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# Tanzania's Red Meat Value Chain

## A diagnostic



The United Republic of Tanzania



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# Tanzania's Red Meat/Leather Value Chain:

A diagnostic

September 2012 Version

# Abstract

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Tanzania counts with the third largest livestock population on the African continent and the livestock sector contributes to more than one tenth of the overall Gross Domestic Product (GDP). However, value added particularly from Cattle, Sheep and Goat – the red meat sector – is marginal depriving many people in rural areas, particularly traditional herders and small-scale farmers, but also urban dwellers from income opportunities related to improved animal production and value addition activities. Meanwhile, with the exception of a very small high-price quality meat segment, slaughtering and meat handling throughout the country is substandard and causes enormous food safety and health hazards to the majority of the population.

**Primary production:** The livestock population in the country both from traditional and commercial production is increasing as some farmers adopt improved production systems such as feedlotting, and commercial producers respond to the demand for quality meat by niche and export markets. However, the optimum potential of the sector is yet to be realized and this is coupled with underutilized existing genetic potential of the indigenous and exotic breeds, poor rangeland management, limited feeds resources and feeding technology, inadequate diseases control, poor financing, etc.

**Processing capacity:** The red meat value chain is considered to produce various products and by-products that need to be recovered and processed into valuable products in order to generate higher value, better prices for producers and reduce environmental pollution. The potentials which the livestock rearing and meat production sector offers have only been utilized marginally. The existing custom service slaughtering facilities operate below 50% of installed capacities because most traders and butchers prefer using traditional lower cost facilities. The reason for this are limited access to premium markets, lack of entrepreneurial dynamism by the operators, inadequate enforcement of meat quality legislations, technology used and limited consumers' knowledge about quality meat. In consequence, quality and food safety standards are not complied with and the health risks at the various slaughter and meat selling points are peculiar. Also there is limited capacity to handle wastes generated from meat processing facilities. It is crucial to revitalize the existing slaughter facilities, establishing new facilities especially at strategic production and market points and instituting the use of appropriate technologies.

**Market and trade:** Marketing of livestock in the country is carried out at various levels of livestock markets, where pricing is through negotiation, grading and weighing normally based on visual estimation. The existing marketing infrastructures are dilapidated with limited essential infrastructure such as weighing bridges to facilitate efficient marketing. Auctioning of livestock at the markets is often the method of marketing. Meat, meat product and by-products are mostly marketed by individual businesses retailers and meat processing companies while exportation of hides and skins are undertaken by specialized exporters. The retailing of meat is mostly done through privately owned butcherries located all over the country. The butchers face serious shortage of appropriate tools and equipment used in meat handling and cutting. Marketing information on red meat value chain, which include different marketing channel for animals and meat and meat products is limited. The demand for quality meat, processed

meat products and by-products in domestic and export market is growing. The domestic demand of meat is met by imported products including premium meat cuts, sausages and canned beef. The domestic processing is considered to be insignificant. Still more than 95% of the domestic demand is for warm “mixed meat” (locally known as Nyama Kuawida). Marketing and consumer information campaigns are necessary to raise the awareness of consumers’ vis-à-vis quality and safety issues and also raising the demand for value added meat products.

**Value chain governance:** The red meat value chain is dominated by traders and butchers – few of them actually are of considerable sized and financially endowed with access to credit – who are able to exercise market power vis-à-vis a large number of small-scale livestock farmers and traditional herders. The public ranching company - NARCO and a number of emerging private commercial ranchers dominate the system of commercial ranching, although the production capacity and influence of these commercial producers on the value chain is limited. Feedlotting is emerging as a valuable input in the livestock production systems and caters primarily for quality meat supply to niche and export markets. Meat retailing also is dominated by individual businesses operating in rich urban areas. In general, vertical integration of livestock farmers, meat processors and traders is limited and efforts for more strategic action steps to be taken by the Tanzania Meat Board are required to bring together stakeholders who can articulate their needs and jointly get to build solid business relationships and a better organization of the chain.

**Sustainable production and energy use:** The consideration of efficiency in energy utilization for both the traditional and commercial systems is minimal, as animal wastes which are generated across the value chain could be utilized. Dung waste, for example, is the most suitable feedstock for biogas production. The solid and liquid waste produced from slaughter facilities could also be used in the production of biogas to power automated slaughter facilities, cold chain storage and processing operations. The discharged waste from biogas production is a good manure stock for crop and pasture production. In most instances the wastes are piled up in pits and heaps, which cause air, water and environmental pollution. However, for the utilization of the solid and liquid wastes there is limited technology available and investment costs are rather high.

**Value chain finance:** Finance is insufficient in each and every segment of the red meat value chain. Formal finance from banks and finance institutions is constrained due to limited understanding of livestock rearing, feedlotting, trading, butchering and processing businesses and the inadequate conditions that are applied to the granting of loans. Informal finance through individual, family and/or friends and through delayed and advanced payment in the value chain are prominent. To reduce the credit access difficulties in red meat value chain special credit and guarantee schemes both by the banking and micro-finance sector and the government agencies are required.

**Business environment and socio-political context:** Though the business environment in the country has improved substantially over the last years in the red meat value chain, conditions are determined by customary rules with much inefficiency. The country has instituted laws and legislations that govern the processing and marketing of meat and meat products. The Tanzania Bureau of Standards (TBS) has set the meat standard. The Tanzania Food and Drug Authority (TFDA) in collaboration with Tanzania Bureau of Standards (TBS)

regulates the processing and marketing of meat and meat products, including the inspection and certification of processing establishments, packaging, labelling and compliance of products to consumer safety and hygiene standards. The Ministry of Livestock Development and Fisheries tries to oversee the industry through its network of local government authorities and the newly formed Tanzania Meat Board and the associated annual Meat Council. However none of these regulators is able to enforce the regulations and in large part of the country animals and meat are handled inappropriately. Government extension and research services are struggle with lack of funds and skills and are not able to reach out to the large number of livestock farmers and other actors in trading, slaughtering and processing.

Overall, there exist a large potential to improve productivity, augment production of cattle, sheep and goats which can provide more income and improved livelihoods to a very large part of the population. This potential is matched with a significant potential to market meat to export markets and higher value added products to domestic niche markets. However, this requires concerted efforts not only on the level of animal husbandry, genetic improvement and feeding but also on the subsequent segments of the value chain including feedlotting (for the fattening of animals), trade, transport, slaughtering, butchering and further processing. Isolated interventions in one of these segments will not be satisfactory. Improvements go vertically across the chain starting with animals of improved genetics, which are raised profitably and then get fattened before slaughtering. Only meat from such animals is able to enter the higher-value market where it needs to be properly cut, transported and packed under very high hygienic conditions. The development of the Tanzanian red meat value chain requires concerted efforts from a wide range of public and private actors.

# Acronyms

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3ADI	African Agri-business and Agro-industries Development Initiative
AfDB	African Development Bank
CBPP	Contagious Bovine Pleural Pneumonia
CoET	College of Engineering and Technology
DVO	District Veterinary Officer
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GMP	Good Manufacturing Practices
GoT	Government of Tanzania
LAT	Leather Association of Tanzania
HACCP	Hazard Analysis Critical Control Points
IFAD	International Fund for Agricultural Development
MLFD	Ministry of Livestock and Fisheries
MITC	Meat Industry Training Centre
MITM	Ministry of Trade, Industries and Marketing
MT	Metric Tonnes
NAIC	National Artificial Insemination Centre
NARCO	National Ranching Company Ltd.
NMB	National Microfinance Bank
PASS	Private Agriculture Support Project
PMO	Prime Minister's Office
PPP	Private Public Partnership
SACCOS	Savings and Credit Societies
SCF	SME Competitiveness Facility
SUA	Sokoine University of Agriculture
TALIMETA	Tanzania Livestock and Meat Traders Association
TAMPEA	Tanzania Meat Processors Association
TBS	Tanzania Bureau of Standards
TFDA	Tanzania Food and Drug Authority
TIB	Tanzania Investment Bank
TIC	Tanzania Investment Centre
TIN	Tax identification Number
TMB	Tanzania Meat Board
TPL	Tanganyika Packers Ltd
TRA	Tanzania Revenue Authority
TSH	Tanzania Shilling
TZS	Tanzania Shorthorn Zebu
UAE	United Arab Emirates
UNIDO	United Nations Industrial Development Organisation
VETA	Vocational Education Training Centre



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# Introduction

Tanzania ranks third in Africa in terms of livestock population. The country has more than 21.3 million cattle, 15.2 million goats and 6.4 million sheep (NBS, 2011). However, there is little value addition taking place in the sector. In consequence Tanzania's livestock sector share in real Gross Domestic Product (GDP) has been marginal accounting for only 3.8% in 2011.

This diagnostic study provides information about where and how value is generated in the red meat sector in Tanzania. This information is considered crucial for the design of a value chain development support program as it is currently envisaged in the context of the African Agroindustries and Agribusiness Development Initiative (3ADI). The 3ADI in Tanzania, initiated by the Prime Minister's Office (PMO), is implemented by the Government of Tanzania (GoT) through the Ministry of Industry and Trade (MIT) in collaboration with the Ministry of Livestock Development and Fisheries (MLFD) and the Ministry of Agriculture, Food Security and Cooperatives with support from UNIDO, FAO, IFAD and possibly other donors.

The analysis follows the UNIDO methodology of industrial value chain diagnostics (UNIDO 2010) that provides for an integrated view on the value chain emphasizing the dimensions of inputs and supplies, production and processing technology and innovation, markets and trade, value chain governance, energy and cleaner production, value chain finance and policy environment and institutions.

The findings draw from existing analyses and data and are complemented by interviews and consultations with key actors in the value chain and a wide range of stakeholders. The authors acknowledge the limits of this information base and propose that a more detailed value chain analysis, particularly of the poorly understood informal sector in which unlicensed and unregistered operators account for as much as 90% of the animal trade, slaughter and meat retail, be conducted. Most of the current information was actually collected from the more formalized businesses on the level of slaughtering.

## Mapping of the Red Meat/Leather Value Chain

The red meat value chain relates to live animals; meat, processed meat products and by-products from cattle, sheep and goats (shoats) sold both locally and in the export market. Almost all people in Tanzania consume red meat and it can be estimated that up to a one third of the population in one way or another is engaged in the production, processing and selling of red meat.

### Value chain actors and their functions

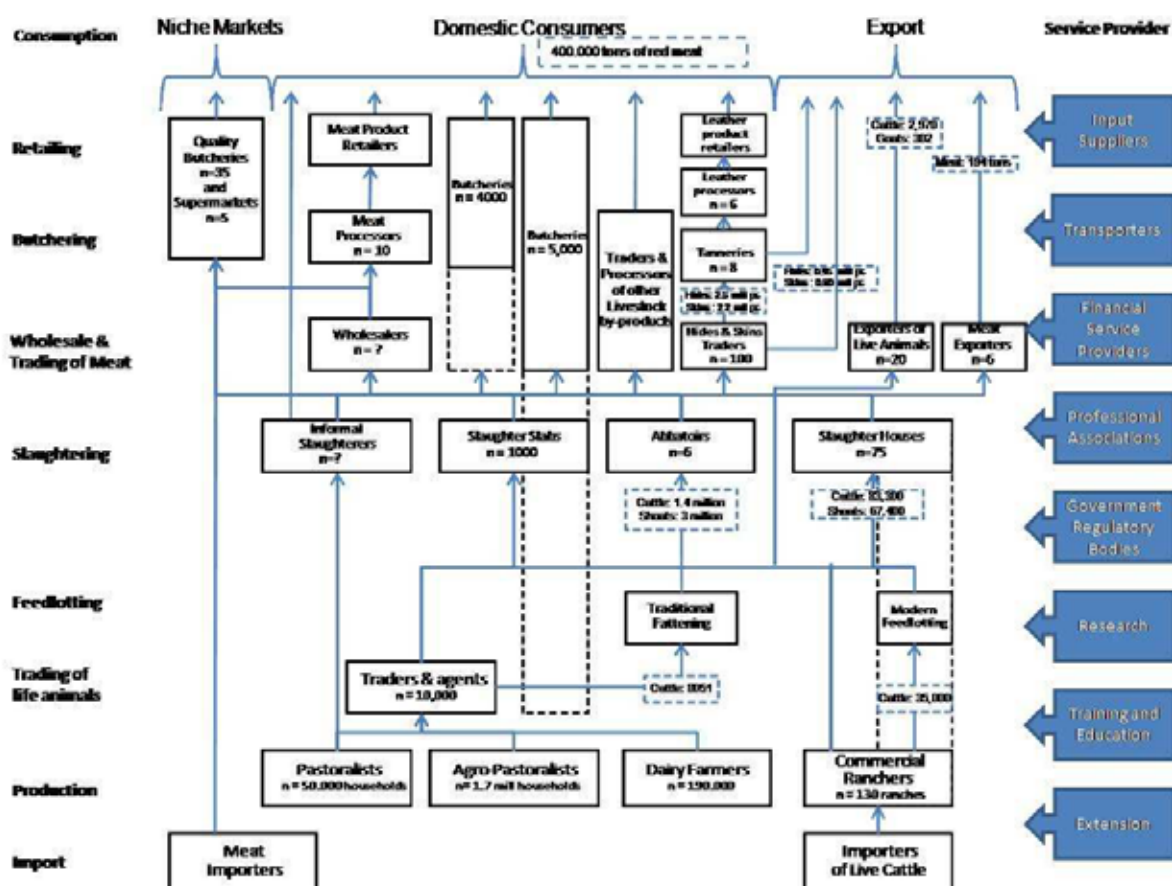
The actors in the red meat value chain include primary producers, traders of animals, meat and by-products, feedlotters, slaughterers, butchers, retailers and end-consumers. A main characteristic of the value chain is that most actors engage in more than one function. For example, butchers, particularly the larger ones, may also engage in trading and wholesaling of meat while traders may as well engage in feedlotting and butchering. Figure 1 shows a simplified chart of the Tanzanian red meat value chain. Further clarification on actors and their functions is given below.

- **Production:** Livestock farmers are highly diverse groups of farmers that are specialized in rearing of domesticated animals to produce commodities such as food/dairy products, meat and fibre. Out of the 4.9 million agricultural households in the country, about 36% keep livestock (NBS, 2011). Traditional nomadic herders, who make up approximately 1% of rural households engaged in livestock farming. Agro-pastoralists cultivate crops as well as raise livestock; they account for most of the 1.8 million livestock keeping households. Additionally there are some 190,000 dairy farmers (Swai and Karimuribo, 2011) who bring male animals and non-lactating cows to the slaughter process. A small number of commercial ranches keep improved livestock breeds and engage in feedlotting for commercial meat production. The study was not able to identify consistent figures on sheep and goat producers.
- **Trading of live animals:** An estimated 10,000 traders and their agents buy cattle and sell to butchers, meat processors, wholesalers and supermarkets. An estimated 20 traders also engage in cross-border trade and exporting. They commonly operate through agents who buy and transport animals from livestock farmers to designated primary and secondary markets. They also buy animals at such markets and sell them, after slaughtering, to butchers. Few of their operations are monitored and government authorities have few means of regulation.
- **Feedlotting:** Some traders do normally buy cattle and put it into a fattening cycle to receive better payment for the animals. Such traders are often connected to export markets where higher prices for animals with better meat quality are paid. Sometimes traders also commission livestock farmers to do the feedlotting for them. There are also livestock farmers groups who, usually with some outside support, have in recent times engaged in fattening of animals and selling them to passing traders. For example in Shinyanga region there are more than 70 feedlotters holding more than 5,550 heads of cattle. Finally some ranches engage in feedlotting. All together, there may be more than 100 feedlotting units currently in the country.

- **Slaughtering:** There are informal slaughterers (the number is difficult to estimate – basically every village may count with such an institution), some 1000 slaughter slabs which handle 1 to 10 animals per day, 75 slaughter houses that process up to 50 animals and more per day, and some 6 abattoirs who engage in semi-mechanized slaughtering. Most operators of the slaughter facilities in the country don't buy animals but however provide slaughtering services to clients for a stipulated fee, Slaughter slabs are found in rural areas, while slaughter houses are located rather in urban centres, mainly at the municipalities. At all slaughtering facilities, with exception of the informal slaughter slabs, official meat inspectors examine the meat.
- **Wholesale and trading:** Meat wholesalers locally known as “mabeseli” operate in urban centres such as Arusha, Dar es Salaam and Mwanza. They buy meat from traders in bulk, usually at the slaughter facilities, and further sell to small butchers and meat shops. Sometimes they trade in live animals, buying the animals up-country and bringing it to towns and cities. Wholesaler trade is not very significant.
- **Butchering:** Butchers operate as retailers that buy a) live animals that they pass through the slaughter facilities or b) carcasses in halves or quarters, which they further process before selling it to consumers in smaller quantities. A butcher may run more than one, sometimes many, selling points with a number of employees. There may be around 5,000 butchers in the country who buy slaughtered meat from traders. Additionally, there are an estimated 4,000 butchers in the country that also engage in the buying of live animals. Some 34 quality butcheries and 5 supermarket chains operate mainly in the urban areas and close to the premium markets. They observe higher levels of compliance to hygiene and safety standards and engage in selling standard meat cuts. Some quality butcheries are run by supermarkets.
- **Retailing:** Retailers include restaurants and eateries that serve beef soups and small businesses engaged in roasting of meat (locally known as Nyama Choma) and selling it on streets and at stopping points of major highways. Most retailers have limited capital and storage facilities and therefore buy a quarter or even less at a time. There are also a limited number of street vendors distributing sausages (mainly Farmers’ Choice, a Kenyan brand) using cold boxes mounted on motor bikes. Commodity shops also stock processed meat products, especially imported corned beef.
- **Import:** Importers operate mainly in niche markets. Imported meat products are mostly frozen slices of meat as well as processed products such as sausages, corned beef and hams, which are sold to supermarkets, touristic hotels and mining areas. A major supplier of such products is “Farmers Choice” from Kenya; other products come from South Africa, New Zealand and the Middle East. Some importers also operate as wholesalers stocking meat and meat products in large quantities for onward marketing to domestic consumers. Some supermarkets import meat on their own whereas others use import companies such as Bright Choice Ltd, a partner of Kenya’s Farmers’ Choice.
- **Exporters of animals:** An estimated 20 traders engage in export of live animals to neighbouring countries including Comoros, Democratic Republic of Congo (DRC), Kenya, Zambia, Malawi, Uganda, Rwanda and Burundi. Further goat and sheep carcasses are exported to Arab countries in chilled form after splitting into halves without further processing. The official export figures suggest that the country exports around 200 MT of meat per annum.

