-urban areas. This has created the need for farmers to find feed even for poultry kept under extensive scavenging system, leading to a gradual decrease in the number of systems based on scavenging only. More and more farmers claim to gather and even buy ingredients like maize bran, market or restaurant wastes to feed their backyard chickens. This is leading to a competition between rural poultry and pig farming.

Home-made feeds from mixing different resources

In both rural and urban areas, local mixing and compounding of poultry feeds is increasing. This is mostly done by small- to medium-scale poultry producers as a strategy to reduce

feeding costs. Such producers collect and mix feed ingredients such as maize bran, wheat bran, sunflower or cotton seed cake, small fish/sardines and dried livestock blood. The better-off farmers add vitamin supplements to these feed mixes. Some producers mix the home-made mixtures with commercial feed.

This practice has created a business of loose feed like maize bran, seed cakes, fish meal, etc. Some traders mix the feed ingredients themselves and sell it to farmers.

Industrial (commercial) feed production

Production of commercial animal feed started in Tanzania in 1971 by the Tanzania Animal Feeds Company (TAFCO). This was a government parastatal which produced 80 percent of the total national demand. In 1992, TAFCO collapsed and private feed production emerged. This happened when Tanzania shifted from a state-owned economy to privatization. The private feed mills that emerged after TAFCO were small and mostly produced poultry feeds.

Between 1992 (when TAFCO collapsed) and 2014 (when the industry took a new shape- see below), feed manufacturing was disorganized and unregulated. The demand for compounded feed started to increase in 2009 when rural farmers started to raise day old chicks commercially. In 2010, the Grazing Land and Animal Feed Resources Act was passed to regulate feed resources management and trade. Because the feed industry was dormant and unregulated, feed resources like cotton seed cake, sunflower cake and even maize bran were easily available in the market and exported mainly to Kenya and the Middle East. All feed mills used sardines (fish meal) as the source of animal protein in the poultry feeds. Soybean was not used.

Feed manufacturing was very secretive and non-trusting, there was no information sharing or collection of information, few traders monopolized the market and feed millers were accepting poor quality raw materials. Furthermore, the limitations of funds for both public and private sector organizations was slowing down the integrated approach for effective markets. The evaluation of price set against the quality of products was lacking as the nutritive content was poor. There was a lot of on farm mixing with no regular audits or analyses (audits were only being carried out when a problem occurred). The supply of quality commercial feeds was inconsistent.

In 2014, feed manufacturing took a new shape in Tanzania largely because of a dedicated support from the United States Government to revive the sector. The US Grains Council (USGC-Tanzania) launched the Tanzanian Food for Progress program to: (i) promote quality feed formulations for poultry; (ii) develop self-sufficient industry associations for poultry producers and feed manufacturers; and (iii) improve broiler and layer production through training seminars. The program worked with feed manufacturers, the government and poultry producers to develop a strong, self-sufficient poultry and feed manufacturing industry. They provided training and exposure to feed manufacturers and feed inspectors as well as building the capacity of the Tanzania Veterinary Laboratory Agency (TVLA) in ensuring the quality of feed ingredients through efficient and robust laboratory analyses. The Council also assisted in developing industry associations that help producers to utilize quality feed to its fullest potential. The program also helped individual poultry producers to improve their operations and increase the confidence of consumers in the quality of poultry from Tanzania.

Today, the feed sector is liberalized and active. The quality of feed has also improved as the feed sector moves towards gaining the farmers confidence in their products. There is more collaboration within the feed sector and between the sector and regulatory authorities and policy makers. Feed millers compete by doing comparison trials against competitors' feeds. There is an emergence of educated business-oriented farmers who are ready to invest. They demand high nutrient density feeds to ensure rapid turnovers and maximum productivity. This "livestock revolution" has provided opportunities for development in the feed sector in many regards.

As the sector became formalized, a shift from using fishmeal to using soy cake/meal in feed composition occurred, thus opening up initiatives for trade from different countries. Quality testing has also been introduced through the Tanzania Veterinary Laboratory Agency (TVLA) which analyses feed raw materials and compounded feeds. These developments have also increased the demand for feed ingredients and therefore created a shortage in the market. Consequently, imports of feed ingredients have also increased.

The actual number of feed mills in the country is not known. However, the Tanzania Feed Manufacturer Association (TAFMA) has 40 members (which is an increase from 21 in 2012) which produce up to 80 tons per day. Most of the members use simple hammer technology to produce mash feeds and a few of them produce pellets. In addition to these 40 feed mills, the country has a significant number of small-scale unregistered millers producing up to a minimum of half-a-ton a day. Table 15 provides the list of feed manufacturers currently registered by the Government.

The overall production of commercial feed for poultry and other livestock is low and feeds are often reported to be of poor quality. Maize production is occasionally not even enough to meet the food security needs of the country. According to TAFMA, the poultry feed industry faces the following challenges: lack of reliable data; lack of funding for regulators to support them in capacity development training programs on the Grazing-Land and Animal Feed Resources Act of 2010; the country produces soy beans and not soy cake as such; all the soy bean meal that is consumed by the feed market is imported and has no tax relief; the industry requires more qualified agriculture personnel, specifically feed technologists; and storage facilities for raw materials is lacking.

TABLE 15. Main poultry feed mills (with capacity of over 25 tonnes)

Name of Factory	Location	Production (tonnes)	
		Installed capacity	Actual production per day
Mapussa Animal Feed	Dodoma	80	25
Interchick Co.	Kinondoni	45	35
Hills Animal feeds	Kinondoni	30	20
JKT Animal Feed	Kibaha	30	20.5
Jadide Animal feeds	Kinondoni	35	15
FALCON	Temeke	30	20
International Tanfeeds Ltd	Morogoro	30	25.5
Kongowe Feed +Millers	Mkuranga	25	15.5
Kijenge Animal Product Ltd	Arusha	25	10.5
Best Chicken Feed	Temeke	25	14
Ideal Chicks	Temeke	25	15.5
Amadori	Temeke	25	20
Benfeed	Ilala	25	15
Pantoni Animal Feed	Kibaha	25	15
Posho Mill	Ilemela	25	15.5
Benfeed	Ilala	25	15
Twiga Feeds	Temeke	20	10.5
Igo Animal Feeds	Kinondoni	25	15

Source: MLF, 2012

Cost of feed

The success and expansion of the poultry value chain highly depends on the availability of quality and affordable feed; it can account for about 60 –70 percent of the production costs. Poultry producers are generally concerned about the cost of feed (which has gone up in the past one to two years) due to limited availability of affordable raw materials and newly introduced VAT on poultry feed, among other factors. In Tanzania, the price of poultry feed has remained stable between 2015 and 2017 due to a bumper maize harvest recorded in 2014/2015. The average price in the market of various compound feeds is shown in Table 16. As an attempt to lower production costs and therefore stabilize feed prices feed manufacturers are increasingly moving away from using fishmeal as a source of protein to soybeans. However, since there is very little production of soy beans in the country, feed manufacturers rely on imported soy beans and soy bean cakes (a total of 9 600 and 4 900 tonnes in 2016 respectively, mostly from India, Malawi, Uganda, USA and Zambia) which increases the cost of production. Basically, high cost of raw materials, inadequate storage capacity and logistics challenges drive up production cost and caused a number of small

producers and some feed manufacturers to go out of business. However, producers who afford to process their own feed have relatively lower production costs.

TABLE 16. National average prices of various types of compound feed as at December 2017

Type of feed	National average price		
	TZS / 50 kg Bag	TZS / Ton	USD/Ton*
Chick Mash	54 940	1 098 800	492
Grower mash	49 677	993 540	445
Layers Mash	49 696	993 920	445
Broilers' Feeds	63 401	1 268 020	567
Broiler starter	66 690	1 333 800	597
Broiler grower	62 621	1 252 420	560
Broiler finisher	60 375	1 207 500	540

* USD / TZS Rate of 2 235

Source: World Bank, 2017c

2.1.7. Poultry and public health

Poultry health

Although the industry has not faced major disease outbreaks between 2007 and 2017, poultry diseases continue to be among the major problems facing the sector, especially in rural areas. Newcastle disease (ND) and fowl/chicken pox diseases continue to cause losses and pose a threat to the emerging industry. There have been some improvements in the control of ND in the country whereby about 29 percent of households now vaccinate their poultry (MLF, 2017a). However, access to basic veterinary inputs and services is still limited especially in rural areas (Table 17).

Most commercial poultry producers (small, medium and large) have over time established trusted sources of quality drugs and vaccines (World Bank, 2018c). However, there is presence of substandard products in the market most of which enter the country through illegal channels. Small-scale poultry producers, especially in rural areas, often access veterinary drugs and advisory services from Agroveter shops. These are drug outlets which sell veterinary drugs along-side other agricultural inputs like feeds, fertilizers and pesticides. Such shops are not recognized by the existing legal framework and therefore not registered. According to a World Bank Report (2018c), practices in these shops are not up to standards, and farmers are not asked to provide prescriptions irrespective of drugs they buy. Shop attendants are also not qualified animal health staff. Currently, the Veterinary Council of Tanzania (VCT) is actively formalizing and upgrading standards of all drug retailing agroveter shops to veterinary centers.

TABLE 17. Health challenges in poultry production and government investment prioritization as per the Tanzania Livestock Master Plan

Production system/theme	Description
Animal health challenges	<p>The Tanzania Livestock Master Plan explains that all poultry keepers in Tanzania face similar challenges, but farmers have different coping mechanisms and strategies. For example, large-scale producers may hire their own vets, import drugs or buy their own diagnostic tools. Small-scale producers, instead, may establish trusted sources of drugs and rely on them for advice, i.e. they get diagnosis and prescription from drug sellers who might not be vets. This is very common in rural areas.</p> <p>The following challenges have been identified:</p> <ul style="list-style-type: none"> • high prevalence of disease particularly, Newcastle disease (ND), Salmonellosis, Marek’s disease; • poor access to veterinary services –hence self-medication is high (no diagnosis and no prescription); • poor handling and quality drugs and vaccines associated with inadequate human resource for supervisory, monitoring and unreliable cold chain supply of chicken vaccines; • poor housing and sanitation; • poor regulation of rural drug suppliers.
Government strategies	<ul style="list-style-type: none"> • Strengthen enforcement of Animal Disease Act (2003) and its regulations; • formulate biosafety guidelines for disease control and other relevant guidelines; • enforce stricter disease controls on importation of commercial replacement stock; • production of ND vaccine with high efficacy and mass mandatory vaccination against ND; • awareness creation among small producers on sanitation and housing (including the importance of using disinfectants).
Prioritized animal health improvement activities	<ul style="list-style-type: none"> • Improve the capacities of chicken feed quality control laboratories; • upgrade and expand ND, fowl pox, Gumboro vaccines production plant; • establish and monitor the chicken industry biosafety program; • establish new crossbred semi-scavenging and commercial day-old chick multiplication centers; • establish mother units and distribution centers for 4 weeks vaccinated chicks.

Source: MLF, 2017a

High incidences of diseases and related bird deaths that could be easily prevented and managed through better animal husbandry practices and optimal use of animal health services are reported particularly in rural areas. Most small-scale poultry producers seek animal health services only when birds fall sick, and hardly conduct routine checks to identify animals requiring health attention. These farmers also tend to buy and administer drugs without consulting an expert (World Bank, 2018c).

Government reports show that the number of small-scale farmers who adhere to routine vaccination has recently increased especially against Newcastle disease, Gumboro disease and fowl pox (MLF, 2017b). However, treatable infections like infectious coryza, fowl typhoid, coccidiosis and worm infestation are still rampant among small-scale producers mainly due to poor husbandry and low biosecurity. In scavenging systems, diseases may cause mortality of up to 80 percent of the poultry flock (MLF, 2017a).

Quality control and law enforcement

Laws and Regulations to control zoonosis (The Animal Diseases Act of 2003) and to promote food safety during preparation and handling of food including meat and eggs (The Tanzania Food, Drugs and Cosmetics Act of 2003) are in place. However, their enforcement is still a challenge. Specifically, the Government's capacity to inspect and monitor the quality of veterinary drugs sold in the market, the hygiene standards in processing plants (slaughter houses), the safety of all imports, etc. need strengthening. For example, illegal importation of unchecked live birds and eggs is still a challenge in some border ports.

Use of antibiotics

In April 2017, and as a response to the global call to combat antimicrobial resistance (AMR), the Government launched the National Action Plan on Antimicrobial Resistance 2017-2022 (URT, 2017b) to guide processes and actions to promote proper use of antibiotics in Tanzania. This includes raising public awareness on the AMR problem, addressing issues related to self-medication, limiting prophylactic use of antibiotics (especially in poultry production), avoiding selling of poor quality veterinary drugs in the market, and limiting excessive use of broad spectrum antibiotics in livestock production.

2.1.8. Environment and human health

According to the Tanzania Environment Management Act of 2004, large-scale farms, feed manufacturing plants, hatcheries and meat processing plants must carry out an environmental impact assessment. Particularly, hatcheries and meat processors are required to invest in handling wastes from incubators and abattoirs, respectively. Unfortunately, however, investment in such systems is costly and therefore not many companies are complying.

The development of industrialised poultry production raises the question of the impact on the environment, especially in terms of manure management and possible discharge of nutrients in surface water, but also in terms of greenhouse gas emissions, use of chemicals in production and processing, water management and management of packaging materials. Antimicrobial resistance and animal diseases are also serious concerns for human health associated with industrial poultry production. However, no data was found on these impacts in Tanzania.

POULTRY VALUE CHAIN ANALYSIS

2.1.9. Chicken meat

The chicken meat value chain involves producing, trading, processing and marketing of both indigenous and exotic chickens. FAO conducted a comprehensive study in 2015 to analyse the white meat (pig and poultry) value chain in Tanzania (Wilson, 2015a) and described the chicken value chain as being fragmented, unorganized, uncoordinated and uncontrolled (in

spite of being over-regulated). The study also found that it has weak and uncompetitive horizontal and vertical linkages.

Products

The chicken meat value chain includes live chicken; raw (fresh) chicken meat and processed meat products and by-products that are sold uniquely to the domestic market. The primary processed meat and meat products are derived after animals are slaughtered and include whole and part carcasses, offals (gizzards and liver) and other by-products such as feathers, heads and feet. The secondary processed products are derived mainly (if not solely) from the small commercial poultry sector where there is some vertical integration. The chicken meat comes mainly from broilers, whose carcass weights are between 1 000 and 1 500 g depending on market segment demand, from spent hens (i.e. culled layers), and from indigenous chickens whose average carcass weight is estimated at 900 g (Wilson, 2015a).

Actors and functions

According to Wilson (2015b), the value chain is dominated by large numbers of smallholder poultry owners, an immense number of middlemen who operate across every link, and a similarly unknown number of individual sellers and small processors (who, for example, may cut chicken carcasses into smaller pieces). The latter supply restaurants, cafes and street vendors, or put their products on the market in other ways, but mainly lack the technical and financial ability to work efficiently and profitably. In other words, actors in this value chain include primary producers; traders in live chickens, meat and by-products; processors; butchers; and consumers (Table 18). Most of these actors are not specialized and their functions relate to various segments of the value chain. Many primary producers trade animals, and some upstream actors undertake both primary processing and trading of live chickens and meat in order to produce higher value cuts.

Many participants in the chain play multiple roles and functions. For example, some small-scale producers also act as processors and retailers while some processors are also wholesalers and retailers. Poultry producers may sell their chickens in several key ways: directly through a market, to a trader, or to a processor (they may also use a combination of all outlets). Traders may sell to another trader, directly to a wholesale or retail butcher, or to a processor. Processors, especially the smaller enterprises, may buy birds directly from farmers or from traders and sell the products to wholesalers or retailers (Wilson, 2015a).

