

Estimating the economic significance of
pastoralism:
The example of the *nyama choma* sector in
Tanzania

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1. Introduction

What contribution does pastoralism make to the local, regional and national economies of Tanzania? This is the question this paper seeks to answer because to many observers, including policy makers, pastoralism contributes very little. And yet, Tanzania is estimated to have the third largest livestock herd in Africa! Pastoralism is commonly seen by the government as a backward and economically inefficient system that needs to be modernised if it is to contribute to the Tanzania's vision of graduating from a least developed country to a to a middle-income country with a semi-industrialised economy based on a modern and highly productive agricultural sector.

This paper presents the results of a study on the dynamics of the nyama choma sector in the Arusha municipality of Tanzania.¹ Nyama choma, which means roast meat in Kiswahili, is a complex and evolving sector involving a long chain of industry participants, beginning with the cattle reared within the pastoral systems, through slaughter, to final preparation and sale of the meat. This study examines every stage of the supply chain, evaluating its contribution to the economy of the municipality as well as the national economy.

The objective of the study is to establish the true contribution of nyama choma businesses to the economy of Arusha municipality, and to link our findings on the sector and its supply chains back to pastoral systems that provide the raw material (meat). This will allow us to demonstrate the broader contribution pastoralism makes to the local and regional economies that are often not captured in official statistics.² Box 1 presents the specific objectives of the study.

Box 1: Specific objectives of the Study

- To establish the total number of NC businesses existing in Arusha municipality in December 2005.
- To identify the direct as well as indirect fees and taxes collected by Arusha Municipal Council and the Arusha Meat Company resulting from NC business activities.
- To collect data on the annual number of livestock presented and slaughtered at the abattoir for the previous three years and to calculate the total fees collected through provision of these services by Arusha Meat Company and Arusha Municipal Council.
- To establish the origin of the animals and calculate the percentage coming from pastoralism.
- To collect data on the annual licence fees and taxes paid by Arusha Meat Company to Arusha Municipal Council and to establish what proportion of the council's annual licensing income is made up of these fees (if possible).
- To establish and calculate other fees or taxes paid either to the abattoir or to the council by pastoralists or other livestock traders for use of the abattoir.

¹ The study was commissioned by the regional programme on the Reinforcement of pastoral civil society in East Africa (PCS-EA) jointly implemented by Resources Conflict Institute (RECONCILE) and the Drylands programme of the International Institute of Environment and Development (IIED). PCS-EA is co-funded by Dfid, the Swiss Development Cooperation, DANIDA and Irish Aid.

² See Hesse & MacGregor, 2006.

Methodology of the study

The methodologies employed for data collection were:

- A literature review to understand the socio-economics of Arusha region/ municipality.
- Site visits to the only abattoir in Arusha.
- A personal interview with the manager of Arusha Meat Company to gain an in-depth understanding of the abattoir system as a both a necessary service and a business.
- Visits to livestock markets of Kisongo, Ngaramtoni and Duka Bovu to observe the marketing system.
- A survey of nyama choma businesses and the bars in which they are located in Arusha to establish their number.
- Interviews with the owners of three nyama choma businesses to discuss their business environment, challenges and successes.
- Visits and interviews with several butchers.

2. Meat production and business in Arusha municipality

2.1 *The nyama choma sector*

The nyama choma sector involves a complex and dynamic supply chain with a considerable number of small, medium and large business activities centred on meat production. Historically, nyama choma activities originated from the customs and traditions of the pastoral people such as the Maasai. Nyama choma as a business began at the livestock market places, taking advantage of the readily available market (since market days occur only once or twice a month, people attend in large numbers). Indeed, this was the only easy way of providing food to the buyers and sellers at remote livestock markets.

Because of the popularity of the product, the business of nyama choma soon expanded beyond the livestock market. Today these activities are found in almost all urban and trading centres in Tanzania. It should be noted that in Arusha only men are involved in these activities. According to Maasai custom, it is taboo for warriors (young men at a certain stage of life) to eat meat that has been seen or prepared by women.

2.2 *Nyama choma products*

The most popular products sold by nyama choma businesses in Arusha are:

- **Roasted meat** (also referred to as nyama choma). The meat is prepared using charcoal stoves usually in places selling liquor (bars) or food

(restaurants). It is served with either roasted or boiled bananas or ugali (stiff porridge made from maize).