- Transformation into leather.** The red meat value chain is the main input provider to the leather value chain and therefore some basic information has been included into this mapping. There may be more or less than 100 collectors of hides and skins who buy the hides, wet or dry, from slaughter facilities and bring them to local tanneries or provide them to exporters. Furthermore, there are 8 tanning companies which produce “wet blue” and leather. Finally there are around 50 footwear and leather manufacturers in the country all of whom use local materials for production and do not import. The products of the industry include mainly shoes, bags, belts, jackets, wallets, and gloves. Some few companies do also export products. There are also 10 actors engaged in the export of raw hides and skins.

Figure 1: Red meat value chain in Tanzania



Source: The authors

## Flow of Products

The arrows in Figure 1 describe the flow of products from primary production to consumption. Live animals are sold on primary livestock markets by livestock producers to traders, traders’ agents and butchers who usually involve in the exchange of live cattle, sheep and goats for cash in local currency. Often, sellers allow buyers to pay at a later stage, e.g. when the animals are slaughtered and sold. Alternatively the livestock producers can also sell their animals directly to agents who pass through their homes or grazing locations. At secondary livestock markets, traders deal with other traders/agents exclusively under the supervision of the Ministry of Livestock Development and Fisheries (MLFD).

Basically one can distinguish between two main channels of trading live cattle, sheep and goats in the country: The first one engages traders that buy these animals from primary producers and sell them at primary and secondary livestock markets to butchers and other agents. Either traders or butchers bring the animals to the slaughter facilities. In the second channel, butchers reach out to primary producers, buy and transport the animals, put them through the slaughter facility and use them in their own butcheries. A third, less important, channel engages commercial ranchers who rear or produce and market animals, put some animals for slaughtering and thereafter sell the meat to a small segment of consumers that are able to pay premium prices for quality meat. In addition live animals are sold to neighbouring countries in Africa and Arab countries.

According to estimations of the authors, approximately 97% of the 400,000 MT of red meat produced annually is sold as “warm meat” (meaning it has not been refrigerated or chilled at any stage of the value chain) to end-consumers on the domestic market through butchers operating as retailers. More than 90% of meat and meat products in the country are supposedly handled by butchers. Further processing into minced meats, sausages and meat cuts is rare involving only a very limited number of companies. Drawing on MLFD data, the authors estimate that this segments accounts for about 2% of the meat produced in the country. The remaining part of high quality red meat estimated to be below 1% goes to niche markets such as tourist hotels, supermarkets and mining companies. FAO data suggest that red meat worth 247.000 USD has been imported in 2008 also destined to these high value niche markets; however this figure may be much higher nowadays. Sheep and goat are sold to markets in Arab countries, either as live animals or processed as halves. By-products from slaughter and processing operations make up almost 40% of live weight. In general, slaughtering by-products are not wasted but sold to traders and users without much value adding.

## Service Providers

Service providers include the Tanzania Meat Board, District Agricultural and Livestock Offices, government research and extension facilities, financial institutions and NGOs.

- **Input suppliers:** They provide vaccines, veterinary drugs, animal feeds and feed supplements. The suppliers own licensed trade businesses and also operate as stockists of farm tools and equipment such as syringes, drenching guns, spray pumps, mowers, hay bailers and tractors. Concentrates, particularly for poultry feed, are provided by specialized stockists. Bran is supplied by milling facilities to informal middlemen. There are also some informal entrepreneurs specialized in the trading of hay. For meat processing there are a limited number of suppliers of machine and equipments for slaughtering and meat processing including flaying knives, band saws, meat cutting tables, mincer, packing machines and packaging materials.
- **Transporters:** While most traders and butcher have their own vehicles, there are also some who render their services to facilitate the transportation and delivery of cattle, sheep and goats to markets and also transport feeds and pastures to farms in the region. The services rendered by these transporters can not be considered to be a very large business as most animals are usually herded on hoofs to livestock markets and slaughter facilities and may be picked up by trucks only on the last kilometres. Transporters of animals need to have a business license and a permit when moving livestock from one point to another.



- **Financial service providers:** These provide credits to ranchers, butchers and traders. However, the scale of these services is very limited while the interests are high and most find it difficult to meet conditions for collaterals. Financial service providers include networks of Savings and Credit Societies (SACCOSs), guarantee funds such as Private Agriculture Support Project (PASS) and the Tanzania Investment Bank (TIB). These have introduced financing products that could benefit the livestock actors, along with provision of support on preparation of bankable business plans, collateral verification and guarantee funds.
- **Professional associations:** There are few private sector associations in the red meat sector including the Tanzania Meat Processors (TAMEPA), the Leather Association of Tanzania (LAT) and Tanzania Livestock and Meat Traders Association (TALIMETA). Some of these associations are rather weak and do not play a very prominent role servicing their members, e.g. through joint sourcing of materials and inputs, joint marketing and lobbying.
- **Government regulatory bodies:** The Tanzania Meat Board (TMB) is the regulatory body under the Ministry of Livestock Development and Fisheries (MLFD) that promotes the functioning of the value chain and ensures its actors comply with rules and quality standards. The Tanzania Food and Drugs Authority (TFDA) is the regulatory body under the Ministry of Health and Social Welfare responsible for regulating the quality and safety of food, drugs, cosmetics and medical devices. TFDA inspects the handling of meat at slaughter facilities, butcheries and vending points. According to the Animal Disease Act No. 17 of 2003, meat inspectors from the MLFD would appoint certified inspectors to inspect and regulate slaughtering processes at slaughter facilities and issue certificates required for sales of meat and export of live animals and meat products. Among other activities, the certified inspectors would stamp the carcasses using special ink.
- **Research:** The Livestock Research Institutes at Mpwapwa, Uyole, West Kilimanjaro, Tanga, Temeke and Mabuki, all under the Ministry of Livestock and Fisheries Development (MLFD), provide support to research, development and commercialization in areas such as animal breeds, range management, animal nutrition, feeding and disease control. Furthermore, there are academic research institutions at Sokoine University of Agriculture (SUA) in Morogoro and at the College of Natural and Applied Sciences (CoNAS) and the College of Engineering and Technology (CoET) at Dar es Salaam University which engage, to a limited extent, in research and development for animal production and meat processing.
- **Training and education:** The MLFD also runs professional training services for field officers as well as for livestock farmers at national livestock training institutes established at Tengeru in Arusha, Mpwapwa in Dodoma, Temeke in Dar es Salaam, Mabuki in Mwanza, Kikulula in Kagera, Madaba in Ruvuma and Morogoro. The students graduating from these institutions are expected to be employed by government institutions, as technicians and managers in the private sector or become entrepreneurs. The meat Industry Training Centre (MITC) under the Vocational Education Training Authority (VETA) in Dodoma is the only institution in the country with training facilities covering the entire meat processing cycle. MITC provides student the required education and vocational training on slaughtering and meat processing.

- **Extension:** An estimated 4, 400 District Agricultural and Livestock Officers in the country. Their operations are under auspices of the district governments and or in collaboration with Community-based and Non-Government Organizations, who provide trainings, organize farmer field schools and assist in facilitating the dissemination of information on animal husbandry practices.

# 1<sup>st</sup> Dimension: Primary Production and Inputs

The red meat value chain includes meat and processed meat products of cattle, goats and sheep. Animal rearing is an essential segment of the value chain. It can have a decisive impact on meat quality which is influenced by the animal breed, the livestock production system and disease control amongst others.

## 1.1 Animal Breeds

Cattle breeds in Tanzania comprise mainly of the indigenous Tanzanian Shorthorn Zebu (TSZ), Ankole and Boran. TSZ is the breed most adapted to the harsh conditions found in the arid and semi-arid lands. Other imported cattle breeds such as *Chianina* and *Semental* are more suitable for red meat production given their productivity and meat quality, but they are highly susceptible to diseases. Most dominant breeds of sheep and goat are Red Masai, East Africa Long Tail and East Africa Small Goat. Additionally, a small number of dopper and black head Persian are bred at commercial farms.

TSZ contribute about 94% of the total production of red meat and meat products. They also serve as sources of draught power and contribute to food security. Many are also kept as capital assets and for status reasons contributing to social security. However, they do not provide a good basis for meat production due to inferior meat quality and limited response to feeding schemes. TZS strains are classified by size as dwarf, small or large; each of them suited to specific agro-ecological zones. The dwarf and small varieties of TZS produce low carcass weight and are therefore not profitable as compared to the large frame TZS, which is relatively more suitable for meat production. The large frame strain is relatively affordable and could be profitable if readily available for the majority of cattle herders.

Some efforts are made on the level of the national livestock research institute Mpwapwa to develop improved and disease-resistant breed known as the „Mpwapwa Breed“. Latest efforts to improve the breed towards a “new Mpwapwa Breed” are underway and are supposed to deliver results in 2013. However, it is not certain if the results will be able to distribute commercially and whether the necessary incentives are in place so that livestock farmers will make use of such breeds. For beef production, information from SUA reported that genetics are less important for beef production in short-term breeding programmes. However, for quality beef production, genetics are an important consideration. Improved local breeds also include Ankole, Boran, Ufipa strain of Tanzania Short horn Zebu and crosses some of which are fast-growing and disease-resistant. As with the Mpwapwa breed they are rarely available and are not affordable for traditional livestock farmers. Improved breeds are found mainly on commercial ranches, while cattle breeds that are both fast-growing and disease-resistant remain almost unavailable.

## 1.2 Livestock production systems

Livestock farming in Tanzania is conducted mainly in form of traditional production systems while commercial production is limited to ranches and feedlots. Meat quality is determined by many factors, including animal breeds, rearing practices, water supply, pasture quality, supplementary feeding, disease control, infrastructure, labour and husbandry practices. Cattle-farming is the most lucrative production activity for traditional pastoralists, followed by goats and sheep. Within the traditional production system for cattle, sheep and goat one can distinguish between pastoral, agro-pastoral, dairy and commercial ranch systems.

- **Pastoralism:** Refers to the traditional cattle production system which relies entirely on natural pastures for animal rearing. In Tanzania, this system is practiced by about 1% of rural households engaged in livestock farming. Pastoralists generally keep large herds of cattle, goats and/or sheep of indigenous breeds, which are well adapted to the harsh climatic conditions and are resistant to common local diseases but grow slowly and respond poorly to fattening. Pastoralism is to be viewed as a traditional way of living where animal herds present important family assets and wealth rather than a business endeavour and thus faces many limits to increased efficiency in the production of meat. Herders rely on traditional knowledge to adapt to climatic conditions, which includes flexibility in natural resource use, mobility and diversification of herds to mitigate risks from droughts, livestock rustling and disease outbreaks. Being dependent on communal grazing lands and thus, impacted by seasonal changes, herders migrate in search of pastures and water during the dry season (nomadism). Major pastoralists are found in the arid and semi arid zones of Shinyanga, Arusha and Manyara.
- **Agro-pastoralism:** This is a system in which crops and livestock are produced for sustenance. It is practised by about 40% of rural households (amounting to around 2 million households) and – contributing to 80% to Tanzania’s beef production – represents the most important livestock production system for the country’s red meat sector<sup>1</sup>. Within this system, livestock rearing and crop production are practised inter-dependently where livestock is grazed on harvested fields and animal manure is applied as crop fertilizer (NBS, 2007/2008). In comparison to the traditional pastoralist system where herders in search of pasture and water during dry seasons, sedentary agro pastoralists face additional challenges from land pressure and limited pastures for their livestock. Additionally, insufficient attention is paid to adequate herd management, rearing techniques, feeding and disease control. Only in rare cases do agro-pastoralists practice animal feed conservation in form of hay and crop stovers. In this light, they mostly rear indigenous breeds, which have very limited potentials for commercialisation. Agro-pastoralism is practiced in the semi-humid and humid areas such as Mara, Mwanza, Kagera, Shinyanga, Singida, Manyara, Dodoma, Arusha, Morogoro, Rukwa and the coastal regions.
- **Dairy production systems:** While pastoralists and agro-pastoralists produce only small amounts of milk for subsistence use, many farmers particularly in the highlands, engage in commercial dairy production. Dairy farming is carried out by some 190.000 small-scale farmers (Swai and Karimuribo, 2011) rearing around 700,000 cattle of improved breeds.

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<sup>1</sup> Ministry of Livestock and Fisheries Development (2011). Pastoral Systems: Department of Pastoral Systems Development, p 5. Available from [http://www.mifugo.go.tz/pastoral\\_systems/index.php](http://www.mifugo.go.tz/pastoral_systems/index.php).

Dairy farming is growing in Tanzania at a rate of 6% per year. The cattle generally feed on improved pastures with little supplementation from agro-processing industries. While the milk is the main product, the sector also produces meat, particularly from male calves and spent cows. Such animals are bought by traders/butchers who bring them to slaughterhouses and abattoirs. Due to the fact that improved breeds are used in dairy production, meat quality of dairy animals – especially male calves – is often better than that of local pastoral breeds. Often with the support of international development assistance, dairy farming has become an important activity in regions where it is being practiced. They include Kilimanjaro, Arusha, Tanga, Kagera, Mbeya and Mara regions.

- **Commercial ranch system:** The system involves rearing animals of fast growing breeds, such as Boran, Ankole and other exotic breeds and the crossbreeding of such animals with local shorthorn zebu. It also included fattening of cows before slaughtering purposes which entails using improved pastures and agro-industrial feeds. The commercial ranch system is capital intensive and requires specialized production skills and markets that demand quality product, to ensure returns on investment. Ranching provides the prospect for increasing meat production, multiplication of quality animals for meat, the application of good animal husbandry practices (GAHPs) and increased income to those who engage in feedlotting, including traditional livestock farmers. Formerly in Tanzania, ranching was dominated by the National Ranching Company Ltd., a government agency, which operates 10 large-scale ranches for breeding improved stock, feedlotting and production of quality meat all over the country (see Box 1). It is estimated that there are over 100 privately-owned ranches currently in the country. According to MLFD 2010/2011 data, a limited number of ranches are engaged in rearing of animals primarily for the production of quality meat, which make up for less than 1% of the countries cattle herd and an estimated 6% of the total meat production.

### **Box 1: Large Scale Commercial Farming at NARCO – management and marketing challenges**

The National Ranching Company Ltd. (NARCO) is a parastatal company mandated to produce beef cattle for the domestic and export markets. NARCO started initially with fifteen ranches with a total of 630,000 hectares. NARCO ranches were established by a World Bank loan under a low cost investment strategy that envisaged establishment of basic ranching infrastructures. The plan placed less attention on costly investments such as fire breaks, pasture development and breeding but on dam construction, roads, dips, and cattle handling yards. In the last two years, the focus has expanded towards intensive production strategies and investments in modern breeding, husbandry and feeding technologies. The big ranches with the exception of the Ruvu, Kongwa, Kikulula and West Kilimanjaro ranches, all ranches have been divided into a core unit of around 20,000 hectares managed by NARCO and 124 small ranches of 1,500 - 5,000 hectares totalling 289,069 ha that were leased to private national investors. The eight core NARCO ranches and the designated disease-free ranches of Kongwa and Ruvu now possess a total area of 230,384 hectares, with a capacity to hold over 100,000 livestock units. The core ranches under NARCO have about 26,500 heads of cattle and a small number of sheep and goats. The ranches have good quality Boran herd, suitable for upgrading local breeds for meat production. The “Off-take” from the ranches is 22%, double of the national herd while slaughter weight of ranch bred steers is over 150% above that of the national herd. Currently the company sells 12,250 cattle annually.

*Source: NARCO Investment Plan, 2007*

### 1.3 Range Management

Tanzania has a total of 88.6 million hectares of land, of which 60 million hectares are rangeland suitable for livestock grazing with a capacity to carry a total of 20 million livestock units. Currently, it is estimated that of the total size of the country's rangelands, around 40 million hectares is being utilised with an estimated number of 16 million livestock units. There are potentials to expand the land available for livestock and crop production and increase the supply of live animals as raw material for the meat value chain. The distribution of animal population is concentrated in a few livestock rearing areas with over 70% of the total traditional herds in pastoral regions, where overgrazing and competition for land use for crop production become the major challenge for the communities. Efforts by government authorities to relocate livestock farmers from the overgrazed locations are met with resistance, especially from indigenous pastoralists. As a result, the carrying capacity for many communal lands is disregarded, grazing control is not enforced and no pasture or fodder conservation is practiced during seasons of plenty.

The rangeland pastures are only seasonally available and pastoralists and their herds need to migrate to areas where there are enough pastures in order to make the best which the land has to offer in a particular season. 80 % of the pastures used by livestock farmers for grazing cattle are communal property rangelands, limiting the potential for feeding livestock from improved pastures. The incentives for households, villages, or producer groups to invest in improving pastures are insignificant when others cannot be prevented from free-riding. Some pastoral and agro pastoral communities exercise leasehold ownership over the land based on allocations made under the Village Land Act. However, the incentives to improve range management (e.g. through over-sowing or re-seeding with improved pastures) are too low mainly due to the cost of investment. Fallow and forestland estimated at about 15 hectares can also be utilised for livestock production if put under controlled access and ownership. Nonetheless, change to a more appropriate model of land ownership would require investments and approval by local governments, who are sometimes unaware of the problem or unable to balance the competing needs of various land users.

