# The United Republic of Tanzania

## Tanzania Investment Centre

# *Investment Opportunities in the Livestock Sub-sector, Tanzania*

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# 1 Overview of Tanzania Livestock Sub-sector Analysis

According to the livestock sector analysis (LSA)[1], Tanzania accounts for about 1.4% of the global cattle population and 11% of African cattle population[2]. The main livestock types are cattle, goats, sheep, pigs, chickens, and donkeys. Based on the 2016/17 LSA baseline Tanzania has about 30.7 million cattle, 19.1 million goats, 5.6 million sheep and 580,238 donkeys. Other livestock include 2 million pigs, 40.3 million local chicken and 15.6 million improved chicken[3]. Goat meat and mutton currently account for 14% and 4% of all red meat respectively - thus, their improved productivity is unlikely to significantly close the projected meat consumption/demand gap as beef accounts for 82% of the red meat production in Tanzania. Thus, the development focus has to include cattle.

The national herd is dominated by indigenous cattle - which are currently displaying low productivity, but they have much potential if feed, health and breed improvements can be made. The main breeds of beef cattle in the country include: Tanzania Shorthorn Zebu characterized by small size mature body weight (200 - 350 kg); Longhorn Cattle such as the Ankole which is characterized by large matured body weight (500 - 730 kg); and the Boran which has a large body weight (500 - 800 kg).

The country has many other outstanding natural resources to support livestock development including extensive rangelands; diverse natural vegetation and its diversely resilient low production livestock breeds. Despite these resources, the livestock sector is performing below its potential.

In recent years therefore, the government of Tanzania prioritized the transformation of the agricultural sector[4]. This approach was adopted in the 2007 Agricultural Sector Development Program (ASDP) and its successor, the 2016 ASDP II.

The country's agriculture development plan is designed to help meet the objectives set out in a number of existing strategies and policies in the country. Despite accounting for 11% of the African cattle population, livestock-related activities contribute only 7.4% to Tanzania's GDP and growth of the livestock sector at 2.6%, is low. This growth largely reflects increases in livestock numbers, rather than productivity gains. The absence of a roadmap to develop the livestock sector has persistently hindered successful implementation of previous investment plans for the sector.

Though severely constrained by low livestock reproductive rates, high mortality and high disease prevalence, detailed interdisciplinary by the International Livestock Research Institute (ILRI) and the Ministry of Livestock and Fisheries (MLF) revealed the potential benefits of a comprehensive Livestock Master Plan (LMP) for Tanzania.

The LMP sets out livestock-sector investment interventions - **better genetics**, **feed**, **health services**, and complementary **policy** support - which could help meet the ASDP II targets by

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[1] Ministry of Livestock and Fisheries Development Livestock Sector Analysis – done during 2016/17

[2] FAO, 2014. FAO: World Agriculture: Towards 2015/2030

[3] as also reported in the MLF budget speech, 2016/17

[4] LIVESTOCK SECTOR DEVELOPMENT PROGRAMME (August 2011). Ministry of Livestock and Fisheries Development, Po Box 9152 Dar es Salaam, TANZANIA.

improving productivity and total production in the key livestock value chains of poultry, pork, red meat and milk, leather and dairy[5].

## 1.1 Livestock Sub-sector Data Collection

This study was conducted in partnership between the Tanzania Investment Centre (TIC) and East Africa Trade & Investment Hub (EATIH) during February - June 2019. Officials from the regions where sampled National Ranching Company's (NARCO) Cattle Ranches and Livestock Multiplication Units (LMUs) took the lead to guide the team throughout the exercise.

Table 1-1 details NARCO's ranches and LMUs that were visited: -

**Table 1-1 The Livestock Sub-Sector Study Schedule**

| | Location | Name of Livestock Producer or Processor | Date |
|---|---|---|---|
| **1** | Dodoma | Kongwa Ranch | March 4, 2019 |
| **2** | Shinyanga | Misungwi Livestock Multiplication Unit (Mabuki) | April 15, 2019 |
| | Mara | Tanzania Dairy Ltd (Utegi Dairy Farm Company Ltd – UDAFCO) | April 16, 2019 |
| **3** | Morogoro | Mkata and Ngerengere Ranches | June 14, 2019 |
| **4** | Kilimanjaro | West Kilimanjaro Ranch | June 16, 2019 |

The following methods were used to generate required data or information: -

i. Desk work/Literature review
ii. Physical site visits - observation
iii. One-to-one or group interviews
iv. Questionnaires
v. Focus Group Discussions

[5] Tanzania LivDeveloped by the Tanzania Ministry of Livestock and Fisheries (MLF) and the International Livestock Research Institute (ILRI) livestock master plan team January 2018estock Master Plan.

## 2 Livestock Master Plan Commodity Value Chains

Using the most recently available data, from 2013 to 2015, the MLF supported by ILRI and by the Bill & Melinda Gates Foundation (BMGF), employed the livestock sector investment and policy toolkit (LSIPT) to develop the Tanzania Livestock Master Plan (LMP) for 2017 - 2022. The LMP is a series of five-year development implementation plans or 'roadmaps', to be used to implement the ASDP II.

Based on results of the Livestock Sector Analysis (LSA), to reach the objectives and goals of the government, the key value chains targeted in the livestock master plan roadmaps are: -

a) Red meat (and milk) from cattle, sheep, and goats
    - Improved traditional red meat and milk
    - Ranches
    - Specialized feedlots
b) Poultry
    - Improved family chicken
    - Commercial specialized chicken (layers and broilers)
c) Pigs/Pork
    - Traditional system (scavenging and semi - scavenging system)
    - Commercial specialized pig production systems
d) Cow Dairy
    - Improved family dairy
    - Commercial specialized dairy
e) Skins & Hides
    - Quality of skins & hides
    - Processing facilities to produce leather & its products

### 2.1 Key Results

#### 2.1.1 Red Meat Value Chain Development

The proposed combined interventions for red meat production on traditional family farms and commercial ranches, as well as feedlot development, would result in a 52% increase in total red meat production. Production would grow to 742,524 tons between 2017 and 2022[5]. This would, however, not meet expected consumption growth of 71% by 2022 (to 867,302 tons), leaving a 17% deficit (124,778 tons) in the 2017 - 2022 red meat production and consumption balance. Given the rapidly growing population, and increasing incomes and demand for animal-source foods in Tanzania, such projected deficits would put upward pressure on red meat prices.

The extremely restricted access to land for grazing and feed production and limited ability to enhance the genetic potential of local ruminant breeds in the medium-term means it is unlikely that the red meat production gap can be closed in the next five years. Even a substantial increase in the supply of red meat from small ruminants – with goat meat and mutton currently accounting for 14% and 4%, respectively - is unlikely to significantly help close the projected meat consumption/demand gap because beef accounts for 82% of red meat production in Tanzania.

## 2.2 Poultry Value Chain Development

Successful interventions would allow the poultry subsector to move to improved family poultry with semi - scavenging crossbreds and enable substantial increases in the scale of specialized layer and broiler operations. Such a transformation - depending on successful interventions in breed selection, health services (particularly in treating Newcastle disease), feed, extension, private investment and trade policies - would contribute considerably to improving household food and nutrition security and increase the subsector's contribution to GDP by 182% from TZS 256 billion to TZS 723 billion; thereby contributing significantly to closing the production - consumption gap for meat.

Projected annual chicken meat and egg production in Tanzania would rise to 465,600 tons and 4.2 billion eggs. This would bring the production-consumption deficit for chicken meat from 130,000 to a surplus of 258,000 tons between 2017 and 2022. The combined interventions would result in increases of 666% and 40% respectively in chicken meat and egg production by 2022. Such accomplishments would enable Tanzania to meet the chicken meat and egg demand for its growing population, and produce a very significant surplus for domestic industrial use or for export. With the assistance of policies encouraging investment in processing plants, the surplus eggs could be processed into egg powder and used domestically for new or additional industrial uses (e.g. in the baking industry), or exported to generate foreign exchange earnings.

## 2.3 Pig/Pork Value Chain Development

The proposed combined interventions for improved family and expanded commercial pig production systems would result in a 69% increase in pork production. Production would grow from 22,025 to 37,191 tons between 2017 and 2022. The development of a competently market - oriented farming, processing and a dynamic pig/pork marketing sector, operating in more sustainable and climate-smart ways, supplying consumers with high-quality and safe pork would significantly contribute to increased household income, food and nutrition security, poverty alleviation and would increase sector's contribution to GDP by 83%, from TZS 44 billion to 80 billion between 2017 and 2022. This would bring the production-consumption deficit for pork from 8,000 tons to a 1,350-tonne surplus between 2017 and 2022.

Improving pig production requires a focus on controlling African swine fever in pigs. In the 'without additional investment' scenario, by year 2032, a deficit of 16,000 tons of pig meat is estimated, thus resulting in a total 'all meat' deficit of 2.0 million tons. However, industrializing pork production (in large commercial-scale operations and processing for product transformation) will lower domestic meat prices, and lead to an increase in pig/pork exports and foreign exchange earnings.

## 2.4 Cow Dairy

The projected increase in national cow milk production as a result of the proposed interventions - including artificial insemination and hormone synchronization, combined with improved feed and health interventions, value addition and complementary policy changes - during the ASDP II period (2017 - 2022) is 77%. This represents a surplus of 1,002 million liters over projected domestic consumption requirements. This production increase would

make it possible to meet the milk production targets in the ASDP II and exceed the growing domestic demand for milk by 35%. This surplus of milk could then be substituted for imported milk products and used domestically for new or additional industrial uses (e.g. in the baking industry), or exported as milk powder or ultra-heat treated (UHT) milk to raise foreign exchange earnings. Due to increases in the number of crossbred dairy cows by 281% and milk production per cow by 26 - 42%, the contribution of the dairy sector to GDP is expected to rise by 75%.

## 2.5 Meat Production - Consumption Balance

Perhaps most importantly, the growth of the poultry and pig subsectors would enable Tanzania to close the projected total national meat production - consumption gap. This growth would also make it possible to increase the share of white meat in the total meat consumed from the current 9% to 41% by 2032, but only if chicken is substituted for red meat. Taking advantage of the benefits of the potential poultry revolution will require substantial investments in promotional activities to change tastes and preferences from beef, as well as from local to exotic chicken meat and eggs. The substitution of the surplus chicken meat for domestic red meat consumption would also lower pressure on domestic meat prices and enable an increase in the export of live animals (cattle, sheep and goats), potentially raising foreign exchange earnings.

The huge deficit in projected demand (without investments) for red meat is being driven by an increasing human population and income growth. Limited access to land for improving feed production, including grazing lands, and the low genetic potential of local cattle and small ruminant breeds are the main constraints to increased red meat production. Nevertheless, red meat from small ruminants will be of little help in closing the meat gap due to their low numbers, limited feed resources and low genetic potential of indigenous breeds, nor will pork help because of outbreaks of African swine fever and a lack of demand in the country.

## 2.6 Skins & Hides

Unfortunately, the LMP didn't include Skins & Hides as valuable livestock products (value chain), but the Tanzania Leather Strategy 2016 – 2020[6] does lay very practical strategies to improve the leather & footwear sub-sector in the country.

[6] UNITED REPUBLIC OF TANZANIA LEATHER SECTOR DEVELOPMENT STRATEGY 2016-2020

# 3 Livestock Production

## 3.1 Livestock Production in Tanzania

Tanzania is the third amongst countries with largest livestock population in Africa after Ethiopia and North Sudan. Although during 2016/17 the livestock sector plays a significant contribution to the economy of Tanzania (whereby the sector growth was 2.8% - contributing 6.9% to GDP), yet there is so much room to improve as the sector performance is way below its real potential.

The main types of livestock grown in Tanzania are cattle, goats, sheep, pigs, chickens and donkeys. The dominant species are cattle with 30,672,001 heads, followed by goats (19,055,651 heads), sheep (5,565,986 heads), donkeys (580,238 heads) and indigenous chicken (40,349,893 birds)[2].

Products produced include meat, milk, skins & hides, and eggs. During 2016/17, some 2,127,267 liters of milk were produces; 622,597 Tons of assorted types of meat, and 4,352,182 eggs were produced in Tanzania.

Livestock also contributes to crop and vegetable production by providing draft power for cultivation and organic manure. It generates a considerable amount of cash income and determines the household economic and social status in many communities.

According to the Ministry of Livestock and Fisheries, over 70% of livestock is found in the lake, northern and central zones. Over 98% of cattle are of indigenous breed[7], mainly Tanzania Shorthorn that are known for their ability to survive and are productive even under harsh environment with poor quality feed resources and disease challenges. These animals are kept under four farming systems which are: mixed farming, agro-pastoral, pastoral and commercial.

**Table 3-1 Production of Livestock Products, Tanzania mainland, 2012 - 2016**

| Product | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|
| **Milk Production ('000 ltr)** | | | | | | |
| Indigenous Cattle | 1,135,422 | 1,255,938 | 1,297,775 | 1,339,613 | 1,381,451 | 1,423,288 |
| Hybrid cattle | 608,800 | 597,161 | 623,865 | 650,570 | 677,275 | 703,979 |
| **Total** | **1,744,222** | **1,853,099** | **1,921,640** | **1,990,183** | **2,058,726** | **2,127,267** |
| **Meat Production (Ton)** | | | | | | |
| Beef | 262,606 | 289,835 | 299,581 | 309,086 | 323,775 | 319,112 |
| Goat/Sheep | 103,709 | 111,106 | 115,652 | 120,199 | 129,292 | 124,745 |
| Pork | 43,647 | 47,246 | 50,814 | 74,174 | 54,360 | 79,200 |
| Chicken | 93,534 | 84,524 | 87,408 | 95,292 | 104,292 | 99,540 |
| **Total** | **503,496** | **532,711** | **553,455** | **598,751** | **611,719** | **622,597** |
| **Egg Production (number)** | | | | | | |
| Egg | 3,339,566 | 3,494,584 | 3,725,200 | 3,899,569 | 4,153,800 | 4,353,182 |

## 3.2 Meat Imports Quantity into Tanzania

As shown on Fig. 3-1, in 2016, meat imports quantity for United Republic of Tanzania was 3,737 Tons. Before meat imports quantity of United Republic of Tanzania started to increase

[7] Ministry of Livestock and Fisheries Development Report (2018).

to reach a level of 3,737 Tons in 2016, it went through a trough reaching a low of 27 Tons in 1993.

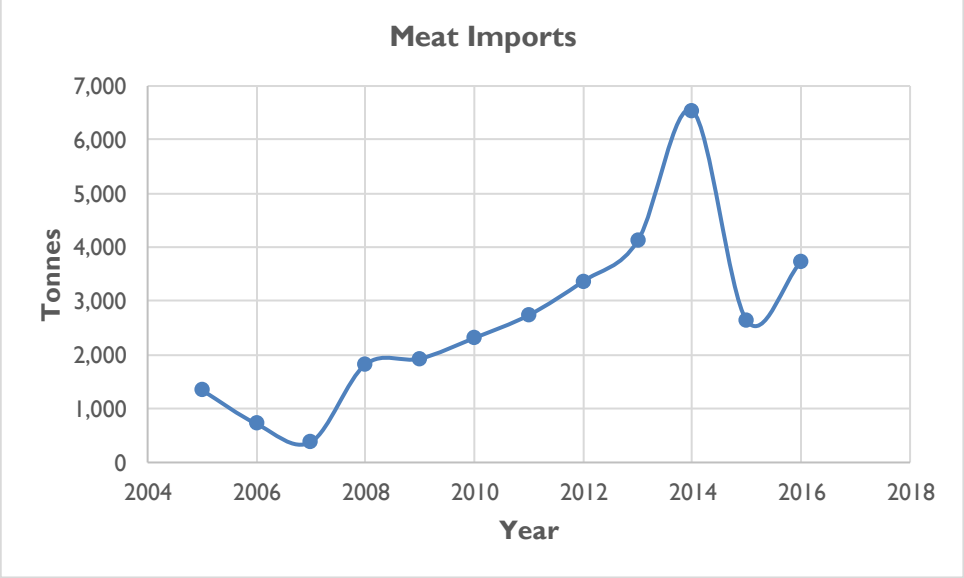


**Figure 3-1 Meat Import Quantities into Tanzania**

**Table 3-2 Meat Imports into Tanzania**

| Year | Tons | Change, % |
|---|---|---|
| **2016** | 3,737 | 41.50% |
| **2015** | 2,641 | -59.63% |
| **2014** | 6,542 | 58.71% |
| **2013** | 4,122 | 22.31% |
| **2012** | 3,370 | 22.99% |
| **2011** | 2,740 | 18.36% |
| **2010** | 2,315 | 20.01% |
| **2009** | 1,929 | 5.87% |
| **2008** | 1,822 | 378.22% |
| **2007** | 381 | -46.94% |
| **2006** | 718 | -46.58% |
| **2005** | 1,344 | |

## 3.3 Cattle

During 2017/18 a total number of 3,065,308 operators were engaged in cattle rearing in Tanzania Mainland. The total number of cattle was 30,496,687 heads.