- **Large pieces of boiled meat**, weighing over half a kilogram (called mchemsho). This is sold in the same types of places where roasted meat is sold. It is usually served with boiled bananas and white soup.
- **Meat soups** (called mchemsho wa mkia, makongoro, vichwa na utumbo). The meat used includes cows' tails, hooves, heads and stomachs. Cow head soups are mainly prepared at establishments where a local alcoholic brew is sold. Customers are usually those on low incomes. Tails and hooves are prepared together and served with boiled bananas and white soup. The stomach is boiled and served with the sauce that forms while it is being boiled.
- **Boiled meat mixed with vegetables** (known as trupa). Vegetables used include carrots, potatoes, green pepper, green peas and onions. Trupa is a new type of nyama choma. It is only prepared by a few businesses as it is more costly due to the large number of ingredients needed for preparation.
- **Herbal soup** (called supu ya dawa). This soup is normally prepared closer to the livestock markets. The Maasai like this particular soup because it uses their traditional herbs and plants, and is therefore limited in its range to rural locations.
- **Local sausage** (known as mtura or bomu) is another newly created dish in Arusha. This is prepared using small pieces of meat with a few vegetables stuffed in a special type of meat, then roasted the same way as nyama choma.

2.3 Benefits of livestock and the nyama choma sector

There are many benefits from livestock and the nyama choma sector. The distribution of benefits varies from one stage of the supply chain to another.

The supply chain begins with the pastoralists who keep the animals. Cattle are one of major assets of pastoral communities in northern Tanzania. They provide milk and blood, but also cash to buy cereals and other goods and services while providing an inflation-free store of value. Pastoralists sell their livestock at markets. Young pastoralist men often play the role of middlemen between livestock markets - buying animals on one market, to sell them at a profit on another.

The supply chain then moves to the middlemen who buy livestock from the pastoralist traders, slaughter the animals themselves or sell the animals to the abattoir or other places of slaughter. For the middlemen involved in meat production activities, this trade is their major source of employment and commercial

investment. When an animal is slaughtered, nothing is wasted, with different parts being sold to different customers. Consumers for domestic use as well as those buying prepared meat for nyama choma businesses buy the meat from the abattoir.

Trading and value addition along the supply chain contributes to a large number of livelihoods, covering costs and even providing profits for each participant. The livestock sector as a whole in Tanzania is the greatest contributor to the national supply of protein. Economically, livestock provides about 30 per cent of agricultural Gross Domestic Product (GDP). About 40 per cent of the sector's contribution to GDP comes from beef production, 30 per cent from milk production and the remaining 30 per cent is from poultry and small stock production [9].

This brief introduction gives us a glimpse of the contribution pastoralism makes to local, regional and national economies of Tanzania. While this does not represent the entire economic contribution of pastoralism, it is a significant element of the trade from pastoral land. In the next section, we will focus on Arusha.



Livestock being sold in one of the markets in Arusha.

2.4 Nyama choma businesses in Arusha municipality

Nyama choma businesses are categorised under a small licensing system operated by the Arusha Municipal Council. According to records held by Arusha Council and data collected from sites, there are 601 nyama choma businesses in Arusha, covering a population of 800,000. This is roughly one for every 1,300 inhabitants, or 300 households.

For the last four years, small businesses have been operating informally and without paying fees because their licensing system was abolished. Most of these businesses are attached to places where liquor is sold such as bars and restaurants, particularly the larger ones (see Table 1). The nyama choma businesses prepare different categories of meat partly in response to the purchasing power of their customers and location. Each business in Arusha attracts a specific category of customers. For example, the pubs found on the Arusha are for high and medium income people and the following types of meat services are on offer: nyama choma, mchemsho and trouper. While Sombetini and other squatter areas are for low-income people who can only afford to purchase cheap meat pieces such as hooves, head soups, and stomach stuffs.

Table 1: Categories of nyama choma businesses and their distribution in the 17 wards of Arusha Municipality

NO.	WARD	NYAMA CHOMA	NYAMA CHEMSHA	TRUPA	HOOVES (MAKONGORO)/ TAILS (MIKIA)	HEADS VICHWA	TOTAL
1	Kati	11	8	3	6	5	33
2	Daraja II	10	6	3	6	5	30
3	Kaloleni	27	10	5	6	6	54
4	Unga Ltd	7	1	0	6	5	19
5	Ngarenarok	19	7	2	5	4	37
6	Sokon	8	2	0	2	4	16
7	Elerai	7	2	0	3	2	14
8	Lemara	5	3	0	4	3	15
9	Engutoto	3	3	0	4	2	12
10	Terrat	0	0	0	0	0	0
11	Sombetini	26	21	3	19	9	78
12	Themis	8	4	0	2	0	14
13	Oloirien	12	5	1	3	4	25
14	Kimandolu	34	11	4	22	7	78
15	Baraa	6	2	0	5	2	15
16	Levolosi	45	31	4	28	3	111
17	Sekei.	15	13	2	14	6	50
	TOTAL	243	129	27	135	67	601