Each cattle, at an average, requires 4 to 5 hectares of rangeland to graze without receiving any additional feed (MLFD Budget Speech, 2008/09). The use of rangelands for production of feed is almost unknown in the traditional systems despite its potential to increase the survival rate of cattle and profitability of livestock farming. Only in a few communities, livestock farmers practice traditional storage of pastures under a fallowing system. The most common practice is that, livestock farmers sell off their cattle when rain fail or serious droughts occur, mainly due to lack of alternative income and food sources. Often, under such circumstance, prices fall due to increased supplies and given the low body weight losses for livestock farmers are sever.

The breeding of seeds for pastures and fodder crops production is undertaken on a small scale and improved seeds are supplied by livestock research institutions and government seed producing centres such as Mpwapwa Pasture Research Institute in Dodoma, Vikuge - Coast, Langwira, Mabuki- Mwanza and Tengeru Livestock Training Institute. On commercial and mixed livestock farms, waste from animals is used as manure for production of feed, and in turn the improved feedstock is used in rearing and fattening of cattle in order for the herds to have good quality red meat..

In general, the rangeland infrastructure is insufficient, lacking dams, means of water supply, fire breaks, and crushers. The government has been supporting livestock farmers through the construction of dams for water supply in communal-owned rangelands. However, most of these dams do not have the capacities to supply water throughout the year due to the large number of the livestock and communities depending on them. A further problem is that dams are not constructed to last longer and operational maintenances are not done adequately and regularly.

## 1.4 Animal Husbandry

Under the traditional husbandry systems, cattle take about 5 to 6 years to attain the optimal slaughter weight and even then the carcass weight is relatively low. Improved schemes of animal husbandry can reduce the average time of cattle rearing and increasing the carcass weight substantially. Also, through good husbandry practices, livestock farmers can operate profitably on smaller sizes of land and inputs.

In general fertility rates in traditional herds are low; fluctuating with season of pastures availability. The bulls used in natural mating are mostly of indigenous breeds (sometimes practice inbreeding), with exception of ranches where they use purebred bulls sourced from other ranches or imported.

In traditional livestock farming castration is not used as a tool for herd management and breeding control. However, castration is applied to draught animals (Oxen). Unfortunately it is also applied to those bulls with high growth vigour and strong draught power; thus good breeding animals are lost.

Herders leave reproduction in the herd mostly to random selection of bulls that are available at breeding time. Artificial insemination is rarely practiced as it requires close monitoring of the herd and synchronization with regard to the presence of the bulls and availability of the insemination experts. Price, availability and efficiency of synchronizing agents is also a major challenge. Efforts to ensure artificial insemination services are underway where liquid Nitrogen production centres are established. This is particularly the case for Arusha where the National Artificial Insemination Centre (NAIC) produces semen. The centre provides semen from proven bulls both from local and imported from neighbouring Kenya and South Africa.

In traditional livestock husbandry schemes and in ranching there is no special emphasis on housing. The animals are housed in kraals or simply stay on the pastures under trees. In the few feedlots animals are kept in specialized pens that have feeding and water infrastructure.

## 1.5 Feeding

Feeds are an important input in livestock production. In traditional production systems, feeding of cattle, sheep and goats depends on the natural pastures; supplementation in the mornings and evenings in the shed or kral is rarely practiced. Dry season feeding are largely unknown by livestock farmers. However, this type of feeding is very important for livestock in order for them to withstand seasonal weight losses.



## Box 2: Seasonal feeding cycles in traditional livestock systems in Tanzania

Due to the seasonality of rangeland grazing in many pastoral regions of Tanzania are prone to extreme seasonal variations in rainfall and drought. This affects adversely the reliability of pastures and water. Most parts of the country experience high and dry temperatures which hardly go below 20 degrees Celsius with hottest period in November and February (25 – 31 degrees) while the coolest period occurs between May and August (10 – 20 degees). The southern, south-west, central and western parts of the country experiences unimodal type of rainfall (December to April) while north and northern coast experienced bimodal type of rainfall (October to December and March to May). During the dry season, many cattle, sheep and goats lose substantial weight and some die from emaciation or extreme weight loss, which they are only able to regain in the wet season or with supplementary feeding. To minimize risks, most livestock farmers keep on moving with their animals unguided from one place to another searching for pastures and water during dry season. This impact negatively on the environment, with evident degradation effects such as soil erosion and poor land productivity.

There is a small amount of feed produced by the commercial scale from high value inputs especially quality corn and established pastures. It mainly goes to feedlots for fattening as well as dairy and poultry farmers. Supplementary feeding is relatively more common in agro-pastoral and mixed production systems where grass and crop residues, e.g. from cereals and other crops, are used to produce forage and hay. Still, the availability of this feed type is seasonal. Some livestock farmers also collect residues from farms during harvest seasons and from grain mills, sugar cane processing plants and some limited quantity of grain residue from breweries.

### 1.6 Feedlotting and Fattening

Feedlot operators, who buy animals for fattening pay a premium price for animals that are considered to have good potential for fattening, based on the breed, weight at sell time and observation of physical condition. However, there are too few feedlot operators to exercise substantial market power.

Traditionally, animal weight changes considerable across the year with highest and lowest peaks being reached at the end of the raining and dry seasons respectively. This leads to peaks in the supply of well fed live animals at the end of the raising season while during the rest of the year higher prices are paid but only meagre cattle is available. Feedlot and fattening schemes are able to break this cycle of “fat-thin-fat”. The quantity and quality of meat per animal is improved through controlled feeding schemes at specialized farms which can engage in both improved pastures and feedstuff supply. Feedlotting and fattening is exclusively applied to cattle, for sheep and goat production commercial feedlotting is still to be explored. In spite of the lack of information on the scale and quality of feedlotting and fattening practices in the country, three basic systems can be distinguished:

- **Traditional feedlotting:** Cattle are reared on non-industrial feeds and agro-waste such as cotton seed oil cake, cereal bran etc, and small amounts of industrial animal feeds. Traditional feedlotting is carried out by larger livestock farmers that gradually specialize in this activity or by export traders and niche market butchers who often collaborate with farmers and trade agents to carry out feedlotting. Farmer usually would keep around 50-150 cattle at a time for fattening (Mgheni et al, 2010). Knowledge on feedlot management, optimal type of age of cattle, optimal feeding ratios, feedlot economics and marketing channels is very limited among traditional feedlot operators and operations usually don't reach necessary scales and levels of specialization. Often, minimum feed rations are not adhered to and the fattening duration is reduced to minimize cost and



avoid hold-up of capital. The traditional feedlotting system is practiced predominantly in Shinyanga, Mwanza and Morogoro regions. The feedlot operators in the Lake zone target the export markets for live animals to markets such as Comoros; while those in Morogoro began as small holder suppliers to a local processor in the region, Tanzania Pride Meat Company, which later went into receivership (see Box 2).

- **Improved community feedlotting:** These systems are supported (and subsidized) by government and development agencies with the aim to help farmers improve their income from livestock production as they get access to improved feeding knowledge and technology and organize in groups. A combination of improved pastures and non-industrial and industrial feeds is usually applied to enhance animal nutrition while attention is also given to organizational development and improved marketing practices based on fixed contracts, accurate weighting and better market information.
- **Improved feedlotting at commercial ranches:** Some commercial ranches exercise feedlotting as an integral part of their operations in order to bring animals to optimal weight with good meat quality and operate special lots with improved pastures and finally fed on non-industrial and industrial feeds for that purpose. In some instance ranchers buy cattle from traditional stock at a young age (2-3 years) with an average weight of 180 to 200 kg live weight. Often ranches also practice supplementary dry season feeding, mostly through the production of hay.

### **Box 3: Tanzania Pride Meat Ltd., Mvomero District – Experience in feedlotting and private slaughter**

In 2003 the Tanzania Pride Meat Ltd started to operate near Morogoro drawing from investments from Southern Africa. The company installed daily slaughtering and cooling capacities for 150 cattle, 250 sheep and goat, and 16,000 poultry. Animals were sourced mainly from local herders. Before slaughtering the animals were feedlotted on the company own ranch. The establishment of the company also triggered the engagement of individual herders and community groups in feedlotting. The company offered a variety of meat products, mainly improved cuts and sausages to niche markets such as supermarkets, hotels and the mining sector. Many products were actually sold to Dar es Salaam where the company also opened its own outlet. The company became under receivership in 2010. Various reasons have been given for the bankruptcy of the company ranging from inappropriate management to irregularities in its finance. The failure of the company left suppliers without pay and future selling opportunities for their animals. Some of its former staff now found work in the more advanced butcheries in town. The company has been recently taken over by TEDAJI Ltd., a joint venture of Tanzanian and Israeli capital.

*Source: The authors, based on interviews in Morogoro*

In Tanzania, fattening can usually take around 60 to 90 days to achieve slaughter weight. Animals are put in the fattening cycle around the age of 2 years with a live weight about 180 kg. During the fattening period the animals receive a special feed ration, high in energy content and balanced with regard to nutrients. This ration can include molasses, oil-seed (cotton, sunflower) cake, maize, minerals, straw, urea and salt. The optimal weight gain for breeds which are kept under feedlot is 0.5 to 1 kg live weight per day, although most cattle do not achieve this rate of weight gain due to trait and breed difference, quality of feed and feeding rations and lack of capital to complete the feeding cycle. The animals are kept till they have reached a live weight of approximately 230 to 270 kg per animal.

Research from Sokoine University of Agriculture (SUA) shows that quantity of meat from Tanzania Shorthorn Zebu and Boran races can be improved by finishing on a high

concentrates diet. However, for supplementation to be profitable it is necessary that there is a market willing to pay extra for improved quality meat. Another study from the Sokoine University of Agriculture (Mwilawa et al. 2010) estimates that profit margins in feedlotting are in the order of USD 110-140 per head of cattle from traditional feedlots, which compares favourably with margins presented by Kongwa ranch (see Table 1). Profit margins are better if the fattened cattle is sold per live weight rather than slaughtered and sold as ordinary mixed meat. For the case of Kongwa, a fattened cattle weighing 263 kg and selling at a price of Tanzania Shillings 2,200 per live kilo weight fetches a total value of Tanzania Shillings 578,600. The same cattle sold would yield 139 kg of meat that can be sold at Tanzania Shillings 4000 per kg yielding Tanzania Shillings 557,560.

## 1.7 Disease Control

The most common diseases which livestock are mostly vulnerable to include among others, tick bone diseases, worms, trypanosomiasis, Foot and Mouth Disease, Rift Valley Fever, Contagious Bovine Pleural Pneumonia (CBPP). Other common livestock diseases such as East Coast Fever can also be controlled through use of inoculums, but it is relatively expensive. The incidence of diseases resulting from tick borne is high during the month of February to March.

**Table 1: Estimated profit from cattle feedlot at Kongwa NARCO Ranch, March 2011**

Cost Item	Units	Qty	Duration (days)	Rate (TSHs/kg)	Amount	
					TSHs	USD
Purchase price	Live weight	200	-	1,400	280,000	
Feed	kg feed/day	2	90	320	57,600	
Medicines	TSHs/head	-	-	Lump sum	50,000	
Subtotal					387,600	
Weight Gain, (Ave)	kg/day	0.70	90	63		
Initial weight	kg	-	-	200		
Total weight	kg	-	-	263	578,600	
Gross profit per animal					191,000	127

Source: Mwilawa et al. 2010

In Tanzania, the control of diseases under the traditional livestock farming system is poor. Due to poor practices, a substantial number of calves are severely affected by tick-borne diseases leading to the loss of around 50% of all calves born. This loss could be minimized substantially through regular dip-washing with acaricides that are made available at subsidized prices (up to 60% of the market price) by the Government. Further more, the government has implemented a number of programs to combat diseases and many of these initiatives have showed considerable achievements in the eradication of fatal and meat-related trans-boundary diseases such as rinderpest.

Livestock veterinary support is provided mainly through government agents at the district, wards and village levels. Veterinary extension officers often lack skills and the means to promote improved livestock keeping measures; most of them are even not specialized in

livestock production. Relevant knowledge and information on improved pastures, cross-breeding, animal husbandry and feeding is rarely passed to livestock farmers and or producers. Also, there are limitations with regard to the availability of and access to animal husbandry infrastructure related to the control diseases such as dips and crushers.

The supply of medicines and vaccines to livestock farmers are provided primarily through private dealers. The government through stockiest or local governments do supply vaccines for control of livestock diseases such as acaricides which is considered to be major threat not only to the livestock and as well to overall economical importance of the sector. The government also provide subsidies for vaccines so that livestock farmers and producers could get the much needed support in order to prevent the loss of livestock and decline of the sector. The supply of vaccines as valuable inputs to the control of diseases is however limited as most of the vaccines imported from pharmaceutical companies abroad. Even when veterinary products are subsidized by government, only few are used by livestock farmers due to the fact that there is a situation of limited information and knowledge on how livestock farmers can use these products. Part of the problem also stems from the unregulated supply of subsidized products and unqualified veterinary extension officers.

The government in collaboration with private stakeholders established a livestock marketing information system for livestock identification, registration and traceability. This system, among others, is expected to help identifying the origin and the health conditions of cattle, sheep and goats as at when they are being put up for sale or for slaughter. The system should also help to monitor cases of diseases outbreak and facilitate the combat of diseases on site to avoid wider spread and contamination. The sector regulators acknowledge that even with the central and local level traceability systems, traders contribute mostly to the spread of trans-boundary diseases (TADs) such as CBPP, rinderpest, Riftvalley fever, etc, from in-country livestock farms up to export markets and especially through illegal and undeclared trade routes. These diseases have economic and social impact on the country as they contribute to reducing productivity of the livestock.

## **1.8 Animal Transport**

The transport of cattle, sheep and goats on hooves to secondary and border markets is prohibited in the Tanzania. However, due to the high cost of transportation and limited availability of transport facilities, many traders do engage the livestock on very long treks before loading them on trucks at points very close to the markets. In fact there is no reliable information available if more livestock are put on long treks on hooves then being transported trucks.

Transportation of cattle to and from the markets and slaughter facilities is usually done by trucks that are most times not suitable for the transportation of livestock; often the trucks used are on return trips after delivery of merchandise to areas near the livestock supply sources. For the sake of cost reduction animals transported by truck are crowded to take big numbers and as a result some cattle do arrive in bad condition or die on the way. Since the transporters are not original owners of the herds and do not get other incentives apart from their service fee, taking proper care and safety for the livestock while they are being transported and safe delivery is not in their interest. In this regard, livestock are not provided with feeds and water during transportation to markets and the availability of rest and feeding camps is very limited, and the available resting camps can not even provide the minimum standards and are usually very costly. It is estimated that weight loss due to

inadequate transportation is in the order of 15% at an average. A further loss is due to the lower meat quality caused through stress during entire trek and transportation cycle.

## 1<sup>st</sup> Dimension Constraints

The following point summarizes the constraints that exist in the primary production and input provision segment of the red meat value chain:

- Traditional livestock farmers rear livestock for reasons other than commercial production and profitability; animals are also kept to meet social needs and subsistence income. Individual livestock farmers keep their animals without proper herd management and virtually no inputs such as disease control measures or supplementary feeds. This system does not encourage production of quality livestock and ultimately, quality meat.
- The indigenous breeds have low genetic potential for meat production, but they are resistant against most diseases and the extreme environmental conditions. The few existing improved breeds and crosses are either vulnerable or not performing high enough; feed conversion efficiency and weight gain of an animal depend on the breed and sometimes strain of an animal.
- *Range management*: Most traditional livestock farmers graze their cattle, sheep or goats on communal land where there is limited infrastructure for livestock production and competition between herders. This leads to overstocking, overgrazing, and the deterioration of pastures and sometimes conflicts among land users. In cases of severe drought, the pastoralists are forced to move with their herd searching for pastures and water and sometimes lose considerable number of their livestock in the search process. Government support to infrastructure is not adequate including public and private sector investments in dips, dams, wild fire control, crushers, loading and offloading facilities and resting sites. Livestock farmers lack information and knowledge on rangeland development and management techniques such as reseeding, growth regeneration by over-sowing of improved pastures and feed conservation for dry season feeding.
- *Feeding*: Cattle, goats and sheep mainly feed from pastures and water. Due to seasonality most go through a cycle of fat – thin – fat through the rainy season and severe starving and weight loss during dry season. Supplementary feeding with hay and other supplements in the shed during the night is hardly practiced. The feeding and rationing pattern for livestock is further complicated by the scarcity and high price of feeds. In more advanced stages of livestock farming the animals may be supplemented by industrial feeds, a practice that is seldom carried out. In conclusion animals are not feed sufficiently and with the proper rations to reach optimal growth rates and final weight that allows for production of quality meat that would yield good profits for livestock farmers.
- *Feedlotting* is still in its infancy and there is little evidence of good practices and profitability. Feedlot operators, regardless if they are livestock producers or traders, lack the essential knowledge and skills on organisation of feedlotting and also lack the financial capital to complete the fattening cycle to its full potential. Further more, feedlot operators cannot really count on reliable supplier and buyer relationships that exist. Industries involved in production of livestock feeds are very

few in the country and are mostly engaged in production of dairy milk, poultry and pig feeds.

- *Animal Husbandry*: Traditional livestock farmers leave reproduction in the herd mostly to random selection of bulls that are available at breeding time. The combined feeding, migration, and keeping practices of livestock results into slow growth rates as some animals only reach optimal weight after 8 years while others never reach it. Consequently, these limitations make livestock farming/production a less profitable business for the farmers in the country thus making livestock farming and keeping a large herd becoming a mere social status that is being viewed as very important. In this light, it can be said that, the quality and quantity of meat that is being gotten from traditional husbandry systems in country is far behind the potentials the sector currently has and can offer when properly utilized.
- *Disease control* is inadequate despite the subsidies that livestock farmers can get (theoretically) to buy vaccines and acaricides. Hence it is only livestock with considerably high immunity disease and harsh climatic conditions do survive. Those that do survive are with low meat quality and productivity.
- *Livestock transport* is inadequate. A large portion is still done illegally on hoof while in case of road transport the trucks are inadequate, there are too few stops or along the way to the markets, where there are night rest camps and holding grounds, they are usually in poor conditions.