The region with highest number of cattle was Tabora with 2,663,395 heads (8.7% of the total heads in Mainland) followed by Mwanza (2,420,479; 7.9%) and Manyara (2,201,670; 7.2%).

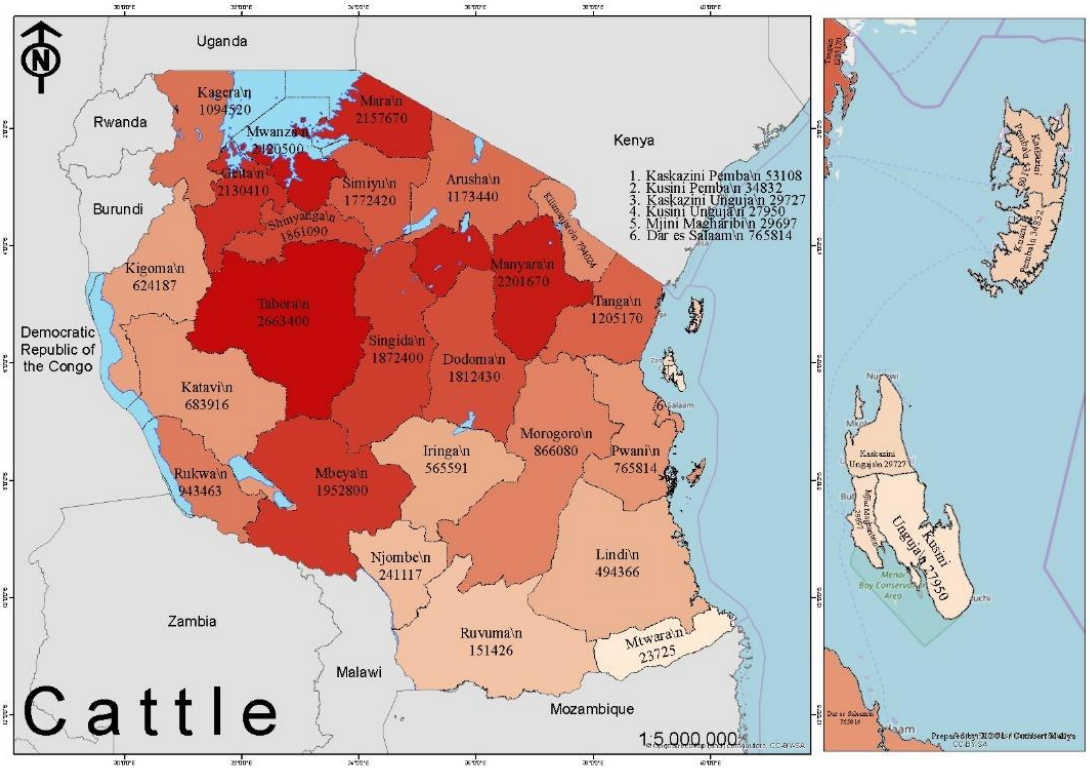


**Figure 3-2 The Status of Cattle Husbandry in Tanzania**

### 3.3.1 National Cattle Ranches

Apart from a vast land - suitable for livestock production in Tanzania, there are two main government resources in the livestock industry in Tanzania for the TIC to consider, while inviting Foreign Direct Investments (FDIs). They are: National Ranching Company (NARCO) ranches and Livestock Multiplication Units (LMUs).

#### 3.3.1.1 The National Ranching Company

NARCO owns a total of 519,453 hectares of land. Of these hectares of land, NARCO operates a total of eight ranches located in seven regions of mainland Tanzania.

**Table 3-3 NARCO Ranches in Tanzania**

| Name of Ranch | | Area (Hectares) | Location | Livestock Population | | | Full Ranch Capacity (Heads of Cattle) |
|---|---|---|---|---|---|---|---|
| | | | | Cattle | Sheep | Goats | |
| 1 | Kongwa | 38,000 | Dodoma | 8,032 | 118 | 768 | 100,000 |
| 2 | Mzeri | 21,236 | Tanga | 3,400 | 200 | 349 | 60,000 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | Ruvu | 43,000 | Pwani | 3,762 | | | 120,000 |
| 4 | Mkata | 19,446 | Morogoro | 0 | | | 35,000 |
| 5 | Kikulula | 42,083 | Bukoba | 8,730 | | | 150,000 |
| 6 | Missenyi | 23,998 | Bukoba | 7,309 | | | 68,466 |
| 7 | West Kilimanjaro | 19,910 | Kilimanjaro | 967 | 772 | | 60,000 |
| 8 | Kalambo | 23,588 | Rukwa | 1,733 | 25 | 35 | 80,000 |

#### 3.3.1.1.1 Proposed Investment Opportunities for Ranches

All ranches in the country are operating below their respective carrying capacities. Therefore, investment plans aim at increasing livestock population in each of the ranches in order to attain their maximum carrying capacities[8]. This would entail: -

a) Purchase of quality breeder animals
b) Purchase of immature animals for feed - lotting
c) Infrastructure development
d) Purchase and water facility improvement

### 3.3.1.2 Livestock Multiplication Units

The profile for each Livestock Multiplication unit (LMU) is as follows:-

**Table 3-4 NARCO Multiplication Units**

| Name of LMU | | Area (Hectares) | Location | Livestock Population | | | Full LMU Capacity (Heads of Cattle) |
|---|---|---|---|---|---|---|---|
| | | | | Cattle | Sheep | Goats | |
| 1 | Mabuki | 9,793 | Misungwi | 2,684 | | 70 | 6,000 |
| 2 | Sao Hill | 6,500 | Iringa | 1,759 | | | 3,000 |
| 3 | Nangaramo | 6,175 | Masasi | 441 | | | 4,000 |
| 4 | Kitulo Dairy Farm | 5,000 | Makete | 970 | | | 3,500 |
| 5 | Ngerengere | 4,562 | Morogoro | 574 | | | 3,500 |

The following breeds are available: -

a) Mabuki LMU – mainly Frieshian, Boran, Tanzania Shorthorn Zebu crosses, some 79 buffaloes and 70 goats;
b) Sao Hill LMU – Boran, Ayrshire breeds and their crosses;
c) Nangaramo LMU - Boran, Ayrshire breeds and their crosses;
d) Kitulo Dairy Farm – Friesian dairy cows
e) Ngerengere LMU – Boran cows, Ayrshire bulls and their crosses.

[8] Ministry of Livestock and Fisheries Development (2019)

### 3.3.2 Bovine Meat Imports Quantities into Tanzania

In 2018, bovine meat imports quantity for United Republic of Tanzania was 844 Tons. Though United Republic of Tanzania bovine meat imports quantity fluctuated substantially in recent years, it tended to increase through 1967 - 2018 period ending at 844 Tons in 2018[9].

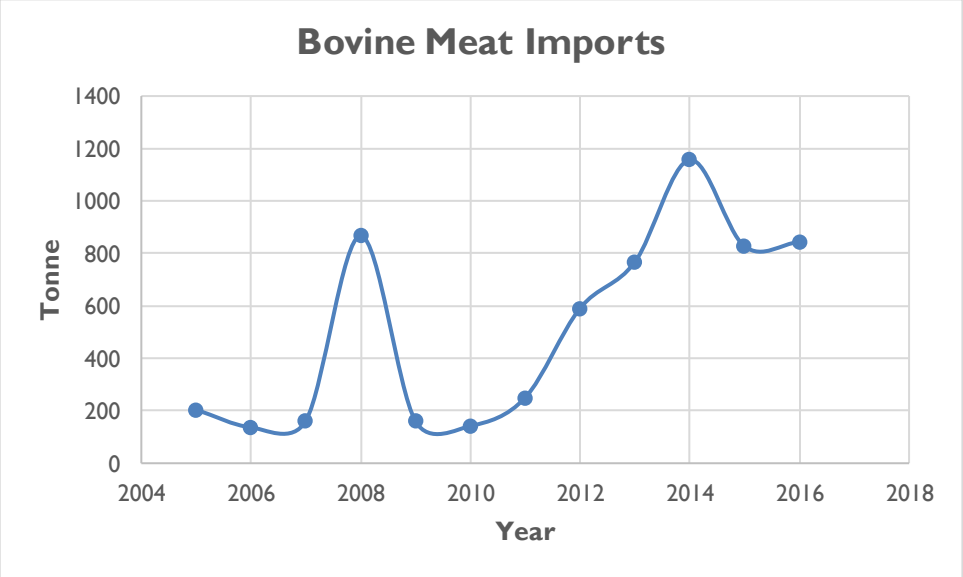


**Figure 3-3 Bovine Meat Imports Quantities into Tanzania**

Table 3-5, shows meat import stats in to Tanzania.

**Table 3-5 Bovine Meat Imports into Tanzania**

| Year | Tons | Change, % |
|---|---|---|
| 2016 | 844 | 2.06% |
| 2015 | 827 | -28.52% |
| 2014 | 1,157 | 50.85% |
| 2013 | 767 | 29.78% |
| 2012 | 591 | 136.40% |
| 2011 | 250 | 76.06% |
| 2010 | 142 | -11.25% |
| 2009 | 160 | -81.55% |
| 2008 | 867 | 435.19% |
| 2007 | 162 | 18.25% |
| 2006 | 137 | -32.84% |
| 2005 | 204 | |

[9] World Data Atlas (2019). https://knoema.com/atlas/United-Republic-of-Tanzania

## 3.4 Goats Production

Goat ranks the second in livestock population after cattle. The number of operators engaged in goat keeping was 2,746,230. Total number of goats was 18,947,657.

Arusha Region with 2,580,017 heads (13.6%) had the highest number of goats, followed by Manyara (1,779,423 heads; 9.4%) and Mwanza (1,301,763 heads; 6.9%).

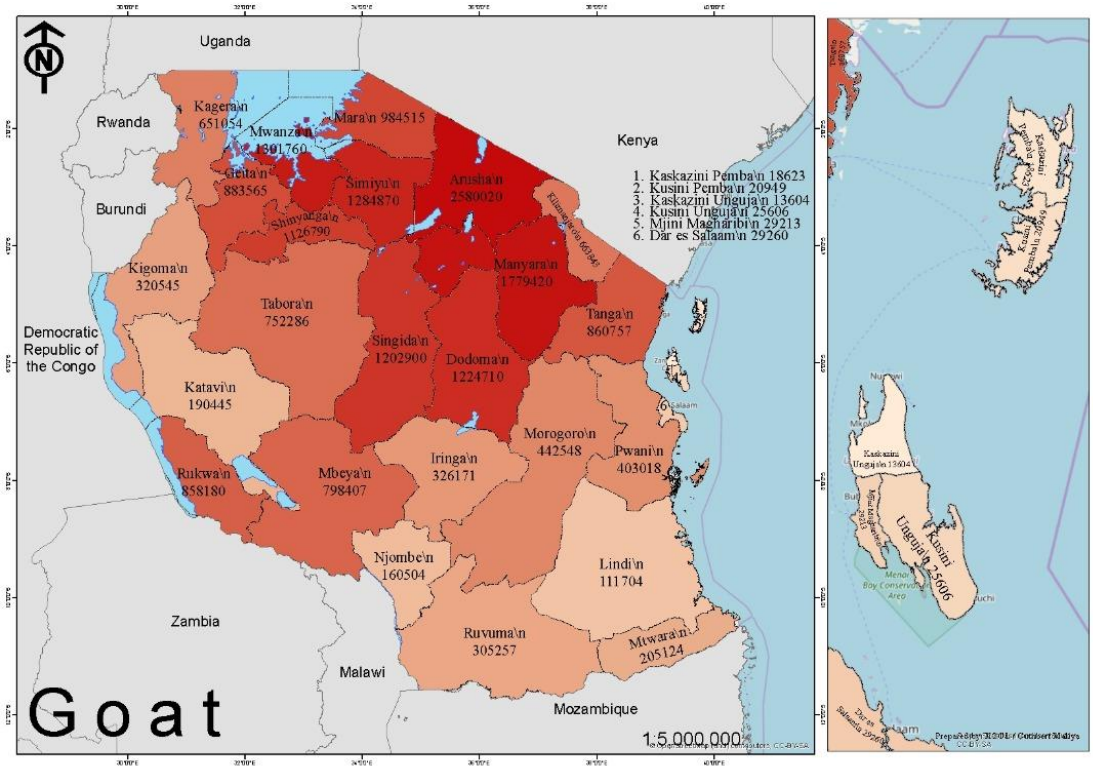


**Figure 3-4 The Status of Goat Farming in Tanzania**

These animals adapt well in nearly all agroecological zones in the country and are raised mainly under traditional production system and limited number raised under commercial farming system.

Goats available are mainly of indigenous types and are kept for meat production. Goat types include Maasai, Gogo, Newala, Ujiji and Sukuma[10].

These types of goats are well adapted to the environment and perform well when raised under commercial system where management is good – mainly in terms of feed, shelter and disease control.

### 3.4.1 Investment Opportunities into Goats Production

The areas for investment in sheep and goats include:

[10] Ministry of Livestock and Fisheries Development (2019)

a) Partnership with NARCO in the production of goats and sheep;
b) Establishment of large-scale sheep and goats' farms for meat production;
c) Establishment of Dairy Goats Multiplication Units;
d) Contract farming between export agents and goat and sheep farmers.

## 3.5 Sheep

Sheep is the third livestock type in terms of population after cattle and goat in Tanzania. A total of 1,070,756 operators were engaged in sheep keeping during 2017/18 period.

The total number of sheep in Tanzania was 5,565,468. Arusha Region with 659,218 sheep (11.8%) had the highest number of sheep, followed by Simiyu (637,269; 11.5%) and Tabora (548,469; 9.9%).