Source: Juliana Letara, field work December 2005

Table 2, provides some data on the economic significance of nyama choma businesses to the Arusha municipality. In total, nyama choma businesses are estimated to provide a minimum of 5,855 full-time job opportunities, employing an estimated 2-3 per cent of the total working age population of Arusha. In addition, in 2005, employee medical examination fees alone amounted to Tshs. 29,275,000 (US\$ 23,420), and the abattoir paid dues of Tshs. 148,045,500. Hence total contribution from livestock to municipality coffers is Tshs. 177 million (US\$ 141,000), accounting for approximately 10% of total municipality income.³

Table 2: Summary information on NC businesses by size category, Arusha Municipality December 2005

Category	No. of NC businesses	Percentage of total NC business in Arusha	Employees (average per NC business)	Total employees	Percentage of total employment in NC sector	Total medical examination expenses paid in TSch (USD)
Small	271	45%	5	1,355	23%	6.75m (\$6,500)
Medium	210	35%	10	2,100	36%	10.5m (\$10,000)
Large	120	20%	20	2,400	41%	12.0m (\$11,500)
Total	601		9.75	5,855		29.25m (\$28,000)

Source: Juliana Letara, field work December 2005

There is a broad range of sizes of nyama choma business in Arusha (see Table 2), with the larger ones being fewer in number but employing two-fifths of the total number of employees. There is no public data on turnover, input costs or throughputs for these businesses. To this end, the methodology employed is to survey in-person some NC business owners. Section 3 reports on this survey.

³ Exchange rate of US\$1 to Tsha 1,250.

3. Interviews with owners of nyama choma businesses

The researcher carried out in-depth surveys of three nyama choma businesses to understand better business operations and to establish their direct and indirect contribution to the Arusha Municipal Council economy.

3.1 YMCA

The first owner to be interviewed was Mr. Mapatano. He has owned and run the barbecue section of the YMCA restaurant for the past three years. His business is located close to a concentration of government offices. He buys meat from butchers, who get their supply of animals for slaughter from pastoralists. Asked whether there were differences in the prices of meat from different sources he said he did not know as he only bought from the butchers.

When asked what type and quality of meat he chose for his business, he said pastoralists supplied the best meat for his business because it was tasty, good quality and his customers preferred it. He also said that his customers did not like meat from imported breeds of animals because it was tasteless.

Mr. Mapatano works with his wife and five permanent employees, paying them 700 Tanzania Shillings a day (US\$0.56) plus meals. He also said that the owner of the YMCA restaurant paid House Rent to the National Housing Corporation (NHC) and he operated his business as a section of the restaurant. He pays the council waste collection fees, although no services are provided.

When asked if he made a good profit at the end of the year he replied that he made a profit of 1.5 to 1.8 million Tshs per year (US\$1,200-1,440), which is just enough to support his family and maintain the business.

Key financial challenges he faces are:

- House rent and utility costs of 1.1m Tshs per annum.
- High cost of waste collection, with no services being provided.
- Fluctuation of prices of supplies including meat and charcoal.
- Medical examination fees of 5,000 Tshs per employee.
- Water shortages.
- High cost of transportation of meat from butchers.
- Wages of 1.23m Tshs per annum plus meals.

Asked whether there were any taxes or procedures that were not helpful, he replied that the taxes on business people are high and there is no support from the Government.

Table 3: Summary economics of pastoralist meat in YMCA restaurant, Arusha 2005

	Total meat daily (kgs)	Size of meat portion served (kg)	No. meals daily (Tsch)	Price portion	Value (Tsch) of meat (daily)	Value proportion for NC owner
NC with ndizi or ugali*	15	0.5	30	1400	42,000	35%
Nyama Chemsha (boiled)	20	0.25	80	600	48,000	40%
Makongoro	?	?	64	300	19,200	16%
Tails		0.5 tail	4	1500	12,000	10%
Total			178		121,200	

Source: survey by J. Letara December 2005.

The NC owner's turnover associated directly with pastoralism is an estimated 121,000 Tshs per day. His actual turnover will be higher - drinks and other foods have not been included in this survey. Turnover is approximately 70m Tshs per annum. Operating costs certainly appear to account for a significant proportion of turnover, with profit an estimated 3% of turnover over the year. This is a relatively slim margin, especially since the owner and his wife might be including their "wages" in their definition of profit.

3.2 Highway Bar and Restaurant

The second nyama choma business owner interviewed was Mr. Aquiline Shirima. His small business is attached to Highway Bar and Restaurant located within one of the premises built around the Mini Bus Stand (a bus stand for town buses).