## 2<sup>nd</sup> Dimension: Processing Capacity and Technology

Tanzania produces some 400.000 MT of red meat per year and the Government estimates that livestock production will double by 2025 in view of the present investment in both the public and private sectors (United Republic of Tanzania 2008). In 2009, indigenous cattle meat was worth USD 670 million, ranking beef production second with regard to value of production in agriculture after bananas (FAOSTAT 2011). However the share of value addition is rather insignificant leaving little room for traders, transporters, slaughterers, butchers, and retailers to handle meat properly and provide meat of good quality and with high safety standards to consumers. Still, slaughtering and processing of red meat has a limited contribution to income generation and job creation, even though the potentials that the meat producing/processing sector has, suggest that income generation could be much higher.

### 2.1 Slaughtering

Primary processed meat and meat products are derived after slaughtering of cattle, sheep and goats and include carcasses, red offal (including liver, lungs, tail, heart and kidneys), hides, and skins. Other livestock by-products include blood, bones, horns, hooves, hair, wool, glands, intestines, stomachs and gut contents. The slaughter process starts with stunning to render the animal unconscious and thereafter the throat of the animal is gently cut with a sharp knife. This method of livestock slaughtering is commonly practiced in Tanzania with the exception of two modern now in the country. After the throat cutting process, the next steps are bleeding, followed by flaying to remove the skin/hides, evisceration to remove visceral organs such as lungs, liver, intestines and rumen, heart, spleen etc; and parting of the carcass into halves and quarters.

The annual slaughter capacity in Tanzania is estimated to be around 1,500,000 cattle; 2,500,000 goats; and 550,000 sheep (Wanyancha and Msanga, 2008). Formal slaughtering - meaning slaughtering that is registered and overseen by the meat inspector - is carried out only at a few abattoirs and the 75 public slaughterhouses at the district level. Around 60 districts do not have abattoirs and use slaughter slabs. On average, the slaughter facilities at Vingunguti handle 280 cattle, Ukonga 320 cattle, Kimara 50 cattle and Tegata slaughter 13 cattle per day. With exception of the abattoirs, all slaughter facilities lack the basic tools, equipments and cooling facilities for slaughter and meat handling. This is despite the Government regulations requiring each district to operate at least two properly designed slaughtering facilities applying strict hygiene regimes for food handling.

Data on actual slaughters is imprecise as it is difficult to predict the unrecorded slaughters. Estimations for 2010/2011<sup>2</sup> suggest that annual meat production is at 503,496 MT which is a substantial increase from the 422,230 MT in 2008/2009. This excludes an estimated 20%

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<sup>2</sup> Ministry of Livestock and Fisheries Development – MLFD (2011). Budget Speech 2010/1. MLFD, Dodoma, Tanzania. Available at [www.mifugo.go.tz](http://www.mifugo.go.tz).

unrecorded data. In fact the unreported data constitutes a substantial problem (see Box 3). Official figures suggest that there have been 1,059,513 heads of cattle, 181,398 heads of sheep and 455,697 heads of goats slaughtered at abattoirs, slaughter houses and slaughter slabs in 2010 (MLFD 2011).

### **Box 3: Reporting of slaughters at Vingunguti**

The Vingunguti Slaughter House facility in Dar es Salaam, some 800 cattle, sheep or goats are slaughtered per day. This slaughter facility is infamously known to be overcrowded with very low food safety and hygiene standards. The above mentioned figure is calculated on the basis of the reports in the hides and skins sector. However, the official meat inspection report only records about 400 livestock being slaughtered daily. This goes to suggest that people at the slaughter facility want to avoid the high and multiple fees for meat processing. The underreporting of quantities of livestock handled at respective slaughterhouses constitutes a leakage of government revenue which justifies the fact that the major actors of the livestock sector are not willing to confirm with the high costs of taxation and regulation. The resulting practice, however, is a major challenge to food safety.

Slaughtering facilities can be distinguished according to a) their capacity, b) the number of slaughtered livestock, or 3) according to the degree of mechanization and technology used. There are four main types of slaughter facilities:

- **Informal slaughterers:** These are not licensed (see section 7.2). They use basic facilities in handling livestock by hanging them on a tree (most relevant for shoats) as well as on bare grounds, crop stovers or sometimes on plastic sheets as they are being slaughtered. In pastoral communities, the number of informal slaughterers is almost comparable to the number of livestock keeping households, and animals are slaughtered primarily for consumption in the individual household. Many informal slaughterers also operate at the village level and during festivals.
- **Slaughtering slabs:** There are 1,009 registered slaughter slabs in the country mostly private owned, and located mainly in villages and suburbs but also at farms and ranches. The slabs are often integrated with butcheries and handle up to 10 animals per day depending on the economic status of the surrounding communities, season of the year and demand. At most times, only 1 or 2 animals are slaughtered on special days of the week. Food safety and hygiene standards are not adhered to and often no meat processing inspection takes place. The facilities have very rudimentary slaughtering tools and equipment, by-product recovery is limited and inspection and enforcement of safety and hygiene are almost non-existent. In rural areas the slaughtering operation at slabs is regulated by livestock extension staff at ward/village level, while in towns specialized livestock inspectors, mostly District Veterinary Officers are responsible for certification of animal health and meat safety.
- **Slaughter houses:** there are about 75 slaughter houses in the country mostly owned by the local governments, and operated at the districts and town centres. Slaughter houses do slaughter between 10 to 50 cattle per day with the exception of the 4 facilities in Dar es Salaam which slaughter about 400 cattle per day. As being the case for slaughter slabs, most slaughter houses need upgrading with regard to tools and handling procedures and compliance to safety standards, especially to meet the requirements of niche and export markets.
- **Abattoirs:** There are three modern abattoirs currently operational in the country; they are located at Arusha, Dodoma, Rukwa. While one Abattoir closed down in



Morogoro four more are set up at Iringa, Manyara, Mbeya and Ruwu. There are also two large structures in Mbeya and Shinyanga that were installed 30 years ago under Tanganyika Meat Packers Ltd; chances to put these facilities back to use are not very high. Finally, there is an abattoir under the Orkonerei Maasai Social Initiative (OMASI) in Simanjiro district, Manyara region, Northern Tanzania. The facility is operated by Orpul LTD and seems to receive support from foreign investors. Some of the abattoirs are privately owned and others are joint ventures in which the Town Council or a Producers Association owns the abattoir and puts its operation into the hands of a private operating company.

The level of capital investment required for the above four slaughter facility types varies substantially and is not only limited to the premises and maintenance thereof, but also includes infrastructure for handling livestock and the basic tools and equipment needed for slaughtering. It can range from the cost for a shack with a hook and a knife to 2.5 million USD for the installation of a modern abattoir. Slaughter facilities generally operate under very peculiar, disorganized and unhygienic conditions.

Slaughter facilities usually practice “custom slaughter”, a system in which ownership of the livestock to be slaughtered remains with the trader or butcher and the slaughter facility takes a fee for performing the slaughtering. Facilities that usually do not operate under “custom slaughter” are the ones attached to ranches. At abattoirs fees for custom slaughter are 15,000 to 20,000 TSH while at slaughterhouses and slabs they are around 1000 to 1500 TSH. At abattoirs staff is paid by the abattoir operator while at all other facilities owners of the meat have to pay “slaughter men” additionally, usually in form of meat or other parts of the animals. In return even blood, skin, offal, horns and hoofs remain with the slaughtered livestock owner who sells them at the spot to specialized buyers. Considering the operational costs, hire of labour and utility inputs slaughtering at slaughterhouses and slabs may well be above 10,000 TSH.

In standard industrial slaughter operations such as applied by the abattoirs skilled workers who went through a specific training in meat cuts and meat hygiene undertake the slaughtering. In practice however, at slaughterhouses and slabs, slaughtering is carried out by rather unskilled individuals hired by the butchers or animal owners according to personal preferences. With exception of the abattoirs, slaughterers are not hired by the slaughter facilities. Only the three currently operating abattoirs are able to comply with the minimum quality standards for handling of meat and meat products as stipulated under the food safety act while all others don't.

Modern abattoirs are a recent development in the country. However, these abattoirs currently operate at 50% of their installed capacities (see Table 2). Reasons for underutilization may include lack of planning and coordination, high utility costs (e.g. electricity), strong competition from better quality and cheaper imports, and food safety certification procedures (Ashimogo and Greenhalgh, 2007).

The carcasses from traditional stock are relatively small and produce less meat, the cuts are not of the standard weights range and meat products are not all that tender. The meat from traditional livestock is organically produced as the animals are fed entirely on natural pastures and it has original meat taste. The dressing percent of traditional livestock is about 54 % and varies with grade of the animal. Final processing leads to production of small amounts and varied ranges of by-products such as bones making up about 10% of live animal weight. The animals of higher grade fetch higher yields up to about 60%, although this is almost



achieved only from animals reared under feedlot. Ranches are rearing improved breeds with yield increases estimated to be up to 60 percent.

**Table 2: Abattoirs capacities in Tanzania**

Company/Abattoir	LOCATION	Design Daily Capacity	Current Turnover	Target Market	Current Status
<b>Abattoirs</b>					
NARCO Ruvu Abattoir	Ruvu Coast Region	800 Cattle 400 Shoats		Meat Traders	Stopped construction
Arusha Meat Co. Sakina Abattoir	Arusha Municipality	300 Cattle 400 Shoats	150 Cattle 150 shoats	Meat Traders	Operational
Tanzania Meat Comp. Dodoma Abattoir	Dodoma Municipality	220 Cattle 200 Shoats	100 Cattle 300 shoats	Meat Traders	Operational
SAAFI SAAFI Abattoir	Sumbawanga Municipality	150 Cattle		Meat Traders	Operational
Tanzania Pride Meat Co. Abattoir	Mvomero Dist. Morogoro	200 Cattle	-	Niche Markets	Under Receivership
Ilaramatak Manyara Abattoir	Simanjiro, Manyara	40 Cattle 40 Shoats	-	Meat Traders	Constructed
Iringa Town Council Iringa Abattoir		200 Cattle 300 Shoats			Under construction
Mbeya City Council Mbeya Abattoir		200 Cattle 300 Shoats			In planning
<b>Ranch-based slaughter houses</b>					
Manyara ranch Abattoir	Monduli Arusha	50 Cattle 100 Shoats	-	Niche Markets	Under construction
Glienshils Ranch and Mtibwa Feedlot	Mvomero Dist. Morogoro			Niche Markets	Operational
Melela Farm	Morogoro			Meat Traders	Operational
Kisolanza Farm (Selous Farming)	Iringa			Meat Traders	Operational
Kongwa Ranch	Dodoma		10 cattle	Meat Traders	Operational
Ruvu Ranch	Coast Region			Meat Traders	Operational

Source: The Authors

The dressing percentage<sup>3</sup> of the livestock in Tanzania varies from 45% to 55% depending on the body conformation of the animal; most of traditional breeds in Tanzania yield an average of 50% dressing percentage. The red meat carcass from most traditional animal breeds in Tanzania constitutes of about 70% animal muscle meat, bones and 10% fat on carcass. Apart from pure muscle tissue, muscle meat also contains an average 20%

<sup>3</sup> The quantity or the weight of carcass is expressed as live weight-percentage and the corresponding yield or dressing percent is estimated according to the formula: carcass weight/live weight\*100. The conversion factor for the traditional livestock breeds is estimated at 1 livestock unit equivalent to 450 Kgs of animal live weight. The live weight and dressing percent includes fat and bone content of the carcass, most of which will be removed if the carcasses are processed further.

connective tissue and inter- and intra-muscular fat ranging between 10-15% depending on the variety and feeding regime, which determine the market segment for the meat and meat products based on quality and grades of the meat.

The processing of by-products recovered at the slaughter facilities is very limited; except for raw hides and skins. Blood and bone is also recovered by rudimentary tapping or collection, dried and milled to produce animal feed, while ruminal content is used as pig feeds and also to produce manure.

## 2.2 Meat Inspection

Meat and meat products from the slaughter facilities undergoes mandatory inspection starting with inspection of the animals before slaughter for diseases. The fitness for slaughter applies to physical conditions such as consciousness of animal, minimum live weight and absence of physical exhaustion or stress from transportation. This is followed by further inspection of the carcass before transfer to the subsequent channels of distribution and certification as fit for human consumption.

Theoretically, there should be a health or veterinary inspector posted at every slaughter point. However, in more remote areas the inspectors sporadically pass the slaughter points. Meat inspectors collect data for local and central government on livestock handled per day and other related information. The inspectors charge an inspection fee, which is part of the revenue generated by local government. At the abattoirs, the inspection fee is part of the overall fee and after post-mortem inspection; the carcasses are stamped and handed over the meat products to the animal owners or to respective distribution channels after slaughter.

## 2.3 Butchering

Butchering (also labelled as primary processing) follows after slaughtering, and involves size reduction of the carcass into parts. Theoretically, this could be followed by partitioning in special cuts, grading and packaging of the end-products such as fillet, sirloin, T-bone steak, rump steak, etc. However, more than 90% of the meat sold by butchers is mixed meat (locally known as Nyama Kuawida), a denomination for the undefined meat pieces cut from any part of the quarters butchers have hung up in their shops. Further to mixed meat butchers also sell steak (meat without bones), filet, and offals which are bought mainly by groups of medium income. In rural areas butchers also sell heads and legs. Some few of the more advance butchers have machines to produce minced meat.

The meat usually arrives at the butchery in quarters and is then cut off the bone by the vendor in response to the liking of the customer without applying any cutting and portioning whatsoever. It is wrapped in a piece of newspaper or packed in polyethylene bags. Most butchers have basic tools and equipment for cutting and packaging meat. The facilities vary from informal shack operations where meat is chopped with a machete on a wooden slab, to shops with air-conditioned and cold storage facilities, specialized band saws and electric meat cutting machines. The latter, however, are rather rare exception and the hygienic status of most the butcheries are in a peculiar state. Sometimes, gaze or mosquito nets are used to build a cage around the meat to keep flies away. Meat is cut on the hook or on wooden or stone tables. Tiling for easier cleaning is only found at a few butcheries. In addition a limited fleet of smaller trucks (3 to 4 MT) most without cooling facilities distribute

the meat to the various selling points. The availability of financial capital for investment and improvement of these facilities is limited and as a result, the level of processing and range of meat products is still limited.

Fresh meat and meat products is highly perishable especially when handled under unhygienic conditions and without cold chain facilities. Only a limited number of transporters of meat and meat products do operate with cold vans for the transportation of meat from slaughter slabs and abattoirs to the end markets. As cold chaining does not exist in Tanzania, except for imported meat that goes to hotels and supermarket, shelf life of fresh and unfrozen meat is only one day or less depending on the temperatures and conditions of handling. When frozen, shelf life of meat can be extended up to one year. It is estimated that up to 40% of red meat value is lost due to post slaughter losses due to lack of proper handling, timely transportation with cooling vans to the markets or designated outlets or consumers.

The initiative of individual butchers and the setting up of modern abattoirs have triggered some push for better handling and hygiene in butchering at places such as Morogoro, Dodoma and Arusha. However, these efforts are not a general phenomenon in the sector and meat quality remains extraordinarily low.

## 2.4 Further Processing

Processing of meat, beyond the local butchers, is almost exclusively left to traditional preservation techniques. The pastoral communities, since centuries, engage in preservation of meet via salting, drying and pre-cooking resulting in meat with relatively extended shelf life. The techniques and processes of value addition to these products in local communities are very low and therefore lack the compliance with food safety standards.

The very few companies that engage in further commercial processing of red meat and other meat types are summarized in Table 3. The capacity, level of expertise and range of products is limited and the most common locally produced value-added or processed red meat products consist mainly of minced meat, several varieties of sausages, hamburgers patties, biltong (dried meat) and roast beef. The processing involves essentially size reduction into retail units and meat pre-preparation processes where red meat is combined with ingredients, such as spices or curried, and then packaged to make a final consumable product.

**Table 3: Major meat processors in Tanzania**

Company/Abattoir	Location	Design Daily Capacity	Current Turnover	Target Market	Current Status
Happy Sausages	Arusha	1,330 kgs meat			Operational
Arusha Meat King Company.	Arusha	283 kgs meat		Niche markets	Operational
Tanzania Meat Products	Dar Es Salaam	1,000 kgs meat		Retail Trade	Not Operational
Shoprite (Outlets) 3 in Dar Es Salaam 1 in Arusha	Dar Es Salaam Ausha			Retail Trade	Operational
Franconia	Dar Es Salaam			Niche Market	Not Operational

Source: The Authors

The cost of formal slaughter limits the reliable supply of quality meat for further processing to final products as the facilities do not stock animals as raw material for own processing and further supply to processors. Moreover, the production system under custom does not encourage the slaughter of animals for production of value added products and by-products.

In general marketing value addition of other livestock by products is very limited due to lack of knowledge and technology in regard to the processing and its use. A limited quantity of hides and skins is processed to local traditional products such as decorations, sitting mats for local use and for clothing, mainly by traditional livestock keeping households. Bones and hard parts are used sparingly for production of crafts. Other livestock by-products recovered undergoes little processing through backyard business who market bone and blood meals to small-scale animal feed processors. The tips of horns may even find their way into exports in raw form and the remained part is wasted. Animal fats, classified as firm or soft texture fat depending on their location in the animal body, are sold at the same butchereries and selling points for beef.