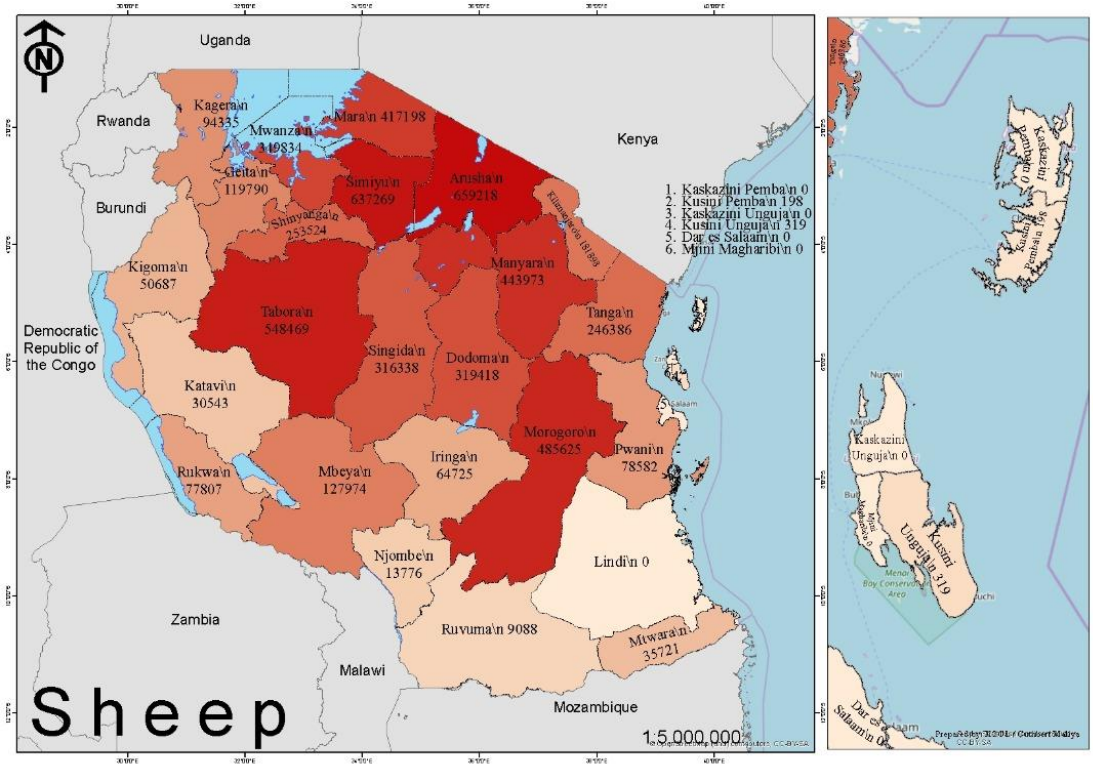


**Figure 3-5 The Status of Sheep Farming in Tanzania**

Sheep available are mainly of indigenous types and are kept for meat production. Sheep types include: - Red Maasai, Sukuma (East African Black Head), Pare and Gogo (Tanzania Long tail).

## 3.6 Pigs

Pig rearing is mainly practiced in Tanzania Mainland in which there are 449,320 operators who were engaged in pig rearing. The total number of pigs was 1,952,801 (97.7%) from which Mbeya Region (713,063; 36%) had the highest number of pigs, followed by Tabora (117,178; 6%) and Ruvuma (116,689; 5.9%).

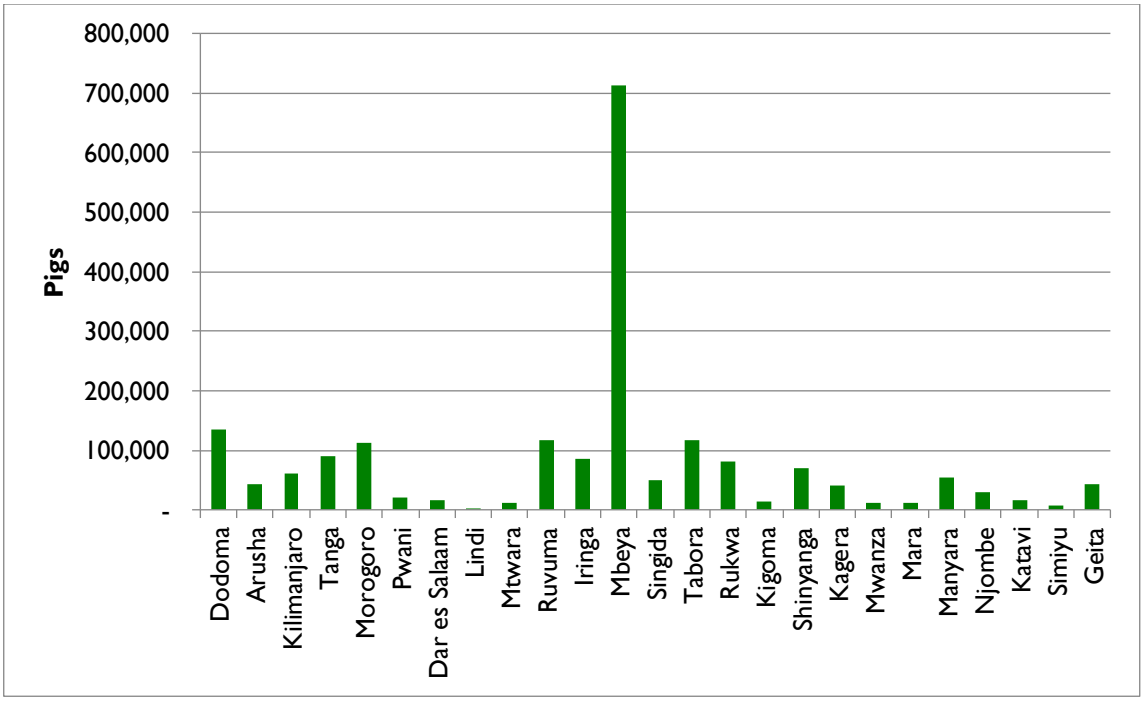


**Figure 3-6 Pig population by region, Tanzania Mainland as at October 1, 2017**

According to the Ministry of Livestock and Fisheries Development[10], more than 90% of the 1.9 million pigs are kept by small-scale farmers mostly in Southern and Northern Highlands under traditional production systems. In addition, pork demand is increasing in urban and peri-urban areas due to the increasing customers' preference for delicacy and health reasons.

However, the current demand does not suffice the increasing demand for domestic and export markets. Therefore, pigs' production can be improved through proper husbandry practices, adequate support services, disease control and appropriate slaughter and marketing infrastructure. Intensive pig production for commercial purposes is limited to very few farmers with regular income, mainly to meet the high cost of concentrate feeds among other requirements.

The breeds of pigs found in the country are crosses of Large white, Landrace, Saddleback and Hampshire; while pure breeds are very few. These stocks have been circulating within the different farms in the country.

### 3.6.1 Pig Meat Imports Quantities into Tanzania

In 2016, pig meat imports quantity for United Republic of Tanzania was 980 Tons. Though United Republic of Tanzania pig meat imports quantity fluctuated substantially in recent years, it tended to increase through 1967 - 2016 period ending at 980 Tons in 2016.

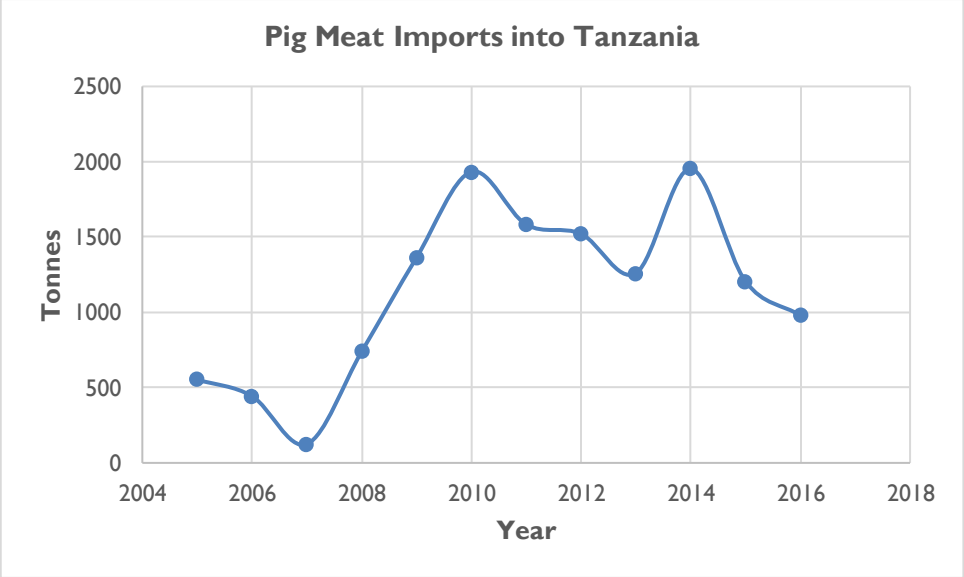


**Figure 3-7 Pig Meat Import Quantities into Tanzania**

**Table 3-6 Pig Meat Imports into Tanzania**

| Year | Tons | Change, % |
|---|---|---|
| **2016** | 980 | -18.67% |
| **2015** | 1,205 | -38.30% |
| **2014** | 1,953 | 55.00% |
| **2013** | 1,260 | -17.16% |
| **2012** | 1,521 | -3.92% |
| **2011** | 1,583 | -18.11% |
| **2010** | 1,933 | 41.82% |
| **2009** | 1,363 | 84.44% |
| **2008** | 739 | 491.20% |
| **2007** | 125 | -71.78% |
| **2006** | 443 | -19.89% |
| **2005** | 553 | |

## 3.7 Investment Opportunities in the Piggery Sub-sector

The areas for investment in the pig industry include:

a) Establishment of breeders' farms;
b) Establishment of commercial farms;
c) Establishment of slaughter and processing plants.

## 3.8 Poultry Production

In Mainland Tanzania the number of indigenous chickens was 38,595,106. Tabora Region with 2,829,024 birds (7.3%) had the highest number of indigenous chickens, followed by Shinyanga (2,332,826; 6.0%) and Singida (2,184,743; 5.7%).

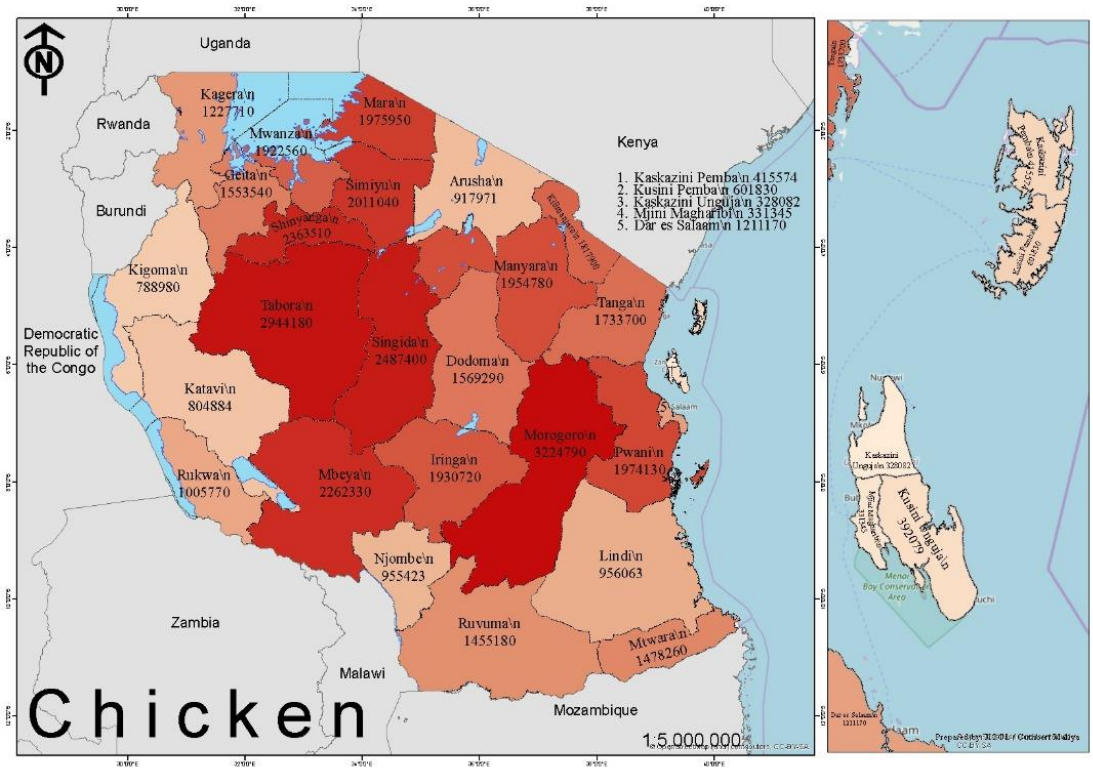


**Figure 3-8 Status of Chicken Farming in Tanzania**

The poultry production system in Tanzania is of two types: traditional and commercial production. The current production is estimated at 58 million chicken (indigenous 23 million and commercial 35 million), and 1.2 million ducks.

Poultry production has a lot of opportunities for the private sector investment. The small and medium enterprises have managed to increase numbers of local chickens from 27 million in 2001 to 30 million in 2006; while commercial stock increased from 20 million to 25 million.

On average 5.5 million hatching eggs and 1 million Day Old Parent Chicks are imported annually to produce a total of 25 million Day Old Chicks for commercial purposes. This figure is low compared to the current requirement of 60 million Day Old Chicks per year.

The per capita consumption of eggs has increased from 50 to 75 eggs per person per year in Tanzania. The rising demand for DOCs, meat and eggs calls for more investments. The hatcheries and their capacities are as indicated in Table 3-7.

**Table 3-7 Poultry Hatcheries**

| Region | Hatchery | Capacity (Number of chicks per 3 weeks) |
|---|---|---|

| | | | |
|---|---|---|---|
| 1 | Arusha | Tanzania Poultry farms | 180,000 |
| 2 | Dar es Salaam | Euro Poultry | 160,000 |
| | | Interchick | 260,000 |
| | | Twiga Hatcheries | 120,000 |
| | | Ideal Chicks | 120,000 |
| 3 | Coast | Kibaha E.C | 120,000 |
| | | Ruvu JKT | 30,000 |
| | | Kiluvya Poultry Products | 30,000 |
| | | Mkuza Chicks | 360,000 |
| 4 | Kilimanjaro | Kilacha | 30,000 |
| | | Kibo Hatcheries | 60,000 |
| 5 | Mbeya | Songwe Hatcheries | |

## 3.9 Poultry Meat Imports quantity

In 2016, poultry meat imports quantity for United Republic of Tanzania was 1,805 Tons. Poultry meat imports quantity of United Republic of Tanzania increased from 193 Tons in 1967 to 1,805 Tons in 2016 growing at an average annual rate of 155.24 %.