Contract farming

In Tanzania, contract farming has been common in crop production especially in producing export crops like coffee, sugar, tea, etc., but not in poultry production. However, in 2010 after the Research Into Use (RIU) project introduced farmers to buying day-old chicks from specialized hatcheries and to keeping relatively larger numbers of birds under 'all-in-all-out' system, poultry contract farming expanded involving mainly commercial farms, hatcheries and aggregators. Commercial farms contract out-growers to raise broilers or layers to supplement their eggs and meat production, while hatcheries producing indigenous or cross breed chicks also contract out-growers to produce fertilized eggs to fill in their incubators' capacity. On the other hand, aggregators are marketing companies contracting smallholder farmers to raise chicken and buy back at a pre-agreed price. A typical aggregator often enters into contracts with farmers (through groups or associations) and offer credit in form of day-old chicks,

compound feeds enough to feed chicks for one month, vaccines and drugs to produce eggs or raise boilers, then buy back up to 75 percent of what is produced at a pre-agreed price. Aggregators also enter into contracts with buyers like hotels, restaurants, bakeries and supermarkets to supply eggs and meat in volumes. Some aggregators (e.g. Kukudeal) sort, package and brand eggs produced by different farmers.

TABLE 18. Key actors of the chicken value chain

Actor	Activity	Description
Poultry producers	Keep and sell chicken	This is the largest group of actors in the chain. Poultry farming is largely subsistence. To a small extent, semi-intensive and small-scale intensive systems are emerging, especially around urban areas. A number of large-scale and vertically integrated farms also exist in Tanzania.
Feed manufacturers and distributors	Manufacture and distribute compounded feeds	A few small, medium and large-scale feed manufacturers exist. Most manufactured feeds are of low quality.
Hatcheries	Hatching of eggs to produce day-old chicks (DOCs)	There are small hatcheries with varying capacities (2 000 to 15 000 DOCs per cycle), mostly located close to Dar es Salaam.
Drugs and vaccines suppliers	Import and supply of veterinary drugs	Big private firms (e.g. Farmers Center, Bytrade, Tan Vet, etc.) and their agents characterize the market for vaccines and veterinary drugs. Drugs and vaccines are imported from the Netherlands, Israel, Germany, etc. and several agro-veterinary shops (stockists) based outside Dar es Salaam work as agents of the importing companies.
Agro-veterinary shops (stockists)	Supply of drugs, vaccines, chicken feeds and other inputs.	Small district shops are supplied from big suppliers (e.g. Farmer Center, Bytrade etc.).
Village and town traders	Trading (primary, secondary and tertiary markets)	Trading of indigenous chicken meat goes through village traders, upcountry town traders (traders positioned at the district level) and Dar es Salaam based traders.
Meat processors	Slaughtering, dressing, cutting and packaging meat	Processors buy live chickens or take from their own farms and process them into dressed chicken or meat cuts. The larger processors also own medium/large-scale farms. Small and informal processors can be found in large markets in urban areas and slaughter and package for clients upon request.
Aggregators	Process and package meat produced by contracted farmers	This is an emerging function where individuals or companies contract small-scale farmers to grow broiler chickens on agreed terms.

Actor	Activity	Description
Mini supermarkets	Retailing of dressed chicken	Mini supermarkets buy chickens from suppliers in Dar es salaam markets and city suburbs or source from upcountry farms.
Food service sector	Supply institutional buyers	Growing industry that supplies educational and military establishments, hotels, hospitals, etc.
Individual consumers		Consumption of chicken meat in urban centres is mainly by middle- and high-income consumers. In rural areas, a large number of households produce chicken for home consumption.
Other actors and functions:		Other actors include researchers, extension staff, regulators, NGOs and development programs who are involved in providing services like training, extension, credit, community mobilization, etc. These are mainly involved in providing services as mechanisms to support small-scale producers to reduce mortality and earn more income. The initiatives are usually area specific and focusing on vulnerable groups like women, HIV/AIDS victims, etc.

Source: Match Maker Associates Limited, 2010; Wilson, 2015a; Wong *et al.*, 2016

Processing and value addition

Poultry processing is at its infant stage in Tanzania as most poultry are sold alive. Slaughtering and processing of chicken can be formal or informal, and in a public or private facility, as follows:

Informal home slaughtering. Most indigenous poultry is slaughtered informally for home consumption, and with no formal inspection. However, a small proportion of indigenous birds passes through urban markets and are subjected to some formal processes.

Public slaughter facility. Central poultry slaughter facilities do exist in cities and major towns; some are provided by the local authorities to a private management. In Dar es Salaam, such a facility is at Kisutu which is the main poultry market in the center of the city. Such facilities are usually registered with relevant authorities and are therefore subject to routine inspections. Although the exact number of such facilities in the country is not known, it is estimated that at least every municipality in the country has at least one. In these facilities, heads and feet are usually removed and bought by other traders (mostly women) for further processing into retail food.

Private integrated slaughter facility. These are owned by medium and large-scale broiler producers who are usually vertically integrated. In such facilities, slaughtering is more advanced and processing meat and other products into specialized value added components is also carried out in an organized line. Private integrated slaughter facilities are regulated and certified by the Government. The key facilities present in Tanzania are listed in Table 19.

TABLE 19. Chicken meat processing facilities

Slaughter center	Location	Slaughtering capacity (chickens/day)
Kingchick	Dar es Salaam	3 000
Kuku Poa	Mwanza	5 000
Interchick	Dar es Salaam	3 000
Kijenge Farms	Arusha	4 000
Kiliagro	Moshi	4 000
Mkuza Chicks	Pwani	16 000
Twiga Feeds	Dar es Salaam	3 000
Aman (Endanahai)	Babati	4 000
Tendaji Foods	Morogoro	> 16 000
Mbarali NAFCO farm	Mbeya	1 500
Tanzania Pride Meat	Morogoro	1 500
Total		> 61 000

Source: MLF, 2017b

BOX 2. Main issues specific to poultry processing

The processing part of the chicken meat value chain is beset with problems, some cascading down from 'above' (in terms of laws, regulations, unwarranted and unproductive interference), some seeping up from 'below' (in terms of lack of organization, poor facilities, a non-discriminating customer base). The main issues in terms of processing are:

- the market chain for poultry is largely informal (aside from the small segment that deals with broilers);
- a lack of real competition among chicken buyers (farm gate prices are similar throughout the country, except in larger urban areas, and sellers seem generally to accept these without too much complaint);
- the uncontrolled (often illegal) slaughter of birds;
- there are no proper slaughter facilities for poultry leading to food safety and animal welfare concerns (the exceptions are the two or three facilities owned by the larger integrated enterprises, and the totally inadequate Kisutu market operation in Dar es Salaam);
- complicated and conflicting regulations that are not usually enforced;
- untrained and unskilled staff throughout the links;
- lack of (or inadequate) equipment and tools throughout the links;
- potentially valuable by-products (heads, feet, feathers, blood, glands, etc.) which are not fully valorized and pose environmental hazards;
- little interest from the majority of domestic customers in terms of quality or value added products;
- limited quality and quantity of the range of processed products;
- further processing of diversified meat products is limited in quantity and aimed only at a small market segment;
- local horizons with regard to 'quality' considerations are probably lower than international ones.

Source: Wilson, 2015a

2.1.10. Table eggs

The table eggs value chain involves producing, trading, packaging and marketing of eggs from both indigenous and exotic hens. Egg production from other poultry (e.g. ducks, quails, turkey, guinea fowl, etc.) is very limited and therefore is not considered in this review. There is no comprehensive study conducted to specifically analyse the egg value chain, but the analysis has often been covered whenever chicken, meat and white meat value chains are analysed. The egg value chain resembles, to a large extent, the chicken meat value chain described by Wilson in the white meat value chain analysis report of 2015 (Wilson, 2015a) and in the Match Makers poultry sub-sector report of 2010. Both reports describe the chicken value chain as being fragmented and dominated by small-scale actors who operate informally and handling relatively small volumes. The regulation of the egg sector lies with the same institutions and frameworks that regulate meat.

Products

Currently, all eggs in Tanzania are sold in the shell. As described below, there are three types of eggs sold as table eggs in the Tanzanian market:

Indigenous eggs. Usually eggs from the indigenous chickens raised under the traditional scavenging system enter the market fertilized and are therefore highly perishable. This is because, unlike the exotic layers, indigenous hens are raised together with cocks. Such eggs follow very informal market channels which are multiple and hard to regulate. Most of these eggs are left to hatch or consumed on farm. Thus, very little is sold in village and roadside markets. The volumes that enter the urban markets have not been established. However, such eggs are found in selected urban retail shops, butchers and fresh food markets, especially for consumers who prefer organic products for feeding young children and the sick.

Improved local chicken eggs. These all the eggs produced by crossbreeds and other dual-purpose chickens. These include all eggs produced in commercial farms that do not keep exotic layers and feeding commercial feeds. These eggs are treated by customers as substitutes to indigenous eggs. They are believed to be organic, because they are mostly raised in rural areas under semi-intensive systems. Some Traders fetch higher prices by marketing them as indigenous eggs. However, they are more of 'free ranged' than indigenous.

Most of these eggs are sold by producers directly to traders, supermarkets, retailers or consumers. Traders use bicycles to collect and distribute them to pre-established customers. Some eggs are produced under contract between farmers and an aggregator. The latter is usually a company or an individual buying eggs from several small-scale producers and marketing them. Aggregators often enter to contracts with farmers and offer them input credit, then buy back what farmers produce at a pre-agreed price. Aggregators then enter into supply contracts with buyers like hotels, restaurants, bakeries and supermarkets.

Exotic eggs. These are eggs from commercial layers produced mostly in specialized small, medium and large-scale farms. Most of these eggs are directly sold by producers through their own wholesale and retail outlets located in different areas. They are also sold to traders who use bicycles to distribute to customers.

Actors and functions

Just like it is with the meat value chain, the egg value chain involves producers, traders (village trader, town trader or aggregator), supermarkets, food sector and the final consumer. Usually, the actors dealing with live chicken and chicken meat, also deal with eggs (Table 20).

BOX 3. Main challenges faced by egg producers in Tanzania

- Scarce availability and high price of poultry feeds and veterinary services.
- Poor access to good quality water sources and to uncontaminated environment.
- Consistent supply of quality feed resources.
- Lack of hatcheries and of quality day-old chicks.
- Insufficient poultry production infrastructures like for water supply, power, disease surveillance, transportation, etc.
- Inadequate control of poultry pests and diseases (layers and broilers).
- Lack of efficient poultry slaughter and marketing facilities.
- Low accessibility to credit facilities.
- Poor provision of technical support devices and extension services.
- Weak poultry farmer organizations.
- Low domestic demands of eggs.

Processing

There is no commercial company in Tanzania processing eggs into liquid or powder eggs. All eggs are sold in the shells. However, what is done is:

- *Cleaning.* This is done manually to remove surface dirt.
- *Sorting.* Sorting is also manually done to remove damaged eggs. Sorting by size is rarely done as the Tanzanian market does not buy eggs by size or weight. Manual candling is also done to detect fertilized eggs from eggs received from rural households.
- *Packaging.* Eggs are usually sold loose on in trays of 30 eggs. However, during the last ten years more and more were eggs sold in major cities like Arusha, Dar es Salaam and Mwanza packed in smaller trays of 15, 12 and 4 eggs. Branding and labelling has also increased.

TABLE 20. Table eggs value chain actors

Actor	Activity	Description
Producers	Production of table eggs	Table eggs are produced both by layer farms in urban areas and improved dual-purpose poultry farms in rural areas. At the national level, 68 percent of eggs from indigenous chickens are not sold. All eggs are sold in the shell.
Village and town traders	Buy eggs from producers in villages or small/medium farms	Eggs from indigenous hens are sold by producer households to traders or directly to consumers. They use bicycles to collect and move eggs around to their customers. They sell both wholesale and retail.
Aggregators	Contract farming (buy-back)	These are companies or individuals who buy eggs from several small-scale producers and sell them. Some aggregators sort, package and brand eggs produced by different producers.
Retail shops and butchers	Buy and sell eggs to final customers	These are retail shops in urban and peri-urban areas who buy eggs from retailers or directly from large/medium-scale producers and sell them together with other foodstuffs.
Supermarkets	Sell eggs directly to consumers	Enter into supply contracts with farmers or aggregators and sell them as eggs or cooked food. These can be large or mini supermarkets mostly in urban and peri-urban areas.
Food service sector	Consumption of eggs	Consumption of eggs in urban centres (e.g. Dar es Salaam) is mainly by middle- and low-income consumers. Eggs are mostly consumed boiled, with roadside chips or fried with tomatoes as a source or relish to eat ' <i>ugali</i> ' with.
Individual consumer	Final buyer and consumer of eggs	These buy eggs from retail shops or buy food cooked with eggs like cakes, 'fast-food chips (commonly known as ' <i>chips mayai</i> '), etc.

Source: Adapted from Match Maker Associates Limited, 2010; Wilson, 2015a

3. Poultry and egg markets and regulations

POULTRY SUPPLY AND DEMAND

The domestic demand for chicken meat and eggs is growing, especially in urban areas where there is a high dependence on imports. Export potential is also high (MLF, 2017a, 2017b) (e.g. to the European Union, Middle East and Eastern and Southern African countries) if better animal husbandry will be adopted and processing facilities established as well as producers will be able to adhere to the strict conditions and requirements of the European market.

Currently, the national demand for poultry and poultry products surpasses local production. In order to close the current production deficit, the annual chicken production has to increase by almost eight times by 2021/22, i.e. from about 60 800 to 465 600 tonnes. Egg production should also increase from about 3.0 to 4.2 billion eggs (MLF, 2017a)

3.1.1. Production

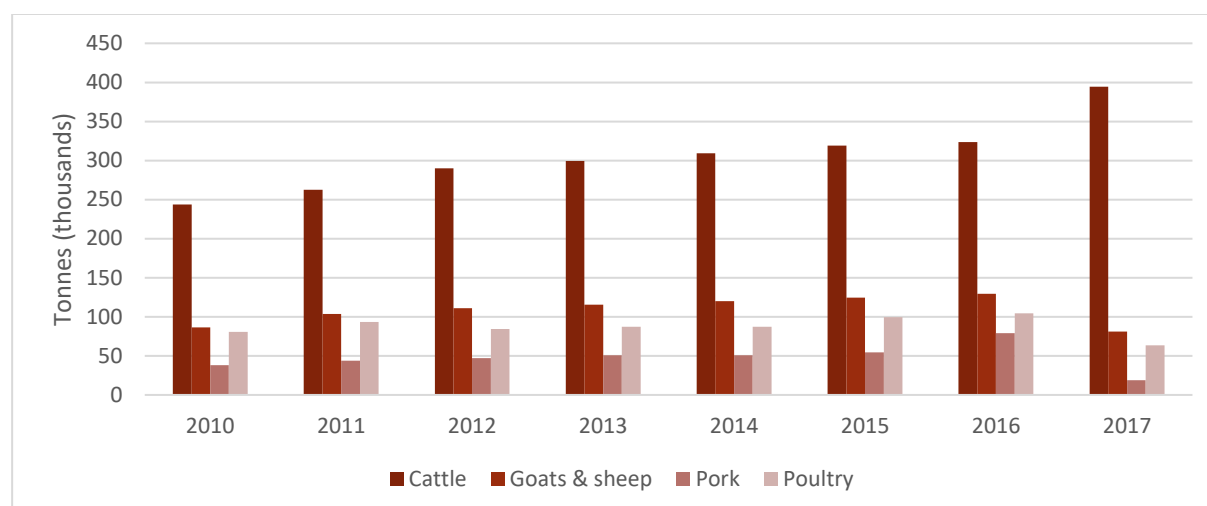
Meat

The national demand for meat has always been higher than supply and is expected to increase with the human population growth, urbanization and income gains. The annual meat production increased by 19 percent between 2005 (378 500 tonnes) and 2010 (449 673 tonnes) (Wilson, 2015b). It continued to increase to 597 757 tonnes in 2015 (+ 33 percent), but declined by 7 percent (558 164 tonnes) in 2017 (Figure 8). Most of the increase in meat production comes from small-scale producers in traditional systems (Wilson, 2015b).