Mr. Shirima has been in the nyama choma sector for the past 13 years. He started as an employee but for the last ten years he has owned this business. When he was working as an employee, he realised that the nyama choma business was a good opportunity for self-employment and that the market depended on the location of businesses. He used to move from one place to another looking for a suitable environment within which to operate his business. He has been in the Highway Bar and Restaurant for the last four years. He employs three full-time and one part-time staff at 700 Tshs a day plus meals.

He always buys his meat from the same butcher, and always buys pastoralist meat. His customers prefer pastoralist meat to meat from high breed or cross breed animals.

Typical daily meat requirements for his business are:

- 10 - 12 kgs of nyama choma prepared daily.
- 5 - 8 kgs of nyama chemsha (boiling meat) prepared daily.
- 2 - 4 boiled cow tongues prepared daily.
- 50 pieces of banana are prepared daily, each selling at 100 Tshs.
- 4 pairs or 16 pieces of makongoro prepared daily, producing 64 portions - each portion is sold for 300 Tshs.

Key financial challenges are:

- Rental of business premises of 1.1m Tshs per annum.
- Medical examination fees of 25,000 Tshs per annum.
- Charcoal prices fluctuate.
- Waste collection fees often for no service. Indeed, he has to hire someone everyday to dispose of waste despite having to pay a waste collection fee of 60, 000 Tshs per annum to the Municipal Council.
- Access to capital to improve his business. He plans to buy and use improved (appropriate technology) stoves with lower charcoal consumption.

He reports that he makes a reasonable profit, enough to maintain his business and cover his family's living costs and school fees. His nyama choma business has enabled him to buy a plot and build a small residential house for his family.

3.3 Kenny Garden Bar and Restaurant

The third interviewee was Mr. F. Silayo, the Manager of Kenny Garden Bar and Restaurant. They have been in business for more than 20 years. Kenny Garden Bar, Kenny Garden Restaurant and the nyama choma business are all under the ownership of Mr. Massawe who owns the building. The manager said they had been able to stay in business this long because of good location and that the nyama choma business, the bar and the restaurant complement each other and function as one big business. The restaurant gets its meat from butchers.

Like other nyama choma businesses Kenny Garden buys the meat of pastoralist animals, since customers prefer it. According to the manager, there are always customers for different types of meat prepared at the restaurant. Asked whether prices for the meat varied according to its origin (e.g. pastoral meat versus ranch meat) he said he did not know because his meat had for a long time been supplied by a butcher who knew exactly what kind of meat was needed for the restaurant.

Kenny Garden pays 200,000 Tshs for a business license, 150, 000 Tshs for the premises, and 300, 000 Tshs for the land every year. Other costs are water supply, electricity, and medical examination fees for employees, at 5000 Tshs per each employee. The business has forty employees so this amounts to 200, 000 Tshs. The restaurant also

pays 60, 000 Tshs for waste collection and disposal, but as indicated by other businesses above the services are not provided.

The manager indicated that salaries are negotiable with an increasing scale starting at 30,000 Tshs per month (US\$24).

Mr. Silayo explained that the restaurant used to have very high charcoal consumption but they are now using improved low consumption stoves so their fuel consumption is minimal. The manager said that the nyama choma business made an average profit; he did not want to give more details.

The manager said they only faced small problems such as customers refusing to pay their bills when they were drunk, shortage of water and erratic electricity service. But, all in all, they feel that they are doing well.

The daily meat needs for this nyama choma business are:

- Trupa : 50 kgs daily.
- Nyama Choma: 50 kgs daily plus four goats.
- Nyama Chemsha: 50 kgs daily.
- Nyama Roast plus ugali: 30 kgs daily.
- Mtura (local sausage): 20 kgs daily.

4. Arusha Meat Company

4.1 The Arusha Abattoir

The Arusha Abattoir is owned and operated by Arusha Meat Company. It is one of the service projects established in 1991 by Arusha Municipal Council with the help of their twin city of Murzzuschlag in Austria. Prior to its establishment, although livestock rearing was one of the key production activities of the Arusha Region, there were no processing facilities in the region. The local contribution towards construction costs was 150 million Tshs (US\$ 214,285).⁴ Another abattoir was built at Dodoma in 2004.

Arusha Abattoir provides a hygienic environment for slaughtering livestock, and is the only place where livestock can be slaughtered. Even the private butchers have to slaughter their animals at the abattoir.

⁴ Based on an estimate of exchange rates in 1991.



Some of the slaughtered animals at the Arusha abattoir.

4.2 Arusha Meat Company

Arusha Meat company (AMC) operations are divided broadly between the two owners: the municipality and the private sector.