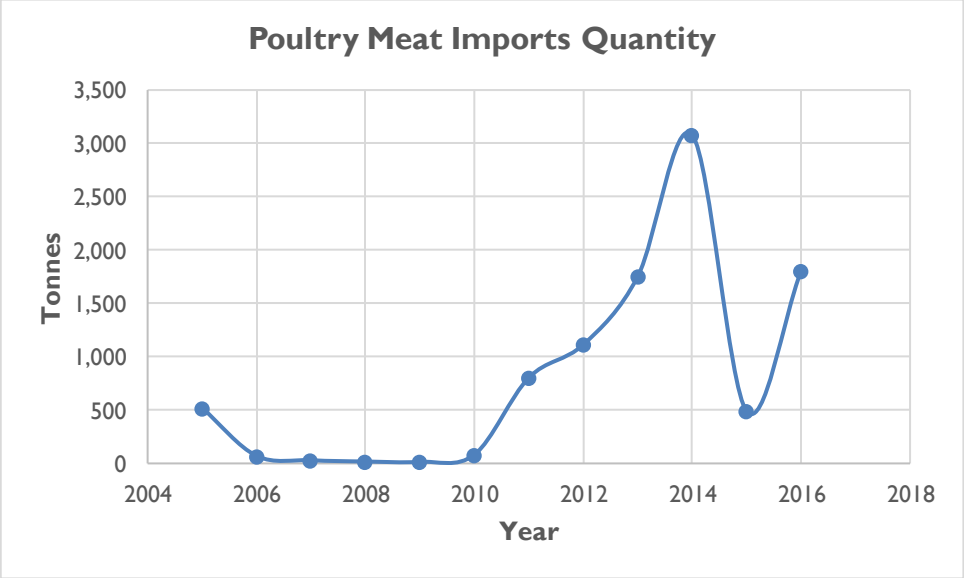


**Figure 3-9 Poultry Meat Import Quantities into Tanzania**

**Table 3-8 Poultry Meat Imports into Tanzania**

| Year | Tons | Change (%age) |
|---|---|---|
| **2016** | 1,805 | 269.12% |
| **2015** | 489 | -84.11% |
| **2014** | 3,078 | 75.68% |
| **2013** | 1,752 | 57.41% |
| **2012** | 1,113 | 38.43% |
| **2011** | 804 | 880.49% |

| | | |
|---|---|---|
| **2010** | 82 | 446.67% |
| **2009** | 15 | -16.67% |
| **2008** | 18 | -40.00% |
| **2007** | 30 | -57.75% |
| **2006** | 71 | -86.37% |
| **2005** | 521 | |

### 3.9.1 Investment Opportunities in Poultry Production

The areas for investment in the poultry industry include:

a) Establishment of breeders' farms for grand and parent stock
b) Establishment of commercial layers and broiler farms
c) Establishment of chichen and eggs processing plants. It was learned during this study that; eggs can be processed into powder – which is used in bakeries.
d) Poultry feeds processing
e) Poultry hatcheries and supply of chicks

## 3.10 Other Livestock Species

**Table 3-9 Number of Other Livestock by Region and Type of Livestock as of 1st October 2017**

| Region | Ducks | Guinea Pigs | Turkey | Rabbits | Donkey | Dogs |
|---|---|---|---|---|---|---|
| Dodoma | 30,236 | - | - | 2,115 | 31,083 | 99,411 |
| Arusha | 6,858 | 14,115 | | 6,211 | 58,992 | 44,531 |
| Kilimanjaro | 31,298 | - | 12,269 | 16,160 | 17,874 | 53,548 |
| Tanga | 201,135 | - | 641 | 2,135 | 18,712 | 57,615 |
| Morogoro | 163,106 | - | 124,116 | 2,638 | - | 37,529 |
| Pwani | 89,720 | - | - | - | 936 | 26,224 |
| Dar es Salaam | 178,111 | - | 48,968 | 1,303 | - | 7,266 |
| Lindi | 4,566 | - | | 189 | - | 17,080 |
| Mtwara | 29,971 | - | 3,275 | - | - | 3,123 |
| Ruvuma | 12,404 | 3,694 | 3,913 | 2,040 | - | 16,345 |
| Iringa | 15,774 | 312,263 | 8,005 | 9,260 | 4,240 | 51,297 |
| Mbeya | 69,172 | 59 | - | 12,914 | 25,448 | 59,802 |
| Singida | 48,889 | 1,174 | 5,222 | 782 | 72,644 | 127,585 |
| Tabora | 80,596 | - | - | 1,579 | 41,262 | 266,864 |
| Rukwa | 39,796 | 5,660 | - | 25,113 | 16,120 | 45,797 |
| Kigoma | 2,234 | - | - | 2,271 | - | 105,450 |
| Shinyanga | 149,786 | 4,319 | 3,621 | 7,140 | 32,427 | 174,926 |
| Kagera | 53,560 | - | - | 20,069 | 1,725 | 39,389 |
| Mwanza | 170,800 | 7,803 | 2,925 | 2,555 | 17,531 | 516,703 |
| Mara | 144,387 | - | - | 10,789 | 24,653 | 213,939 |
| Manyara | 11,527 | 208 | 16,960 | 1,932 | 113,623 | 181,207 |
| Njombe | 18,416 | 210,949 | - | 19,468 | 14,415 | 5,158 |
| Katavi | 46,515 | 4,650 | - | 1,050 | 16,720 | 17,606 |
| Simiyu | 81,449 | - | 989 | 2,967 | 31,998 | 62,214 |
| Geita | 151,757 | - | 1,169 | - | 21,641 | 177,519 |
| **TOTAL** | **1,832,064** | **564,894** | **216,931** | **150,681** | **546,996** | **2,408,129** |

# 4 Improving Performance of the Livestock Sub-sector in Tanzania

## 4.1 Red and White Meat

### 4.1.1 Tanzania's Red Meat Systems Roadmap (2016/17 - 2021/22)

Tanzania produced about 493,000 metric tons of red meat (by year 2016/2017) whereby 83% was beef and the remainder came from sheep and goats. Most of this produce (97%) came from pastoral and agro-pastoral communities.

The red meat produced is predominately for domestic consumption, with little exports. The country still has not been able to meet its domestic demand for red meat, and meeting this demand, as well as exploiting the export potential for red meat, are possible only if the limitations of unavailable resources, such as animal feeds, are overcome[1].

The 2016/22 LMP through the Ministry of Livestock and Fisheries Development, defined the vision and targets for improving availably of red meat in Tanzania[11].

#### 4.1.1.1 Vision

The projected year 2021 domestic demand gap for red meat arising due to rapidly growing population, increasing urbanization, and rising incomes is reduced; and live animal and meat exports are increased to generate foreign exchange earnings.

#### 4.1.1.2 Overall Target

To reach production of 742,000 tons of red meat by year 2021, through improvement of grazing land resources, animal health, and genetics; and use of appropriate feeding technology.

By 2021, a total of 2 million heads of animals passing through the ranch, feedlot and non-traditional (culled dairy cattle) operations is achieved; and the contribution of the traditional sector to the overall red meat produced is reduced from the current level of 97% to 10%.

Improved traditional red meat production targets Interventions aimed at increasing traditional red meat output are expected to bring the following changes: -

a) An increase in the area of the grazing/pasture from 10 - 13%.
b) Promoting allocation and establishment of pasture/fodder production areas from almost 0%, at present, to 5%.
c) Increasing the parturition rate from 4 - 5%.
d) Reducing mortality rate to 25 - 50% for all age and sex categories.
e) An increase in dressing percentage by 2%.
f) Live weight increase by 10% for all age and sex categories.
g) Off-take rate increases from 10 - 16% for small-scale farms; 10 - 14% for medium - scale farms; and from 18 - 26% in ranches.

[11] Tanzania Livestock Master Plan 2016 – 2022. Ministry of Livestock and Fisheries Development

h) Increasing the herd size of ranches by a range of 10 - 37% through purchasing of additional heifers in the first three to four years; and maintain constant herd size, once the carrying capacity is achieved.
i) The number of ranches increased by 18%.
j) The number of cattle in a fattening cycle, in feedlots, increased by 33%.
k) The number of fattening cycles per year, in a feedlot, increased by 17%.
l) To increase the number of feedlot units by over 100%.

### 4.1.1.3 Key Challenges and Strategies in Enhancing Red Meat Production in Tanzania

**Table 4-1 Key Challenges and Strategies in Enhancing Red Meat Production in Tanzania**

| Challenges | Strategies |
|---|---|
| **Feed** | |
| Lack of sufficient grazing areas to meet the feed needs of the animals | Rehabilitation of rangeland/grazing land |
| Poor-quality grazing land resources | Acquiring substantial additional area for grazing land and for pasture/fodder production |
| Inadequate knowledge on the use of crop residues and by-products | Training and capacity building and skill development to increase the use of crop residues and by-products |
| Limited availability of concentrates and feed supplements, when needed. | Increased and better use of agro-industrial by-products from the processing of cereal/grains/oil seeds/sugarcane as concentrates for animal feeding. |
| | Promote appropriate storage and marketing of concentrates and feed supplements |
| **Genetics** | |
| Low genetic improvement extension coverage | Selection within the local breeds |
| Poor animal data recording system | Establishing community-based breeding programs, which include developing an animal recording scheme |
| | Promoting animal identification and traceability scheme. |
| **Animal Health** | |
| Poor animal health extension services | strengthening animal health regulatory capacity under the coordination of the livestock ministry |
| Inefficient animal health services | |
| Inadequate supplies and qualities of vaccines and drugs | |
| Poor control of drugs and supplies | |
| Marketing and processing | |
| Poor market infrastructure | Building additional infrastructure. |
| Poor technical knowledge of value chain actors, especially processors and technicians | Strategic capacity building spearheaded by the second phase of the agricultural sector development program (ASDP II) |
| Inadequate market information | |
| Poor linkages between producers, processors and export abattoirs. | |
| **Policy** | |
| Absence of a breeding policy | Developing clearly defined guidelines on land use and access rights |
| Loss of land to alternative investments outside livestock | Implementing appropriate land policies. |
| A lack of protective trade policies | Gazetting grazing land |

### 4.1.2 Interventions to Achieve Red Meat Targets

Most of interventions for red meat production are expected to be done in the central, and coastal and lake production zones. The interventions in these zones do not involve artificial insemination and genetic progress through improved selection of indigenous breeds is anticipated to be slow[5].

The main proposed technological interventions in the central zone are: -

a) Feed improvement through better range management, over-sowing with grass and legumes, and the control of invasive species. The intervention to improve rangeland productivity includes water development and rangeland improvement by shrub clearing, and the application of thinning technique where major shrub encroachment takes place.
b) Reduction in young and adult stock mortality: The relevant health interventions include improving access to quality of veterinary services through rationalized use of public/private veterinary services; parasite control and treatment and vaccinations.
c) Breed improvement through better selection and management of male breeding animals.
d) Introduction of a herd/flock recording scheme for breed improvement.

However, other interventions will target the research, extension, market and value additions for the red meat products. In the highlands zone, the following interventions will be carried out: -

a) Breed improvement, involving artificial insemination with semen of exotic breed primarily for dairy development. However, the culled dairy cattle will be channeled to beef production.
b) Breed management and improvement through the implementation of a herd/flock recording scheme.
c) Training/extension to improve the capacity of farmers to select and manage male breeding animals.
d) The reduction of young and adult stock mortality with vaccines and anti-parasites.
e) The introduction of integrated fodder crops with food crops.
f) The timely harvesting of grass, and storage and conservation of hay from communal grazing lands.
g) Increased efficiency of crop residue use (proper storage, supplementation, treatment including physical treatment chopping, and urea).
h) Over-sowing and rotational grazing.

### 4.1.3 Investment Opportunities in the Red Meat Value Chain

Investment opportunities in the red meat industry exist in the following areas: -

a) Going into joint venture with National Ranching Company (NARCO) and other privately-owned ranches to modernize the existing ranches. Production of various types of livestock including beef and dairy cattle, goats, sheep, pigs in partnership with NARCO ranches and

with already existing Livestock Multiplication Units – together with establishment of new farms for the same purpose;
b) To invest in the establishment of new ranches (cattle, sheep, goats) and farms (poultry and piggery);
c) Feed - lot/fattening programs;
d) Slaughtering and processing;
e) Meat and milk processing;
f) Value addition in livestock and other livestock products and byproducts such as hides and skins;
g) Construction and operation of new abattoirs and processing plants;
h) Production of hay, compounded animal feeds and vaccines.

### 4.1.4 Tanzania's Chicken Development Roadmap (2017/18 - 2021/22)

The 2016/22 LMP through the Ministry of Livestock and Fisheries Development, defined the vision and targets to ensure adequate supply of chicken in Tanzania.

#### 4.1.4.1 Vision

By 2022, the chicken industry is to a large extent efficient and commercially run, both in commercial and household operations, using improved and highly productive breeds to ensure household food security and higher incomes, and significantly contributes to achieving national all-meat food security, and higher national income while being resilient to climate change and conserving the environment.

#### 4.1.4.2 Overall Target

The overall target is to raise annual chicken meat production almost eightfold from about 60,800 to 465,600 tons and egg production from about 3.0 to 4.2 billion by year 2021/22 through improved traditional family chicken (ITFC), tropical improved chicken (TIC) and expanded specialized/commercial chicken (SCC) - with layers and broilers subsystems.

#### 4.1.4.3 Improving Traditional Family Chicken and Promoting and Expanding Tropical Improved Chicken Sub-systems

##### 4.1.4.3.1 Targets

a) The number of hens in the ITFC grows from 4.2 million in the base year to 5.7 million in 2021/22, a 37% increase.
b) The number of chickens in the TIC grows from 0.02 million to 2.01 million.
c) Chicken meat production from ITFC increases from 31.8 thousand tons in the year 2016/17 to 48.2 thousand tons in the year 2021/22, a 52% increase.
d) Chicken meat production from the TIC increases from 0.01 thousand tons in the year 2016/17 to 1.7 thousand tons.
e) Total meat from the family system increases from 31.81 thousand tons to 49.9 thousand tons, a 57% increase.
f) Egg production from ITFC increases from 101.2 million in the year 2016/17 to 229.2 million in the year 2021/22, a 127% increase.

g) Egg production from TIC increases from 0.79 million in the year 2016/17 to 129.1 million in the year 2021/22.
h) Total egg production from the family system increases from 109.99 million in the year 2016/17 to 358.3 million in the year 2021/22, a 350% increase.

Tropical improved chicken is a newly introduced chicken system with a small number of birds in the base year hence comparing the near non-existent number of TICs in the base year with those in the fifth-year number does not make sense.

#### 4.1.4.4 Key Challenges and Strategies Related to Traditional Family Chicken System

**Table 4-2 Key Challenges and Strategies Related to Traditional Family Chicken System**

| Challenges | Strategies |
|---|---|
| **Feeds** | |
| Limited access to land to produce maize and soybeans for formulation of chicken feed | Enforce Grazing Land and Animal Feed Resources Act 2010 and related regulations |
| Low nutritive value of feed ingredients used in feed formulation such as maize, maize bran, grain sorghum, rice bran and fish meal in terms of energy, protein, mineral and amino acid profile | Build capacity for animal feed inspectors in various levels |
| Low nutritive value and low quality of commercial chicken feeds in terms energy, protein, mineral and amino acid profile and high crude fiber | Prepare guidelines for inspection of processed chicken feeds |
| Presence of physical and chemical contaminants such as charcoal, sand and dust in chicken feed ingredients and feeds | Create awareness through sensitization on need/ requirements for quality chicken feeds |
| Low institutional capacity to monitor quality of chicken feed produced and processed | Build capacity for good processing practices among animal feed processors |
| Low incentive for the private sector to invest in chicken feed processing plants | Regulate the export of oil crops and import of cooking oils<br><br>Strengthen mechanisms to control feed quality<br><br>Give tax breaks and other incentives to encourage private sector in chicken feed processing industries |
| **Animal Health** | |
| High prevalence and impact of diseases particularly Newcastle, salmonellosis, Marek's disease among small-scale chicken producers | Strengthen enforcement of Animal Disease Act 2003 and its regulations |
| Poor handling and poor-quality drugs and vaccines associated with inadequate human resource for supervising and monitoring drugs use and unreliable cold chain supply of chicken vaccines | Formulate biosafety guidelines for disease control and other relevant guidelines<br><br>Enforce stricter disease controls on the importation of commercial replacement stock |
| Poor housing and sanitation for chickens | Produce Newcastle Disease vaccine with high efficacy and institute mandatory mass vaccination against the disease |
| | Create awareness among small producers on best practices in chicken housing and sanitation |
| | |

| | |
|---|---|
| **Marketing and Processing** | |
| Chicken farmers' marketing organizations are limited in geographical scope with most operating in Dar-es-salaam and other urban areas | Promote establishment of Tanzania chicken traders' associations |
| Weak chicken farmer's groups and platforms Existing farmers marketing organizations are poorly structured and there is lack of a related apex national association. | Construct chicken slaughtering and processing facilities and promote chicken meat and eggs marketing. |
| Lack of slaughter facilities for chicken | |
| Lack of chicken meat processing facilities | |
| Weak biosafety facilities and hazard analysis and critical control points (HACCP) | Institutionalize mandatory biosafety and HACCP procedures |
| Weak consumers preference for exotic chicken meat and eggs | Intensify the promotion and extension work to change the attitudes of consumers towards consuming eggs and meat from hybrid and exotic breeds |
| | |
| **Policy** | |
| Most of the hatcheries and breeder chicken farms are not registered, do not have registered veterinarians and operate within residential areas without standard operating procedures | Promote registration of hatcheries and breeder farms<br><br>Establish standard operating procedures and guidelines for<br>operation of hatcheries and breeder farms |
| There are many complaints from farmers on high mortality of chicks from some hatcheries due to salmonellosis and emergence of Marek's disease in pullets (layers). | Institutionalize biosafety measures and HACCP facilities for chicken meat, eggs and feeds |
| Weak policies related to land acquisition for chicken feed production. | Create favorable policies for land acquisition for chicken feed production |

### 4.1.4.5 Interventions to Achieve Chicken Production Targets

The interventions to transform the family chicken system involve improving indigenous chicken productivity through improved breed selection, importation of high-yielding pure tropical scavenging brooding breeds and importation of semi-scavenging tropical breeds. These measures should go along with a reduction of reproductive wastage by introducing brooding and artificial incubation facilities such as hay box brooders and small-scale incubators; and health, feed and management interventions.