Meat demand in Tanzania is dominated by red meat. The demand for red and white meat is estimated at about 450 000 tonnes and 60 000 tonnes per year, respectively. The proportion of poultry meat to the total meat production has always been below 20 percent. Figure 8 shows a declining trend of this contribution from the highest figure in 2010 and 2011 (i.e. 18 and 19 percent respectively) to the lowest in 2017 (i.e. 11 percent).

About 99.9 percent of the demand for red meat and 80 percent for white meat is met from local production. Imports of red meat are estimated at about 700 tonnes per year (the equivalent of 10 000 to 14 000 head of cattle), coming as exclusively 'choice' beef cuts from Kenya, which flow into the resident expatriate and tourist markets. On the other hand, imports of white meat, especially poultry, are exclusively 'upmarket' processed and value-added products aimed at the resident expatriate and tourist markets (Wilson, 2015a, 2015b).

FIGURE 8. Production of meat from cattle, sheep and goats, pigs and poultry (2010-2017)



	Production of meat (tonnes)							
	2010	2011	2012	2013	2014	2015	2016	2017
Cattle	243 943	262 606	289 835	299 581	309 353	319 112	323 775	394 604
Goats & sheep	86 634	103 709	111 106	115 652	120 199	124 745	129 292	81 064
Pork	38 180	43 647	47 246	50 814	50 814	54 360	79 200	18 899
Poultry	80 916	93 534	84 524	87 408	87 408	99 540	104 292	63 597
Total	449 673	503 496	532 711	553 455	567 774	597 757	636 559	558 164
Poultry as % of total meat production	18	19	16	16	15	17	16	11

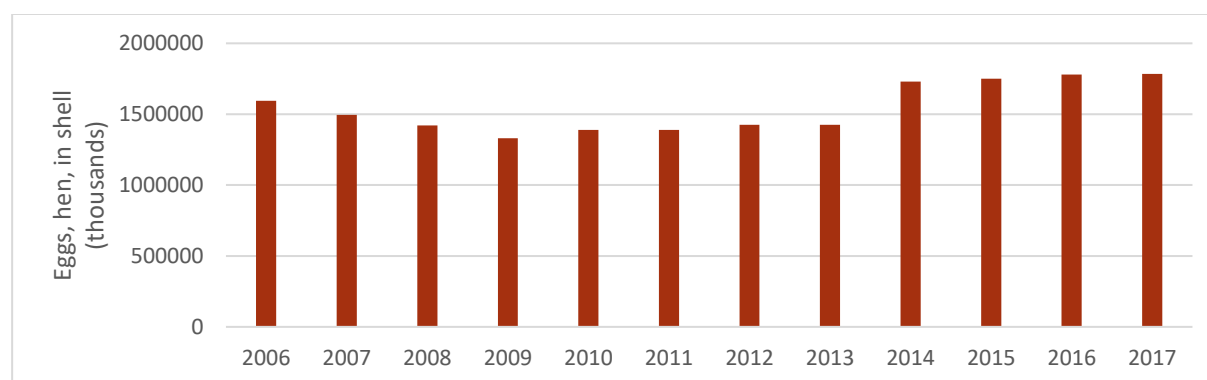
Source: MLF, 2017b

Table eggs

Table eggs are produced both by layer farms in urban areas and improved dual-purpose poultry farms in rural areas. Although some eggs from indigenous chickens are found in the market, about 68 percent of such eggs is often not sold but left to hatch or consumed by producer households (MLF, 2017b). On the other hand, eggs from crossbreeds of dual-purpose breeds are mostly sold.

Egg production has been increasing over recent years after staying constant for several years (Figure 9). The layers' subsector in particular has recorded good growth due to an increase in the number of large-scale producers (MLF, 2017b).

FIGURE 9. Production of hen eggs, in shell (2006-2017)



Production of hen eggs, in shell (millions)											
2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1 595	1 495	1 420	1 330	1 390	1 390	1 425	1 425	1 730	1 750	1 780	1 785

Source: FAO, 2018a

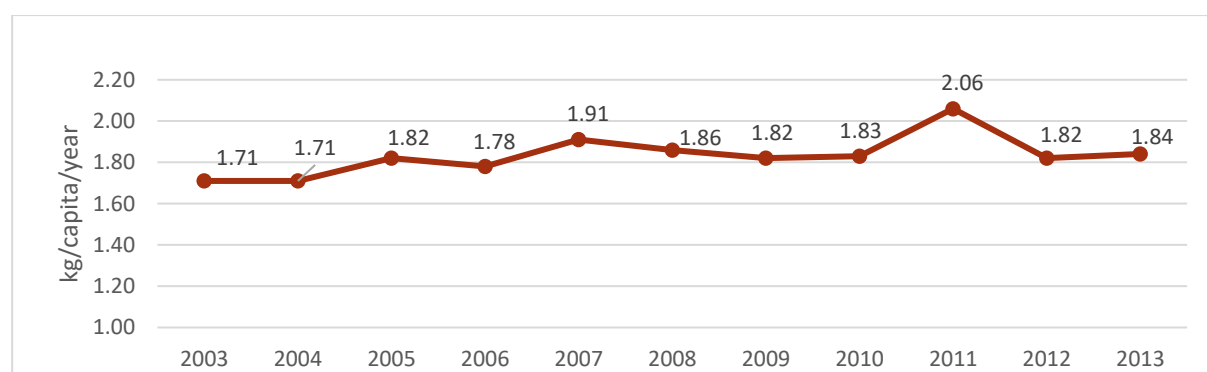
3.1.2. Consumption

In Tanzania, the consumption of animal source foods (including poultry meat and eggs) has been gradually increasing over the past decades due to the growing population (particularly the middle class), rising incomes and urbanization as well as to the growth of the mining and tourism sectors. Chicken and eggs are a particularly important source of animal protein in rural areas, where most households keep chicken and consume about 70 percent of what they produce (United Republic of Tanzania, 2016).

Meat

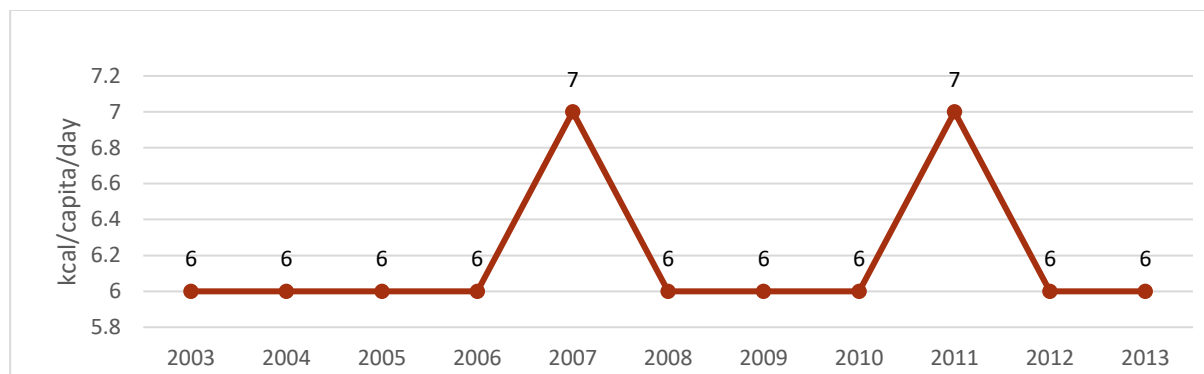
Figures 10.a. and 10.b. show that between 2003 and 2013 Tanzania's per capita consumption of poultry meat has not varied significantly. The average poultry meat consumption during this period was 1.82 kg/capita/year.

FIGURE 10.A. Poultry meat consumption (kg/capita/year), 2003-2013



Source: FAO, 2018a

FIGURE 10.B. Per capita intake of energy derived from poultry meat (kcal/capita/day), 2003-2013

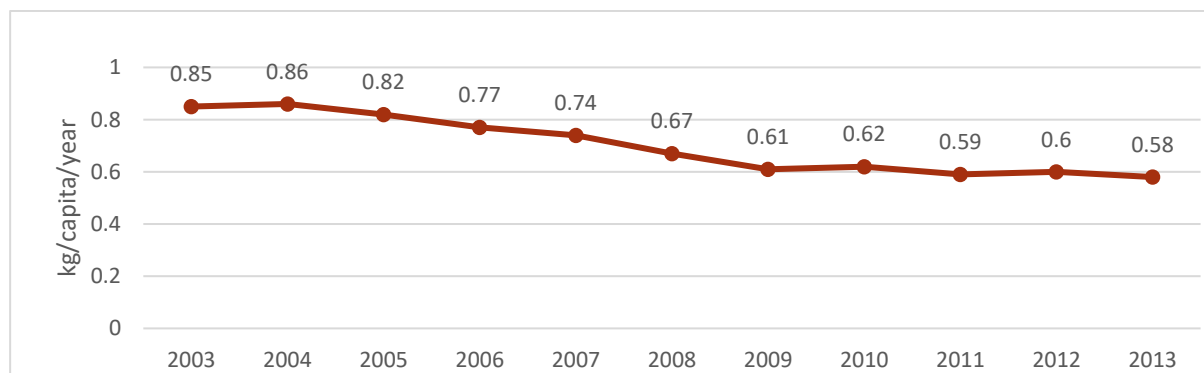


Source: FAO, 2018a

Table eggs

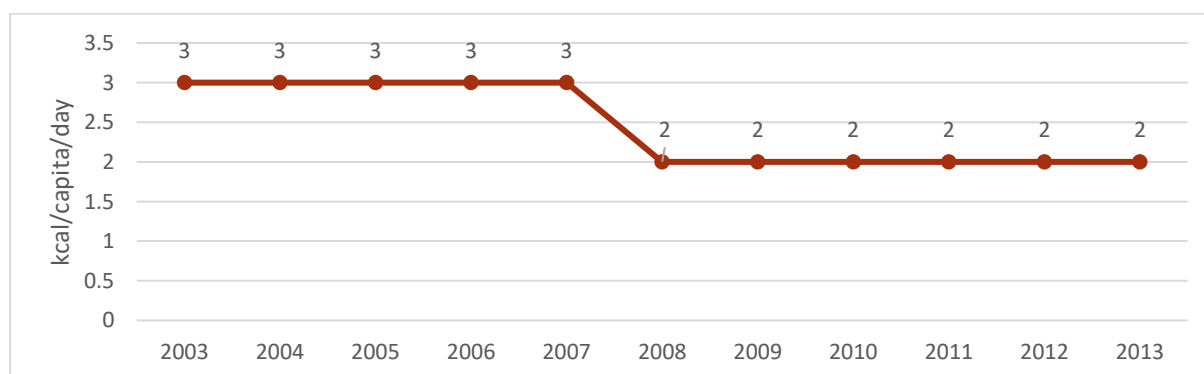
According to FAOSTAT, Tanzania's per capita consumption of eggs in 2013 was 0.58 kg/capita and the per capita intake of energy derived from eggs was 2 kcal/capita/day (FAO, 2018a).

FIGURE 11.A. Poultry egg consumption (kg/capita/year), 2003-2013



Source: FAO, 2018a

FIGURE 11.B. Per capita intake of energy derived from eggs (kcal/capita/day), 2003-2013



Source: FAO, 2018a

A noticeably huge unmet market demand exists in the production of indigenous chicken meat, eggs and DOCs. Most urban consumers buy exotic chicken because of their lower prices. However, the latent demand for indigenous chicken in urban centres is high as most people in Tanzania prefer their taste over that of exotic breeds. The high and unsatisfied demand, especially for indigenous chicken, provides a huge opportunity for the sector. At the same

time, the growing middle-income class with preference for fast foods and packed, ready to cook foods may mean a growth in the market for exotic chickens.

The growth of the middle-income consumers with preference for pre-packed and ready to cook foods provides opportunities for innovation and value addition even for indigenous poultry products. For example, unlike before, eggs from indigenous birds are packed and sold in supermarkets in trays of 4, 6, and 12 eggs.

3.1.3. Prices

Poultry producers' share of the end market price varies between 26 and 35 percent. It increases as they operate further up the value chain by selling directly to consumers, food vendors, supermarkets or processors. Generally, traders in urban areas realize a bigger share of the end market price (Match Makers Associates, 2010). The end market price for indigenous chicken meat is almost double the price of meat from exotic breeds. This is because of the value consumers put on the organic and free-range nature of the chicken.

Consumer prices of meat and eggs fluctuate with supply. This is because of their perishable nature. When there is too much supply, producers tend to lower prices in order to sell before the products go bad. For example, the increase in meat production in 2017 lowered consumer prices being as low as TZS 4 000 (USD 2) per tray (30 eggs). (MLF, 2017b). Egg prices fluctuate during the year in response to increases in demand, especially during seasonal holidays.

TRADE, MARKETING AND MARKETS

3.1.4. Domestic market

Marketing of poultry mainly occurs in local markets. The domestic market involves selling chicks, live chicken, meat, eggs and other processed products like sausages. Most important markets are urban markets where most poultry products are sold.

Rural Markets

According to the review of the smallholder livestock sector based on the 2012/13 national panel Survey conducted in 2016, the largest share of livestock keepers does not utilize markets regularly. Only between 30 and 40 percent of livestock producers in rural areas sell live cattle, goats or chickens to the market. About 9 percent of those utilizing the market sell eggs. Overall, only 8 percent of livestock production enters the market chain. In addition, the median number of animals sold is small (one cattle, two goats, three poultry and one pig). The quantity of eggs sold is also small, i.e. about 5 eggs per year. This suggests a sporadic and opportunistic participation in the market rather than of a regular utilization of markets (United Republic of Tanzania, 2016).

Unlike it is for cattle and goats, there are no formal markets for poultry. When producers need to sell their stock it is usually done through individual or group bargaining (Wilson, 2015a).

Market for indigenous chicken and eggs

In rural areas, there are no organized markets for chickens and producers sell birds in local markets when in need of cash. However, traders purchase chickens at farm gate and transport them to urban markets. These traders usually go door to door, or visit village markets where

they buy and keep them until they reach a sufficient number to transport (Match Makers Associates, 2010). Some of these traders carry merchandise and barter it for chickens.