- The municipality is keen to provide a service at minimum cost to butchers to both efficiently satisfy the meat demand of Arusha Municipality residents and to dissuade butchers from informal slaughter. This was previously carried out often on small cement slabs in the open air and was a source concern in terms of hygiene. On a number of levels, the construction of the abattoir was a considerable relief to the council. Other advantages to the municipality of having a centralised slaughtering house are that it is easier to check for disease. Inspections are carried out at the marketplace where animals are examined as part of the marketing process; at the abattoir before slaughtering process; and finally meat is inspected at the abattoir before sale to butchers. Ninety-four percent (94%) of the cattle slaughtered at the abattoir are reared by pastoralists. The remaining 6 per cent are cross-breed and high-breed species, mostly from ranches.
- Realising that the fee paid by butchers for slaughter was low (to cover the running, operation, and maintenance costs of the abattoir) and the investment capacity of the municipal council as a partner in the AMC was limited, the AMC management team started their own meat business. The business buys and slaughters livestock from different sources, grading and selling the different

types of meat, and preparing meat products such as minced meat and different types of sausages. The graded meat is sold at a higher price than that sold in normal butchers and eaten in nyama choma businesses. It is aimed at the tourist hotels of Arusha, Kilimanjaro, Dar es Salaam and Zanzibar as well as a few wealthier individuals interested in higher quality meat products.

4.3 Economics of the abattoir

Table 4: Summary data on abattoir production and municipal fees, Arusha Meat Company, 2003-5

Livestock	Factor	Year		
		2003	2004	2005
CATTLE	No.	29,583	28,964	31,175
	Slaughter fee:	106,499,700	104,270,400	112,230,000
	Medical exam. fee	14,791,500	14,482,000	15,587,500
SHOATS	No.	23,085	26,142	25,285
	Slaughter fee:	13,851,000	15,683,060	15,171,000
	Medical exam. fee	4,617,000	5,228,400	5,057,000
TOTAL	Slaughter fee:	120,350,700	119,953,460	127,401,000
	Medical exam. fee	19,408,500	19,710,400	20,644,500

Source: Arusha Meat Company, 2005

Annexe 1 provides detailed monthly information on livestock slaughter levels.

The slaughter fee is 3,600 Tshs per cow and 600 Tshs per sheep or goat (shoats). Table 4 shows the financial receipts or turnover of the abattoir over three years (2003-5) is approximately 120m Tshs per annum. Turnover is used to run and maintain the abattoir, to pay service providers, government charges as well as to pay salaries of the employees.

The medical examination fee is fixed at 500 Tshs per cow and 200 Tshs per shoat. The cost of running the municipality's food and animal hygiene services is approximately 20m Tshs per annum. Costs are made up of staffing, transportation, development and enforcement of laws, monitoring, training costs for workers and industry participants, dissemination of information on laws and best hygiene practice.

4.4 Interviews with Arusha Meat Company

The manager of the Arusha Meat Company (AMC) was asked where slaughtered livestock came from:

- Six per cent of the head count are cross-breeds and high-breeds from government and private ranches, while ninety-four percent come from middlemen and pastoralists. According to the manager, the abattoir prefers meat from ranch animals because the animals are well cared-for; the meat is of good quality and free from disease. Animals are graded as Tanzania Special 1, 2, 3 and 4. Tanzania Special 1 contains only 20 per cent bone, with the rest consisting of a good quality of meat. Most of the ranch animals are between Tanzania 1 to Tanzania 3 quality, while pastoralist animals are of Tanzania 3 and 4 quality.

The AMC does not buy from traders who simply turn up and sell their animals at the abattoir gate.

The AMC faces very high operation and maintenance costs. Hence, it does not have enough capital to run the abattoir at full production. Prices are fixed according to the different cuts and quality of the meat. They range from 3,800 Tshs per kilogram of marinated fillet to 800 Tshs per kilogram of meat bones. The price depends on the quality and not the breed of the animal. The company also sells bones, for household purposes, pet food and for private sector inputs to livestock feed.

Asked about price fluctuations, the manager said that the price of meat changes from year to year, in accordance with inflation and rising living costs. The AMC does not keep records of prices.

The company pays the following annual taxes and fees:

- Business licence from the Municipal Council, 26, 400 Tshs.
- Occupational, Safety and Health Authority, 130, 000 Tshs.
- Food handling fees paid to Tanzania Food and Drug Authority, 600, 000 Tshs.
- Twenty per cent (20%) of all fees collected is paid to the Income Tax Department (VAT), which is part of the pay as you earn (PAYE) tax.