Adoption and coverage of the intervention at 40% and 30%, respectively, will impact 12% of the total indigenous ITFC chicken over the five-year project period. Tropical improved chicken will grow from 15,000 - 2,000,000 chickens in five years, a huge development.

The interventions in the improved traditional family chicken (indigenous and imported pure breeds) aims at upgrading the flock size from 2 - 8 hens. Eggs laid per year will increase from 50 - 90 and average weight of sold chicken will increase from 1.1 - 1.4 kg. Through the semi-scavenging tropical crossbreeds such as Kuroiler, holding per family will remain 25 chickens and it is expected to grow to at least 150 eggs per hen/year with 2.8 kg live weight for mature chicken. With the additional animal health services, chicken mortality before marketing will

dropped down from 50 - 10%. The average number of eggs consumed on-farm/year will increase from 10 - 20 and chicken consumed from 5 - 10; both 100% increases.

#### 4.1.4.6 Specialized Commercial Chicken Production

##### 4.1.4.6.1 Targets

a) The number of chickens in the specialized chicken layers subsystem grows from 13.3 million in 2016/17 to 17 million in 2021/22, a 28% increase.
b) The number of chickens in the specialized chicken broilers sub-system grows from 3.3 million in 2016/17 to 48.2 million in the year 2021/22, a 1,362% increase.
c) Chicken meat production from specialized chicken increases from 29,047 tons in 2016/17 to 415,745 tons in the year 2021/22, a 1,331% increase.
d) Egg production from specialized layers increases from 2.86 billion in 2016/17 to 3.82 billion in the year 2021/22, an increase of 33%.

##### 4.1.4.6.2 Key Challenges and Strategies Related to the Specialized Layers and Broilers System

The specialized layers and broilers systems are facing the challenges as those of the traditional family chicken system and need similar strategies transforming the system. Refer to Table 4-2 for the details.

##### 4.1.4.6.3 Interventions to Achieve Specialized Layers and Broilers Targets

The interventions for specialized chicken improvement involve increasing the scale of operations and volume of production from the specialized chicken farms i.e. specialized chicken layers and specialized chicken broilers. The major intervention proposed for the specialized chicken layers and specialized chicken broilers is increasing their number in the country and the number of specialized farm units. The average number of broilers per specialized farm/year increases to 1,020 per cycle and the average number of layers stays the same at 1,300.

#### 4.1.4.7 Investment Opportunities in the White Meat Value Chain

a) Establishment of breeder farms for poultry (grandparent stocks)
b) Establishment of commercial layers and broiler farms as well as broiler processing plants;
c) Chicken slaughter abattoirs
d) Chicken feeds processing using locally available materials

### 4.1.5 Pig/Pork Value Chain Development Roadmap 2017/18 - 2021/22

#### 4.1.5.1 Vision

By 2025 the Tanzania pig industry becomes an efficiently functioning sector with market-oriented farming, processing and dynamic marketing, operating in more sustainable and climate-smart ways, supplying consumers with high quality and safe pig meat/pork, and contributing to household food and nutritional security, income growth, poverty alleviation and to national economic growth.

#### 4.1.5.2 Overall Target

The overall target is to raise pig meat production from the current 22,000 tons (2016/17) to 37,000 tons by 2021/22 through improved family and expanded commercial specialized pig production systems.

#### 4.1.5.3 Modernizing and Transforming the Traditional Free-Ranging Family Pig Production System

##### 4.1.5.3.1 Targets

a) The number of sows in traditional (extensive) family (TFPS) systems increases from 207,083 to 300,070 and the number of pigs in the improved semi - intensive family system increases from 77,778 to 112,703. In both cases the change in number over five years is 45%.
b) Pig meat production from the TFPS subsystem increases from 12.8 thousand tons to 18. 2 thousand tons, a 43% increase.
c) Pig meat from improved (semi-intensive) family pig subsystem (IFPS) increases from 6 tons to 8.4 tons, a 41% change over five years.

##### 4.1.5.3.1.1 Targeted Productivity Changes

a) The number of sows in the TFPS household sub-system increases from two to four.
b) Mortality of young pigs will decrease from an average of 20% to 18% and 12% to 10% in TFPS and IFPS, respectively.
c) The age at first calving decreases from an average of 300 - 270 days in TFPS.
d) The proportion of industrial feed included in the pig ration increases from average of 0% to 4% and from 20% to 40% among TFPS and IFPS, respectively.
e) Age at weaning decreases from an average of 60 - 55 and 45 - 35 days among TFPS and IFPS, respectively.
f) Age of piglets for marketing decreases from 120 - 112 days and from 60 - 40 days among TFPS and IFPS, respectively.

**Table 4-3 Key Challenges and Strategies Related to the Family Pig Sub-system**

| Challenges | Strategies |
|---|---|
| **Genetics** | |
| Limited number of improved pig breeds | Establishing public and private sector specialized commercial pig breeding and multiplication farms |
| Lack of specialized commercial pig breeding farms | The LMP provides opportunities for designing a pig industry development strategy/program in Tanzania |
| Low productivity of family-kept pigs partly due to low genetic potential and inbreeding leading to poor quality stock supplied to farmers | Importing new lines of improved high-yielding pig breeds to avoid inbreeding and increase productivity |
| Inadequate supply of well-bred pig stocks from pig multiplication and breeding farms | Extension and proper management and husbandry practices to lower the probability of inbreeding |
| | Supporting the Tanzania Livestock Research Institute pig breeding and research activities |
| | |
| **Animal Health** | |
| A weak animal health delivery system | Strengthening surveillance, early detection/diagnosis |

| | |
|---|---|
| Inadequate health extension staffs Strengthening | Strengthening national and local government authorities' capacity to recruit additional staff to respond to outbreaks and provide specialized pig extension services |
| | The MLF will prepare the national pig biosecurity policy guidelines for farmers (small and commercial), feed and meat processors |
| Widespread pig health and reproductive problems and major devastating diseases such as African swine fever, foot-and-mouth disease, erysipelas, transmissible gastroenteritis and brucellosis that cause heavy mortality | Supporting immunization measures (for foot-and-mouth disease, brucellosis)<br><br>Improving pig farm management practices to benefit producers.<br><br>Enforcing the Animal Pounds Act, and Animal Welfare Act, 2008<br><br>Extensive pig farmers education and developing regulations to stop free roaming |
| | |
| **Feeds** | |
| Unreliable supply of commercial feeds | Establishment of private small-scale feed mills and public-private partnerships multilevel feed processing plants |
| Below standard quality of commercial feeds | Strengthen surveillance system and the regulatory capacity of the central veterinary laboratories (CVL) with MLF involved in monitoring feed quality and safety |
| High prices of commercial feeds and premixes such as amino acids, minerals and vitamins that are necessary to adhere to standard pig nutritional diets | Organize commercial pig producers for massive importation of essential feed ingredients e.g. amino acids, vitamins and trace minerals<br><br>Create suitable conditions for land allocation, and land lease to investors under the provisions of the current land laws, with major tax incentives on land use fees and lease time |
| Severe feed shortages to supply large pig commercial/specialized pig farms | Develop and implement business models in the production, transportation, processing and distribution of pig feeds<br><br>Expand private sector-led massive cereals and legumes production to supply feed processing plants. Undertake research on alternative pig feeds in terms of nutritive values, and feed conversion impacts on weight gain and meat quality that are suitable in each zone |
| Unreliable supply of commercial feeds | Massive production of cereals (yellow maize, maize, sorghum etc.) and legumes (soybeans, other oil seed cakes) to feed commercially farmed pigs<br><br>Owners of commercial feeds processing plants, large-scale cereal and other alternative feed raw materials are supported to start and run businesses |
| | |
| **Marketing and Processing** | |

| | |
|---|---|
| Weak pig marketing arrangements | Developing the pig value chain to improve pig marketing, trading capacity and smallholder pig production by constructing pig markets, slaughter facilities/abattoirs and fresh pork marketing outlets |
| Higher pork price due to marketing inefficiency, high cost of transportation from producers to urban markets | Applying good-manufacturing practices (GMP) in production process, implement HACCP in animal feed manufacturing, pig slaughtering facilities and processing |
| Lack of pig slaughter facilities/abattoirs, absence of cooling systems (e.g. refrigerators), absence of standard weights and measures | Strengthening swine producer associations (SPAs) to provide credit facilities, offer learning opportunities to farmers' and actors' in the value chain through skills training and joint implementation of biosecurity measures to control devastating diseases such as African swine fever |
| Lack of access to formal credit sources for investment in pig production | Promote SPAs to innovate and actively participate in the value chain mainstreaming to maximize installed feed and meat processing capacities, own and manage cooperative-owned small-scale feed mills, enforce formal use of weights in meat sales, and infrastructural developments in order to increase the overall volume and values in the market |
| Lack of quality grading system for pig meat | Establish pig meat quality grading standards and regulatory systems to enforce it<br><br>Build capacity of animal and livestock production staff on pig ante- and postmortem<br>inspection skills/techniques |
| **Policy** | |
| Lack of official pig marketing and pig meat transportation policies | Ensure policy guidelines/regulations to reorganize pig marketing/trading system is developed<br><br>Ensure linkages to slaughter facilities/abattoirs, preservation facilities and processing plants<br><br>The development, support and implementation of animal welfare strategic plan<br>undertaken |
| Lack of policy for pig holding and slaughtering facilities | Create enabling policy environments for the establishment of rural small-scale and urban large-scale slaughter facilities<br><br>Develop policy guidelines, standard operating procedures (SOPs) and awareness campaigns on slaughter facilities' hygiene and food safety |
| Lack of policy for land allocation for pig production | Ensure policy related to land acquisition or long-term land leasing |
| Lack of policy that gives incentives to private sector to invest in pig production | Develop and seek government approvals on appropriate policy incentives to encourage foreign direct investments, organizations and individuals to invest in commercial pig production, processing and marketing, building domestic pig auction markets, and pig products and kiosks consumption outlets<br><br>Ensure sufficient infrastructure and access to feed sources for the production of feed raw materials |

| | |
|---|---|
| | (cereals, legumes, roots/tubers etc.) to supply large pig farms<br><br>Introduce protective trade policies to encourage domestic private investment<br>in pig production |

#### 4.1.5.4 Interventions to Achieve Targets in Family Pig Subsystems

The proposed transformation of the traditional family pig production system involves genetic, health and feeding interventions alongside marketing and policy interventions. The genetic interventions involve importation of tropically adapted and more productive pig sows and boars for breeding and crossbreeding and the establishment of pig breeding and multiplication farms.

The animal health interventions involve strengthening disease control for priority pig diseases such as African swine fever, transmissible gastro enteritis, erysipelas, worms, and mange; strengthening biosecurity and allied facilities; surveillance through local government authorities and zonal veterinary labs; and the building of staff capacity on national mandatory pig or commodity-based identification and traceability to achieve animal health and safe trade objectives.

The feed interventions involve strengthening the capacity of private small - scale pig feed mills/processors to compound and distribute pig feeds to rural smallholder farmers and strengthening capacity of family pig keeping households to compound and supplement quality pig feed/home rations with locally available and industrial feed materials.

#### 4.1.5.5 Expanding the Commercial Specialized Pig Production Sub-system

##### 4.1.5.5.1 Targets

The number of sows in the commercial specialized pig subsystem increases by 180% from 57,580 to 161,218 sows.

With each sow having 6 followers, the total number of pigs in this subsystem increases from 403,360 to 1,128,526.

Pig meat production from the specialized pig system increases from 3.3 thousand tons to 10.5 thousand tons over five years which constitutes a 219% growth. This growth is as a result of the following changes:

a) Delay in weaning: successful service from 15 - 11 days
b) Proportion of industrial feed included in the ration rising from 70 - 79%
c) Age of piglets marketed reducing from 40 - 36 months
d) Daily weight gain of piglets rising from 0.7 - 0.8 kg

#### 4.1.5.6 Key Challenges and Strategies Related to the Commercial Specialized Pig System

##### 4.1.5.6.1 Genetics Challenges and Strategies

The genetic challenges and strategies for addressing them are similar to those in the family pig sub-system in Table 4-3.

##### 4.1.5.6.2 Animal Health Challenges and Strategies

Apart from the low level of biosafety measures in the commercial specialized pig subsystem, which can be addressed through implementation of a strict biosafety measures at farm level and HACCP at feed plants, the animal health problems and strategies to them challenge are similar to those in the family pig subsystem (refer to Table 4-3).

##### 4.1.5.6.3 Feeds Challenges and Strategies

These are the same as those in the family pig subsystem in Table 4-3. However, to deal with the serious feed shortage in the specialized system, suitable conditions for land allocation, and leasing of land to investors under the provisions of the current land laws, with major tax incentives on land use fees and lease time should be created.

##### 4.1.5.6.4 Marketing and Processing Challenges and Strategies

These are the same as those of the family pig subsystem in Table 4-3.

##### 4.1.5.6.5 Policy Challenges and Strategies

These are the same as those of the family pig sub-system.

#### 4.1.5.7 Intervention to Achieve Targets in Commercial Specialized Family Pig Sub-systems

The proposed expansion and upscaling of the commercial specialized pig production system involves genetic, health and feed interventions alongside marketing and policy interventions. The genetic improvement measures involve importation of 4,000 tropically adapted pig sows and 200 boars for breeding and crossbreeding and establishment of 10 private and 10 public pig breeding and multiplication farms.

The animal health interventions involve strengthening disease control for priority pig diseases such as African swine fever, transmissible gastro enteritis, erysipelas, worms, and mange, strengthening biosafety facilities, and building staff capacity on national mandatory identification and traceability to achieve animal health and safe trade objectives.

The feed interventions involve strengthening capacity of private small-, medium- and large-scale pig feed mills/processors and making land available for pig feed (maize and other cereal) production. See Table 63 for the detailed investment interventions.

## 4.2 Dairy Development Roadmap 2017/18 - 2021/22

### 4.2.1 Vision

The overall vision of the dairy development roadmap is increased milk production that meets the domestic demand and the surplus is exported. This goal will be achieved by increasing dairy cow productivity through improvements in dairy cow genetics, health and nutrition and by expanding the national dairy cow herd and improving the processing and marketing of dairy products.

### 4.2.2 Overall target

The number of crossbred dairy cattle at the national level will increase by about 3.8 times from the current 783,000 to 2,985,000 by 2021/22.

The production of milk at the national level will increase from 2,159 million liters in the base year (2016/17) to 3,816 million liters in 2021/22 - an increase of about 77% over five years. Though most of this change is expected to come from improvement and increased production by dairy cows, improvement of cattle for red meat production will also contribute to milk production.