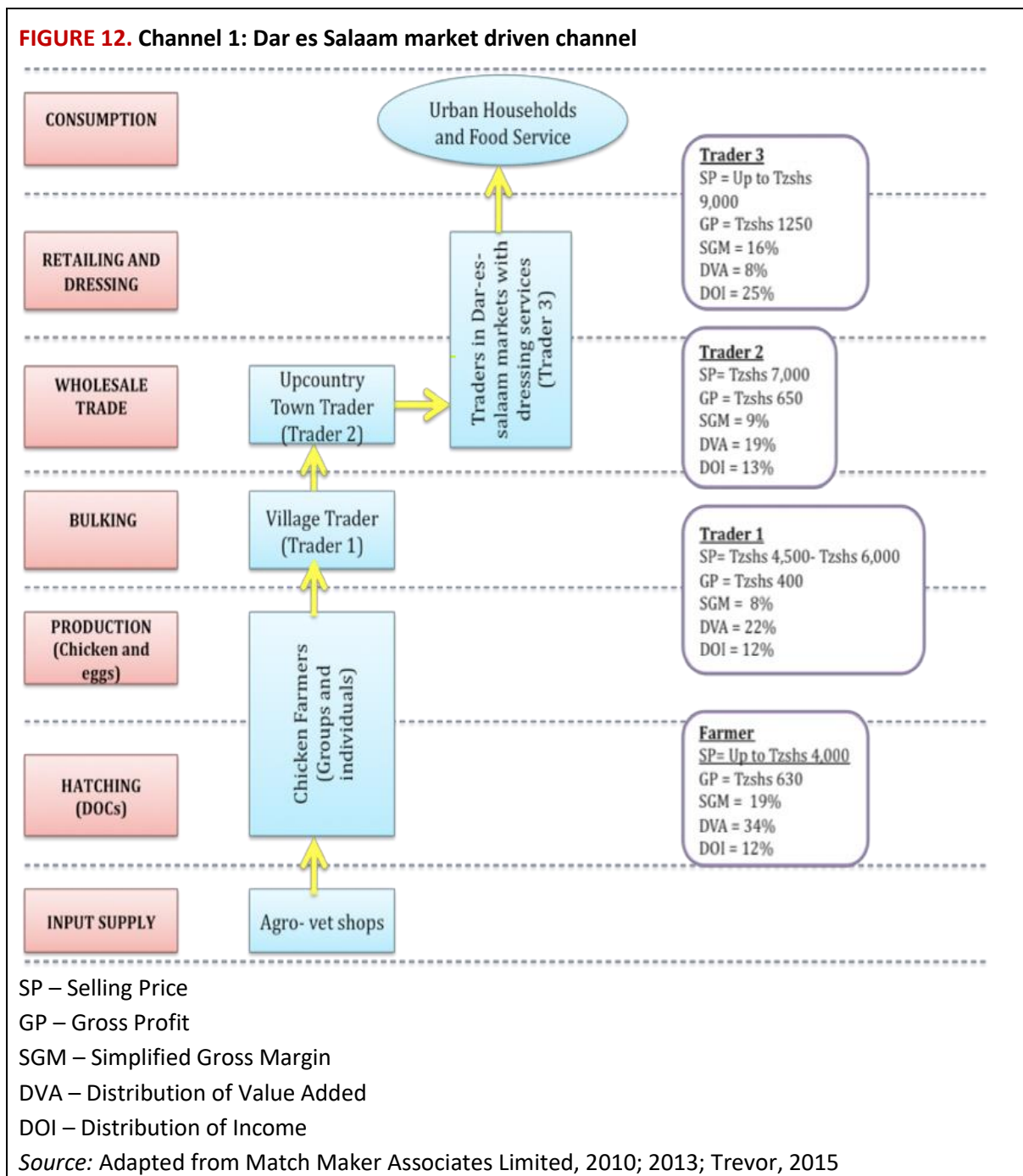
The main markets for indigenous chickens are in urban areas and in particular Dar es Salaam as well as Arusha, Mwanza and other regional towns where middle- and high-income household consumers purchase indigenous chickens. Indigenous chickens are also sold to restaurants and more rarely to big hotels. Very little processing is done in urban areas where very rudimentary dressing is done. Dressing is offered by the retailers but done at the cost of the customer.

Following recent initiatives to increase rural poultry production, more indigenous chickens are now traded between rural and urban areas. Studies divide the domestic poultry market into four key channels as follows (RIU, 2010):

Channel 1: Dar es Salaam market driven channel

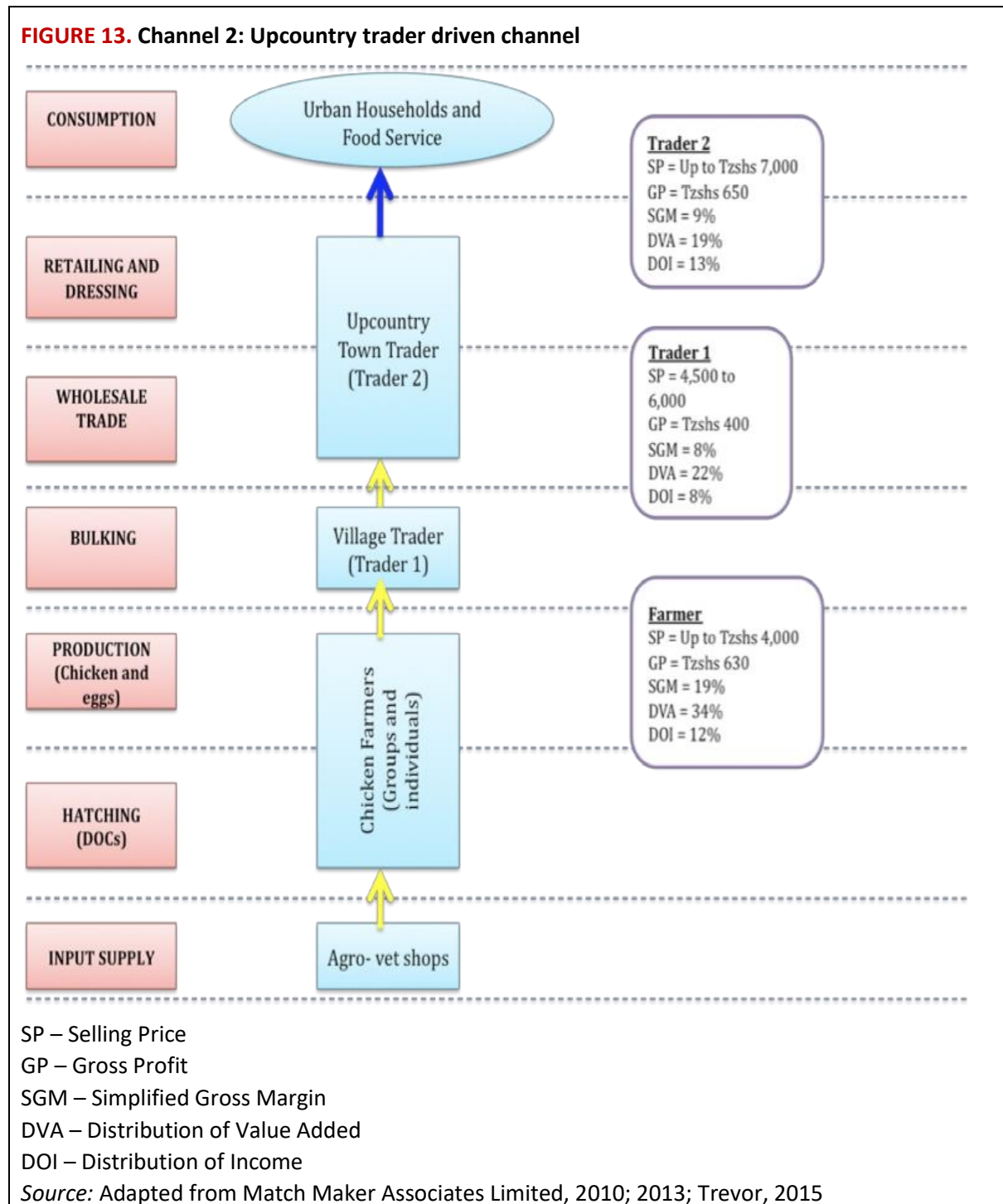
The Dar es Salaam traders channel is the channel that essentially drives the indigenous chicken subsector. It is estimated that over 15 000 chickens go through this channel every week, constituting about 50 percent of trade (Match Maker Associates Limited, 2010; Wilson, 2015a). In this channel, production is predominantly by smallholder farmers, some of whom are organized in groups and others working individually. NGO programs (e.g. World Vision, Farm Inputs Promotions, etc.) and local government (e.g. DADPS and TASAF) support some farmer groups. In this channel, chickens go through at least three categories of traders (village traders, town traders and Dar es Salaam traders). The movement of chickens from Singida and the central corridor typifies this channel. Figure 12 represents channel 1.

FIGURE 12. Channel 1: Dar es Salaam market driven channel



Channel 2: Upcountry trader driven channel

This channel is similar to channel 1. Production is predominantly by smallholder farmers. The distinction is that this channel is driven by up country markets (e.g. Mwanza, Arusha and other urban towns). Also, in some cases, the number of traders involved in the transactions in this channel tends to be fewer, and the end market price is lower (TZS 7 000). About 25 percent of chickens traded go through this channel. Figure 13 represents the upcountry trader driven channel.

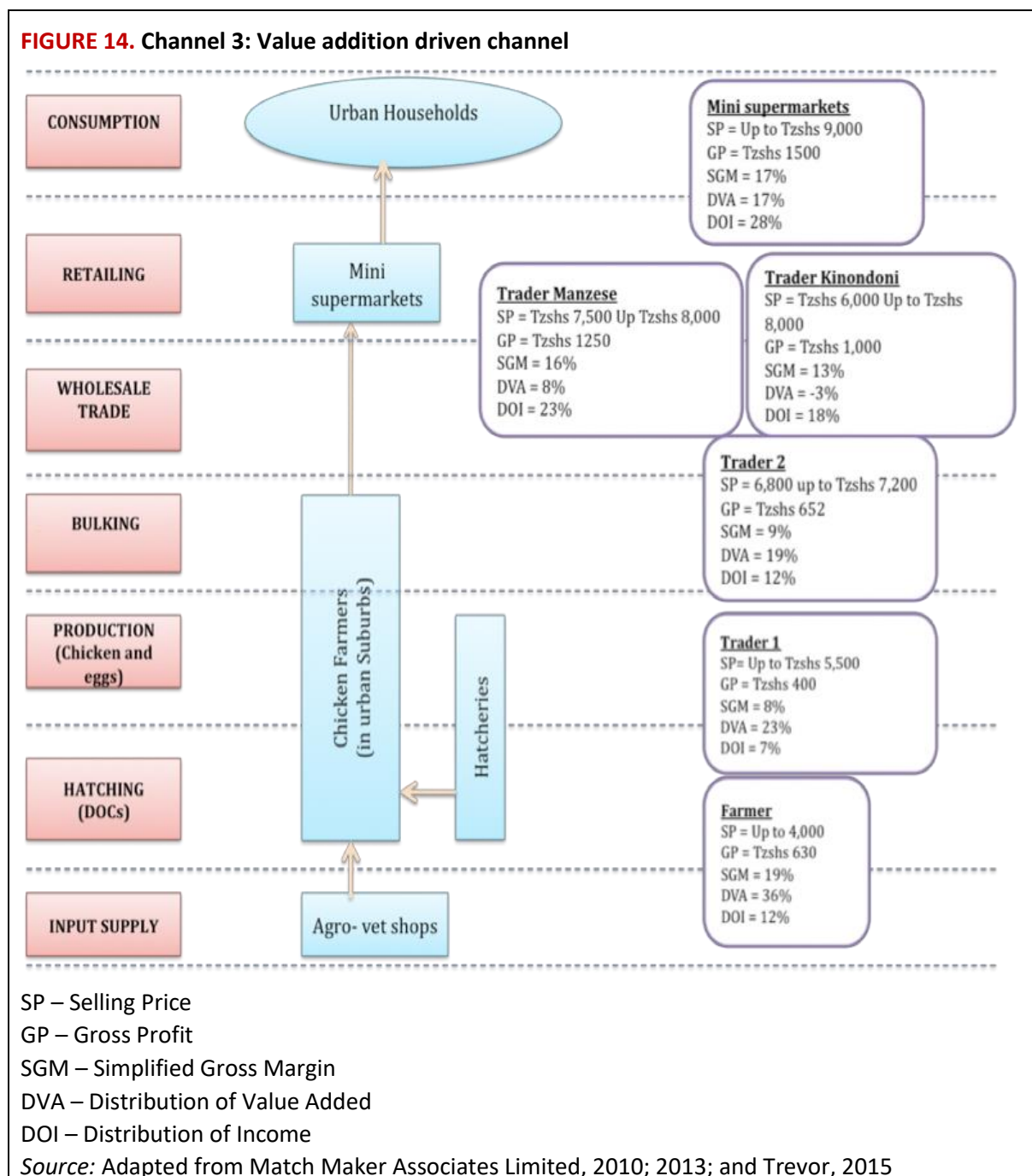


Channel 3: Value addition driven channel

This channel (Figure 14) is driven by large-scale producers of day-old broilers, most of whom produce and sell broilers, eggs and occasionally culled hens. Entry into this channel is capital intensive and hence for a long time the number of growers has remained fairly static. In this channel, there is a high level of biosecurity. Although the value addition driven channel produces for bulk markets and some high-income consumers at fast food restaurants in urban centers, such as Steers and Kentucky Fried Chicken (KFC), it also supplies chicken to supermarkets, meat shops and urban traders.

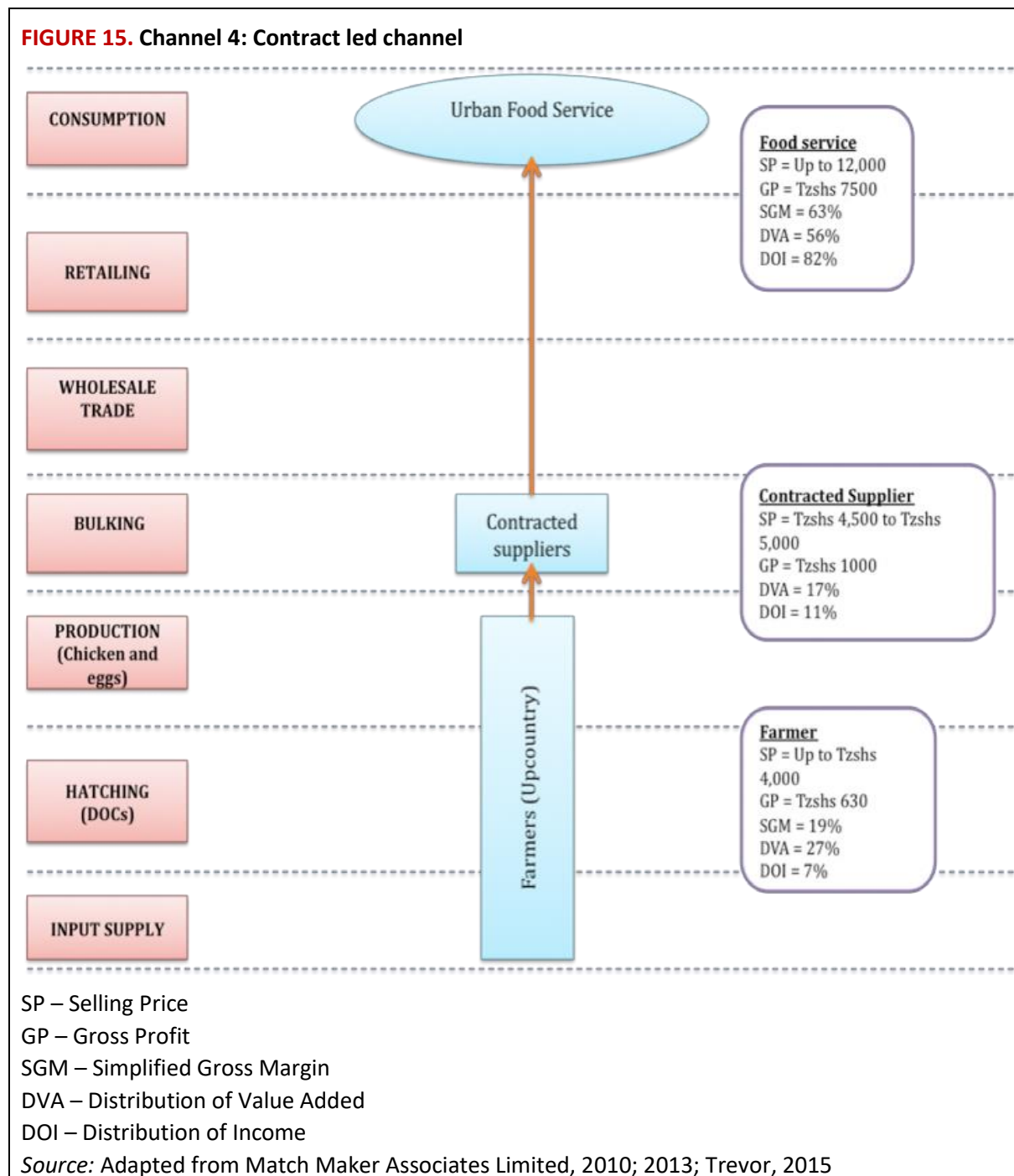
Compared to other channels, this is the only channel where chickens are supplied as “dressed” chicken to mini supermarkets. This channel is characterized by medium-scale chicken producers located in urban suburbs owning more than 150 chickens. Usually farmers in this channel are conscious of, and motivated by, the market opportunities –such as the high prices. The farmer’s proximity to the market is an added advantage. This channel contributes about 10 percent of chickens traded to the end market (Match Maker Associates Limited, 2010; Wilson, 2015a). In the case of medium- and large-scale producers, who supply chicken to meat shops or supermarkets, the producing company slaughters and dresses and supplies dressed chicken. Some meat shops chop chickens in distinct parts and sell chicken parts in branded packages.