The meat company employs fifty-six full-time and three part-time employees who are paid according to the government salary scale, which ranges from 65,000 Tshs per month to 156,869 Tshs per month. The manager is an employee of and is paid by Arusha Municipal Council. In addition, the company employs one trainer to run

butchery courses at 156, 000 Tshs per month. Other casual staff are hired to carry out construction repair work and they are paid 3,000 Tshs per day.

The company incurs other costs, including:

- Repairs and maintenance.
- Vehicle running and transportation.
- Special uniforms and working tools.
- Electricity.
- Office management and stationery.
- General staff expenses.

The company faces several challenges:

- Fees are low and have been fixed for over four years while running costs are constantly increasing.
- The municipality is unable to support the company or re-invest profits in its future. Indeed, the manager indicated that the company makes very little profit. This is because they have been running the abattoir just as a service to the residents of the municipality (this is a political decision of Councillors). This makes re-investment in the abattoir's future difficult. Since its establishment, the council has not allocated any funds to support the running of the abattoir.
- The manager said that the taxes remitted to central government were not helpful. Rather, it would be helpful if the amount remitted to the Arusha Municipal Council remained with the company to cover the costs of different activities and other improvements. Another aspect that is not helpful is the political decisions of councillors and their control over the service fees. They want change regardless of the running costs and expenses incurred by the abattoir.
- Opportunities remain unrealised. The manager suggested that financial support was needed to improve and modernise the abattoir to bring it up to an export quality standard so that the abattoir could begin exporting. At the same time, even within the country there is a big market opportunity. For example, at present, the abattoir has a daily order of 500 kilograms to Zanzibar and 1,000 kilograms to Dar es Salaam; but this is less than half of the actual demand they are getting. For the time being, they cannot supply more than that because of their limited capacity. Despite these difficulties, the company plans to have several shops and selling outlets at various points within Arusha municipality and even in other urban centres within the country. They also have plans to establish

tanneries for skin and hide treatment. At present, local businessmen have captured this trade, salting and curing skins and hides for export. Others are buying, drying or treating meat with salt and then exporting it to India, Pakistan and China. The AMC are missing out on these opportunities.

5. An economic analysis of the supply chain for nyama choma

Using the information and data collected, this section represents a first attempt to provide sector-wide information on one of the key contributions of pastoral production systems to the local, district and national economy. The chief constraints with the presentation of the estimates in this section are:

- Double-counting: not all meat “produced” in Arusha is consumed in Arusha.
- Input costs: are heavily estimated and use generalised figures based around the margins found in other informal industries in East Africa. Hence the value-added estimates should ideally be refined by further research using a more detailed survey tool and a larger sample size.
- Multiplier information is not available to reflect the full economy-wide contribution of the sector. The multiplier effect refers to the effect that spending by one sector has on other sectors as the money circulates. For instance, cheap meat sales at restaurants will generate economic activity and jobs in a range of service industries such as beer delivery, laundry, taxis, etc. But for Tanzania’s rural areas and informal sectors, these multipliers remain poorly understood. Hence the multiplier effect has not been included.
- These data have been estimated from survey data and other unofficial sources. Many assumptions have been necessary. As more research is conducted, the picture presented in this section of the trade chain for pastoral meat into nyama choma businesses, might change.
- There are other economic values of pastoralism that are not captured by the nyama choma business supply chain. These include other outputs, opportunity costs, social and cultural values as well as values to the economy through associated industries such as tourism and agriculture. These will be examined in greater depth in subsequent studies.

5.1 Descriptive statistics

Table 5: Descriptive statistics on the trade chain supplying NC businesses in Arusha, Tanzania, 2005:

Participant sector	Number (owners)	Employees	Est direct dependents	Total value of inputs	Total value of sales	Estimated value-added	Medical exam fees
						TSCHS	TSCHS
Pastoralists	12,000	12,000	54,000		3,047,668,000	609,533,600	-
Middlemen/ traders	60	300	1,350	3,047,668,000	6,095,336,000	609,533,600	150,000
Butchers/ distributors	200	1,000	4,500	6,095,336,000	24,453,187,500	3,119,511,500	500,000
Abattoir	1	60	270	127,401,000	127,401,000	-	30,000
NC businesses	601	5,589	25,152	55,014,681,429	55,893,000,000	878,318,571	2,794,650
TOTAL	12,862	18,949	85,272	64,285,086,429	89,616,592,500	5,216,897,271	3,474,650
[US Dollars] TOTAL					86,169,800	5,016,247	3,341

The research detailed in this report and summarised in Table 5 leads us to conclude that an estimated 18,949 employees are directly employed in this supply chain. An estimated 6.6% of the population of Arusha obtain a proportion of their livelihood from the nyama choma business supply chain. The data presented in Table 5 does not include the indirect benefits through the ‘multiplier effect’ for the rural and urban economy, which would substantially increase these figures.