Productivity improvement interventions in the dairy cow production system will result in 31% increase in the average annualized milk productivity of a cow in traditional and improved family dairy subsystem and a 26% increase in commercial specialized dairy. The national average annualized milk production of a cow will increase from 179 liters to 254 liters over five years (2016/17 - 2021/22).

Mainly due to dairy but also red meat improvement interventions, the GDP contribution of milk at the nation level is expected to increase from TZS 808,342 million in 2016/17 to TZS 1,415,671 in 2021/22, a 75% increase.

### 4.2.3 Target Production Subsystems for Cow Dairy Improvement Interventions

The dairy production system in Tanzania can be divided into three major categories: traditional cow meat-milk, improved family dairy, and commercial specialized dairy subsystems[2]. The traditional cow meat - milk production subsystem is not specialized on a single commodity and both milk and meat are important products.

However, milk is a priority commodity in improved family dairy and commercial specialized dairy subsystems. Both of these subsystems use crossbred/pure temperate dairy breeds like Holstein, Jersey and Ayrshire and they differ mainly on the level of intensification and specialization[2].

In the improved family dairy subsystem, the level of input by farmers is lower compared to the commercial specialized dairy subsystem. The input level in improved family dairy subsystem depends on marketing opportunities and income from sale of milk. Cattle are kept under semi and zero-grazing settings with cultivated fodder, crop residue and grass cut from communal land providing most of the feed. Channels for selling milk rely on direct marketing of milk to the consumer and milk collection centers.

The commercial specialized dairy subsystem is more commercialized and specialized and has higher input of feeds and animal health services compared to the improved family dairy subsystem. This subsystem is divided into small and medium-sized farms, based on herd size. In small farms, farmers keep between two and three mostly crossbred cows that are not mixed with indigenous cattle.

Farmers in the medium commercial and specialized dairy subsystem own larger herds of cattle, often more than 100 cows, with a national average of 450 animals. These farms are government or privately-owned farms with their own input delivery systems. The milk produced in these farms is sold directly to milk processing plants or processed within the farms.

The development of the cow dairy system in Tanzania is targeted at improving and expanding the improved family dairy subsystems in coastal and lake and highlands zones and the commercial specialized dairy subsystem across the country.

### 4.2.4 Improved Family Dairy Production in Coastal, Lake, and Highlands Zones

**Table 4-4 Key Challenges and Strategies Related to Improved Family Dairy Production**

| Challenges | Strategies |
|---|---|
| **Feed Availability and Quality** | |
| Erratic supply of feed quality and quantity | Strengthening the extension service and training on forage production, conservation and feeding |
| Limited availability and high cost of forage feed and limited supplementation | Policy interventions to make land available for investors for forage seed and forage production |
| Limited access to land for grazing, production of forage and forage seed due to an unclear land tenure system | Enforcing feed and forage seed quality standards |
| Mineral deficiencies in most of the forage | Using appropriate fertilizers in forage production. |
| | |
| Low genetic potential of indigenous animals for milk production Inadequate and inefficient artificial insemination services | Providing training support and incentives to livestock farmers to work as artificial insemination technicians<br><br>Establishing and strengthening dairy heifer multiplication farms through private, public and private-public joint ventures<br><br>Promoting, expanding, and strengthening privatization of<br>artificial insemination and hormone synchronization services |
| **Animal Health** | |
| High calf mortality<br><br>Inefficient animal health services<br><br>Inadequate supply of drugs<br><br>Poor quality control of drugs and supplies<br><br>High prevalence of transboundary diseases and Trypanosomosis | Rationalizing and strengthening the animal health regulatory capacity at the national and local government authorities<br>(LGAs) levels under the coordination of the MLF<br><br>Improving availability and quality control of vaccines and<br>drugs |
| | |

| | |
|---|---|
| **Marketing and Processing** | |
| Unreliable transport system<br><br>Narrow product range which is concentrated on short shelf-life products i.e. liquid and fermented milk<br><br>Poor milk marketing and low price of milk<br><br>Fluctuations in milk supply due to seasonality (dry and wet seasons)<br><br>An absence of quality-based pricing incentives<br>Poor milk quality control and enforcement mechanisms<br><br>Existing informal trade of raw milk which poses threat tospreading zoonoses<br><br>Limited promotion of dairy-product consumption | Promote investment in long shelf-life milk products such as UHT and powdered milk<br><br>Introduction of quality-based standards and pricing to encourage quality milk supply<br><br>Strengthen enforcement of milk and milk products quality standards<br><br>Formalize milk trade by training and licensing milk traders<br><br>Scale up school-milk feeding program to promote milk consumption |
| | |
| **Policy** | |
| Pricing policies have disincentive effects on milk Processing<br><br>Overregulation of the dairy industry resulting to multiple<br>taxes which is a burden to investors | Introduction of a protective trade policy that includes increasing import tariffs or bans and/or subsidies for domestically-produced milk products to enable competition with imports<br><br>Put in place indicative prices for milk products<br><br>Reduce bureaucracy and facilitate investment in the dairy<br>industry |

#### 4.2.4.1 Interventions to Achieve Dairy Supply Targets

All production zones are expected to benefit from the cow dairy improvement interventions. Expanding and improving the commercial specialized dairy subsystem will be implemented in all over the country while expanding and improving the improved family dairy subsystem will target coastal and lake, and highlands zones. The major criteria used to select the production zones for improved family dairy subsystems include feed availability, climatic condition (temperature), prevalence of endemic diseases like trypanosomiasis, existing experience in dairying, product marketing infrastructure, and comparative advantage of each zone for dairy.

##### 4.2.4.1.1 Main Activities

##### 4.2.4.1.1.1 Feed Improvement Interventions

The feed balance estimate in the costal and lake and highlands zones shows significant deficit. Maintaining moderately high productive crossbred dairy cattle therefore should be accompanied with a significant increase in amount of feed produced/purchased. In the coastal and lake zone, up to 60% and in highlands zone up to 40% of the feed requirement should be

either produced/purchased to keep the crossbred dairy cattle productive. The type of feeds produced/purchased could be:

a) Improved forage (grass/legumes/fodder trees and shrubs)
b) Concentrate feeds (locally made and industrial by-products)
c) Strengthen the existing forage/forage seed/ quality control laboratories

#### 4.2.4.1.1.2 Genetic Improvement Interventions

Use artificial insemination with and without hormone synchronization and/or proven bulls for crossbreeding/breeding.

Increase the number of crossbred cattle in the improved family dairy system through crossbreeding/breeding of indigenous and crossbred cattle using exotic dairy cattle breeds like Friesian, Ayrshire, Jersey, Brown Swiss and Mpwapwa.

a) Strengthen existing national and zonal artificial insemination centers and establish a new semen production center.
b) Acquire five new liquid nitrogen plants
c) Training and capacity building for 6,650 artificial insemination technicians
d) Encourage establishment of bull centers
e) Encourage establishment of crossbred heifer multiplication farms
f) Purchase and distribute crossbred heifers for under-resourced dairying beginners (2,000 every year)
g) Sensitize farmers on the formation of breed societies

#### 4.2.4.1.1.3 Animal Health Improvement Interventions

a) Set up an East Coastal fever vaccination program to vaccinate of 300,000 dairy cattle annually.
b) Implement vaccination campaign for foot-and-mouth disease, Rift Valley fever, contagious bovine pleuropneumonia, brucellosis, East Coastal fever, transboundary diseases and perform routine internal and external parasite control programs.
c) Improve the capacity for livestock disease surveillance and diagnosis.
d) Rehabilitate veterinary centers.

#### 4.2.4.1.1.4 Milk and Dairy Products Improvement Interventions

a) Provide incentives and ease the bureaucracy for investors seeking to establish milk processing plants.
b) In addition to small- and medium-scale pasteurized milk processing plants; promote establishment of high capacity milk processing plants (at least two processing plants: one UHT milk and one milk powder).
c) Promote the establishment of and strengthen the dairy cooperative/societies in high potential areas through training, sensitization, equipping and facilities.
d) Encourage/establish at least 150 milk collection centers/chilling plants (cold chain).
e) Strengthen the Dairy Board (office and laboratory) to improve quality regulation and marketing of milk in milk shed areas
f) Strengthen the capacity of the milk quality assessment and safety control laboratory
g) Strength school-milk feeding programs to benefit 500,000 children in five years - starting from 100,000 children on the base year and adding new 100,000 children every year.

Notice that, Tanzania's per capita consumption of 40 liters per annum is only one fifth of FAO recommendation of 200 liters and a half of Kenya consumption level.

#### 4.2.4.1.1.5 Extension Services Improvement Interventions

Training to livestock keepers and improved family dairy farmers on better husbandry, breed improvement and feeding practices.

### 4.2.5 Current Status of the Dairy Processing Capacity in Tanzania

There are 22 milk processing plants with the capacity of 700,000 liters of milk per day but capacity utilization is only 30% (210,000 liters daily or 85 million liters annually). Tanzania spends TZS 165 billion (US$ 70,434,560) to import milk annually in a bid to fill the gap during.

The dairy industry has a great potential for investment through production, processing and marketing of milk and milk products. Currently, there are about 600,000 dairy cattle – mainly crosses of Friesian, Jersey, and Ayrshire breeds with the Tanzania Shorthorn Zebu, which are kept commercially.

Annual milk production is estimated at 1.65 billion liters, of which 70% comes from the traditional sector, while the remaining 30% comes from the commercial sector.

Dairy goat farming is gaining popularity all over the country and it is one of the tools for addressing nutrition insecurity and income among the rural population. It has also become an alternative source of milk to households that cannot afford to keep large dairy animals either due to low purchasing power or lack of land to accommodate large animals. It is estimated that presently there are about 40,000 dairy goats in Tanzania.

Dairy goats' breeds available in Tanzania include Toggenburg, Saanen, Anglo-Nubian, Alpine, Norwegian, Mallya goat and their crosses.

The demand for dairy goats is higher than the supply, most of the dairy goats have been introduced in the country by NGOs such as Heifer International Tanzania and FARM AFRICA; and institutions such as the Sokoine University of Agriculture and other religious institutions such as Roman Catholic and Anglican. These are not enough to meet the current demand. Production of dairy goats within the country is needed.

The general situation with the milk processing industry is as shown on Table 4-5.

**Table 4-5 Dairy Processors in Tanzania**

| Region | | Name of Processing Plant | Status | Installed Processing Capacity (Liters/day) | Current Processing capacity (Liters/day) | Percent Utilization (%) |
|---|---|---|---|---|---|---|
| 1 | Arusha | Brookside (T) Ltd | Working | 45,000 | 2,500 | 6 |
| | | International Dairy Products | Working | 5,000 | 3,000 | 60 |
| | | Mountain Green Dairy | Working | 1,500 | 500 | 33 |
| | | Kijimo Dairy Cooperative | Working | 1,000 | 300 | 30 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Longido Women Dairy Cooperative | Working | 1,000 | 300 | 30 |
| | | Arusha Dairy Company | Working | 5,000 | 500 | 10 |
| 2 | Dar es Salaam | Azam Dairy | Working | 3,000 | 2,000 | 67 |
| | | Tommy Dairy | Not Working | 15,000 | 0 | 0 |
| | | Tan Dairies | Working | 15,000 | 6,000 | 40 |
| 3 | Dodoma | Gonqi Foods | Working | 600 | 200 | 33 |
| | | Royal Dairy Ltd | Not Working | 0 | 0 | 0 |
| 4 | Iringa | CEFA Njombe Milk Factory | Working | 10,000 | 2,000 | 20 |
| | | ASAS Dairy | Working | 12,00 | 6,000 | 50 |
| 5 | Kilimanjaro | Kondiki Small Scale Dairy | Working | 1,200 | 600 | 50 |
| | | Fukeni Mini Dairy | Working | 3,000 | 1,000 | 33 |
| | | Kalali Women | Working | 1,000 | 440 | 44 |
| | | Marukeni | Working | 1,000 | 450 | 42 |
| | | Mpoleni Women | Working | 1,000 | 300 | 30 |
| | | West Kilimanjaro | Working | 1,000 | 300 | 30 |
| | | Nlonda Women | Working | 3,200 | 1,250 | 36 |
| | | Ng'uni Women | Working | 1,000 | 350 | 35 |
| 6 | Kagera | Kagera Milk (KADEFA) | Working | 3,000 | 400 | 13 |
| | | Kyaka Milk Plant | Working | 1,000 | 450 | 45 |
| | | Del Food | Working | 1,000 | 300 | 30 |
| | | Bukoba Market Milk Bar | Working | 500 | 300 | 60 |
| | | Bukoba Milk Bar – Soko Kuu | Working | 500 | 300 | 60 |
| | | Mutungi Milk Bar | Working | 800 | 180 | 23 |
| | | Salari Milk Bar | Working | 800 | 170 | 21 |
| | | Kashai Milk Bar | Working | 800 | 200 | 25 |
| | | Kikulula Milk Processing Plant | Working | 1,000 | 500 | 50 |
| | | MUVIWANYA | Working | 1,000 | 350 | 35 |
| 7 | Mara | New Musoma Dairy | Working | 120,000 | 20,000 | 17 |
| | | Utegi Plant (Ex TDL) | Working | 45,000 | 0 | 0 |
| | | Makilagi SSDU | Working | 1,500 | 1,000 | 67 |
| | | Baraki Sisters | Working | 3,000 | 2,100 | 70 |
| | | Mara Milk | Working | 15,000 | 6,000 | 40 |
| 8 | Mbeya | Mbeya Maziwa | Working | 1,000 | 1,000 | 100 |
| | | Vwawa Dairy Cooperative Society | Working | 900 | 600 | 67 |
| 9 | Morogoro | SUA | Working | 3,000 | 200 | 7 |
| | | Shambani Graduates | Working | 1,500 | 700 | 47 |
| 10 | Mwanza | Mwanza Mini Dairy (Sengerema) | Working | 3,000 | 500 | 17 |
| | | Lake Side | Working | 5,000 | 0 | 0 |
| 11 | Tabora | New Tabora Dairies | Working | 16,000 | 200 | 1 |
| 12 | Tanga | Tanga Fresh | Working | 30,000 | 25,000 | 83 |
| | | Ammy Brothers | Working | 2,000 | 500 | 25 |
| | | Morani | Not working | 0 | 0 | 0 |
| **Total** | | | | **384,100** | **88,940** | **23** |

## 4.3 Potential Areas of Investment in the Dairy Value Chain

a) Establishment of dairy farms in order to increase milk production;
b) Establishment of milk collection centers;
c) Construction of milk processing plants;
d) Manufacturing of dairy equipment and packaging materials.

### 4.3.1 Establishment of Milk Collection Centers

Currently, more than 90% of milk is uncollected due to lack of collection centers. The decision of where to establish milk collection centers will depend on the amount of surplus milk produced and also availability of power supply, road network and transport facilities.

Therefore, in order to utilize this potential, establishment of a well-coordinated milk collection network could be a kick-start towards a successful milk processing business.

### 4.3.2 Establishment of Milk Processing Plants

Currently, only 1.6% of the milk produced is being processed. Establishment of processing plants is required in order to exploit the remaining amount of milk. The sizes of plants to be established will depend on the availability of surplus milk. Other key determinants of establishing milk processing factories include processing level (scale), land, buildings, milk processing equipment/machines, packaging materials, handling, storage, distribution and other utilities. Potential areas for establishing milk processing plants are as indicated below.