## 2<sup>nd</sup> Dimension Constraints

The operations at slaughter facilities and village slabs use rudimentary equipments slaughter technology and in absence of any hygienic measures, the resulting quality meat coming from these facilities is very low. The users of these facilities, traders and butchers, tend to turn away from these facilities looking either for illegal lower-cost solutions or request upgrading.

The skills in processing among “slaughter men” at slaughter facilities are limited. These people are hired by the owners of the animals and have no incentives to comply with quality and food safety standards. Payment procedures are ad hoc and chaotic.

No grading of carcasses is performed and the meat is sold without much value addition “warm” as “mixed meat”. Consumers will need to cook it for some time to kill germs. Butchereries work with few skilled technical staff and lack appropriate processing tools, knowledge on hygiene and cuts and cooling equipment.

The few improved slaughtering facilities (3 abattoirs) operate below capacities with regard to the slaughtering of livestock. Many traders and butchers still don’t see the reason to pay higher slaughtering fees at these modern abattoirs and do not value the better quality of meet that they provide.

Good Manufacturing Practices, codes of food hygiene, and food safety standards have been well set out at the policy level, but they are not implemented.

Few processors venture into final processing and marketing of differentiated value added products due to the limited capacity, lack of equipment, capital and limited information on markets for improved products.

The capacity for tracking the quality of raw, processed meat and meat products along the chain is hardly in place. The use of laboratory methods for quality testing and safety assurance is limited. The assurance of quality and safety of animals is undertaken using only visual observation and involves only quality inspection of the animals and carcass by the district veterinary officer (DVO) at the slaughterhouse.

## 3<sup>rd</sup> Dimension: END MARKETS AND TRADE

### 3.1 Markets for Live Animals

Traditional livestock farmers sell their animals to primary meat markets. Primary markets are located close to livestock farms; they are established and managed by local government authorities (municipalities, districts). Secondary markets are established close to the consumption areas near towns and cities or where they can gather animals from major primary markets and areas of intensive livestock rearing. Secondary livestock markets are administered by MLFD. Main players in the primary markets are producers and traders; on secondary markets trade is among traders exclusively. There are between 300 to 400 primary markets in the country versus 12 secondary markets. Additionally there are 10 border markets, also administered by MLFD, whose function is to facilitate livestock trading to bordering countries.

In principal, the animals in the markets are supposed to be weighed, graded and auctioned on site to ensure transparency in pricing. However, primary as well as secondary markets in Tanzania usually lack the necessary infrastructure such as weighbridges, loading and offloading ramps, pens and fences. The marketing infrastructure has been improved by the Africa Development Fund of the African Development Bank which claims in its completion report that Improvement in railway and trucking transportation has led to reduction in weight loss of animals from 12% to 10% and mortality rate from 5% to 0.2% (AFD 2006). However, marketing infrastructure is still far from developed in the country.

Real auctioning, which entails that livestock are presented to all buyers and sold to the highest bidder, is not practised in the country, with the exception of some efforts in Kondowa district. However, the common practice is that the price is determined through direct negotiation between the buyer and seller. The buyer examines the quality and weight of the animal visually. Often, this practice is to the disadvantage of primary livestock producers. Skilled buyers however, are able to detect above the average animals and buy them for a good price.

Annual livestock trade is estimated at about 900,000 cattle, 700,000 thousand goats and 100,000 thousand sheep, accounting for 382.4 TSH billion (MLFD, 2010/2011). While these figures may include double counting on the primary and secondary markets the overall figure may be well above the official reports. In fact, the reported numbers of annual slaughters and hides and skins traded suggest that the number is much higher (see Table 4). The problem lies in the revenue collection on the livestock markets and slaughter houses. Fewer animals traded and slaughtered means that less revenues have to be paid to the revenue authorities by the local authorities.

**Table 4: Animals traded and slaughtered versus hides and skins traded (2010)**

	<i>Cattle</i>	<i>Goats</i>	<i>Sheep</i>
Animals traded	857,208	682,992	122,035
Animals slaughtered (head count)	1,059,530	455,697	181,398
Hides and skins reported	2.500.000	2,400,000	200,000

Source: Ministry of Livestock and Fisheries Development – MLFD (2011). Budget Speech 2010/11. MLFD, Dodoma, Tanzania. Available at [www.mifugo.go.tz](http://www.mifugo.go.tz)

The Government has initiated the setting up of a livestock marketing (price) information system to assist livestock holders and traders with information so as enable them make better decisions in livestock trading. The information is provided through local newspapers, as well as platforms provided by mobile cell phones and websites. The information provided relates to volume of stock, grades and price of animals. In order to request information users need to know market codes, for instance Pugu (DAR), Meserani (ARUM), Igunga (IGU), Wereweru (MSH) etc). The database is designed also to provide information on prices and markets for meat products, including raw hides and skins, although at the time of the study the capacity and system for update of this information was not in place.

However, the main government websites [www.livestockinfo.go.tz](http://www.livestockinfo.go.tz) (created under the Tanzania Livestock Marketing Project - TLMP) as well as [www.limstz.net](http://www.limstz.net) (created under the Livestock Information and Knowledge System of the Tanzania Ministry of Industry and Trade) seem not to be currently operational.

Pica-Ciamarra et al. (2011) reviewing the market data collected and disseminated by the Livestock Information and Knowledge System find that the data is useful but provides more potential to identify market opportunities for livestock producers if combined with household data collected by the National Bureau of Statistics. They further argue that the combination of the two datasets would also help to provide policy makers with information to design and implement policies that facilitate access to markets for livestock producers.

### 3.2 Markets for End Products

Most meat, one can estimate up to 90% of the total production, is sold in form of mixed meat (Nyama Kawida in Kiswahili) by local butcheries to consumers who include the wide range of lower income groups in rural and urban areas up to people with medium income. At the butcheries the consumer chooses the meat parts off the carcass based on physical appearance, price, and trust.

The medium and high-level income groups (including medium level employees, members of the political class, expatriates and tourists) forms a market segment that demands high quality meat cuts. However the demand for meat products such as meat cuts, biltong, sausages, ham, canned meat and others may not exceed 5% of the total meat consumption in the country. The segment has growth perspectives for good quality meat as import figures show.

Elaborated meat products are sold at supermarkets and shops and constitute the high-value end of value chain. The supermarkets and wholesalers who cater to this market also sell to large hotels and mines. They usually have cold storage facilities for preparation of the meat products and keeping stocks on the shelf. However, their facilities are affected by the reliability of power supply, and in cases of fluctuations, the quality of products at these

retail facilities is subject to fast deterioration. Some facilities are able to operate stand-by alternatives for power supply which at times may result in price fluctuations of the products on shelf.

### 3.3 Markets for Hides and Skins

Non-edible by-product specifically hides and skins are collected for trade to exporters, tanneries and processors of leather and leather products. Hides and skins is an important by-product produced along red meat value chain, which are mainly sold as individual units to collectors for the slaughter slabs and retail buyers from the slaughter facilities (see Schmel 2012 for a more detailed analysis of the Tanzanian Leather Value Chain by UNIDO). Most of the hides and skins (about 70%) are exported raw and little amount as semi finished leather (wet blue). Domestic consumption of leather is limited to artisanal level in making shoes, belts, bags, etc. The finishing of this products is still of low quality which need to be improved. The government following up on its 2007 leather sector development strategy introduced a levy on export of raw hides and skins at 40% or TSH 400 per kg of export value to ensure local industries receive required raw materials and to promote value addition (United Republic of Tanzania 2007). The recovery of hides and skins from animal slaughtering at household level for local use of the red meat and other products is negligible. They may occur only at community and family ceremonies that are common during the festive season in cattle herding regions.

### 3.4 Export Markets

Since Tanganika Packers Ltd (TPL) lost its sanitary certificate in 1976 (see Box 4) the country has not been exporting meat and it is only in 2005/06 that exports have been resumed. Particularly goat and sheep carcasses are exported in chilled form after splitting into halves without further processing. Currently there two private companies engage in the export of red meat. They engage agents to buy animals from the secondary and primary markets up to larger primary producers and slaughter the animals at a custom service Abattoir (usually in Dodoma). The exported animals are mostly of bigger frame size with more tender meat (especially Ankole types). The traders source them from rural producers and make special arrangements with feedlot operators to improve the quality of the animals.

#### **Box 4: The Story of Tanganyika Packers Ltd., 1949 - 1993**

Tanganyika Packers Limited (TPL) dates back to the pre-independence period. After independence the company become a joint venture between the state (51%) and the British subsidiary Brooke Bond Liebig (49%) who was managing the company. TPL's Kawe plant in Dar es Salaam had a capacity to slaughter 1000 cattle per day. In the 1970s it slaughtered about 200,000 cattle per year. The company was certified to export meat to Europe. The main export product was corned beef and premium cuts. During that time the management of the company developed plans to increase its production and to source meet also from remote areas of Tanzania. For that purpose two highly mechanized modern meat plants were installed in Mbeya and Shinyanga with a capacity of 250 cattle per day. However, nationalization policy put an end to these plans and the plants never went into operation. Following nationalization in 1974, TPL became a subsidiary company of the Livestock Development Authority (LIDA). Slaughter for export ceased 1976 when TPL lost its international sanitary certificate. However production at the Kawe plant continued until 1993 when it was officially closed. In recent years Kawe and Shinyanga plant were privatized to private operators of which up to now there is no new development. The Mbeya facility is still under custody of the Consolidated Holdings Corporation (CHC) but private or public investors have not yet been identified.

*Source: The authors, based on interviews with former TPL staff*



Meat is exported to Oman, Kuwait, United Arab Emirates (UAE), Oman, Malawi and Democratic Republic of Congo (DRC). The demand for sheep and goat meat in Arab countries has been growing and the figures fluctuates around 200 MT. Just before Muslim holidays the demand can be particularly intensive. Meanwhile, the market for beef in these countries is more limited. There are also some projections that exports will double in the years to come.

Further to the formal exports, it is estimated that about 300,000 head of cattle are informally exported annually “on-hooves” to Burundi, Democratic Republic of Congo, Kenya, Malawi, Rwanda, Uganda and Zambia. In order to formalize the business government has constructed ten (10) livestock border markets situated along the borders of the neighbouring countries but none of them is functioning. Still, un-trustful traders export livestock through porous borders, an illegal practice that has been difficult to regulate.

### 3.5 Meat Import

The country imports high-value special cuts such as marinated fillet, tenderized and vacuum packed products, t-bone, sirloin and fillet. These products are not available on the local market; most of these are imported from Kenya (mostly processed pork meat such as sausages) or South Africa (mostly raw meat cuts). The imported meat is for the high-value niche market including hotel restaurants, super markets and mining areas. In recent years pork meat has also become popular in urban areas as a kind of street food delicacy (*kitimoto*). The figures on the imports of red meat are ambiguous and it is not clear from where the market for high-value prime meat cuts is catered from. While there are estimations which suggest that the imports are as high as 326 MT for red meat more official figures show that the imports of all meat are 710 MT (of which red meat is only a negligible portion). A detailed market study would need to clarify these estimates.

### 3.6 Market Potentials

More than a decade ago Delgado et al. (1999) have predicted that an increasing urban population, growth in rural areas as well as export market perspectives will lead to a market situation where demand for red meat products will continue to outstrip supply. While this may well be the case also in Tanzania not much of these market potentials have been realized and increases in slaughtered animals and exports as well as value addition have been modest. More recent estimations of NARCO and SAGCOT (SAGCOT no date) based on production increases monitored between 2002 and 2006 suggest that the market for red meat, particularly local consumption, will continue to grow. Another indicator is the rise of young livestock traders who only a few years ago were livestock trekkers and the short term (3-4 months) fattening of cattle in the Lake zone and processing of meat in the Northern zone. A particular interesting trend is to be expected from the market for good quality meats which is in short supply throughout.

### 3.7 Food Safety Standards

The quality of red meat and meat products in Tanzania is uncontrolled, due to the lack of enforcement of local and international food safety standards. Commonly slaughtered animals are handled on the ground with limited facilities for handling and cleaning of the products. The hygienic situation is also peculiar at butcheries and selling points where adequate equipment, washing facilities, packaging and handling are all but in place.



Each slaughter facility is supposed to have a certified government inspector to check and approve animal health before and after slaughter. Most inspectors rely on physical inspection and issue authorization by stamping each carcass as proof of certification that allows the animal to be slaughtered for domestic consumption and sell to export markets. The technical capacity and laboratory services for pre and post slaughter quality assurance are centralized at the sector ministry and limited in the rural and semi-urban areas.

There is no laboratory at any of the abattoirs, or butchers and slaughter houses to facilitate the determination of level of hygiene and disease. However, the abattoirs are trying to keep hygiene standard required in food safety handling better than in slaughter house and slabs. On the other hand, government intervention through its institutions (MLFD, MIT, TFDA and TBS) engaged in the regulation of red meat value chain business standards, quality and conducts.

Quality and safety remain an important investment prospect for import substitution and increased exports.

### **3.8 Quality Requirements**

Quality criteria for meat include sanitary, palatability, tenderness, juiciness and fat content. Good quality meat that fetches premium prices can only be derived from animals of appropriate genetics and well fattened. Presently less than 5% of all animals slaughtered meet these criteria.

Grading of livestock, meat and meat products is an important factor to increase marketing efficiency that would facilitate negotiations of similar products between buyers and sellers. In practice this system is not applied, when used properly it will stimulate the production of quality animals. The Government in collaboration with the Tanzania Meat Board introduced a grading system with four grades that applies to traditionally raised animals as well as to better quality animals. However, the system is yet to be put into practice.

The current meat exporters have standard requirements for the meat but this does not have much influence on production of quality animals. In most cases goat and sheep meat is exported chilled in halves without further processing. The abattoir in Dodoma has the facilities to produce meat to satisfy export standard, although it has not yet received certification for quality and HACCP standards. This is an area that requires support for ensuring compliance to trade standards for the major markets by attaining relevant quality and safety certification status including ISO compliance.

In most case, consumers are not in a position to demand for quality meat and meat products, this is because they are not aware of the quality criteria, hygiene and safety issues. However, urban consumers are starting to become more conscious about meat quality. Extending this consciousness to all sectors of the society may be a gradual process and certainly will cause tremendous changes in the entire value chain.

### **3<sup>rd</sup> Dimension Constraints**

- There is limited information on the markets for red meat, particularly the marketing channel for animals and meat and meat products, market segments and their respective size and prices. Further information on consumer preferences and purchasing power in various consumer segments is not available. It is not clear to which extent quality meat products could be sold to a wider group of consumers and

how would consumers react to the prices of quality meat. A detailed marketing study is required to explore all these aspects.

- The livestock marketing information is not accessible for the actors across the value chain to make appropriate decision on matters related to trading of livestock; also the availability of reliable data is limited.
- Most consumers of meat and meat products are not aware on quality and safety issues in meat consumption and the related legislation for meat handling and packaging. Demand for better quality meat is constrained through both consumer ignorance and limited purchasing power. Concerted efforts to inform and educate consumers through an information campaign would boost the demand for quality meat eventually also levelling out part of the price sensitivity of consumers.
- Despite the emergence of a local niche markets for quality meats, e.g. via supermarkets or modern urban butchers, product differentiation and value addition in meat and meat products is largely underdeveloped.
- Butchers and meat processors lack skills and capacities to market their products, including understanding of the buyer markets, organization of continuous supply, transport facilities, cooling equipment and proper packaging.
- The export market for red meat and infrastructure for market access is poorly developed. Exports are mainly in form of animals or slaughtered halves of goat and sheep for the Middle East Markets which does not exceed quality and value addition in these export products is minimal.
- Meat quality regulations require improvements and their implementation needs to be enforced. The hygiene and disease diagnosis in the slaughter facilities is carried out upon visual observations. At butcheries the handling of meat, equipment and packaging is inadequate.
- The marketing of by-products, such as skins and hides, bones, horns, blood etc is not developed. Most by-products find their use in the informal sector contributing only marginally to value addition. Using by-products more efficiently would render slaughtering and butchering more profitable.



## 4<sup>th</sup> Dimension: VALUE CHAIN GOVERNANCE

In principle there is no clear coordination of red meat value chain. The vertical integration in the red meat value chain is marginal and the value chain can be considered to follow a “market-type” governance model. The following chapter describes two main features of the organization of the value chain: 1) the prevailing power relationships and 2) interest group articulation.

### 4.1 Power Relationships

The red meat value chain is characterized through millions of primary livestock producers, a range of traders and trading butchers, many butchers and meat selling points and almost all Tanzanians who consume red meat products. In this group traders and larger butchers can exercise considerable power, but only if they have sufficient access to finance to buy animals. As formal finance through banks does not exist in animal trade, power remains in the hands of a few well financially endowed traders and butchers.

The position of livestock farmers in Tanzania is weak, partly due to the seasonality in rearing of livestock. Many livestock farmers do not rear animals for commercial purposes and even larger herders with a considerable number of cattle do not play an important supplier role as they only sell occasionally. In consequence, during the end of the rainy season, when animals are well fed and healthy, livestock farmers do not sell but keep the animals to increase herd size. In contrary, at the end of the dry season, livestock farmers tend to sell those animals that may not survive the shortages of feeds and water. The consequence is that only animals of minor quality end up being sold. Traders and buyers try to counterbalance that cycle but as animals are not paid based on quality and weight there is too few incentives for farmers to sell healthy and fat animals.

Integrated systems of production that include livestock keeping, feedlotting and marketing to quality markets are almost inexistent. An exception is NARCO’s KONGWA ranch, which currently runs at very low capacity utilization, and a number of recently established commercial ranches.

The slaughter service is mainly dominated by local governments owning almost all slaughter facilities at municipal and district level. The existing privately owned slaughter houses and slaughter slabs are not profit-oriented specialized entities but sprung up in reaction of insufficient government services.

Butcherries are the main meat and meat product outlets. An individual entrepreneur can own from 1 to 15 butcherries. For example, one butcher in Morogoro Municipality owns 12 butcherries handling some 15 to 30 heads of cattle per day accounting for up to 30% of the daily slaughters in Morogoro. Such individuals are able to exercise considerable market power.