FIGURE 14. Channel 3: Value addition driven channel



Channel 4: Contract led channel

This is an emerging channel where chickens are produced by small-scale farmers. In this channel, there are elements of contracting of suppliers, whereby, urban food service enterprises enter into informal contracts with suppliers to produce a given number of chickens per given period of time. Trust is what drives the relationship between the supplier and the food service enterprise. In this channel, the supplier sources chicken from rural upcountry farmers and delivers it to the urban centres. About 15 percent of the chickens (Match Maker Associates Limited, 2010; Wilson, 2015a) traded go through this channel. Figure 15 is a diagrammatic presentation of the contract led channel.



Market for value added poultry products

The overall demand for value added poultry products such as ‘halal’ chicken sausages, liver, gizzards and breasts is currently quite limited. Supermarkets, some specialist urban butchers, hotels, and other food service areas (including mines and institutions) are the main outlets for processed products. This market is growing quite rapidly and can be expected to grow further in the future as the number of consumers expands to include wealthier urban dwellers and an emerging middle class (Wilson, 2015a).

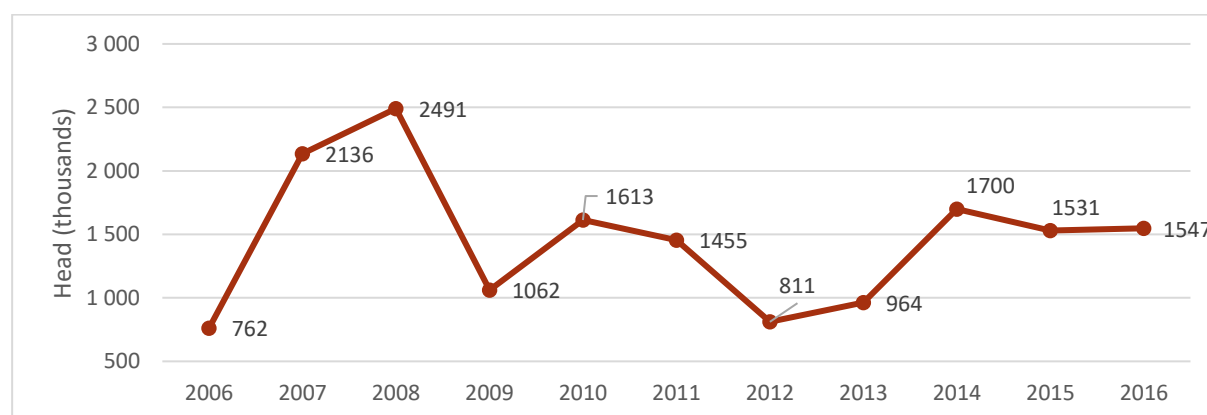
On the other hand, the market for packaged eggs is mainly in supermarkets targeting wealthier consumers in urban and peri-urban

3.1.5. Trade

Import

Since the outbreak of Avian Influenza in the mid-2000s, importation of poultry and its products into Tanzania has been banned. However, fertilized eggs and day-old chicks for parent stock have continued to be imported. For example, between 2016 and 2017 about 1 290 000 fertilized eggs were imported to Tanzania from Malawi and 459 411 chicks were imported as parent stock from the Netherlands, France, Mauritius and the UK. During the same period, about 3 200 day-old-chicks were exported to Comoro from different private breeding farms (MLF, 2017b). On the other hand, stakeholders through their associations (the Tanzania Poultry Breeders Association and Tanzania Commercial Poultry Association) have been adamant to keep pressure on the government not to allow imports, as they would have a major negative impact on the development of the local industry. Illegal importation of poultry meat is rampant.

FIGURE 16. Live chicken imports (2006-2016)

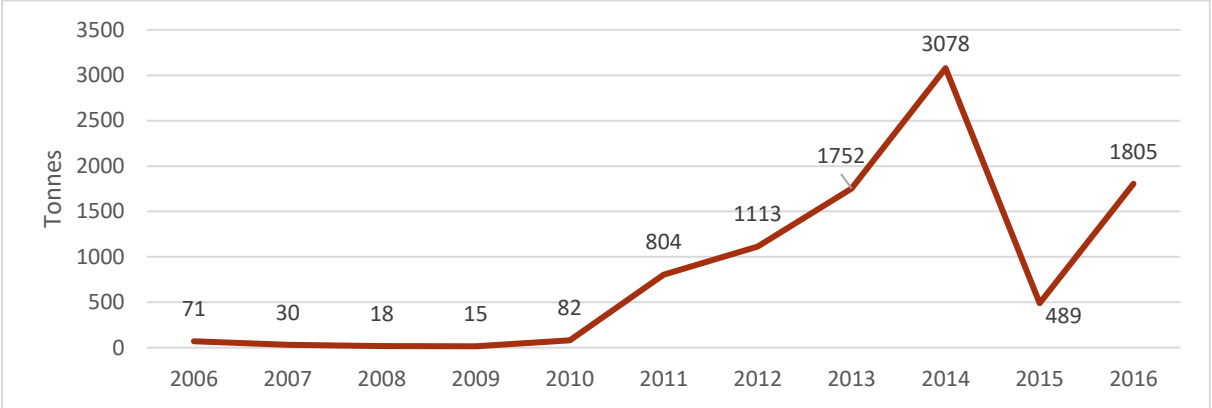


Source: FAO, 2018a

Poultry demand in Tanzania, like in most African countries, is surpassing supply. Therefore, international companies and producers are seeking to capitalise the supply chain gaps in the continent. In September 2016, Tanzania allowed imports of frozen and chilled halal poultry products from the Russian meat producer Cherkizovo. This producer works through Zanchick, the largest distributors of poultry meat, including of premium halal meat, in East Africa and with an extensive distribution network in Zanzibar. By the end of 2016, Cherkizovo shipped about 500 tonnes of halal poultry into Tanzania (Karombo, 2016).

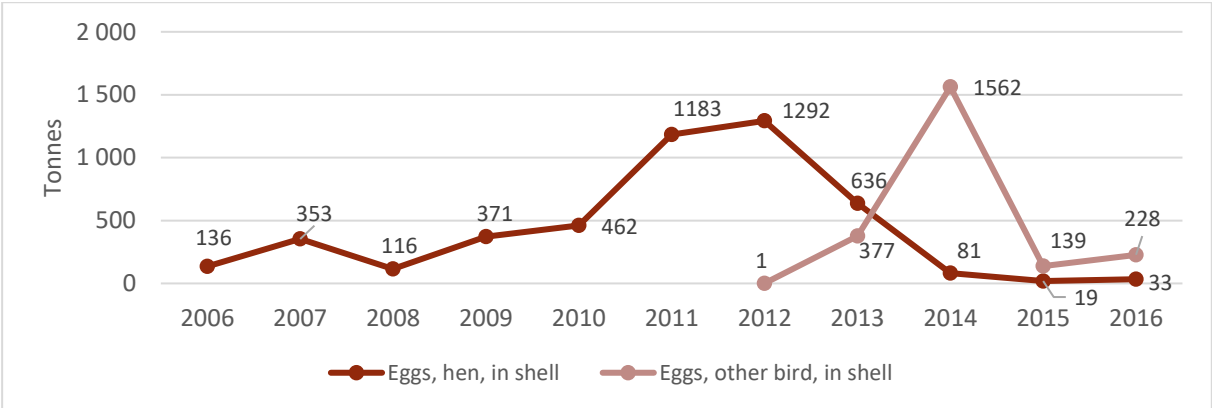
Most demand for poultry meat and eggs is met by local production. Since 2006, Tanzania has maintained a hard line position on its ban on imports of frozen or fresh chilled chicken and poultry products from the US. Tanzania has used the ban to protect its poultry farmers from what it sees as unfair competition posed by cheap imports of chicken. Imports are exclusively ‘upmarket’ processed and value-added products mainly from Kenya and aimed at the resident expatriate and tourist markets (Wilson, 2015a). According to FAOSTAT, poultry meat imports rose from 71 tonnes in 2006 to over 1 800 tonnes in 2016 (Figure 17.a.).

FIGURE 17.A. Poultry meat imports (2006-2016)



Source: FAO, 2018a

FIGURE 17.B. Egg imports (2006-2016)



Source: FAO, 2018a

Export

In spite of the enormous potential to export poultry meat and eggs that exists, Tanzania has yet to produce a sufficient amount to provide an exportable surplus (Wilson, 2015a). According to the World Bank baselines report of 2018, exports of day-old chicks (DOCs) to neighbouring countries (particularly Kenya and Comoros) is increasing, while exports of other poultry products has generally declined. In the recent past, some Tanzanian businesses were involved in the export of eggs to Comoros. However, due to competition from cheaper imports from elsewhere, Tanzanian products have become uncompetitive (World Bank, 2018b, 2018c).

The major potential export markets for Tanzania are: the East African Community (EAC), comprising Kenya, Uganda, Rwanda, Burundi and Tanzania with about 100 million people; and

the Southern African Development Community (SADC) with its 215 million consumers. In addition, Tanzania has seaboard, inland water ports, land and air links that provide it with reliable access to export markets. Unfortunately, even with such enormous export potential, serious challenges still exist towards export market penetration. Those challenges include issues related to the Animal welfare, biosecurity and food safety requirements which can potentially hinder entry to lucrative export markets.

For over 30 years now, and even with legislations in place, establishing disease-free zones in Tanzania has been difficult. This is specifically because of the presence of porous internal and international boundaries which are expensive to establish and not easy to maintain (Wilson, 2015a). Unfortunately, without fully guaranteed and documented disease-free certificates some markets cannot be accessed. Inability to meet the stringent sanitary and phytosanitary conditions as stipulated by the World Organization for Animal Health (OIE) and World Trade Organization (WTO) hampers international trade in poultry, poultry products and by-products. In Tanzania, meat hygiene is an area of concern especially because standards of slaughter facilities used by the majority of smallholder producers and marketers are generally poor. Thus, with export markets increasingly demanding that quality and hygiene standards are met, the country needs to strengthen its regulatory capacity and build the capacity of industry actors to comply.

CURRENT GOVERNANCE, POLICIES, AND LEGAL FRAMEWORK

3.1.6. Governance

In 2017, an independent Ministry of Livestock Development and Fisheries (MLDF) was created, and detached its activities from the Ministry of Agriculture and Food Security. The Ministry has five Divisions directly linked with livestock, namely: (i) Administration and Human Resources Management; (ii) Policy and Planning; (iii) Livestock Products and Marketing; (iv) Veterinary Services; and (v) Research Training and Extension.

The Ministry also has two Agencies:

1. *Tanzania Veterinary Laboratory Agency (TVLA)*. Promotes animal health and welfare through animal disease and vector control study, surveillance and diagnostic services to livestock stakeholders in order to enhance food safety, food security and national economy.
2. *Livestock Training Agency (LITA)*. Conducts livestock training, production applied research and consultancy services in the areas of animal health and production.

The role of the Government of Tanzania, through MLDF, in livestock sector development involves:

- a) creating an enabling environment for the participation of the private sector in livestock production, marketing, processing, input supply and distribution, and credit;
- b) developing appropriate agricultural infrastructure; and
- c) providing adequate extension services, research (including diagnostic services) and training, research and development (R&D).

Following the trade liberalization process in the 90s, when the government privatized most business activities, MLDF has been left with core functions, which include monitoring, planning, regulating and promoting the livestock industry. To date, there is no specific policy

for the poultry sector and the National Livestock Policy of 2006 guides the development of the sector.

3.1.7. Policies

Policies, strategies and programs (2007 – 2017)

During the period under review several policies, strategies and programs were in place. Some of the programs have ended, while some strategies and policies changed. The sections below present what is currently operational and what ended between 2007 and 2017.

Currently operational

Tanzania Development Vision 2025 (TDV)

All initiatives in the livestock sector like in all other sectors in Tanzania seek to contribute to the realization of the Tanzania Development Vision 2025 (TDV) which envisages raising the general standard of living of Tanzanians to the level of a typical medium-income developing country by 2025.

Long Term Perspective Plan (LTPP, 2011-2025)

The LTPP provides guiding principles that include: (i) developing strong forward and backward linkages between the agriculture sector and other sectors in the economy; (ii) creating favourable environments for the private sector to engage profitably in activities in the sector; (iii) developing effective training and research programmes to benefit key stakeholders; (iv) ensuring sustainable production based on available resources and the environment; and (v) good governance of resources, and especially land, water and forests.

The Second Five Year Development Plan (FYDP II, 2016/17 – 2020/21)

The FYDP II has integrated frameworks of the first Five Year Development Plan (FYDP I, 2011/2012-2015/2016) and the National Strategy for Growth and Reduction of Poverty (NSGRP/MKUKUTA II, 2010/2011-2014/2015, further extended to 2015/2016). FYDP II aims to enable Tanzania to industrialize and transform into a middle income and semi industrialized nation by 2025. FYDP II is built on three pillars of transformation, namely industrialization, human development, and implementation effectiveness.

In agriculture, the key targets by 2020 are: real growth rate of 7.6 percent; GDP share, 24.9 percent; share in total employment, 56.5 percent; and 24.9 percent share in total exports. The Plan focuses on promoting agro-industries and agro-processing. In livestock, FYDP II prioritizes development of beef, dairy, chicken, hides and skins value chains through: increasing availability and utilization of livestock inputs and implements and extension services; improvement of research and training activities in livestock sector; improving livestock related infrastructure as well as enhancing the availability of livestock markets. The livestock targets include: increasing the average growth rate (percentage) from 2.2 in 2015 to 8.0 in 2025, and the share of total export earnings (percentage) from 3.5 in 2015 to 6.3 in 2025. Also reducing the share of GDP (current prices) (percentage) from 7.8 in 2015 to 4.8 in 2025, and of total employment (percentage) from 3.4 in 2014 to 2.1 in 2025. The idea is to have more people employed in the manufacturing and service industries.

Agricultural and Livestock Policy (1997) and National Livestock Policy (NLP, 2006)

The Agricultural and Livestock Policy of 1997 aimed to redefine the roles of public and private sectors. However, during the implementation of this policy other reforms emerged that necessitated the formulation of a new policy, which led to the NLP 2006. The vision of the 2006 revised livestock policy was to commercialize and modernize the livestock sector by 2025 to improve incomes of nationals. With regards to poultry, the policy objective was to increase quantity and improve quality of poultry and its products to satisfy domestic demand, increase export and promote sustainable poultry production.