Annual turnover of businesses along the supply chain in Arusha is estimated at 89 billion Tshs (USD 86.2 million), with an estimated value-added of 5 billion Tshs (USD 5.0 million). The formal part of this supply chain is restricted to the licences and fees collected by the Arusha municipality. Here, one aspect, medical examination fees, raises 3 million Tshs (USD 3,341); this is dwarfed by the value-added contributions to the economy of the informal sector. These figures help to show how the potential economic benefits to the economy of pastoral production remain hidden owing to the informal nature of trade and industry associated with its output.

5.2 Tanzania

If these data can be generalised for Tanzania as a whole, the population of 33.6 million is serviced by 15,585 nyama choma businesses with a supply chain-wide turnover of 1,353 billion Tshs (USD 1.3 billion) and value-added to the national economy of 23 billion Tshs (USD 22 million).

Furthermore:

- Outside pastoralism, each pastoral cow slaughtered “supports” (through the nyama choma supply chain) at least one-quarter of a full-time job in the Tanzanian

economy, accounting for 1.07 dependents, and providing an estimated USD 172 worth of economic value-added in the economy.

- Including pastoral society, each pastoral cow slaughtered “supports” (through the nyama choma supply chain) at least three-fifths of a full-time job in the Tanzanian economy, accounting for 2.91 dependents.

6.0 Conclusion

Informal and invisible: From the above discussion it is clear that the contributions of pastoralist production systems are substantial in both formal and informal economies. It is clear that the true economic worth of the nyama choma business sector is undervalued by the data collected through official channels. In the formal sector, pastoral production is visible at a national level through the fees and taxes collected at the livestock markets, livestock movement, medical examination and the market fees.

In addition, at a district level, Arusha municipality has created an industry monitoring and enforcement structure based around pastoral production that currently enforces hygiene laws and is paid for by the industry participants ‘at cost’ through fees collected at one point in the chain - slaughter. This system has admirably positive pro-poor aspects, since prices are assured to be relatively low. However, the ongoing lack of investment at the abattoir and static fees mean this situation is likely to be untenable in the long-term.

Section 5 indicates that the fees collected from the nyama choma businesses reflect a small proportion of the actual economic activity of this sector. Indeed, fees represent less than 1 per cent of estimated value added of the nyama choma business sector to district and national economies! This needs to be addressed through a more rigorous estimation of the contribution of this sector. It is likely that as Tanzania’s economic growth continues, the food hygiene and livestock health sectors will formalise quickly. With this process will come greater official recognition of the true worth to the economy of the nyama choma business and its inputs. However, this should not stop greater immediate data gathering to ensure that the raw material production that sustains this industry is not dissolved through uninformed policy measures.

An efficient supply chain: The industry supplying nyama choma businesses has its efficiencies: nothing of the animal is wasted, with by-products such as blood, dried and sold as an ingredient for animal feeds, while stomach contents are sold as manure for gardening purposes. In addition, the final sale is differentiated among customers. Finally, it supplies relatively cheap protein for all Tanzanians.

It has not been possible to assess the efficiencies or cost effectiveness of pastoral production systems in this study; this is for later research.

A good deal for pastoralists? This research has shown an apparently smoothly functioning supply chain. Yet, it has not been possible here to investigate the viability of pastoral production. Further information is required on the relative price received, the terms of trade and where the “power” lies in this supply chain, to derive a better understanding of how policy should be developed to influence (or tweak) the supply chain in ways that unequivocally enhance the livelihoods of pastoralists.

Estimating the pastoralists’ economic significance: This research has provided an initial step towards estimating the economic significance of pastoral production systems in the region of Arusha. It is designed to stimulate thinking among researchers and to drive debate on how best to leverage our existing knowledge on pastoralism and the industries it supplies with goods and services.

A policy push? This research indicates that insufficient appreciation of the informal sectors of the economy and, particularly, how to derive the best outcomes from national and district policy aimed at producing pro-poor gains through these sectors. For instance, the medical examination fee is based around cost-recovery, while the abattoir investments by the Arusha municipality are based around pro-poor/poverty alleviation principles. A more in-depth examination of how policy is formulated and how “pro-poor” it is, detailing ideas for reform and positive steps for future formulation, are needed.