Meat exports have only picked up recently and the trade is dominated by two exporters with almost equal market shares. For other actors it has been difficult to access to lucrative export markets due to the finance required to assure a constant supply of products with stable quality. For smaller ranchers and more so livestock farmers groups and individual herders it has proven impossible.

Consumers often have insufficient knowledge on meat quality while being rather price-conscious. Consequently they may receive meat of lower quality. Meat selling points also do not accurately weigh the meat they sell.

## 4.2 Interest Group Organization

The level of organization among livestock farmers is low (in comparison to crop farmers) and the representation of livestock farmers' interests through associations and unions is rather insufficient. The primary and secondary livestock markets are also intended to provide platforms where livestock farmers could market their animals collectively and get a higher price. However, farmers rarely take advantage of that opportunity and rather sell their animals individually leaving them with few bargaining power. If they are in need of immediate cash most likely they are not able to fetch a good price. The government promotes the organization of livestock producers to enable collective access to inputs, extension and business and information services. However inputs and improved knowledge have not yet penetrated the livestock sector to a sufficient extent.

Traditional livestock farmers are represented largely by NGOs, encouraging formation of pastoralist communities such as the SNV-supported, pastoral community association "*Umoja wa Wafugaji Kanda ya Mashariki*" (UWAKAMA) in Western Zone. In other areas traditional livestock farmers are also represented through local associations such as "*Manyara Ranch Livestock Producers Association*" (MRALIPA), *Jumuiya ya wafugaji Ruvu*, etc. These have not featured at the national and policy level. The traditional livestock producer scattered all over the country may be insufficiently represented through associations/organizations. In this regard, there is a need for concerted efforts from various stakeholders to promote formation of traditional livestock farmer's producers associations at local and national levels. In the future it is envisaged to constitute a national association of livestock farmers.

Private commercial livestock producers from Kagera region have established associations that provide a platform for advocacy on key production and market issues. The associations of commercial producers, mainly those operating NARCO satellite ranches have been engaged in lobbying on markets and regulatory policies such as on levies and subsidies on inputs. The commercial producers associations have a relatively better analytical and policy dialogue structure, and in some instances they have been able to influence government policy (e.g. via the Tanzania Meat Board), legislations processes by the parliament and to a less extent, marketing support services.

Traders are also less organized, although they have an association at district and national levels which involve MWACIBA - Mwanza, UWANYAMO - Morogoro, UWANYAMA – Arusha, UWANDO – Dodoma and the umbrella organization Tanzania Livestock and Meat Traders Association (TALIMETA) created in 2007. The representation of traders by these associations is however still weak, and mainly related to negotiations on cross-border trade regulations, such as with Kenya Meat Commission and other neighbouring countries. The traders association is represented at the Annual meat council, although its capacities need to be strengthened to guarantee improved functioning.

The meat processors also established an association, the Tanzania Meat Processors Association (TAMEPA), currently supported by individual processors operating mainly in Dar es Salaam. Information about the organization, membership and services provided is limited.

The Tanzania Meat Board (TMB) has the overall mandate of overseeing and regulating the red meat industry. Though still in its infancy, its activities include the promotion of the development of the meat sector, ensuring compliance with quality standards and collecting and disseminating information, amongst others. TMB is also engaging in strengthening stakeholders' organizations and particularly building a national livestock producers association and strengthening the TALIMETA and the Tanzania Meat Processors Alliance (TAMEPA).

The leather association was established with the support of UNIDO and the Ministry of Industry, Trade and Marketing (MITM) to represent the stakeholders in the leather and leather products subsector, including exporters and processors of hides and skin, and producers of leather products. The association is fairly active, with coverage limited mainly in the regions of Dar es Salaam, Morogoro and Kilimanjaro. In addition to providing a limited range of support and training activities to the members, they engage in advocacy and lobbying to promote local processing of hides and skin; and associated leather and leather products.

#### **4<sup>th</sup> Dimension Constraints**

- Meat traders and butchers exercise certain market power. Their current practices renders profits to them under the prevailing conditions of the value chain but they block realization of important innovations with regard to hygiene and value addition.
- The red meat value chain stakeholder's organizations are weak; there is no strong meat stakeholders' association/organization available which could represent the interests of the industry. Also on the level of livestock producers there is a limited degree of organization.
- The pricing system of the red meat is not transparent, where pricing of animals in the livestock markets is on negotiation. The normal system in livestock pricing depends on market forces (competition) which attained through auction of the animals.
- The vertical integration of animal producers and meat processors is hardly given. Animals are bought on spot markets and there are few incentives for producing quality animals. Feedlot operators, independent or linked to traders, are partly filling the gap but lack capacities and skills. Their integration in the chain would require contracting with buyers and eventually animal producers who raise animals of improved genetics.

## 5th Dimension: SUSTAINABLE PRODUCTION AND ENERGY USE

The availability and use of energy is an important input in the red meat value chain. Water supply is also important for all actors – livestock farmers require water for animals and in the production of pastures, processors require water and energy supply for production of quality meat and meat products. Destructive impacts associated with the production of red meat relate to energy and water use inefficiencies, impact of grazing on biodiversity, emissions, as well as waste pollution.

The red meat value chain has potential to establish intergraded waste utilization measures at the level of farms and at other levels of production. For instance, efficiency of waste utilization at abattoirs can be improved through use of the waste for biogas and electricity generation. Such measures are being practiced at the level of commercial producers such as abattoirs and some large scale slaughter houses. The initial investment cost might however be prohibitive to most producers and they require incentives including although not limited to technical assistance and regulatory interventions.

### 5.1 Use of inputs

Traditional Livestock farming is an activity that utilizes few inputs. The production process generates a lot more by products and the sector is not taking advantage of waste recovery and utilization. Mainly it is grazing land which is the main input while animals are reared through herd management. The ranching and feedlotting system utilizes large amount of inputs including conserved pastures, agro-industry or industrial animal feeds, water and medicines. The system produce large amount of liquid and solid manure which is used in crop and /or pasture production. This could be utilized more efficiently in the biogas production and eventually utilized as manure in crop and /or pastures fields.

An input that deserves some attention is the vaccines, acaricides and drugs for maintaining animal health. The emissions from livestock production are also used in relatively sustainable volumes. As there is no monitoring carried out of the residues of the veterinary chemicals and drugs it is a potential source of health issues.

On the level of slaughtering one of the few inputs to be considered is the salt being used in hides and skins curing. In the case of salt drying of hides and skins, slippage is not controlled and most salt concentration is drained to land and water resources. An alternative approach is by air drying on frames; but the process takes a long time to dry. However, use of air drying is further complicated during the wet and rainy seasons, and in this case salt drying is preferred. The disinfectants used in the slaughter facilities flows to the fields and source of water, mostly there is no proper treatment of the water from the slaughter facilities.

## 5.2 Energy Use

Energy use in slaughtering facilities and butcheries is substantial when chilling and freezing is applied. Meat is not yet treated in a cooling chain or in the production of feeds, and therefore the most common energy requirement in the value chain is fuel for transportation or the animals and meat. Only few abattoirs (e.g. Dodoma and Arusha) have cooling facilities and on the level of butchers it is only few who work with ice boxes and refrigerators. Energy is wasted through inappropriate use of cooling devices (located in the direct sun, doors left open, etc.) and under utilization of installed capacity of the facilities. Also livestock markets and slaughter facilities use fire wood or heavy oil energy in incineration of the dead animals (cadavers) and condemns.

However, commercial farms and slaughtering facilities could use dung and ruminant contents to produce biogas that can be used directly for traction, heating purposes and indirectly in power generation for electrical, cooling and lighting purposes. This technology, however, may only be introduced after substantial upgrading of the farm and slaughtering facilities has been achieved and their operations have stabilized (such as being the case in the Dodoma and Arusha abattoirs). In addition natural gas and coal can be utilized in the boilers operation in the slaughter facilities especially at the district level and town centres if appropriate technology made available.

## 5.3 Use of Water

Water is a limiting factor in the keeping of the animals. During drought, herders may move their animals towards places with sufficient water supply where there is no specific place (water troughs) for the animal to drink thus, causing water pollution and soil erosion; and at times, causing conflicts with those who use those supplies for other purposes. In commercial livestock production water is required not only for drinking but also for pastures irrigation and cleaning of the animals sheds. Also in tick control water is required to fill dip tank and foot bath. The slaughtering process requires substantial amount of water for hygiene meat production which include cleaning carcasses, offals and slaughter facility. Slaughtering facilities face severe challenges when water supply is cut or not sufficient for their need. Mostly slaughter houses and slabs use water from the shallow wells and rivers fetched using buckets, this leads to poor meat hygiene production. Fetching water from the shallow well or rivers using buckets is laborious work, the attendants engaged in this work tend to fetch less water than required. None of the existing slaughtering facilities use a system of waste water cleaning and recycling in other hand this may be source of water sources contamination. The disposal of the dip wash also, is the source of contamination of water sources. In most cases dips are constructed close to the water sources to facilitate dip filling but when it comes to the case of emptying is where the issue of contamination comes in especially when it is on the upstream of the source.

## 5.4 Effects on Bio-diversity

Negative effects on biodiversity mainly relate to the issue of overgrazing and uncontrolled fires: With an ever-increasing number of kept animals, environmental degradation and destruction through overgrazing is inevitable. When animals, in search of pastures, are brought to forested areas and reserves, the land is usually cleared by cutting down trees to allow for subsistence farming and reduction of tsetse fly infestation.



Commonly, livestock keepers make use of controlled fires to manage rangeland. The intent is to accelerated regeneration of pastures. However, without knowledge and good planning, the practice goes uncontrolled with disastrous effects, whereby the burning reduces the available grazing land for the given time and sometimes even forests which are the source of water supply.

There are also positive effects on biodiversity through animal manure. Waste from livestock farms is a good source of organic farm manure, which enriches fertility and productivity of soil. With the increasing price of chemical fertilizer, many farmers make their own manure or buy solid composite from livestock farms. During the rainy season though, the supply of this type of manure is not sustained.

## 5.5 Emissions

Edible meat by-products such as skin, internal organs and blood make up 40-50% live animal weight and also determine characteristics of meat and meat product. They are a potential source of solid pollution if handled as waste and affluent, or if not properly disposed; and when properly handled they provide quality inputs for processed meat products and meat dishes such as local soups, casings for sausages and filling for constituted meat products such as liver paste. The edible by-products are generally utilized only on a negligible scale as meat parts that are mixed with low red meat grades. The resulting non-edible parts are processed to feeds for animals or discarded with non-edible by products with the exception of hides and skin as animal waste products.

Slaughtering facilities are often located in or close to residential areas, emit foul-smelling gases and contaminate waters. The current practice of piling up of ruminant contents and release of unfiltered matter into porous sewage systems causes clogging with the subsequent gases released making the neighbourhoods uncomfortable to live-in. Unutilized methane gas is released directly to the atmosphere and contribute to global warming.

## 5.6 Waste Management

In the traditional and commercial livestock farming, dung is used in the fields as manure for pastures production and very limited amount used in biogas production. In slaughter facilities, mostly there is inefficient collection of waste especially resulting from poor handling of ruminal content and blood. Blood is processed mainly at backyard units where this causes a lot of menace to the vicinity dwellers. In principal blood is an important slaughter by product with ready market, this require improvement of technology in its collection and processing to increase efficient and value. There is also, a lot of in efficient in bones, hooves and horns collection and processing and regarded as wastes, this coupled with poor technology and capacity. The bones are use in animals feed processing as a raw materials where its recovery being a problem because in almost all slaughter facilities there is no de-boning facilities where sold in as mixed meat. The hooves are sold together with the shanks to prepare delicacy shank soup commonly known as makongoro. This makes difficult in collection of the hooves and shank bones, where give the technology and equipments this may be done in much more profitable and other parts be collected efficiently. Effluent from the slaughter facilities especial at local level is no treated and ultimately causes environmental pollution. The remaining wastes at the slaughtering level are usually put into septic tanks and/or soak-pits which are often poorly managed. Waste at the butchering level is almost negligible. The small scale hides and skins processors use

ancient technology where effluent is not properly handled and produces a lot of bad smell, this need improved production technology.

## 5<sup>th</sup> Dimension Constraints

- Biodiversity is affected through overgrazing, deforestation and fires. Livestock farmers are often not aware of the detrimental effects of such practices. Fires set up for pasture regeneration can be difficult to control, in some cases resulting in the destruction of larger farmlands.
- The potentials for using dung and ruminal content in biogas production to complement and/or replace other expensive source of energy is not explored. Mostly there is no awareness regarding the existence of such potentials and initial investment capacity.
- Water consumption in livestock production, slaughtering, and processing is substantial while it's in short supply. There are little efforts to secure safe water and recycling of water from slaughter facilities is unknown.
- Contamination from slaughter houses, butchers and for hides processing facilities waste disposal is rampant and there is no enforcement of the regulation in control..
- Valuable by-products in the slaughtering process are often not efficiently collected and treated in a way that allows the realization of their full value. This is also the source of cross-contamination, air pollution and related effects on the biodiversity. The technology and equipments used in the recovery and processing of the valuable livestock by products it is very rudimentary.

# 6<sup>th</sup> Dimension: Value Chain Finance

## 6.1 Financial attractiveness

Bank's and other finance institution's appetite to invest in businesses in the red meat value chain seem to be still very limited if not inexistent. If traders, butchers and meat processors receive loans they do this on the basis of providing sufficient collateral and not because the banks have checked (and believe in) the profitability of the business. Feedlotting and modern ranching operations together with modern slaughtering for high value markets seem to have the highest potential to attract finance to the sector.

The government currently makes efforts to get investors engaged in the NARCO ranches. Many smaller pieces of land have already been sold, though this may be rather due to the attractiveness of general land ownerships than because of the perspectives the investors have in engaging in profitable ranching businesses. Indeed the business plans that have been developed for the ranches and also some slaughtering facilities still need to be further developed. The NARCO investment scheme foresees that investor becomes the main lessee of the investment project and assumes responsibility for repayment. NARCO acting as the lease holder on one hand, and the financing institution on the other hand, monitor the investment performance to ensure compliance with the requirements of all parties. As the investment portfolio grows, NARCO could divest its lease holding for instance through full privatization, or the joint listing of shares with the investor. Some significant investments were received by the Ruvu slaughterhouse near Dar es Salaam. The perspective here is also on meat production and processing for the export (see Box 5).

### **Box 5: Establishment of the Ruvu Abattoir near Dar es Salaam**

In 2006/2007 an MLFD initiative sought to modernize the slaughtering sector aiming at higher quality meat products to be provided to both the domestic and export market. The initiative suggested establishing abattoirs at Ruvu 50 km off from Dar es Salam, Themis near Arusha, Misenyi near Kagera, Magu near Mwanza and Bunda near Mara. The scheme sought to attract investors while the Government provided land. After realizing that investors were not easily attracted into the scheme, in 2008 the Government together with the National Ranching Corporation (NARCO) started constructing the facility based on a design developed by civil engineers from the government. The abattoir is supposed to have a capacity of 800 cattle and 400 sheep and goats. Total cost of the project is USD 40,418,830 and NARCO has already contributed USD 32,706,630 (as land and equity) resulting in a shortfall of USD 7,712,200. Additional investments are needed for abattoir construction completion, extend processing areas and for the conversion of fermentable wastes to biogas to produce electricity and a rendering plant that will convert abattoir wastes into products that can be used as inputs into a feed plant NARCO, on whose premises the facility was constructed, received seed funding to be able to buy improved animal breeds and start up a feedlotting scheme that would provide the abattoir with healthy livestock that will produce quality meat. Construction works are still not completed; no slaughtering equipment has been installed so far. Various foreign investors have visited the site but apparently no concrete investment offer has materialized yet. Meanwhile the National Development Corporation has engaged in promoting the Themis abattoir project while the projects at the other sites have been shelved.

*Source: The Authors, based on interviews with NARCO in 2011*



## 6.2 Financial Needs

Financial needs of businesses in the red meat value chain range from maintaining stocking and purchase of feedstuff and veterinary products by primary producers, the rearing and management of livestock by traders, investments in meat processing, and the establishment of marketing infrastructures.

In *primary production*, the setting up of livestock farms involves acquisition of grazing fields, construction of livestock production infrastructure, purchasing of foundation stock, pasture establishment and management as well as feedlotting. The traditional livestock farmers start their livestock projects from inherited herd of cattle or from own source. These farmers would need access to finances to allow them to purchase and use the inputs they need to modernize and increase the productivity of their herd. However, in most cases traditional livestock producers do not even look for financial support because they know they are barred by the loan conditions.

In some parts of the country traditional and commercial livestock farmers seek to engage in *feedlotting* to be able to cater to an increasing market for quality meat. Feedlotting requires finance and it has been able to attract investors though it is not very clear where these investments stem from.

In *trading* of livestock from farms and primary markets to secondary and border livestock markets, the flow of financial capital is more evident in livestock trade and exchange of ownership for cash in markets, transportation to slaughter facilities and the retail sale of carcasses. In order to operate on a profitable economy of scale from trading livestock which are mainly from rural farmers and primary markets, sufficient amounts of money is required where loan and other financial sources are important.

At the subsequent value chain stages of trade of animals, processing and marketing of value added products, the requirements for financing are more pronounced as these operations are relatively more capital intensive compared to primary production. Also exporters require a considerable amount of finance to be able to secure the quantities demanded by the diverse actors across the value chain. Financing is also required by the central and local governments as well as the private sector in putting up the necessary infrastructure that would allow for primary processing (slaughtering and recovery of by-products) that is in compliance with food safety standards and regulations and good manufacturing practices (GMPs).

See Table 5 for a summary on financial needs in Tanzania's red meat value chain.