Livestock Sector Development Strategy (LSDS) of 2010

LSDS is an operation tool for the NLP with a strong focus on poverty alleviation and improved sustainable and environmentally friendly livestock production and productivity. This strategy provides a sector-wide framework for formulation of livestock development programs as well as private sector led commodity/industry (dairy, beef, pork, poultry meat, eggs, hides and skins) specific strategies, programs and investment plans for implementation in the various stages of the livestock value chains and among the vulnerable groups or actors in the value chains in ways that will define the roadmap for the sector with long lasting impacts. LSDS targets directly interventions in Districts where livestock farming plays a significant role in the livelihoods of the local population and has therefore great potential for poverty reducing impacts.

Livestock Sector Development Program (LSDP) 2011

LSDP is designed to implement the NLP of 2006 and its LSDS. Its aim is to improve the livelihoods of livestock farmers by enhancing the delivery of livestock inputs and services; improving marketing infrastructure and marketing systems for livestock and livestock products; strengthening the capacity of livestock farming communities and the private sector; and strengthening national and local government institutions to provide services to the livestock sector. LSDP also intends to modernize the livestock sector towards economic, social and environmental sustainability. It also seeks to enhance coordination of support for livestock development within a coherent and comprehensive national system taking into consideration the Decentralization by Devolution (D by D) approach.

Tanzania Livestock Master Plan (TLMP) 2017

The TLMP is a series of five-year development plans or roadmaps for the key livestock value chains and production systems. Each roadmap includes specific visions and targets, challenges and strategies, and combined investments in technology and policy interventions, with expected outputs, outcomes and impacts. The roadmaps are also fully budgeted, and include timed and sequenced activity plans (Gantt charts).

The TLMP is based on a 15-year sectorial analysis (2016/7-2031/32) that informs the development of the plan. The elaboration of the TLMP entailed creating a livestock sector model and then carrying out a quantitative analysis of the present technical performance of the sector and the economic contribution of potential interventions to households, value chains, the livestock sector, the agricultural sector, and the national economy.

These roadmaps are meant to be implemented by MLDF, together with other GoT ministries and agencies, at both federal and regional levels, as well as by development partners (donors, development banks, international and local NGOs, CSOs, etc.) and private sector actors.

National Action Plan on Antimicrobial Resistance 2017-2022

As a response to the global call to combat AMR, in April 2017, the GoT developed an action plan to guide the process. The objectives of the national action plan are to: (i) create awareness and understanding of AMR through effective information, education and communication; (ii) strengthen the knowledge and evidence base through surveillance and research; (iii) reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures; (iv) optimize the use of antimicrobial agents in human and animal health; and (v) develop the economic case for sustainable investment that takes account of the needs of all countries and to increase investment in new medicines, diagnostic tools, vaccines and other interventions.

As part of implementing the action plan, poultry producers and feed manufacturers will be required to control levels of antibiotics used in treating diseases and in feeds. Currently the law prohibits any use of antibiotics in feed formulation. It also encourages proper diagnosis of animal diseases to ensure that antibiotics are used only when necessary. Issues of quality of drugs, proper use and handling are also emphasized to avoid any abuse of antibiotics. Testing meat to control residues will also be promoted.

Not operational but implemented during the review period (2007-2017)

National Strategy for Growth and Reduction of Poverty (NSGRP II), popularly known as MKUKUTA II

Provided guidelines for achieving targets set for the agricultural sector in its contribution to the overall development plans of the country. NSGRP II provided targets for up to 2015 after which its ambitions were taken over by the Five Year Development Plan II (FYDP II) in 2016.

FYDP I

The five-year plan stipulated modernization, commercialization, and productivity enhancement as implementation goals in the livestock sector. It also set GDP growth targets of 5.6 percent for agriculture, 5 percent for livestock, and 7 percent for fishery to be reached by 2015. These goals and GDP growth targets guided interventions in the livestock sector between 2010 and 2015.

Tanzania Livestock Modernization Initiative (TLMI) 2015

The objective of TLMI was to transform the traditional livestock subsector into a modern, responsive, sustainable and environmentally friendly engine for rural development and improved national health and nutritional standards. It aimed to harness the potential of the meat, dairy and poultry sectors for poverty alleviation through improvements across the value chains including improvements in security and access to grazing, supplementary feed and water, genetic potential of traditional livestock, animal husbandry and disease control, access to markets, quality and safety of livestock products, processing and value addition. It identified the coordinated interventions needed across sectors to support these improvements and the necessary regulatory environments to ensure safe and healthy livestock products.

The TLMI priority areas for supporting the development of the poultry value chain were: (i) identify key dual purpose breeds suitable for Tanzania free-range conditions; (ii) rapidly disseminate improved breeds to meet agreed targets of household and commercial operators; (iii) strengthen stock management capacity; (iv) support concentrated delivery of vet and

extension services; (v) ensure availability of high-quality improved feeds; (vi) facilitate availability of credit and insurance; and (vii) revise the regulatory framework to facilitate investments in the poultry sector.

Laws and other legal instruments currently in place

Animal Diseases Act of 2003

The Act gives the Director of Veterinary Services (DVS) the overall mandate of regulating livestock activities for the purpose of controlling animal diseases in the country. The Act has set requirements and procedures for inspecting, registering, testing, identifying, licensing and regulating movements of animals and animal products. DVS is required to implement the law in relation to other international laws on animal diseases control. DVS maintains a national veterinary laboratory system and other means for analysing products in controlling and handling animal diseases in the country and to regulate the use of animal pesticides, vaccines and any other related products that may be used under the Act.

Presidential Circular No. 1 (2002)

The Presidential Circular No. 1 of 2002 focuses on regulated animal movements for controlling animal diseases. This policy requires that traders of chickens ferrying chicken across a region, from upcountry to Dar es Salam markets should have animal movement permits, which are given by the District Veterinary Officer (DVO) of the district where the chickens are coming from. Traders pay Tzs 2 000 per *tenga* to get animal movement permits. Although well intended to control spread of animal diseases, the implementation of the circular has been weak and has not been effective to control transportation of diseased chickens across regions. Also, the permit is given upon payment, without any prior investigation of the health of the chicken by the DVO or his/her representative. As such, having a transit permit is just a formality a trader should fulfil. By making animal transit permits mandatory, the net effect of the presidential circular on chicken trade has been negative, i.e. it has only served to drive up transactions costs and the end market price for chicken.

Regulatory framework for poultry breeding flocks and hatcheries

Poultry breeding flock farms and hatcheries in Tanzania are regulated by the following Acts of Parliament and Regulations:

1. The Animal Diseases Act of 2003 (see above).
2. The Animal Diseases (Hatcheries and Breeding Flocks) Regulations of 2010. These Regulations were launched following the global outbreak of the H5N1 avian influenza virus to ensure the quality of chicks sold in the market. The regulations require hatcheries to be inspected and registered formally and hatchery owners to have formally written Standard Operating Procedures (SOPs). They also regulate production and sale of eggs and chicks through registration and inspection of hatcheries and agents that distribute eggs and chicks.
3. The Tanzania Meat Industry Act of 2006. The Tanzania Meat Industry Act mandates the Tanzania Meat Board to regulate all stakeholders involved in the business of producing and trading poultry birds and their products including breeding farms and hatcheries.

The government is also in the final stages of enacting a Breeding Act to regulate all animal breeding activities and resources in the country.

The Veterinary Act of 2003

The Veterinary Act 2003 mandates the VCT to regulate the veterinary profession in the country. VCT registers and monitors professional conduct of veterinarians and para-professionals. It also includes procedures to address disciplinary cases related to mismanagement of drugs and vaccines.

The Grazing Land and Animal Feed Resources Act of 2010

The act provides for the management and control of grazing lands, animal feed resources and trade and other matters related to animal feeding. It regulates feed manufacturers, importers and distributors. It also sets standards for different feed resources and ensures no sub-standard feeds are sold in the market. While the Law was passed in 2010, its implementation is still poor as the government is still formulating Regulations and training inspectors.

The Animal Welfare Act of 2008

Through this Act, the government regulates how animals are treated and handled. Specifically, the law requires the owner or operator of a vehicle, vessel, aircraft or premise to maintain minimum established standards for transporting or keeping an animal. It also involves checking and certifying how animals are transported. The Act is very relevant to poultry as it defines how chickens should be housed, raised, transported and slaughtered. Unfortunately, Regulations to implement the Act have just been developed and therefore not enforced. As a result, chickens are still transported and slaughtered in manners not permitted by the Act.

Regulatory framework for Veterinary Drugs and Vaccines

The supply of veterinary pharmaceuticals which include drugs and vaccines (biologicals) is regulated by the following Acts of Parliament:

1. Tanzania Food, Drugs and Cosmetics (TFDC) Act, No. 1 of 2003. The TFDC Act establishes the Tanzania Food and Drugs Authority (TFDA) and gives it an exclusive mandate to regulate all matters related to quality and safety of veterinary drugs, biologicals and medical devices.
2. Animal Disease Act, No.17 of 2003 (see above).
3. The Veterinary Act, 2003 (see above).
4. Industrial and Consumer Chemicals (Management and Control) Act, 2003 mandates the Chief Government Chemist Laboratory Authority (CGCLA) to regulate industrial or consumer chemicals or chemical products other than medicines, pesticides, food additives and any other substance that has therapeutic effects sold and used in Tanzania. Under this mandate, CGCLA inspects to certify imported veterinary drugs at the point of entry before they are allowed to enter the market.

Regulatory framework for poultry slaughter and meat processing

Poultry slaughter and meat processing activities are regulated by six Acts of parliament as follows:

1. Tanzania Food, Drugs and Cosmetics Act, No. 1 of 2003. Under this law, TFDA is mandated to register, regulate and inspect slaughter and butchery facilities to determine whether or not they are suitable for the intended purpose.

2. The Animal Diseases Act (2003) and its Regulations, 2007 (GN. Nos. 25-30). This law and respective regulations requires the DVS to register all slaughter facilities (for more information see above).
3. The Standards Act, No.2 of 2008. The Standard Act of 2009 empowers the Tanzania Bureau of Standards (TBS) to issue compulsory and voluntary standards for food products. Regarding meat, TBS does set standards “Codes of Hygiene” to be used in slaughterhouses, as well as specific standards for meat processing and packaging.
4. Local Government (Urban Authority) Act and Local Government (District Authority) Act of 1982. These two laws give local authorities powers to establish, erect, maintain and control slaughterhouses as public facilities and generate income for the Local Government Authorities (LGAs). Furthermore, the LGAs are required to inspect all meat, fish, vegetables and all other foodstuffs.
5. Meat Industry Act of 2006 and Regulations of 2011. The law instructs the Registrar of Tanzania Meat Board to register producers, processors and other dealers of meat and meat products for the purpose of their identification and involvement in promotion of the meat industry. The Registrar therefore, maintains a register of (i) livestock or meat producers; (ii) livestock and meat traders; (iii) livestock markets; and (iv) associations of dealers in the meat industry.
6. Public Health Act of 2009. The Act provides for Regulations to make necessary procedures to ensure that all meat or poultry intended for human consumption is inspected, both at the ante-mortem and post-mortem. The Act requires that all food manufacturers (including of poultry meat and eggs) and their premises are registered and licensed, and that such premises maintain and adhere to the prescribed public health standards throughout the duration of registration.

3.1.8. Permits and licenses in the poultry business

Table 21 includes the licenses and permits for businesses in poultry meat and eggs handling and processing.

TABLE 21. List of official licenses and permits required by different businesses in the poultry value chain

License/Permit	Issuer
Certificate of food premises registration	Tanzania Food and Drug Authority (TFDA)
Food business license	-“-
Certificate of food product registration	-“-
Food import permit	-“-
Food export permit	-“-
Meat transport license	-“-
Meat movement permit	-“-
Veterinary import permit	Director of Veterinary Services (DVS)
Veterinary export certificate	-“-
Zoo-sanitary export clearance certificate	-“-
Animals and animal products movement permit	-“-
Slaughter facility registration certificate	-“-
Export clearance certificate	Tanzania Meat Board (TMB)
Import clearance certificate	-“-
Meat industry stakeholder registration certificate	-“-

Source: MLF, 2017b

3.1.9. Stakeholder organizations

Before 2010, the poultry sector was disorganized with no producer associations. However, currently there are eleven registered associations which are active in policy influence and in promoting the interest of the private sector. The associations are listed below:

1. African Women in Agribusiness Network Company Ltd (AWAN);
2. Arusha Poultry Keepers Association (APOKA);
3. Kisutu Poultry Cooperative Society (KIPOCOSO);
4. Tanzania Animal Feed Manufacturers Association (TAFMA);
5. Tanzania Broiler Farmers Association (TABROFA);
6. Tanzania Commercial Poultry Association (TCPA).
7. Tanzania Layer Farmers Association (TALFA);
8. Tanzania Poultry Breeders Association (TPBA);
9. Tanzania Veterinary Paraprofessionals Association (TAVEPA);
10. Umoja wa Wafugaji wa Kuku Dar es Salaam (UFUKUDA, Association of Dar es Salaam Poultry Keepers); and
11. Ushirika wa Wafugaji Kuku Morogoro (UWAFUKUMO, Association of Morogoro Poultry Keepers).

The eleven associations listed above are represented by an umbrella organization called the Poultry Association of Tanzania (PAT).

The roles of the poultry associations include:

1. **Engaging with the Government during formulation and reviewing of Laws and Regulations.** This is done to ensure that enacted laws are favourable to the private sector. For example, TAFMA is currently engaging with the Ministry in formulating feed regulations. In 2016, the association also participated in the formulation of the National Feed Standards, as well as took part in a team that harmonized and developed the East African feed standards and regulations.
TPBA is a key participant in the review of the Animal Diseases (Poultry Breeding Flock and Hatcheries Management) Regulations. The review intends to make the Regulations more effective and robust.
2. **Lobbying for favourable policies.** This includes lobbying to change tax laws. For example, in 2011, TPBA lobbied for hatchery equipment to be exempted from VAT; and TAFMA lobbied for VAT to be removed from manufactured feed and feed ingredients.
3. **Supporting members to access information and technologies.**
4. **Acting as a link between members and service providers or technology suppliers.**

4. Sustainable development of the poultry sector: Status and prospects

CURRENT ECONOMIC, SOCIAL AND ENVIRONMENTAL STRENGTHS AND WEAKNESSES OF THE POULTRY SECTOR

The section presents information on the sustainable development of the poultry sector and is based on studies commissioned between 2014 and 2017 to analyse the livestock sector and provide inputs to the formulation of the Tanzania Livestock Master Plan (TLMP), the second Agricultural Sector Development Program (ASDP II) and the Tanzania Livestock Modernization Initiative (TLMI).

4.1.1. Strengths

Poultry is a source of livelihoods

The majority of poultry keepers are poor households, and most poultry businesses are owned and managed by women. Poultry products are also a good source of animal protein for most of the population. Of all households in Tanzania engaged in livestock production, 86 percent raise chickens (United Republic of Tanzania, 2016).

Domestic market

There is an unexploited domestic market characterized by a growing population, part of which are emerging middle-income consumers, with a growing taste for value added poultry products.

Regional markets

In addition to the domestic market, the EAC with a population of more than 100 million, and SADC with its 215 million consumers offer a market opportunity for poultry meat, eggs and even poultry feeds.