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Annex 1 Monthly data on the AMC slaughter, 2003-5:

Livestock	TYPE	2003 - TOTAL	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC
CATTLE	No.	29,583	2,368	2,362	2,489	2,483	2,533	2,498	2,548	2,376	2,173	2,515	2,625	2,613
	Slaughter fee:	106,499,700	8,524,800	8,503,200	8,960,400	8,938,800	9,118,800	8,992,800	9,172,800	8,553,600	7,822,800	9,054,000	9,450,900	9,406,800
	Medical exam. fee	14,791,500	1,184,000	1,181,000	1,244,500	1,241,500	1,266,500	1,249,000	1,274,000	1,188,000	1,086,500	1,257,500	1,312,500	1,306,500
SHORTS	No.	23,085	1,900	1,744	2,035	1,965	1,801	1,873	1,926	1,818	1,713	1,999	2,145	2,166
	Slaughter fee:	13,851,000	1,140,000	1,046,400	1,221,000	1,179,000	1,080,600	1,123,800	1,155,600	1,090,800	1,027,800	1,199,400	1,287,000	1,299,600
	Medical exam. fee	4,617,000	380,000	348,800	407,000	393,000	360,200	374,600	385,200	363,600	342,600	399,800	429,000	433,200
	Slaughter fee:	120,350,700	9,664,800	9,549,600	10,181,400	10,117,800	10,199,400	10,116,600	10,328,400	9,644,400	8,850,600	10,253,400	10,737,900	10,706,400
	Medical exam. fee	19,408,500	1,564,000	1,529,800	1,651,500	1,634,500	1,626,700	1,623,600	1,659,200	1,551,600	1,429,100	1,657,300	1,741,500	1,739,700
Livestock	TYPE	2004 - TOTAL	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC
CATTLE	No.	28,964	2,310	2,235	2,514	2,354	2,512	2,354	2,736	2,702	2,389	2,362	2,160	2,336
	Slaughter fee:	104,270,400	8,316,000	8,046,000	9,050,400	8,474,400	9,043,200	8,474,400	9,849,600	9,727,200	8,600,400	8,503,200	7,776,000	8,409,600
	Medical exam. fee	14,482,000	1,155,000	1,117,500	1,257,000	1,177,000	1,256,000	1,177,000	1,368,000	1,351,000	1,194,500	1,181,000	1,080,000	1,168,000
SHORTS	No.	26,142	2,230	1,828	2,678	2,309	2,110	2,310	2,154	2,299	2,069	2,107	2,007	2,041
	Slaughter fee:	15,683,060	1,338,000	1,096,800	1,606,800	1,385,400	1,266,000	1,386,000	1,292,400	1,379,400	1,241,400	1,264,200	1,204,200	1,222,460
	Medical exam. fee	5,228,400	446,000	365,600	535,600	461,800	422,000	462,000	430,800	459,800	413,800	421,400	401,400	408,200
	Slaughter fee:	119,953,460	9,654,000	9,142,800	10,657,200	9,859,800	10,309,200	9,860,400	11,142,000	11,106,600	9,841,800	9,767,400	8,980,200	9,632,060
	Medical exam. fee	19,710,400	1,601,000	1,483,100	1,792,600	1,638,800	1,678,000	1,639,000	1,798,800	1,810,800	1,608,300	1,602,400	1,481,400	1,576,200
Livestock	TYPE	2005 - TOTAL	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC
CATTLE	No.	31,175	2,362	2,096	2,378	2,228	2,353	2,391	2,567	2,473	2,707	3,220	3,050	3,350
	Slaughter fee:	112,230,000	8,503,200	7,545,600	8,560,800	8,020,800	8,470,800	8,607,600	9,241,200	8,902,800	9,745,200	11,592,000	10,980,000	12,060,000
	Medical exam. fee	15,587,500	1,181,000	1,048,000	1,189,000	1,114,000	1,176,500	1,195,500	1,283,500	1,236,500	1,353,500	1,610,000	1,525,000	1,675,000
SHORTS	No.	25,285	2,107	2,176	2,278	2,226	2,085	2,012	2,063	2,040	1,928	2,020	2,100	2,250
	Slaughter fee:	15,171,000	1,264,200	1,305,600	1,366,800	1,335,600	1,251,000	1,207,200	1,237,800	1,224,000	1,156,800	1,212,000	1,260,000	1,350,000
	Medical exam. fee	5,057,000	421,400	435,200	455,600	445,200	417,000	402,400	412,600	408,000	385,600	404,000	420,000	450,000
	Slaughter fee:	127,401,000	9,767,400	8,851,200	9,927,600	9,356,400	9,721,800	9,814,800	10,479,000	10,126,800	10,902,000	12,804,000	12,240,000	13,410,000
	Medical exam. fee	20,644,500	1,602,400	1,483,200	1,644,600	1,559,200	1,593,500	1,597,900	1,696,100	1,644,500	1,739,100	2,014,000	1,945,000	2,125,000