**Table 4-6 Milk Processing Zones in Tanzania**

| Zone | | Regions | Description |
|---|---|---|---|
| 1 | **Central Corridor** | Morogoro, Dodoma, Singida, Manyara, Tabora | • The zone produces about 516 million liters of milk per annum which is about 30% of the national milk production;<br>• Current installed milk processing capacity is 21,100 litres/day whereas operating capacity is 1,500 litres/day;<br>• Booming of mining activities in this area (especially Shinyanga) has created potential market for dairy products;<br>• The central highway (road) has been improved to the tarmac level. |
| 2 | **Northern Zone** | Tanga, Arusha, Kilimanjaro | • Estimated milk production: 184 million litres/year – which is about 12% of the national milk production;<br>• Total installed capacity: 103,200 litres/day – whereas current processing is 37,290 litres/day;<br>• Favorable climatic condition (temperate sort of climate) for improved dairy cattle;<br>• Largest tourist corridor in the country, hence existence of potential market for dairy products such as cheese; |
| 3 | **Southern Highlands** | Mbeya, Iringa, Ruvuma, Rukwa) | • Milk production estimate: 178 million litres/year – which is about 13% of the national milk production;<br>• Installed processing capacity: 33,000 litres/day – and operating capacity is 9,600 litres/day; |

| | | | |
|---|---|---|---|
| | | | • No medium and large milk processing plant to absorb the milk produced;<br>• Favorable climatic condition (temperate sort of climate) for improved dairy cattle. |
| 4 | **Eastern Zone** | Dar es Salaam, Coast | • Milk production estimate: 10 million litres/year – which is about 0.7% of national milk production;<br>• Current installed milk processing capacity is 33,000 litres/day, whereas operating capacity is 8,000 litres/day. |
| 5 | **Lake Zone** | Kagera, Mwanza, Mara | • Milk production estimate: 327 million litres/year which is about 23% of the national milk production;<br>• Current installed milk processing capacity is 202,900 litres/day, whereas operating capacity is 9,600 litres/day. |

## 4.4 Leather and Footwear

### 4.4.1 Investment and Production Potentials of the Leather Value Chain

Tanzania has the third largest population of livestock in Africa, counting 30.6 million cattle, 19 million goats and 5.5 million sheep. The large number of available livestock resources provides the base for a significant hides and skins production industry with estimated production potential of about 92 million sq. ft per annum. The availability of hides and skins as raw materials provides advantageous position for the country for investment setup in the tanning sub-sector and subsequent leather products manufacturing sub-sectors. It is estimated that the number of livestock to be slaughtered (off-take rate) is 1.5 million cattle, 2.5 million goats and 0.5 million sheep per annum while actual collection of hides and skins ranges between 56% - 65% of the potential, which is equivalent to approximated 58 million sq. ft per annum. Furthermore, poor performance of livestock sub sector, affects the performance of the tanning sub sector and hence the leather products sub-sector also.

Generally, having an abundant resource base, Tanzania has immense investment opportunities for the establishment of leather & footwear products manufacturing enterprises which will further attract investments into tanneries and, therefore, absorb locally available raw materials.

Huge opportunities for production of quality footwear and wide variety of leather products including exotic products.

If the process is properly managed as is currently done in Ethiopia, the value addition to dried hides can jump up many-folds, as many as thirty times of the value of the raw materials.

**Table 4-7 Analysis of the Capacity Utilization in Tanneries, 2007**

| Company | | Location | Installed Capacity | Capacity Utilization ($ft^2$) in 2007 | Products |
|---|---|---|---|---|---|
| 1 | Moshi Leather Industries Ltd | Moshi | 10,000,000 | 2,450,000 | Wet blue hides and goat skins, finished leather |

| | | | | | |
|---|---|---|---|---|---|
| 2 | East Hides (T) Ltd | Morogoro | 24,000,000 | 19,000,000 | Raw and wet blue hides, goat and sheep skins |
| 3 | Lake Trading Co. Ltd | Kibaha | 5,160,000 | 3,096,000 | Raw and wet blue hides, goat and sheep skins, finished leather |
| 4 | Afro Leather Industries | Dar es Salaam | 3,000,000 | 1,500,000 | Wet blue hides |
| 5 | Salex Tanneries Ltd | Arusha | 4,050,000 | 3,040,000 | Raw hides and skins, wet blue goat and sheep skins |
| 6 | Himo Tanners and Planters Ltd | Moshi | 4,000,000 | 4,000,000 | Wet blue hides, goat and sheep skins, finished leather |
| **Sub-Total Capacity** | | | **50,210,000** | **33,086,000** | |

#### 4.4.1.1 Tanning

Tanzania has seven operating tanneries – all of which are privately owned and are tanning to semi-processed leather (pickled and wet blue) for export and small quantities of finished leather for domestic consumption.

At full capacity utilization, the seven tanneries can process only 39% of the existing production potential. This is a clear indication that, there is ample potential for further investment in the tanning sub-sector. Tanneries and their capacities are shown on Table 4-8.

**Table 4-8 Tanneries and their Capacities**

| Company | | Location | Installed Capacity (Square Feet) | Utilization capacity (%age) |
|---|---|---|---|---|
| 1 | Tanzania Leather Tanneries (East Hides Tannery Ltd) | Morogoro | 10,000,000 | 87 |
| 2 | Late Trading Co. Ltd | Kibaha | 4,500,000 | 56.7 |
| 3 | Afro Leather Industries | Dar es Salaam | 4,000,000 | 82 |
| 4 | Salex Tanneries Ltd | Arusha | 4,000,000 | 54.7 |
| 5 | Himo Tanneries and Planters | Moshi | 3,000,000 | 46.2 |
| 6 | Moshi Leather Industries | Moshi | 10,000,000 | 82 |
| 7 | JAET Ltd | Mwanza | 375,000 | 100 |
| **Total Capacity** | | | **35,875,000** | |

#### 4.4.1.2 Footwear and Leather Goods

The hides, Skins and Leather industry in Tanzania is one of the most important industries in the economy of the country. Available statistics (2016/17) indicate that, the country has 30.6 million cattle, 19 million goats and 5.5 million sheep. With an off-take rate of 10 – 15% for cattle, 28% for goats and 29% for sheep the potential annual production of raw materials is estimated at 2.8 million hides, 3.8 million goat skins and 1 million sheep skins – equivalent to 91.1 million square feet.

On average, 56% of the total hides and 65% of the total skins produced are collected – out of which, only 30% are being processed. The remaining 70% of the hides and skins are exported in raw form and therefore, there is a need to invest in value addition industries such as tanning, footwear and leather goods.

Production of footwear and leather goods is dominated by micro-enterprises and a few small enterprises - focusing on domestic and to some extent, tourist markets.

It is estimated that the current production of shoes is about 720,000 pairs per annum using mainly imported finished leather - against the current consumption of 20 million pairs of shoes per year.

There are prospects for further investment in the footwear and leather goods industry for domestic and export markets. The footwear, leather goods industries and their capacities is indicated in Table 4-9.

**Table 4-9 Footwear, leather goods industries and their capacities**

| Name of Establishment | | Location | Products (Services) | Capacity (Pairs of bags/annum) | |
|---|---|---|---|---|---|
| | | | | Installed | Utilization |
| 1 | Noble Footwear and Accessories | Dar es salaam | Footwear | 52,000 | 0 |
| 2 | J.A.E (T) Ltd | Mwanza | Footwear and leather goods | 39,000 | 39,000 |
| 3 | Ok Plast Ltd | Dar es salaam | Footwear (sandals) | 9,360 | 5,200 |
| 4 | Peramiho Ltd | Ruvuma | Footwear (Ladies footwear) | 3,900 | 2,600 |
| 5 | Italy Shoe | Dar es Salaam | Footwear | 52,000 | 39,000 |
| 6 | DSM Training Production Centre | Dar es Salaam | Footwear & Leather products | 39,000 | 5,200 |
| 7 | Twins Leather Products | Moshi | Leather products (bags) | 2,600 | 2,600 |
| 8 | Morogoro Training Production Centre | Morogoro | Footwear & Leather products | 26,000 | 2,600 |
| 9 | Shah Industries | Moshi | Leather goods (bags) | 13,000 | 7,800 |

Tanzania has a number of national investors in the leather industry. Some of these are seeking for joint venture arrangements in leather processing, footwear and leather goods manufacturing. Their contacts are provided in Table 4-10.

**Table 4-10 Contacts of Some Footwear & Leather Manufacturers**

| Company | | Current Occupation | Area of Investment | Location | e-Mail Address |
|---|---|---|---|---|---|
| 1 | Jaet (T) Ltd | Footwear and leather goods manufacture | Leather processing, Footwear and leather goods | Mwanza | Jaetltd1@yahoo.com |
| 2 | Covenant | Exporter of hides and skins | Leather processing | Mwanza | Cic_tz@yahoo.com |
| 3 | Lake Trading | Tanning of hides and skins | Footwear and leather goods | Kibaha | latco@yahoo.com |
| 4 | Himo Tanners | Tanning of hides and skins | Leather processing and manufacture of goods | Moshi | himotenneriesandplantersltd@yahoo.com |
| 5 | Salex Tannery | Tanning of hides and skins | Expansion up to finishing | Arusha | salimally@yahoo.com |
| 6 | Kirobe Investment | Exporter of hides and skins | Leather processing | Dodoma | kirobeinvestments@gmail.com |

### 4.4.1.3 Challenges of the Leather Value Chain

a) Tanzania's leather and leather products industry has been influenced by a number of challenges against further growth which hinders its contribution to the economy in terms of:
   i. Employment and income generation opportunities to address respective unemployment and income poverty concerns
   ii. Increased foreign earnings through exports
   iii. Increased Government revenues
   iv. Increased industrial interlinked business opportunities and hence raise the subsector's contribution to industrial sector growth and national economic development at large.

b) The challenges include the following:
   i. Human resources capacity
   ii. Physical infrastructure and logistics
   iii. Incentives for investments
   iv. Safeguard measures to domestic industries (particularly MSMEs)
   v. Access to financial services
   vi. Appropriate and affordable technology and technological transfer
   vii. Information networking and integrated market development
   viii. Products quality, design and diversification
   ix. Availability and reliability of quality finished leather for leather products and leather goods manufacturing.

### 4.4.1.4 Development Plans

a) On-going implementation of the Integrated Hides, Skins and Leather Sector Development Strategy
b) Formulation and implementation of national programs geared towards development and promotion of leather products manufacturing in the country
   i. Industrial Village Development Support Program – IVSD Program
   ii. Product Quality Improvement and Diversification Support Programmed (PQI-DSP)
   iii. Promotional Program on Made in and Buy Tanzanian Leather Products (PP-MTLP)
c) Revival and strengthening of Tanzania Institute of Leather Technology (now Mwanza DIT Campus) for human resource development.
d) Domestic Investment Promotion Initiative Program (DIPI)
e) Initiative on technology, technological transfer and financing.

**Table 4-11 Quantitative Targets of Leather Sub-sector (US$'000)**

| HS Code | Unit | 2007 | | 2015 | | 2025 | |
|---|---|---|---|---|---|---|---|
| | | Export | Import | Export | Import | Export | Import |
| Hides and skins | Kg | 10,569,076 | 106,453 | 0 | 8,000,000 | 0 | 12,000,000 |
| Semi-processed leather | | 5,566,405 | 69,795 | 500,000 | 4,000,000 | 0 | 7,000,000 |
| Finished Leather | $Ft^2$ | 0 | 1,200,000 | 300,000 | 1,2000,000 | 900,000 | 3,000,000 |
| Footwear | Pair | 1,132,611 | 31,000,000 | 8,000,000 | 15,000,000 | 15,000,000 | 13,000,000 |
| Leather goods | Kg | 17,553 | 9,313,811 | 5,500,000 | 12,000,000 | 15,000,000 | 10,000,000 |

## 4.5 Animal Feeds

Animal feeds are important inputs in livestock production – which accounts for over 70% of production costs.

The main types of animal feed resources available in Tanzania are pastures, fodder crops, crop residues and compounded feeds. However, ruminants in the country depend on natural pastures for about 100%.

### 4.5.1 Pasture and Fodder Crops

There are several investments in pastures and fodder production in the country. Currently production is in the tune of 303,000 bales of hay while the demand exceeds 1,000,000 bales per year. However, mostly ruminants' production in the country depends on natural pastures and crop residues and little supplementation for the case of dairy animals.

Improved pasture seed production to a greater part is done by government farms. These are Vikunge and Langwira farms with production capacity of about 40 tons of seeds produced annually. Improvement in areas of pasture production and conservation for dry season feeding will improve livestock productivity. There is need therefore, for investing in pasture and pasture seed production and conservation.

### 4.5.2 Compounded Animal Feeds

Compounded feedstuffs production is estimated at 800,000 tons per annum while the potential demand stands at 2.5 million tons. There are about 57 animal feed mills/plants in the country which are not operating to their optimal capacity and most of them are located in Dar es Salaam, Coast, Arusha and Mwanza regions. The production capacity for the different animal feeds plants is shown in Table 4-11.

**Table 4-12 Animal Feeds Processors**

| Region | | Name of Plant | Type of animal feeds produces | District | Production (Tons/day) | |
|---|---|---|---|---|---|---|
| | | | | | Capacity | Production |
| 1 | Arusha | Kijenge Animal Pruction Ltd | Poultry, pig, dairy and horse feeds | Arusha | - | - |
| | | Fammy Poultry | Poultry feeds | Arusha | - | - |
| | | HAFVET Products | Poultry, pig and dairy feeds | Arsuha | - | - |
| | | WAPO animal feeds product | Poultry feeds | Arusha | - | - |
| | | Ilboru Animal Feed | Poultry and dairy feeds | Arusha | - | - |
| | | Nane Nane Animal Feed | Poultry and dairy feeds | Arusha | - | - |
| | | Dhariwal Trading Company | Poultry and dairy feeds | Arusha | - | - |
| 2 | Dar es Salaam | Interchick Co | Poultry and dairy feeds | Kinondoni | | |
| | | Tausi Animal Feeds | Poultry and dairy feeds | Kinondoni | | |
| | | Hill Animal Feeds | Poultry and dairy feeds | Kinondoni | | |
| | | Igo Animal Feeds | Poultry and dairy feeds | Kinondoni | | |
| | | Lengesia Animal Feeds | Poultry and dairy feeds | Kinondoni | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Rimayi Animal Feeds | Poultry and dairy feeds | Kinondoni | | |
| | | Jadide Animal Feeds | Poultry and dairy feeds | Kinondoni | | |
| | | Mfugaji Animal Feeds | Poultry and dairy feeds | Kinondoni | | |
| | | Fide Animal Feeds | Poultry and dairy feeds | Kinondoni | | |
| | | Kimara Animal Feeds | Poultry and dairy feeds | Kinondoni | | |
| | | A – Z Animal Feeds | Poultry and dairy feeds | Kinondoni | | |
| | | Mkombozi | Poultry feeds | Ilala | | |
| | | Barkresa | Wheat meal, wheat bran, bone meal, fish meal | Ilala | | |
| | | Moselmach Tanzania Ltd | Poultry feeds | Ilala | | |
| | | Farmers Centre | Poultry and dog feeds | Ilala | | |
| | | Tanzania Breweries | Poultry feeds | Ilala | | |
| | | Multivet | Poultry feeds | Ilala | | |
| | | BAF | Poultry feeds | Ilala | | |
| | | Farmbase | Poultry and dog feeds | Ilala | | |
| | | Benfeed | Poultry feeds | Ilala | | |
| | | Furahisha Co. Ltd | Poultry feeds | Ilala | | |
| | | Twiga Feeds | Poultry, pig and dairy feeds | Temeke | | |
| | | Best Chicken Feed | Poultry feeds | Temeke | | |
| | | FALCON | Poultry and dairy feeds | Temeke | | |
| | | Ideal Chicks | Poultry feeds | Temeke | | |
| | | Amadori | Poultry feeds | Temeke | | |
| | | Nassad Feeds | Poultry feeds | Ilala | | |
| 3 | Kilimanjaro | M6 Millennium Animal Feeds | Poultry and dairy feeds | Hai | - | 2 |
| | | Machame Animal Feeds | Dairy feeds | Hai | | |
| | | Harsho Animal Feeds Plant | Poultry, pig and dairy feeds | Moshi (M) | 5 | 3 |
| | | Union Store Animal Feeds Plant | Poultry, pig and dairy feeds | Moshi (M) | 8 | 2 |
| | | Josho Plant | - | Moshi (M) | 3 | 12 |
| | | Shengena Mineral Lick Plant | - | Same | | |
| 4 | Mbeya | Kaijunga | Poultry feeds | | | |
| | | Omary | Poultry feeds | | | |
| | | Taraja Agrovet | Poultry feeds | | | |
| 5 | Morogoro | International TanFeeds LTD | Poultry, pig and dairy feeds | Morogoro (M) | | |
| | | Donfeed | Poultry and pig feeds | Morogoro (M) | | |
| | | Chesterfeed | Poultry, pig, dairy and dog feeds | Morogoro (M) | | |
| 6 | Mwanza | Misenani Agriservice | Poultry feeds | | | |
| | | Posho Mill | Fish meal | | | |
| | | Ghana Feed Centre | Poultry feeds | | | |
| | | Elly Mushi Animal Feed Processors | Poultry feeds | Nyamagana | | |
| | | Vess Posho Mill | Poultry feeds | | | |
| | | Ndokeji Fish and Posho Mill | Fish meal | | | |
| | | Kaita Fish Meal | Fish meal | Kibaha | | |
| | | Itale Mbisu Fish Meal | Fish meal | Kibaha | | |
| 7 | Coast (Pwani) | Pantoni Animal Feed | Poultry feeds | Kibaha | | |
| | | JKT Animal Feed | Poultry feeds | Kibaha | | |
| | | Mang'ana Agrovet | Poultry feeds | Kibaha | | |
| | | Vitia Farm | Poultry feeds | Kibaha | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Kongowe Feed and Millers | Poultry feeds | Mkuranga | | |
| 8 | Shinyanga | Kaijunga | Poultry feeds | | | |
| | | Omari | Poultry feeds | | | |
| | | Taraja Agrovet | Poultry feeds | | | |
| 9 | Singida | VETA Singida | Poultry and dairy feeds | Singida | | |