Political will

The Government's will to develop the industry is clear in its key plans and programs including TLMP, ASDP II and FYDP II. In these plans, the Government has put emphasis on developing the poultry sector, both for food security and poverty eradication. According to TLMP, successful poultry development interventions would significantly contribute to improving food and nutrition security, increasing the contribution of the poultry sector to GDP and to closing the production–consumption gap for meat (MLF, 2017a).

Favourable natural resource base and climate

Tanzania has a comparative advantage for producing various animal species and livestock products because it has a strong natural resource base and a climate favourable to commercial and market-oriented livestock production. The country has outstanding natural resources for livestock development, including resilient livestock breeds, extensive rangelands and a diverse natural vegetation. Of 88.6 million hectares of land resources in the country, 60 million

hectares are deemed suitable for grazing (MLF, 2015). Currently, chickens are raised in households and farms found all over Tanzania.

Improving infrastructure

Recent and/or on-going improvements in infrastructures favourable to poultry sector development, include: improvements in market infrastructure for maize and other feed ingredients; construction and maintenance of trunk and feeder road networks; construction of the standard gauge railway along the central corridor from Dar es Salaam to Kigoma and Mwanza (i.e. the Western part of Tanzania); and establishment of the Rural Electrification Agency (REA) and Rural Electrification Fund. The ease of communications and money transfer opportunities presented by mobile telephones, also ease doing business along the poultry value chain.

Increasing stakeholder mobilization

During the last decade, a number of stakeholder organizations emerged, including: producer organizations for both small-scale producers keeping indigenous breeds and medium- and large-scale farmers who keep crosses and exotic breeds; associations of feed manufacturers, and associations of poultry breeders. Institutions like the Agricultural Council of Tanzania (ACT), mobilize different actors involved in both livestock and agriculture to lobby for conducive policies as well as mobilize funds for capacity building. The Poultry Association of Tanzania (PAT), established in November 2017, is now the umbrella organization of the entire industry. Effective stakeholder mobilization contributes to efficient production and marketing through resource mobilization, policy lobbying, capacity building and strategizing for the market.

Emerging cadre of business-oriented farmers

There is an emergence of educated business-oriented farmers who are ready to invest. These include university graduates, diasporas who work with their families to invest in the poultry value chain, and other educated youths who partner with different investors.

4.1.2. Weaknesses

Despite the above-mentioned strengths, the livestock sector in Tanzania is performing well below its potential. Livestock-related activities contribute only 7.4 percent to Tanzania's GDP and an annualized growth at 2.6 percent (MLF, 2015, 2017a). Moreover, this growth largely reflects increases in livestock numbers, rather than productivity gains. According to the TLMP, the sector is severely constrained by low livestock reproductive rates, high mortality and high disease prevalence.

The poultry sector in Tanzania is dominated by small-scale production. The contribution of market-oriented sector to the overall production is relatively small. Such sector is made of few medium- and large-scale producers in urban and peri-urban areas and a few rural and peri-urban households raising between 100 and 600 birds. The level of productivity in the market-oriented sector is generally sub-optimal. For example, the average production per year of layers raised under small-scale intensive production systems is about 235 eggs per hen which is considerably lower than the recommended target levels ranging between 280 – 300 eggs per hen (World Bank, 2018b).

High disease prevalence, poor marketing infrastructure, inefficient production methods and poor supply of quality feeds limit accessibility to both internal and external markets by limiting volumes, qualities and competitiveness in terms of prices in the market. Indeed, the main challenges facing the poultry industry are:

- scarce availability and high price of poultry feed and veterinary services;
- poor access to good quality water sources and effective disease control and surveillance systems;
- inconsistent supply of quality feed resources;
- malpractice and poor quality of chicks caused by the overwhelming demand for hatcheries and production of quality day old chicks;
- insufficient poultry production infrastructures;
- low capacity to control (contagious) poultry pest and diseases (layers and broilers);
- poor provision of technical support devices and extension services; and
- weak poultry farmer organizations.

Weak rural infrastructures including rural road, electrification, market facilities and others have discouraged investments in poultry production and agro-industries by private sector.

Scarce availability of feed, including key feed ingredients like maize and oil seedcakes, is an important challenge to the sector. The current national maize production is not yet sufficient to satisfy both its demand for human food and animal feed. Moreover, policies related to its distribution and marketing are often biased against animal feed production. For example, the National Grain Reserve Agency (NGRA), which has a warehouse capacity to stock about 214 000 tons of grains and releases the stock to the market during shortfalls, does not prioritize selling maize to feed manufacturers when there is shortage in the market. This is because poultry is not considered a priority for the national food security. Crop production is also generally constrained by the dominance of small-scale producers who have little access to major inputs like quality seeds, fertilizer and have low post harvest management capacity. Most farmers also depend on rainfall, that is often unreliable. The production potential of feedstock is therefore not fully utilized. On the other hand, the financial sector provides only limited and inadequate opportunities for financing production of ingredients (e.g. yellow corn) which can be dedicated to animal feed production.

POULTRY DEVELOPMENT

During the last decade, the poultry sector in Tanzania experienced a growing interest, from both the public and private sector, to invest in production and marketing of poultry products and inputs. Specifically, rural poultry production continued to receive attention from donors as a tool for poverty eradication. Unlike before, projects are increasingly using the value chain approach to support the private sector towards linking small-scale producers to markets.

During the past decade, the following major developments took place in the poultry industry in Tanzania:

- *Breeding and hatching are now promoted as a specialized activity which can be regulated.* Between 2009 and 2012, the DFID-funded Research Into Use (RIU) project introduced about 6 000 rural households in Pwani, Singida, Dodoma and Morogoro into buying DOCs from specialized hatcheries and raise the flocks under 'all-in-all-out' system. The approach was then promoted for national adoption by the Prime Minister

Mizengo Pinda in his speech to the Parliament in June 2012. The Speech resulted into more actors in the industry supporting rural producers to start their production cycles with an improved chick from a hatchery which can be regulated for quality. It also marked the end of government projects distributing improved male lines and kerosene incubators in villages as such activities made regulation of quality of chicks difficult. The new approach increased the demand for day old chicks and attracted investment in the poultry breeding and hatchery business.

- *Networks linking rural poultry producers to urban input suppliers and marketers are emerging, and more households are producing for the market.* Poultry contract farming and other producer/buyer models are evolving where urban input suppliers and marketers work with rural households to produce for the market. Between 2013 and 2016, USDA worked with Muvek Development Solutions Limited through the Catholic Relief Services to introduce commercial egg production in Songea and Njombe Districts. The project created a network of 2 500 farmers contracted by Muvek Kukudeal to produce eggs which are sold in supermarkets under a certified brand called 'Kukaya Eggs'. In this arrangement, Kukudeal provides DOCs, vaccines and feeds enough for one month, and buy 75 percent of the eggs produced by each farmer, and sell them to supermarkets. Such arrangements are emerging all over the country.
- *Actors in the indigenous chicken value chain are improving their management practices.* During the last ten years, the country has seen changes in the indigenous chicken value chain with producers keeping more birds of improved breeds, learning new management skills, using more and better inputs like chicks, compound feeds, vaccines and drugs. The growth has triggered innovation in feed formulation. For example, big companies like Silverland, Tanfeeds and Hill feeds produce special feeds for improved indigenous breeds. In addition, new breeds like 'Sasso' and 'Kuroiler' have entered the market.
- *Introduction of I-2 vaccine against Newcastle disease and improved housing and feeding.* The Participatory Agricultural Development and Empowerment Project (PADEP) and DADPs programmes worked on this and have contributed to significantly reducing mortality rates in some regions (e.g. Lindi and Mtwara) (URT, 2017a; MLF, 2017a, 2017b). More work is required to out-scale subsidized vaccination programmes and the adoption of improved husbandry practices (e.g. improved housing and feeding) in order to promote commercialization of traditional poultry keeping and improve incomes of poor households, with special emphasis on women and youth.
- *Processing, packaging and certification is emerging.* For example, now one will find well-packaged products from the indigenous value chain in supermarkets. The intermediary agencies are also emerging as market actors or input distributors in rural areas.

4.1.3. Major ongoing and recently closed development projects

Livestock Micro-Reforms in Agribusiness (L-MIRA)

<i>Implementing agency</i>	World Bank Group
<i>Duration</i>	2016-2020
<i>Geographical area</i>	The whole of Tanzania
<i>Beneficiaries</i>	Government and its institutions and private businesses in the livestock sector
<i>Brief description</i>	The Livestock Micro Reforms in Agribusiness (L-MIRA) program is a technical assistance program contributing to the growth of the dairy and poultry industries through targeted regulatory and institutional reforms. The program is funded by the Bill and Melinda Gates Foundation and implemented by the World Bank Group in three African countries: Ethiopia, Nigeria and Tanzania.

Strengthening food and nutrition security through family poultry and crop integration in Tanzania and Zambia

<i>Implementing agency</i>	Ministry of Agriculture and Livestock
<i>Duration</i>	2014-2019
<i>Geographical area</i>	Tanzania (Manyoni District) and Zambia
<i>Beneficiaries</i>	Women and children (primary beneficiaries)
<i>Brief description</i>	The aim of this project is to reduce childhood under nutrition by analysing and testing opportunities to enhance the key role that women play in improving poultry and crop integration and efficiency to strengthen household nutrition. The project will assess existing family poultry-crop systems and poultry value chains, and test interventions to improve the efficiency and integration of both. It will also assess the role of women farmers, who are often responsible for chickens and secondary crops. The impact of improved poultry-crop systems on family nutrition, income and childhood stunting will be investigated. The project will also build capacity of the researchers and key institutions involved.

Livelihood Enhancement through Agriculture Development (LEAD)

<i>Implementing agency</i>	BRAC Maendeleo Tanzania
<i>Duration</i>	2013-2017
<i>Geographical area</i>	15 Tanzania mainland regions: Dar es Salaam, Zanzibar, Morogoro, Tanga, Kilimanjaro, Arusha, Manyara, Singida, Dodoma, Tabora, Mwanza, Shinyanga, Mara, Mbeya and Iringa
<i>Beneficiaries</i>	53 000 poultry farmers (direct beneficiaries)
<i>Brief description</i>	The Livelihood Enhancement through Agriculture Development (LEAD) project was launched in April 2013 with the overall goal of improving the household incomes of rural poor, smallholder farmers and livestock keepers (65 percent women) in the poultry and maize subsectors in 15 regions in Tanzania. It intended to empower farmers and poultry keepers with training to make them increase productivity and easily access markets. The project worked with poultry farmers in the country and addressed a number of constraints facing farmers by building up their capacities, assisting them to access high quality farming inputs and creating marketing facilities of their produce. Making market work for the poor (M4P), is an approach that was applied during the implementation of the project.

African Chicken Genetic Gains (ACGG)

<i>Implementing agency</i>	International Livestock Research Institute (ILRI) and partners
<i>Duration</i>	2014 - 2018
<i>Geographical area</i>	Ethiopia, Nigeria and Tanzania. In Tanzania the project is implemented in 10 regions, from each region 2 districts. The regions are Dodoma, Lindi, Mbeya, Morogoro, Tanga, Mwanza, Mtwara, Njombe, Simiyu and Singida.
<i>Beneficiaries</i>	2 400 smallholder farmers
<i>Brief description</i>	ILRI and partners initiated this new collaboration to provide better chickens to smallholder farmers in Africa. ACGG is part of the wider 'Live Gene initiative' which tests and makes available high-producing, farmer-preferred genotypes (both local and imported) that increase smallholder chicken productivity in Africa. The program improves chicken genetics and the delivery of adapted chickens to support poverty reduction, productivity growth, increased household animal protein intake and the empowerment of women farmers in rural communities.

Tanzania Agriculture Scale Up Program (TASU) Programme

<i>Implementing agency</i>	Oxfam
<i>Duration</i>	2008-2012
<i>Geographical area</i>	Tanzania, Shinyanga Region (Bariadi and Maswa districts)
<i>Beneficiaries</i>	25 476 smallholder farmers
<i>Brief description</i>	The project aimed at improving income, market access and disaster preparedness in Shinyanga region through improvement of local chicken, rice and sisal value chains. The project focused on local chicken in Maswa and Bariadi Districts. The project carried out activities such as organisation of farmers, training of trainers, group dynamics, improvement of chicken breeds by cross breeding with stronger and larger cockerels (male lines) and marketing, selling and financial management.

The African Poultry Multiplication Initiative (APMI)

<i>Implementing agency</i>	World Poultry Foundation (WPF)
<i>Duration</i>	2016-2021
<i>Geographical area</i>	Tanzania and Nigeria
<i>Beneficiaries</i>	One million rural households, particularly women
<i>Brief description</i>	The initiative is expected to increase poultry production and productivity, increase rural household income, improve household nutrition and empower women. The project will enable a production and distribution system to deliver day old chicks of low-input dual-purpose breeds.

Soya ni Pesa (Soybean is money)

<i>Implementing agency</i>	Catholic Relief Services and Muvek Development Solutions Limited
<i>Duration</i>	2012-2018
<i>Geographical area</i>	Tanzania (Iringa, Njombe, Ruvuma, Morogoro (SAGCOT Area))
<i>Beneficiaries</i>	2 500 households
<i>Brief description</i>	The goal of the project is to increase agricultural productivity and accelerate the commercialization of soybeans from smallholder farmers to supply the emerging demand for poultry feed. The project worked with smallholders, particularly poultry producers, to facilitate their integration into markets.

PROSPECTS OF THE POULTRY SECTOR – OPPORTUNITIES AND CHALLENGES

The per capita consumption of poultry meat in Tanzania is increasing as is the per capita consumption of table eggs. The demand for poultry and poultry products is expected to increase further in the future, as the country eating habits change and the economy continues to grow. It is therefore, clear that the poultry sector has a huge potential in Tanzania considering also the huge land availability to grow grain and soya for poultry feeding. However, a number of challenges must be overcome. Below is a list of opportunities and challenges identified and documented by different stakeholders:

4.1.4. Opportunities

Political will and interest to support growth in poultry

The poultry industry has a promising future in Tanzania as the Government, in collaboration with stakeholders, is supporting and strengthening technical support services and promoting use of appropriate technologies in poultry production. In addition, support is provided for the establishment of quality breeding farms and hatchery facilities and poultry producers and trade associations are promoted and encouraged. The Government is enforcing the law for the production of quality poultry products and breeding flock and established hatcheries regulation and registration for hatcheries. In addition, the country has feed inspectors and feed analysts for law enforcement.

Poultry has a potential to boost economic growth

The sector has a high potential to generate jobs and improve livelihoods for both the rural and urban population (World Bank, 2018b). Especially in rural areas, poultry production has the potential to boost economic growth but there is need to increase public financing, as well as create an enabling environment supportive of smallholder producers to realize this. There is a need to develop the industry by ensuring that majority producers run more efficient and profitable enterprises. This includes transforming the current dominance of scavenging and semi-scavenging production systems into more commercially oriented systems where better performing breeds, practices and inputs are adopted. The current situation where the traditional sector dominates lowers the industry's performance.

Growing opportunities for investment in poultry

In the Tanzania Livestock Master plan, the Government estimates that Tanzania could easily accommodate 100 to 200 million birds, as in the country there is enough space for poultry in terms of current poultry farms capacity and feed production. There is ample potential for expansion of the poultry industry through better chicken production (MLF, 2017a).

Geographical location

The potential for cold storage and potential export as well as cross border conglomeration with Mozambique and Ethiopia makes Tanzania a prime target for investors. A bump in local production and/or reduction on duties for feed inputs and vaccinations have potential to increase profits significantly.

Large consumer base

The Tanzanian population is large -over 50 million- and more people are becoming health conscious biasing towards eating more white than red meat. Chicken prices are high (USD 7.5 per kg in 2017) and annual consumption is increasing toward double digits, providing a good market for poultry.