## 6.3 Financial Risks

**Supply risks:** The risks in primary production relate to diseases outbreak, drought, rustling and animal price fluctuations. Another issue is long time for rearing of the animals till they reach slaughter weight; this process binds capital for a longer time than in efficient livestock rearing systems. Further more; there is no assurance for enough supply of livestock in the market as the livestock farmers sell their animals when they are in need of cash. For instance there is plenty supply of the livestock in the market during famine. Continuous supply can be assured through the application

of proper animal husbandry techniques which includes vaccination against diseases, dipping, de-worming, proper feeding and dry season feeding strategies. In addition, issues related to price fluctuation can be minimized through proper timing, accurate market information and forward contracts for annual purchases. Few of these practices are common in the Tanzanian red meat value chain. Supply risks are particularly high in areas where rustling is rampant and animals are not weighted and graded.

**Table 5: Financial needs in various segments of the red meat value chain**

	<b>Need/Purpose</b>	<b>Volume needed</b>	<b>Risks</b>	<b>Interest</b>
<b>Production</b> Commercial ranch	Foundation stock, pastures, feeds, labor, breeding animals, AI service, inputs and ranch infrastructures	High	Medium	High
Pastoralists	Breeding animals, AI service, inputs, pastures, crashes and Water infrastructure.	Medium	High	Medium
Agro-Pastoralists	Breeding animals, AI service, inputs, feeds, pastures, Water infrastructure, crashes.	Medium	Medium	Medium
Traditional Fattening	Back-grounded animals, Pastures, feeds, feedlotting structures and operational cost.	High	Medium	High
Modern Feedlotting	Feedlotting structures; Working capital (back-grounded animals, labor, Inputs and transport)	High	Medium	High
<b>Slaughtering</b> Slaughter Slabs	Structures upgrading, labor, Inputs, utilities and slaughtering tools and equipment.	Medium	Medium	High
Slaughter Houses	Slaughter facilities establishment and/or upgrading, slaughtering tools, machines; Working capital	High	Medium	High
Abattoirs	Slaughter facilities establishment and/or upgrading, laboratory, slaughtering tools, machines, animal Stocking and holding facilities. Establishment of processing and rendering plants and other livestock by-product processing facility.	High	Medium	High
<b>Trading</b> Live Animals Traders & Wholesale Agents	Animal Handling facilities, transportation and Marketing facilities.	High	Medium	Medium
Importers of Meat	Cold storage; Distribution	Medium	Medium	Low
Exporters of live animals	Animal Handling facilities, Transportation and Marketing	Medium	Medium	Low
Meat Exporters	Cold storage; Distribution	Medium	Medium	High
<b>Processing</b> Meat Processors	Technology; Labour; Marketing outlets	High	Medium	High
Hides and skins	Raw Material collection; Technology; Labour; Marketing outlets	Medium	Low	Medium
Other livestock by-products	Raw Material collection; Technology; Labour; Marketing outlets	High	Medium	Medium
<b>Retailing</b> Butcherries	Meat parts/carcass, transport hire, butcher facilities establishment and/or upgrading, cold chain facilities	Medium	Medium	High
Quality Butcherries	Animals; meat parts/carcass, labor, cold storage and transport, utility	High	Medium	High

**Processing risks:** The technology, machines and equipment used in the slaughtering and processing of meat and meat products are in rudimentary stages all of which

contribute to reducing production efficiency. Also quality / food safety and standards consideration in the production environment is limited. In many slaughter facilities operating know-how is very low as there are no trained and skilled labourers. There is a need to consider investment in new slaughter and processing machines and equipment, promote and enforce legislations involved in the food quality control measures.

**Sales/market risk:** Placing value added products on consumer markets bears risks of demand fluctuations and rejections through retailers. Furthermore, consumers are not aware of the meat quality and safety criteria and are usually very price sensitive.

## 6.4 Informal Finance Practice

Livestock farmers often establish livestock projects from inherited herd of cattle. If there is no heritage herders would herd somebody's livestock for some time and in return receive in-kind payment of cattle. In addition, pastoralists mostly of Maasai ethnic group have earned money through employed as watchman in towns and cities which they reinvest in cattle.

Traders and butchers often go into private arrangements that allow delayed payment from the sellers. It is a common practice to pay the price of the livestock after it is slaughtered or the next market day (an agreement locally known as "*mali kauli*"). These arrangements only work where people know and trust each other; if there are irregularities the chances to recover the money becomes minimal.

## 6.5 Availability of Formal Finance

Access to formal finance has been difficult for all segments of red meat value chain in the country. To start with, finance institutions do not consider the livestock production, trading or processing as a business sector and view it as a highly risky venture. Furthermore, the accessibility to loans is limited due to loan conditions, its cost and the lending prerequisites such as collateral. In addition to the stringent conditions for red meat value chain financing and lending, the interest rates are also very high. The credit pay back conditions generally do not suit the cycle of livestock production thus making it almost impossible for farmers to repay loans at the commercial rates. However, feedlotting activity has good prospects in attracting financial investment as the return period is reasonably short that is 60 to 90 days cycle.

There are government initiatives to improve finance in the sector resulting in the establishment of an "agricultural window" at Tanzania Investment Bank (TIB) with aim to support agricultural projects including red meat projects. However, the conditions to access funds from TIB are the same as other banks but with less interest rate. On the other hand funds are not enough to cater for financial needs for all applicants through TIB agricultural window. NARCO will be the first operator in the red meat value chain to secure loan financing from TIB and CRDB Bank to support feedlotting program in Mzeri, Ruvu, Kongwa and Kalambo ranch, expected to be launched starting in 2012.



The government is encouraging savings by mobilizing local organizations through the Savings and Cooperatives Credit Societies (SACCOS's) to enable members to provide onward lending for production. Micro lending service provision is also improving gradually as a result of financial reform programs such as the Financial Sector Deepening Trust multi-donor program, as well as other government fiscal streamlining program in the country. The participation of livestock producers in mainstream micro savings and lending societies is however still limited. Reforms by commercial banks such as National Microfinance Bank (NMB) and CRDB programs on microfinance lending should also in essence be accessible to producers and businesses in the red meat value chain. This is however not the case, mainly due to the dominance of pastoralist practices and the informal nature of slaughters, butchers and retail outlets.

NGOs also engage in microfinance. These include DANIDA supported Programme for Agricultural Support Services (PASS) located in Morogoro and the SME competitiveness programmes such as SME Competitiveness Facility (SCF). The Cluster Competitiveness Programme (CCP) implemented through the Tanzania Private Sector Foundation is a specialized programme providing support to innovative agricultural business operators including those in the red meat value chain. The services of such providers include technical support services on business feasibility analysis, planning and also provides guarantee funds for access to financing from financial institutions, as well as grants that are tailored to specific business structure, in this case for livestock and red meat production. Financial facilities are limited and very few value chain actors can access substantial financing from the NGO sector.

Financing is available mainly for exporters based on confirmed purchase order. In these cases the exporters can get finance up to sixty percent of the purchase order value. Government programmes such as the export guarantee fund of the Bank of Tanzania (BoT) are also possible avenues for accessing trade financing; although often times such service is short term.

## **6<sup>th</sup> Dimension Constraints**

- Large traders who are able to use informal sources of finance dominate the live animal markets crowding out smaller operators who cannot pay for animals immediately and in-cash.
- Livestock farmers have few opportunities to acquire loans needed for modernization farm infrastructure and for the improvement of animal husbandry measures. These however, contribute to the reasons why traditional livestock farming is lacking behind in the country.
- Banks and finance institutions do not understand well the financial requirements of livestock farmers, feedlotters, traders and processors and they do not evaluate creditworthiness on the basis of revenue or returns on investment but on the basis of availability of collateral. Particularly badly needed investments for improvements in rather profitable feedlotting and meat trading operations are therefore blocked. In consequence traders,

butchers and meat processors – in case they can provide collateral – get finance to expensive working capital conditions only.

- There are no financial support packages, preferential interest rate programs, or guarantee schemes that would ease access to finance. The country has no red meat value chain financing scheme.
- There is limited capital for investment in slaughter facilities. While some local Governments have been able to leverage some money from central Government programs most districts remain without any opportunities to renovate or set up new slaughter facilities.
- Traditional livestock farmers, feedlot operators, traders and meat processors have limited knowledge and skill on business planning and management.

# 7th Dimension: Business Environment and Socio-political Context

## 7.1 Business Environment

Tanzania has enjoyed political stability for about half a century since independence. This is fostered by the existence of democratic institutions which have contributed towards good governance, human rights observance; rule of law; as well as ethnic and diversity stability. Over the last years, annual inflation rate has remained at single digit. The national economy has been growing steadily at around 5–6% annually from 2005 – 2011. The regulatory framework has helped to minimise the impact of occasional price increase, fiscal instability and fluctuations to double digit inflation such as the impacts resulting from food shortages and global economic slowdown.

With regard to the ease of doing business Tanzania, according to the World Bank/IFC scale, has fallen from rank 125 to 128 (of 183) in 2011 (see Table 6). Meanwhile the Government continues to implement the Business Environment Strengthening for Tanzania (BEST) with the objective of providing an enabling environment for private sector development through improved administrative, regulatory, and legal framework.

**Table 6: Tanzania’ Ranking on the Ease of Doing Business Indicator, 2011**

TOPIC RANKINGS	DB 2011 Rank	DB 2010 Rank	Change in Rank
Starting a Business	122	122	No change
Dealing with Construction Permits	179	179	No change
Registering Property	151	148	↓ -3
Getting Credit	89	87	↓ -2
Protecting Investors	93	92	↓ -1
Paying Taxes	120	116	↓ -4
Trading Across Borders	109	111	↑ 2
Enforcing Contracts	32	32	No change
Closing a Business	113	112	↓ -1

Source: [www.doingbusiness.org](http://www.doingbusiness.org)

For the case of private companies operating in the red meat value chain one could argue that there is little government control and regulations that hold back entrepreneurs to become engaged. In fact, most of the business activities in the red-meat sector may lie outside the regulatory and tax framework that the government provides. Businesses, on the other hand, certainly suffer from the poor and erratic supply of energy, water and other infrastructure particularly in remote rural areas and are all constraint with regard to access to funding.

In order to promote private investment in the country the Tanzania Investment Centre (TIC) was established by the Government to support investors, Its roles

include the initiation and support of measures that will enhance the country's investment climate for both local and foreign investors; the collection, analysis and dissemination of information about investment opportunities, the sourcing of investment capital, and the pin-pointing of suitability in partnerships for joint-venture projects. In consultation with government institutions and agencies, the TIC also identifies investment sites, assists investors in obtaining of necessary permits, licenses, etc. and engages in the creation and management of export processing zones, including facilitation of project start-ups, promotion of joint ventures and dissemination of investment information. However, no records are available which shows that support has been given to investors and enterprises in the red meat value chain.. The Private Agricultural Sector Support Limited (see [www.pass.ac.tz](http://www.pass.ac.tz)) based in Morogoro is another arm that tries to stimulate growth and investment in the agricultural and Agro-Business in Tanzania. Among other it published information on the investment potential of in livestock farming.

Under the prevailing liberalization policies, the Government mainly sees its role in formulating policies, legislations and regulation for the purpose of ensuring good conduct and enabling private sector growth and development. The government has provided incentives for the production and processing agriculture products, exempting on case by case basis imported machinery and equipment from taxes. However, private sector development in the meat value chain is still in its infancy. In the livestock farming sector, local governments dominate the provision of support services.

Under the current public-private partnership policy, the government envisages using its own budget to improve infrastructure facilities including construction of abattoirs and mobilizing private investors to operate the facilities based on equal shares agreements such as for build-operate-transfer (BOTs) or build-operate-own (BOOs). For example, the government constructed Dodoma abattoir which is currently under operation of National Investment Company (NICO) after acquiring 51% shares.

## **7.2 Product and Trade Regulations**

The country has in place laws and legislations that govern the processing and marketing of meat and meat products. The Tanzania Bureau of Standards (TBS) has set the meat standard. The Tanzania Food and Drug Authority (TFDA) in collaboration with Tanzania Bureau of Standards (TBS) regulates the processing and marketing of meat and meat products, including the inspection and certification of processing establishments, packaging, labelling and compliance of products to consumer safety and hygiene standards. The Ministry of Livestock Development and Fisheries tries to oversee the industry through its network of local government authorities and the newly formed Tanzania Meat Board and the associated annual Meat Council.

However, despite all efforts to apply regulations, most parts of the livestock farming sector remain unregulated and informal. Further more, the capacity for enforcement of compliance to quality and safety standards by slaughtering facilities, butcheries and meat processing establishments is limited and most people do not know the applicable local and international standards. Enforcement of regulations is also

difficult in areas where local government authorities operate slaughter facilities, as local government authorities in the process of enforcing regulations do create somewhat confusion on how the regulations can be effectively carried out and implemented. Consequently most slaughter facilities do operate with very low hygienic conditions producing meat that could be of serious health issues to the general public.

The various legislations in place require that livestock traders, operators of slaughter facilities, butchers and processors have the following documents at hand:

#### **All businesses**

- Tax Identification Number (TIN) issued for free by TRA for all business actors, to allow for business taxation,
- Business license, issued by the Ministry of Industry and Trade, Business Registration Agency (BRELA) after obtaining income tax payment license from Tanzania Revenue Authority (TRA).

#### **Live animal business**

- Animal movement permit for each lot of animals traded from livestock markets issued by the MLFD staff after payment of market use fees and movement permit fees.

#### **Meat and meat products processing and business**

- Premise inspection certificate from TFDA for slaughterhouses, abattoirs, butchers, meat sell points and meat and meat product processing plant/area,
- Attendant health check certificate issued for operators and laborers.

#### **Animal and / or meat and meat product export business**

- Export veterinary health certificate for each lot exported issued by the MLFD,
- Import permit issued by the relevant authority from importing country.

### **7.3 Public Service Provision**

There are public services (from the government) which are crucial for the value chain to function. These include extension services, research, market information services, slaughter services and marketing infrastructures. Given that the capacity for private sector service provision is limited, and the target users of the services may not be able to pay market rates, the government and its partners continue to support the provision of these services as follows:

- **Tanzania Meat Board:** TMB promotes the development of the meat sub sector in the country through activities that improve sector organization, compliance of quality standards, information collection, processing and dissemination. The functions of the Tanzania Meat Board are stipulated in the Meat Industry Act No. 10 of 2006, section 10 (a – w) and fall into four main categories: including 1) to

advise the Minister for Livestock development on issues pertaining development of meat industry sub sector; 2) to promote, monitor and coordinate stakeholder's activities for the development of the Meat industry sub sector; 3) to promote national or international meat and meat product quality standards compliance, and 4) to collect, process, and disseminate information for the purpose of assisting production, investment, processing, product development and marketing. The TMB is a recent creation: the registrar was appointed in November 2010 and employment of other staff is currently underway.

- **Extension service:** Government provides generic extension service on all issues related to livestock production. Currently the livestock and crops extension services are combined, but there is a directive for local governments to split these functions. The extension service provision is currently constrained because many extension workers don't have knowledge about livestock production but only in crops. Those trained in livestock are often not very skilled and lack knowledge on feedlotting and improved animal husbandry systems. Also, the delivery of extension services is often constrained due to limited means of transport and operational funds. The Government has envisaged in posting more specialized livestock extension officers to the regional, district, ward and village areas known to be very important livestock rearing. In the local Governments there are currently 4,372 (agriculture) and livestock extension field officers on the district, ward and village level. However, the MLFD has calculated that in order to cover the livestock sector adequately this number should be extended to 16,000. There are efforts underway to increase enrolments in the livestock training institutions through the ASDP programme; 750 students graduate every year. The livestock extension service delivery is through government; however, there are also NGO's which engage in the delivery of livestock extension services. Most of the services provided by NGO's are related to dairy cattle and goat production and milk processing; red meat rarely features in the NGO's portfolios.
- **Research service:** The livestock research activities in the country started in Mpwapwa way back in 1905 by the colonial governments. Mpwapwa has been the headquarters for livestock research in the country where six research stations do operate. Also, livestock research activities are going on in universities through higher degree student and special university research programs. The research in the country, among other things has managed to develop dual purpose cattle breed known as Mpwapwa Breed and goats. The research activities have been funded through government budget, Local Government Authorities (under Client Oriented Research - CODEMA) and development partners. There is limited use of modern technology in breeding animals in research stations such as Artificial Insemination (AI), embryo transfer technique, in-vitro fertilization and gene engineering. However, there is no other institution dealing with the multiplication and distribution of research products such as Mpwapwa breed.
- **Marketing infrastructure:** Primary livestock markets are under management of local Governments while secondary and border livestock markets are under MLFD. The maintenance and reinvestment of revenue at local Government facilities is generally subjected to competing budget requirements and revenue

limitations. In most cases the revenues generated are utilized for other purposes than maintenance and reinvestment in the same facilities. The limited reinvestment in upgrading of the market facilities impacts on the quality and incomes gained by the various business operators, and increases the risk factors.

## 7.4 Social and Cultural Context

Traditionally live animals, especially cattle and goats are used as a source of food and as an asset (savings function). Particularly in regions of traditional livestock herding cattle are slaughtered during festive seasons and are given out as customary dowries. As a result herders are sometimes reluctant to market the animals for commercial purposes. Such cultural aspects and tradition play a big role in the marginalization of livestock rearing communities. The grazing of animals on communal lands limits the business operation of farmers as the cost of rearing animals is virtually minimal. The lack of a business dynamism is a limitation to productivity improvement, and when coupled with limited pastures, overgrazing and the constant migration in search of pasture and water resources reduces investment in permanent settlements where centralized services can be provided. Limited education and high illiteracy rates are typical in traditional livestock farming communities especially amongst girls and women who are also restricted to own livestock. This has been partially addressed with the recent establishment of special schools for pastoralist girls and boys. Education has already demonstrated its potential by reducing the extent of female genital mutilation which is commonly practiced affecting women's health for the rest of their lives. Frequent and extended periods of drought have also eroded the "wealth" from livestock farming communities resulting in food insecurity and migration to urban areas. There are also challenges when indigenous livestock farming communities compete for land with crop production and land conservation. Often the livestock keepers get out of these conflicts with few income alternatives and need to move ahead to other areas.