## 4.6 Other Livestock By-products

On the average, 70 – 120 cattle are slaughtered daily in Municipal and City abattoirs – apart from those slaughtered in rural areas. This number confirms the availability of large quantities of livestock by-products (blood, bones, horns, hooves, hair, wool, glands, intestines, stomachs, feathers and gut contents) produced daily to attract investment.

Currently, Tanzania is lacking industries for processing these by-products. In this regard, investors are encouraged to invest in this area either in partnership arrangement or as a sole proprietor. These by-products have various uses which are of economic importance as shown in Table 4-13.

**Table 4-13 Other Livestock Products**

| Name of by-product | | Use |
|---|---|---|
| 1 | Blood | • Liquid blood: used as a source of pharmaceuticals as albumin for the glue, textile and dye industries<br>• Dried blood: used as blood flour, blood meal for animal feed and as fertilizer |
| 2 | Bones | • Used as animal feed, fertilizer, gelatin and glue, manufacture of combs, buttons cutlery handlers, glue, gelatin, tallow and ornaments |
| 3 | Hooves and horns | • Used as meal, fertilizer, gelatin and glue, manufacture of combs, buttons, hairpins and articles of tourists attraction including souvenirs |
| 4 | Hair and wool | • Used in the manufacture of brushes, yarn, fabrics and fibers |
| 5 | Glands and organs | • Used for pharmaceuticals |
| 6 | Intestines | • Used to make sausage casings, musical instruments/strings and surgical ligatures |
| 7 | Stomachs, other offal, condemned meat | • Used to make tallow for soap and glycerin, lubricants, grease and waxes |
| 8 | Got contents, manure | • Used to make compost, biogas as fuel for heating and lighting |

## 4.7 Veterinary Laboratories

Laboratories have the mandate to conduct animal disease research, diagnosis and production of biologicals. Areas of investments include: -

a) Construct and equip the new vaccines production units in Tanzania;
b) Develop new vaccines and expand production of the existing ones.

## 4.8 Abattoirs and Meat Processing Plants

The government in collaboration with private sector has initiated the establishment of Arusha, Dodoma, Morogoro and Sumbawanga abattoirs. The slaughter capacity of each of these abattoirs, range from 150 to 200 animals per day, and therefore, unable to meet the demand of processed meat for both domestic and export markets.

The estimated domestic demand for meat is 449,673 tons/year, while there is also an increasing demand for the export markets to UAE, Kuwait and Oman. In this respect, investment in the abattoirs and meat processing plants exist in three categories namely: -

a) Joint venture with the existing abattoirs;
b) Outright purchase of semi-finished abattoirs; and
c) Construction and operation of new abattoirs and processing plants.

**Error! Reference source not found.**Table 4-14 shows existing or semi-finished abattoirs a re available for joint venture of purchase: -

**Table 4-14 the State of Abattoirs**

| Name of Abattoir | | Location (District) | Owner | Land Size (hectares) | Slaughter Installed Capacity (animals/day) | |
|---|---|---|---|---|---|---|
| | | | | | Cattle | Sheep or Goats |
| 1 | Ruvu | Kibaha | NARCO | 2,000 | 800 | 400 |
| 2 | Dodoma | Dodoma | NICO and NARCO | 11 | 200 | 200 |
| 3 | Mbeya | Mbeya | | 102 | 25 | |
| 4 | Kyaka | Missenyi | | 700 | | |
| 5 | Bunda | Bunda | | 200 | | |
| 6 | Themi | Arusha | | 200 | | |

# 5 Livestock Sectoral Analysis Key Findings on Cross-Cutting Issues

The productivity enhancing technologies and policy interventions with the greatest potential for contributing to achieving Tanzania's national agricultural objectives include feed, animal health, and animal genetics development.

Using the Livestock Sub-sector Investment and Policy Toolkit (LSIPT)[11], constraints and opportunities related to these interventions were analyzed – hence unveiling opportunities for locals and foreigners to grab!

## 5.1 Feed

Crop and livestock production are the dominant economic subsectors providing livelihoods, incomes and employment to more than 80% of Tanzania's population. The livestock sector analysis showed feed is the most critical resource constraint to growth and modernization in the livestock sector. Though endowed with natural resources, a large resource base for the country's millions of livestock, the utilization of grazing lands for sustainable livestock production is hampered by seasonal variations in the quality and quantity of forage etc. While the country also produces substantial amounts of cereals and root crops, whose residues are valuable feeds for livestock, these crops are produced primarily for human consumption and some are in short supply.

The livestock feed deficit is aggravated by the effects of climate change on feed quantity and quality. Extended dry seasons, frequent droughts, erratic rainfall manifested by shifts in the onset and cessation of rainfall, and increased temperatures have drastically reduced the availability of both roughages and concentrate feeds. Pasture and water shortages have also led to overgrazing and resource conflicts between livestock keepers and other land users.

The LSIPT was employed to measure the potential supply of forage, fodder and other feed resources and future requirements for cattle, sheep, goats, poultry and pigs in the three production zones and the specialized systems.

Results indicated a clear shortage in feed and forage supply in the country, with available resources making up only 26% of required feed on average (with deficits in all types of rainfall years). Unless significant action is taken, projected shortages are set to worsen substantially over the next 15 years with available resources making up only 15% of the feed required.

The central zone is expected to be the most severely affected since the systems there rely most on grazing, leading to increased mortality rates and poorer animal nutritional health. Interventions in this zone should focus on improving pasture productivity in the grazing lands and fodder conservation, and reducing the ruminant livestock population. In other systems and zones, the focus needs to be on intensified on-farm forage production, as well as commercial-scale feed production through irrigation where possible. The intensification of feeding programs, where feasible, should also be pursued in tandem with breeding programs to enhance the genetic potential of livestock.

In order to implement a well-informed investment promotional strategy for the livestock sub-sector, Tanzania Investment Centre (TIC) partnered with the East Africa Trade and Investment Hub (EATIH) to conduct a study and identify investment opportunities of the sub-sector.

## 5.2 Animal Health

More than 85% of Tanzanians live in rural areas, out of which about 37% keep livestock. The livestock population is estimated at 107 million animals, of which an estimated 88% are kept in smallholder traditional systems. Animal health services - through disease control and prevention - remain one of the main drivers of livestock production and productivity, along with feed and genetics. In 2015 alone, the Tanzanian government recorded 329 animal disease outbreaks involving 32 animal disease conditions and 24,231 clinical cases, causing 5,864 deaths. The control and prevention of animal diseases is a recurring and costly burden to individual livestock keepers, commercial herd owners and the local and national governments.

Transboundary animal diseases and zoonosis are particularly important constraints to livestock production in pastoral and agro-pastoral areas and are by and large the most important constraint to herd health and trade in animals and their products. The main diseases constraining livestock production in Tanzania are Rift Valley fever, foot-and-mouth disease, peste des petits ruminants (PPR), African swine fever, Marek's disease, Newcastle disease, contagious bovine pleuropneumonia (CBPP), brucellosis and East Coast fever.

Based on expert opinion and data on animal diseases, the toolkit was used to assess qualitative and quantitative socioeconomic impacts of diseases on household assets, markets/value chains and intensification of production, develop a priority list of animal diseases, and characterize the status of veterinary infrastructure in the country. This work sought to determine the optimal allocation of financial and human resources for surveillance, prevention, control and elimination of selected infectious diseases. The species targeted were food-producing animals: mainly cattle (beef, dairy), small ruminants (sheep and goats), chicken and pigs. The identified priority diseases1 hampering:

a) household assets were CBPP for cattle; Rift valley fever for small ruminants, African swine fever for pigs; and Newcastle disease for poultry;
b) markets and value chains were foot-and-mouth disease for cattle; brucellosis for small ruminants; African swine fever for pigs; and salmonellosis for poultry; and
c) livestock intensification were foot-and-mouth disease for cattle; PPR for small ruminants; African swine fever for pigs; and salmonellosis for poultry.

Inadequate resources including funds, skilled personnel and logistics have also weakened the ability of national veterinary services to contribute to reducing the impact of reported transboundary and zoonotic diseases and pests.

Detecting, controlling and preventing these diseases requires a highly-coordinated public surveillance and response system at all levels in all areas of the country. The department of veterinary services needs to strengthen the country's animal disease surveillance and reporting system including through empowering livestock communities to detect and report disease incidents to facilitate prompt responses to outbreaks.

## 5.3 Animal Genetics

The absence of effective livestock breeding and selection programs in Tanzania has hindered the supply of improved breeds to farming communities. Better coordination of the development and protection of animal genetic resources (AnGR) in Tanzania should involve the establishment of reliable and sustainable germplasm delivery systems and the involvement of the private sector in animal genetic improvement.

Employing the LSIPT, an inventory and characterization of AnGR in Tanzania was undertaken. Management, conservation and maintenance policies and practices were evaluated for the three production zones in the country and the findings were discussed with key experts and main stakeholders from the private and public sectors.

Crossbreeding local cattle should focus on the interbreeding of breed-types, taking advantage of additive gene action.

It is recommended that for dairy, suitable exotic breeds include Friesian, and for dual-purpose (milk and meat), the best breed is Simmentals. For small ruminants, selection should focus on improving growth rates, crossbreeding indigenous stock with the Boer, Saanen, Dorper and Malya.

For poultry breeding, there is a need to develop a national recording program to help identify local breeds and strains for commercial production. Indigenous chickens need to be characterized and selected, and desirable traits for improvement and conservation established. Breeds developed elsewhere also need to be tested.

Inbreeding of pigs needs to be controlled and new or improved breeds introduced. The importation and multiplication of breeds with proven herd performance and track records should be undertaken by the private sector in line with MLF policy and oversight. This oversight will require the establishment and enforcement of a legal framework, including the development of an animal breeding policy and the implementation of the animal breeding bill currently before parliament.

Livestock selection for genetic improvement needs to focus on:

a) Ensuring effective breeding, selection and conservation programs are in place, including open nucleus breeding schemes and the renovation of public livestock farms and artificial insemination centres.
b) The establishment of data recording systems for on-station and on-farm breed evaluation programs for both locally-adapted and exotic breeds and their crosses.
c) The provision of training and support to strengthen animal breeding infrastructure, such as artificial insemination and minus-one-element-technique laboratories.

Priority and complementary institutional and policy recommendations: -

The review of existing policies, institutions, laws and regulations highlights a lack of enforcement capacity and the need to modify out-of-date policies are priorities. Land allocation and tenure regulations particularly need to be revised to encourage private sector investment in feed production to alleviate severe shortages. Key policy priorities in related areas include:

a) Offering incentives for the private sector involvement in veterinary service provision in rural areas, including cost sharing for the prevention and control of diseases of economic importance.
b) Establishing a reporting system for the collection of veterinary drugs/vaccines performance at all levels.
c) Strengthening enforcement of the Animal Disease Act 2003 for poultry and the Grazing Land and Animal Feed Resources Act 2010, building the capacity of animal feed and meat

inspectors, and formulating and enforcing poultry feed inspection guidelines and biosecurity and other relevant disease control guidelines.

d) Taking measures to promote investment in processing facilities for hides and skins, and ensuring enforcement of relevant trade regulations.
e) Strengthening market price and related information for live animals and products (i.e. hides and skins).
f) Introducing policies and enforcing laws on rangeland improvement: designating grazing areas in rangelands owned by livestock farmers; encouraging environmentally friendly tsetse control; mandating dipping and vaccinations; and incentivizing the adoption of climate change adaptation and mitigation practices.
g) Ensuring the implementation of the draft animal breeding act is accompanied by the provision of sufficient human resources and infrastructure and the establishment of livestock breeders' associations.
h) Enforcing the Grazing Land and Animal Feed Resources Act 2010, and promoting the commercialization of maize and soybean production for livestock feeds, and contract farming for feed raw materials, such as soybean.
i) Reducing the high costs associated with livestock research by increasing investment in facilities, infrastructure and human resources, mandating more inclusive associations and platforms of experts to promote collaboration among researchers and with other stakeholders, including the private sector.
j) Increasing the quantity and quality of extension staff and associated infrastructure and facilities, and clearly delineating roles and responsibilities between ministry and local government authorities.

# 6 Conclusion and Recommendations

As for ranches, all are operating under-capacity, in terms of livestock population. Typically, Kongwa Ranch (7%), Mkata Ranch (0%), Ngerengere LMU (2%) and West Kilimanjaro Ranch (1%) - all belonging to the National Ranching Company (NARCO). Mismanagement and carelessness attributes to the poor performance. No practical significant signs (of innovation) to improve the subsector were seen from the visited livestock ranches and LMUs.

## 6.1 Recommendations

a) **NARCO Ranches & LMUs**: The government of Tanzania needs to change the organization structure of the ranching system in the entire country. Instead of having animal scientists and veterinary doctors running the ranches, people with demonstrated business acumen, entrepreneurial spirit and with good project management skills should be employed to run these ranches. Moreover, these managers should be given annual performance goals/objectives – against which they will be held accountable (rewarded or demoted).

b) All ranches should be run as profit generating projects. The government should provide initial seed money for ranches to use as capital (expand parent stock base), improve infrastructure etc.

c) **Business environment**: - the government should protect home-made leather & footwear products. Amendments of appropriate policies should be done.

Overall, it has also been learned that, the government of Tanzania's weak capacity to conduct regular monitoring & evaluation (M&E), contributed to the current disappointment – as periodic M&E could have signaled potential breach of contract or business failure.