Rapid transformation of the sector

The poultry sector is growing and transforming rapidly and the demand for animal products and by-products is rising, driven by higher disposable incomes of the growing middle class and increasing rates of urbanization. Its potential contribution to achieving many of the national development goals represents a unique opportunity for far-reaching transformation.

Access to a thermostable vaccine for Newcastle disease (ND)

ND kills 80-100 percent of affected flocks. Therefore, vaccination against ND is critical to reducing chicken mortalities in rural areas. The positive results which have been recorded on reduction of mortality rates through vaccination of indigenous chicken against ND with thermostable I-2 vaccine (I-2) is an opportunity for improving poultry productivity in rural areas.

Reduction of the costs of inputs

Production costs are currently high due to high costs of inputs such as feeds day-old-chicks and veterinary drugs. Poor quality of such inputs also leads to farm losses. Opportunities exist to lower such costs through production, distribution and use of better quality feed, chicks and veterinary drugs; as well as adopting better biosecurity measures and management practices, particularly nutrition. Improving the quality of feed and reducing its cost can be attained by increasing the availability of cheaper and better quality raw materials such as soya meal, amino acids, vitamins, minerals, enzymes, etc.

Improving the quality of poultry products to access better markets

Through proper enforcement of regulations, the quality of poultry products can be improved. It is important that the Government's capacity to enforce existing legislations is strengthened in order to ensure that only quality chicks, feeds, veterinary drugs and other services are available in the market. Access to quality inputs and services can reduce losses from unnecessary costs currently incurred by producers.

4.1.5. Challenges

Limited growth of poultry businesses

Poultry production in Tanzania is done at a relatively small-scale. This is largely due to the limited access to credit from financial Institutions. Provision of affordable and long-term financial support is still lacking. Moreover, the majority of poultry keepers in Tanzania are women, who have limited access to inputs, services and markets. Increasing the scale of production to take advantage of economies of scale is therefore very important.

Low production

Poultry production volumes are still lower than domestic demand. As a result, the country continues to depend on imports to meet the growing demand (URT, 2017a). The resulting low production is at odds with both the country's increasing demand for animal-source foods and products, and the fact that poultry significantly contributes to rural poor families' incomes and livelihoods.

Low capacity to meet market and phytosanitary standards

Standards set by buyers can limit trade. Moreover, inability to meet the stringent sanitary and phytosanitary conditions as stipulated by World Organization for Animal Health (OIE) and World Trade Organization (WTO) hampers international trade in poultry and poultry products.

Unhygienic slaughter facilities

Inadequate and unhygienic slaughter facilities are a problem encountered in most municipalities and towns throughout the country and pose yet another threat to human health. Concerted efforts are required to address them.

Unfavourable policies

There are still a variety of direct and indirect policies that affect the performance of the agriculture sector at large, and the poultry sector specifically, including issues related to agro-industry, rural roads and energy, importation of agro-produce and packaging materials (ANSAF, 2012).

Low genetic potential of the indigenous poultry flock

This leads to poor production and productivity of the industry in general. Although indigenous poultry are adapted to marginal areas, their potential has not been fully exploited due to lack of understanding of their production characteristics and of their variants/strains under improved management. Therefore, promoting locally adapted breed needs further research and organizational innovations to help them compete with exotic production systems in the West. However, insufficient funding still constrains poultry breeding research in Tanzania.

Many poultry keepers struggle with preventable diseases

This is due to the lack of availability of proper veterinary care, with only 50 percent of keepers reporting access to animal health services (United Republic of Tanzania, 2016). Poultry diseases are among the most serious constraints limiting development of the poultry industry especially to small-scale producers. The high prevalence of diseases in the country, such as transboundary, vector borne, zoonoses and emerging diseases, present a big challenge to the development of the industry. Poultry producers are forced to invest heavily in disease control.

Low value addition capacity

There is little value addition in the poultry value chains characterized by selling of live birds, lack of grading products, inadequate infrastructure for processing and poor handling, and characterized by presentation and packaging of products. Also, processing costs and cost of packaging materials are high. In addition, inadequate quality control and generally inadequate

knowledge and skills among actors in the value chain. Therefore, the challenge is how to improve value addition in the value chains at affordable cost.

Poor access to inputs and services

Most small-scale poultry producers in the country use very little inputs and services for production, which leads to low productivity. For instance, only 20 percent of small-scale producers are reported to have access to extension services (United Republic of Tanzania, 2016).

Cheap imports

Cheap poultry imports put poultry producers (particularly those in urban areas rearing broilers) in direct competition with producers outside the country. In 2014, for instance, repacked cartons of frozen chicken and turkey thigh cubes and wings imported from Brazil and the US were reported to have flooded the market and posed serious threats to local poultry farmers. In early 2016, Zanzibar farmers closed shops after massive cheap imports. Poultry farmers in the Isles could not compete with the imports because of their incredibly low prices (The Citizen, 2014).

Shrinking government agricultural budget

The livestock sector contributes between 7.4 to 10 percent of the national GDP, but the sector's development budget remains small, and even shrinking in recent years to 10.6 billion TZS in 2016/17 (Policy Forum Tanzania, 2017)

High cost of feeds and risks of competition with food

When it comes to intensive farming, a steady supply of chicken feed made up of maize and soya is vital. But limited domestic supply means that feed often has to be imported at a high cost, hampering farmers' efforts to ramp up their grain production. Lack of grain reserves for feeds is indeed a limit to the development of the sector (Chakhaza, 2016). However, higher use of grain and oil seeds as feed, even in a scenario of increased domestic production, is a risk for food security in the country.

Poor supply of utilities is a threat

Investors in the industry fail to capitalize on the rise in demand for poultry products because of serious electricity and water shortages. Loss of electricity disrupts poultry operations.

5. Appendix

APPENDIX 1. CLASSIFICATION OF POULTRY PRODUCTION SYSTEMS

	Industrial and integrated / medium- and large-scale intensive	Family poultry production systems			
		<i>Small-scale intensive</i>	<i>Semi-intensive</i>	<i>Extensive scavenging</i>	<i>Small-extensive scavenging</i>
Location	Peri-urban areas; near capital and major cities	Peri-urban areas; near smaller towns		Everywhere. Dominates in rural areas	
Production/farming system	Poultry only	Poultry only	Usually poultry only	Mixed, livestock and crop	Mixed, poultry and crops, often landless
Other livestock raised	No	No	Sometimes	Usually	Rarely
Flock size (adult birds)	> 1 000 broilers > 500 layers	> 200 broilers > 100 layers	50-200	5-50	1-5
Access to markets	Yes (export and urban)	Yes (urban and rural)	Yes (urban and rural)	Limited (rural)	Rarely (rural)
Poultry housing	Yes; conventional materials; good-quality houses	Yes; conventional materials; good-quality houses	Yes; conventional materials; houses of variable qualities	Sometimes; usually made from local materials	Seldom; usually made from local materials or kept in the house
Poultry breeds	Commercial	Commercial	Commercial, crossbred or indigenous	Indigenous or crossbred	Indigenous or rarely crossbred
Source of new chicks	Commercial day-old chicks or pullets	Commercial day-old chicks or pullets	Commercial day-old chicks or natural incubation	Natural incubation	Natural incubation
Source of feed	Commercial balanced ration	Commercial balanced ration	Scavenging, regular supplementation	Scavenging, occasional supplementation	Scavenging, almost no supplementation
Access to vet services and veterinary pharmaceuticals	Yes	Yes	Yes	Sometimes	Rarely
Access to conventional cold chain	Yes	Yes	Yes	Rarely	No
Poultry mortality	Low to medium < 20 %	Low to medium < 20 %	Medium to high 20 to > 50 %	Very high > 70 %	Very high >70 %
Food security of owner	High	Ok	Ok	From ok to bad	From ok to bad

Sources: Adapted from FAO, 2014 and FAO, 2018b

APPENDIX 2. INVESTMENT OPPORTUNITIES IN POULTRY IN THE UNITED REPUBLIC OF TANZANIA²

The imported chicken meat from Brazil for tourist hotels and mines cost Tanzania dearly every year. This demand could potentially be met by high quality local production. This situation could also be used as a window of opportunity to improve the standard of hatcheries, poultry production places and in an increase in volume and number of poultry slaughterhouses. The increasing demand of poultry meat and eggs in the eastern and southern African countries can also be tapped as a potential market once better poultry practices are adopted and improved hatcheries and chicken meat processing facilities are established and operational.

Venture opportunities

- The commercial poultry sector is underdeveloped and only a few companies have established large-scale poultry production units, mostly for the urban market.
- Establishment of (chicken) meat processing facilities for the domestic and export markets, including such poultry products as whole chicken and chicken cuts (wings, quarters, liver etc.).
- Establishment of chicken feed mills.
- Establishment of cold storage and transport facilities for poultry products, only in conjunction with large-scale production and slaughterhouse facilities.
- Provision of veterinary services in the areas of disease monitoring, control and prevention.
- Facilitation of existing training institutions and extension services for the poultry industry.

Investment potential to increase production and productivity in broilers

- Improvement of quality and quantity of chicken feeds.
- Hygiene and proper care of poultry stock (broilers).
- Veterinary care and control of poultry pest and diseases.
- Access to clean drinking water and veterinary services.
- Proper housing of animals and access to clean drinking water.
- Establish and strengthen poultry farmers association.
- Improve access to credit facilities.
- Technical training in broilers production (especially on feeds and prevention of transmission and control of diseases).
- Increase and improve (chicken) meat processing capacity (slaughterhouse).
- Improve efficiency of the poultry marketing system, including cold storage.

Investment potential to increase in production and productivity in layers

- Improvement of quality and quantity of chicken feeds.
- Breeding of high quality stock (layers).
- Hygiene and proper care of poultry stock.
- Improvement of quality and quantity of animal feeds.
- Veterinary care and control of poultry pest and diseases.

² Source: Private Sector Agricultural Support (PASS) (<http://pass.ac.tz/index.php/focus-area/poultry>)

- Proper housing of animals and access to clean drinking water.
- Establish and strengthen poultry producer organizations.
- Improve access to credit facilities.
- Technical training in layers production (especially on feeds and prevention of transmission and control of diseases).
- Increase and improve storage and marketing capacity for eggs (quantity and quality).
- Increasing domestic demands through poultry consumption promotion.
- Improve efficiency of the egg marketing system, including cold storage.

Financing needs for the poultry sector (layers and broilers)

Financial support in this industry is of great importance due to its capital intensity. Financial needs for the poultry sector include:

- Establishment of adequate poultry houses, water supply, electricity and drainage.
- Establishment of hatcheries for the production of DOCs.
- Funds for purchase of initial stocks, feeds and operational cost (labour).
- Invest in adequate veterinary medicines and adequate feeds for the birds.
- Establishment of poultry processing facilities and cold storage.
- Establishment or upgrading of slaughterhouses, including proper waste disposal technology.
- Establishment of poultry feed mills for specialized feeds for broilers and layers.
- Provision of veterinary services in the areas of diseases monitoring, control and prevention.
- Establishment of cold storage and transportation facilities for slaughtered chicken products.
- Establishment of training institutions for the poultry and poultry feeding industry.
- Invest in proper packaging and marketing of poultry products including eggs.
- Purchase transport and loading equipment and facilities.
- Invest in storage facilities, packaging and marketing equipment.

APPENDIX 3. KEY SECTOR STAKEHOLDERS IN THE COUNTRY

Ministry of Livestock and Fisheries

Responsible for the development and regulation of the livestock and fisheries activities in Tanzania.

Director Veterinary Services (DVS)

Responsible for animal health services, animal welfare, zoo-sanitary, livestock research, training and extension in Tanzania.

US Grains Council

Work with Tanzania Animal Feed Association (TAFMA), Ministry of Livestock and Fisheries, Tanzania Veterinary Laboratory Agency (TVLA) and poultry producers to: (i) Promote quality feed formulations for poultry; (ii) Develop self-sufficient industry associations for poultry producers and feed manufacturers; and (iii) Improve broiler (poultry raised for meat) and layer (poultry raised for eggs) production through training seminars.

National Environment Management Council (NEMC)

Regulates investments to protect the environment through the issuing environmental impact assessment certificates.

Tanzania Meat Board (TMB)

Spearhead development of the Meat Industry through coordinating industry actors, capacity building, regulating, technology sourcing and promoting quality and marketing of eggs, meat and meat products, both inside and outside the country.

Tanzania Food and Drug Authority (TFDA)

Regulates veterinary pharmaceuticals including registration, handling and marketing; as well food quality (in this case, meat and eggs), distribution and marketing.

Tanzania Veterinary Laboratory Agency (TVLA)

Conducts animal disease diagnosis, surveillance and research. TVLA is also the appointed Feed Analyst of the Ministry of Livestock and Fisheries.

Veterinary Council of Tanzania (VCT)

Established under the Veterinary Act No 16 of 2003 with the overall mandate to regulate the activities of the veterinary profession (i.e. Vets, paraprofessionals and paraprofessional assistants), and delivery of animal health services in Tanzania (including regulation of veterinary practice facilities).

Tanzania Feed Manufacturers Association (TAFMA)

Put together feed manufacturers for capacity building, lobbying and advocacy.

Tanzania Poultry Breeders Association (TPBA)

Put together poultry breeders for capacity building, lobbying and advocacy.

Agricultural Council of Tanzania (ACT)

ACT is the umbrella organization of the agricultural private sector in Tanzania. It unites groups and associations of farmers, livestock keepers, suppliers, processors, transporters and researchers to push for improved economical and organizational environment of the sector. It facilitates Public-Private Dialogue for policy lobbying and advocacy.

International Livestock Research Institute (ILRI)– Tanzania

Livestock research.

APPENDIX 4. MAIN RESEARCH ACTIVITIES CARRIED OUT IN THE UNITED REPUBLIC OF TANZANIA

African Chicken Genetic Gains (ACGG) (2014-2019)

African Chicken Genetic Gains (ACGG) is an Africa-wide collaboration led by the International Livestock Research Institute (ILRI), as part of the wider 'Live Gene' initiative. In Tanzania, ACGG is implemented in five sub-national zones, i.e. Central semi-arid, Eastern sub-humid, Southern highlands, Lake zone, and Southern humid zone; targeting a total of 20 districts, 80 villages and 3 200 households. The national team is led by scientists from the Tanzania Livestock Research Institute (TALIRI) and from Sokoine University of Agriculture (SUA). At least five strains will be tested, namely: Black Australorp, Koekoek, Kuroiler, Sasso and local strains.

ACGG was initiated in November 2014 to provide better chickens to smallholder farmers in Africa. The program tests and makes available high-producing, farmer-preferred genotypes that increase smallholder chicken productivity in Africa. Beyond the target countries – Ethiopia, Nigeria, Tanzania – the germplasm, data, and knowledge generated have the potential to impact millions of poor rural and peri-urban households in other countries with large backyard chicken production. Specifically, ACGG seeks to deliver the following outcomes:

- i. Data-driven and culturally-relevant insights on the types of chickens that poor farmers, especially women, prefer;
- ii. Through functioning public-private partnerships, smallholders have access to their preferred breeds that produce at least 200 percent more than existing local breeds, with significantly reduced mortality risks due to proper brooding and pre-vaccination;
- iii. Demonstrated and well-publicized data showing that the adoption of the proven chicken genotypes indeed leads to significantly increased production, productivity, income, and household consumption among smallholders;
- iv. Increased empowerment of women smallholder farmers in the chicken value chain; and
- v. A functioning multi-country network of public-private partnerships for long-term chicken genetic improvement that uses modern tools to drive accelerated genetic gains and to deliver more productive, farmer-preferred breeds.

Please see <https://africacgg.net/tanzania/> for more details about the program.

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