## 7<sup>th</sup> Dimension Constraints

Theoretically, the red meat sector is over-regulated, but in practice compliance with regulations is very limited and most actors have considerable room to manoeuvre with restrictions only coming from the constrained business environment and customary rule. Main constraints with regard to the business environment and socio-political context are:

- There is shortage of extension officers at districts, wards and village levels who are responsible for training livestock farmers on animal husbandry, primary processing and marketing. The livestock extension services offered by the staff specialized in livestock is inadequate; also working condition is not conducive and access to new livestock production technologies such as feedlotting is very minimal. The capacity and availability of skilled extension personnel and infrastructures for monitoring and upgrading of quality of livestock is generally limited.
- The use of modern technology in breeding animals in research stations such as Artificial Insemination (AI), embryo transfer technique, in-vitro fertilization



and gene engineering is limited. There are no institutions dealing with the multiplication and distribution of improved races such as the Mpwapwa breed and others.

- Local Governments are often incapable to set up, maintain, manage slaughtering and market infrastructure. Most of public facilities such as the slaughter houses and local government-operated market outlets demonstrate compromises in business efficiency, operating at low capacity and minimum compliance to quality standards. Further local Governments are stuck by role conflicts where they both operate and regulate slaughter and market facilities.
- The regulatory bodies duplicate quality certification regulatory roles, services and enforcement costs and this discourages formalisation of slaughter and processing facilities of meat and meat products. Such multiple fees include cost for veterinary inspection collected by livestock officers, inspection of facilities by food and drugs authority, product quality certification etc. The limited coordination of regulatory services results in conflict on the roles and accountabilities among the regulatory bodies and weaknesses in enforcement such as the inspection and certification of livestock and meat quality.

# Summary and Recommendations

The red meat value chain analysis manage to shed light on the existing opportunities and constraints along the chain, that pave the way to recommend various measures which are expected to revamp the industry if carefully implemented. The recommendations respond to both opportunities and constraints as they were discussed under the seven dimensions above as follows:-

## Inputs and Primary Production

The livestock population in the country both from traditional and commercial production is increasing as farmers adopt improved production systems such as feedlotting, and commercial producers respond to the demand for quality meat by niche and export markets. However, the optimum potential is yet to be realized in the industry and this is coupled with underutilized existing genetic potential of the indigenous and exotic breeds, poor rangeland management, limited feeds resources and feeding technology, inadequate diseases control, poor financing, etc. In order to tap this potential the following suggestions can be made:

- The productivity of existing livestock population can be increased if properly engaged in selection and breeding of fast growing animals with large body frame from indigenous breeds. This would complement the introduction of exotic pure meat breed animals and cross breeding. There is large livestock population with widely spread strains with different potentials in growth and productivity.
- The country has great grazing potentials, currently grazing lands are not properly utilized and the required infrastructures for livestock production are not in place. The ownership and development of land by individuals and sensitisation on responsible land use would help to improve land productivity and investment in improved production systems.
- Traditional livestock producers require support and sensitisation on legislations on land use: acquire grazing land legally, minimise encroachment by crop producers, establish carrying capacity, enforce grazing legislations; and training on land use and range management.
- The use of communal land by organised producer groups and associations of producers should be coordinated with communal ownership to eliminate conflict. Also there is a need to develop rangeland and livestock production infrastructures which include establishment of watering points, crushes, pasture establishment by over-sowing, tilling and reseeding.
- Livestock production involves the majority of subsistence farmers and rural dwellers with varied experience and skills in production. Capacity building and training of the actors on market requirements will strengthen capabilities for reliable supply of quality red meat and meat products. Promoting formation and strengthening of producers' organisations is important in

achieving economies of scale, quality assurance and linkage to premium markets.

- Training of livestock farmers has been among the major means to change from inefficient to efficient production systems. Employment of graduates from livestock training institutes at local government level and provision of suitable environment for provision of extension services would improve primary livestock production.
- Awareness and training on improved production systems and promotion of demonstration farms on livestock keeping as a business would help to promote mindset change among the traditional herders.
- The promotion and distribution of feedlotting schemes in pastoral and agro-pastoral regions can be supported through training on improved feedlotting skills & technology, provision of preferential loans and linking up to marketing opportunities.
- The feedlotting system can be improved through establishment of a system which links the various producers along the value chain for instance breeders, feedlotter, abattoirs and/or markets.
- There is also need to increase enrolment of specialized extension staff, re-train the existing ones, as well as to promote partnership and coordination among extension providers including local government, NGOs and religious organizations.

## Processing Capacity and Technology

The meat value chain is considered to produce various products and by-products that need to be recovered and processed to valuable products to generate higher value, better prices for producers and reduce environmental pollution. Measures include revitalizing the existing slaughter facilities, establishing new facilities especially at strategic production and market points and instituting the use of appropriate technologies. This would increase production of quality product from meat value chain and enable producers to realize profit from the market.

The demand for quality meat, processed meat products and by-products in domestic and export market is growing. The domestic demand is met by imported products including premium meat cuts, sausages and canned beef. The domestic processing is considered to be insignificant and processing plants and abattoirs are operating below 50% of installed capacities. The reason behind underutilization of currently existing processing capacities might be due to limited access to premium markets, lack of entrepreneurial spirit by the operators, inadequate enforcement of meat quality legislations, technology used and limited consumers' knowledge about quality meat. Also there is limited capacity to handle wastes produced from the meat processing facilities.

The following recommendations are targeted at producers, traders and processors in view of the fast growing niche markets and export demand for live animals, quality meat, meat products, and by products:

- Meat processing is a capital-intensive venture and as such financing services need to be availed considering the existing financing conditions and interest rates. Setting up a financial guarantee scheme to support meat and by-product processors access to finance should be evaluated as a means to finance availability..
- Capacity building for the existing regulatory institutions and promotion of coordinated service delivery among the regulating institutions is required. Meat quality standard adherence requires a strong regulatory framework for enforcement of related legislations. This reform of service needs to be accompanied with establishment of laboratories and analytical services which would check for meat quality and hygienic status alongside with the slaughter and processing facilities.
- Most processors lack technical and business management skills, these can be improved through training and information exchange among producers. Capacity strengthening should consider slaughterers, processors of meat and by-products and also training institutions such as Meat Industry Training Centre (MITC) – Dodoma.
- The transfer of know-how and technology and promotion of trainings to improve processing knowledge across the whole value chain is required to complement the upgrading of quality and processing capacity.
- There are a few butchers, mainly those located in urban areas that already operate at some level of clustering such as the Namanga Cluster in Dar es Salaam. These require technical support and enterprise upgrading to promote the cluster approach for improved access to support services, mobilising linkages for economies of scale and consumer mobilisation.
- Good Manufacturing Practices, codes of food hygiene, and food safety standards are well set at the policy level. These practices can be promoted through training, awareness creation for producers and consumers and demonstrations to disseminate the knowledge to the whole sector.
- Strengthening of the capacity for quality testing and safety monitoring should include establishment of laboratories. For this investment in both the equipment side and training of experts are required. Training on food safety standards such as Good Hygienic Practices (GHP), Hazard Analysis Critical Control Points (HACCP) and ISO 22000 are also required.

## Market and Trade

The growing demand for quality red meat and meat products by the domestic niche market and export including East African countries presents potential for trade improvement. Marketing of livestock in the country is carried out at various levels of livestock markets, where pricing is through negotiation, grading and weighing base or visual estimation. The existing marketing infrastructures are dilapidated with limited essential structures such as weighing bridges to facilitate efficient marketing. Auctioning of livestock at the markets is often the method of marketing.

Meat, meat product and by-products are mostly marketed by individual businesses retailers and meat processing companies; exportation of hides and skins is by specialized exporters.. Most of the meat retailing is through privately owned butcheries located all over the country. The butchers face serious shortage of appropriate tools and equipment used in meat handling and cutting. Marketing information on red meat value chain, which include different marketing channel for animals and meat and meat products is limited. On the other hand promotion of meat products does not exist.

In order to open a larger and more profitable channel processed red meat the following suggestions are made:

- The red meat export market infrastructures need to be established and strengthened for compliance with livestock trade regulations and food safety. There is a need to revitalize and equip with essential equipment both livestock marketing infrastructures, and butchers.
- In order to ensure fair pricing and distribution of value for producers across the chain there is a need to advocate transparency in livestock marketing, which includes improved operation of livestock auctioning at markets. In addition to that, the national market information system at MLFD needs to be strengthened to include market information on other red meat products and to provide real-time information to buyers and sellers.
- Promotion of adherence to and enforcement of Quality and Food Safety Standards is necessary.
- Support to processors in the development of niche markets for quality meats would engage in services for business planning, development of distribution outlets, training in business management, marketing campaigns, improved packaging and product advertisement. This would include marketing trials at various selling points in urban and rural areas, assessment of consumer preferences and purchasing power, as well as the reaction to the availability of safer and higher quality meat and meat products.
- To build capacity and skills of butchers and other meat processors in quality production and marketing their products. This includes transportation and trading cooled meat and the opportunity to access premium markets. In addition to that the responsible livestock marketing infrastructures use need to be promoted.
- In some especially rural places, consumers are not willing to pay an additional price for quality meat; mostly due to low purchasing power and undeveloped systems of marketing meat and meat products. In line with this, consumers' meat quality awareness creation campaigns should be conducted to promote demand for quality food products.
- The undertaking of marketing studies (domestic and export) would help to highlight the potentials for marketing to meet demand for higher quality by the various consumer segments. Market studies on consumer preference and segmentation should aim to understand the demand dynamics and propose efficient approach for marketing.

- The existing Tanzania Livestock and Meat Traders' Association (TALIMETA) is weak and does not meet intended objective. Organizational development and capacity strengthening could help to make it a more viable organization supporting actively its members through political lobbying, service provision and sourcing of tools and equipment in bulk.

## Governance of Value Chain

The red meat value chain is dominated by small-scale traditional farmers mainly engaged in traditional livestock production. The public ranching company - NARCO and a number of emerging private commercial ranchers dominate the system of commercial ranching, although the production capacity and influence of these commercial producers on the value chain is limited. Feedlotting is emerging in the livestock production systems and caters primarily for quality meat supply to niche and export markets. Meat retailing also is dominated by individual businesses operating in areas where availability of finance influences the trading of livestock and meat at local levels. For example Mkondya butcheries in Morogoro and City butcheries in Dodoma own more than ten butcher shops per individual.

The newly formed Tanzania Meat Board despite its infancy stage is striving to promote stakeholders' organization along the meat value chain, adherence to quality standards and legislations. In general, vertical integration of animal producers, meat processors and traders is limited. In order to achieve an organization and governance of the value chain that is less costly and favourable to processing and competitive in an international context the following suggestions can be made:

- The organisations of producers need strengthening and upgrade to provide a platform for dialogue by actors at local and national level. The organization of meetings needs to be institutionalized and supported with resources.
- Transparency in pricing system of livestock at end markets requires to be improved through grading, weighing and auctioning of animals.
- Trainings are required for service providers to facilitate the actors in the value chain to meet and discuss options to develop the chain that are of benefit to producers, processors, traders, regulators and service providers.
- The capacity of TMB needs to be strengthened so as to build a platform of exchange between the various actors in the value chain. This would include retooling, organization of stakeholders meetings at local and national level and experience sharing. In addition to that support in the establishment of source of income to sustain the board.
- Promotion of vertical integration for traditional livestock farmers, commercial producers, traders and meat processors could be supported and strengthened via support to set up contractual relationships. These would include purchase guarantees for animals with certain quality. Feedlot operators can be integrated in such systems. Their integration in the chain would also, require contracting with buyers and eventually animal producers who raise animals of improved genetics.

## Sustainable Production and Energy Use

Most pastoralists graze livestock in communal land with no consideration of rangeland development, and in most cases when feed resources are depleted especially during seasons of drought the herders shift to other rangelands. The balance of animals to land holding-capacity also referred to as the most sustainable and efficient way of land utilization is difficult to achieve, as pastoralists are traditionally moving animals and causes destruction on the environment. The agro-pastorals and commercial livestock ranchers keep their animals in specified areas; most of time conserves forages in form of bailed or standing hay and crop stovers for dry season feeding.

The consideration of efficiency in energy utilization for both the traditional and commercial systems is minimal, yet waste generated across the value chain could be utilised. Optimally for instance dung waste is the most suitable feedstock for biogas production. The utilization of the solid and liquid wastes can be done, however, there is limited technology and there is limited provision of initial investment costs. In most instances the wastes are piled up in pits and heaps, which cause air, water and environmental pollution.

The solid and liquid waste produced from slaughter facilities could also be used in the production of biogas to power automated slaughter facilities, cold chain storage and processing operations. The discharge waste from biogas production is a good manure stock for crop and pasture production.

In order to ensure sustainable production and efficiency in energy use while lowering environment pollution the following suggestions can be made:

- Establishment of carrying capacity is important to ascertain sustainable rangeland utilization. There is a need to promote efficient utilization of grazing land, discourage use of bush fire in stimulating regeneration of pasture and enforcement of grazing legislations.
- Rendering plants are important in abattoirs which handle large number of animals to efficiently convert by-products produced into valuable products. If those are not utilized they become source of cross-contamination, air pollution and related effects on the environment.
- Cleaning and re-cycle of water used in the slaughter and processing facilities is possible to reduce contamination and increase efficient utilization of the limited resources.
- The variation in energy use and efficiency of utilization can be improved through capacity utilization and development of alternative energy supply sources. Most of the slaughter and processing facilities are currently operating below capacity, yet the operational cost including energy and water remains almost the same, compared to operating at full capacity.
- The existing and emerging slaughter facilities can utilize wastes produced to produce biogas for direct heating or thermal heating using boilers. This is also applied to primary production especially feedlotting.



## Value Chain Finance

Finance is required at every red meat value chain segment. Finances are sourced from informal and formal sources, the former be individual, family and/or friends and the later are financial institution, government guarantee scheme, saving and credit association. The formal sources of finance are considered as being more reliable. Access to them has been difficult and scarce to most of the value chain actors. To reduce the credit access difficulties in red meat value chain the following suggestions can be made:

- Traditional farmers mostly start livestock production from own source of funds. It is recommended to promote financial institution to put up special facilities to support livestock farming based on guarantee schemes.
- Conduct a study on the volume of funds, risks involved and profitability of the different value chain segments and create awareness among financial institutions about red meat value chain financial requirements. Also the findings can be used to develop special packages that suit each value chain production segment.
- A guarantee system to compensate banks from failing credits to farmers and finalization of agricultural and livestock bank establishment. This need to go hand in hand with promoting lower cost loan and use machine/livestock value as collateral to secure loan.
- Training people who are involved in red meat value chain on business plan and proper financial management as tool to access loan from financial institutions. Livestock farmers, traders and processors have often little knowledge on how to request and manage loans.
- The existing Saving and Credit Cooperative Societies (SACCOs) as an alternative source of funding need to be strengthened and encourage livestock farmers, trades and processors to form credit societies.
- Promote and facilitate business transaction in livestock to go through financial instructions such as bank to bank transaction as a means of building trust among the players. This system will build high level of know your customer banking spirit thus allow easy access of loan facilities.
- Facilitate land titles livestock farmers as a prerequisite for loan access, this may include “Mpango wa Kurasimisha Rasilimali na Biashara za Wanyonge Tanzania - MKURABITA” The Property and Business Formalization programme and legalization grazing land ownership.

## Business Environment and Socio-Political Context

Tanzania has enjoyed political stability for about half a century since independence. Over the last years, annual inflation rate has remained at single digit. The national economy has been growing steadily at around 5–6% annually from 2005 – 2011. The regulatory framework has helped to minimise the impact of occasional price increase, fiscal instability and fluctuations to double digit inflation. With regard to the ease of doing business Tanzania, according to the World Bank/IFC scale, is still on a low rank. Meanwhile the Government continues to implement the Business Environment Strengthening for Tanzania (BEST) with the objective of providing an enabling environment for private sector development. Investors can now access almost all the information on how to start business under one roof through Tanzania Investment Centre (TIC), a governmental institution. The country has in place laws and legislations that govern the processing and marketing of meat and meat products.

- The government should facilitate the creation of new businesses and joint venture in processing but also service provision, e.g. advisory services, in the sector. This can come through training, legal advice in business contact and investment support.
- Organizations such as the governmental Tanzania Investment Center (TIC) and private organizations should be strengthened to promote private investment in the country through measures as supporting investors, promotion of joint ventures and dissemination of investment information.
- Technology institutes and universities should be encouraged to develop and adapt technologies on the farm and processing level. This requires funding and close collaboration and linkage with the user community.
- The quality standards of meat and meat products are set by legislation. Enforcement can be supported by awareness promotion campaigns and strengthening of the institutions involved in the enforcement of the legislations.
- The various institutions involved in regulation of the red meat value chain need to harmonize and work together with the spirit of improving meat quality standard. Implementing agents such as Local Government Authorities (LGAs) need a proper framework to efficiently implement regulations.
- The support and strengthening of public sectors capacity especially at the local level to improve its capacity in providing efficient marketing and slaughter services. This includes set up and manage infrastructure such as slaughterhouse/abattoirs, auction markets, disease control, quarantine stations, night camps, and holding grounds. It needs to include as well the establishment of a capacity framework so that such facilities can operate sustainably.
- Utilization of the existing slaughter and processing capacity would be facilitated through capacity building of the operators both on technical and business management issues.

- Research institutes strengthening in terms of technology and other resources will contribute to the improvement of the red meat production. This needs to be supported by the establishment of a delivering extension service.

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