

# The red meat value chain in Tanzania

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## Abstract

The red meat value chain in Tanzania includes live animals, fresh meat, processed meat products and by-products from cattle, sheep and goats. Participants in the chain include primary producers, traders in animals, in meat and in by-products, processors, butchers, other retail outlets and consumers. The chain from supply and use of inputs, via production and processing to marketing and retailing is confounded by many technical and institutional impediments. The chain is fragmented, unorganized, uncontrolled (in spite of being over-regulated) and uncoordinated. Many participants have more than one role. At various stages, goods and services include land, labour, live animals, veterinary supplies, feed supplies, transport, energy, finance and (perhaps above all and what is most lacking) institutional support. Clearly defined and enunciated standards and a regulatory framework under law are needed. Many of these requirements continue to be weak, non-existent or are not applied in Tanzania.

## Introduction

The value chain describes the range of activities required to move a commodity through the various stages that bring it from the first point of production to the last point of consumption. This usually involves (an often complex) combination of physical change, inputs from various producer services, transfer of ownership and delivery [1]. Commodity value chains are increasingly recognized as providing a solid framework for the analysis of the public and private sector stakeholders players within them as well as the overall performance of particular markets.

Ruminant livestock have long been a mainstay of Tanzania's economy and one of the key livelihoods of its people. In the 50+ years between Independence in 1961 and the year 2012 the human population quadrupled, the cattle population increased 9-fold, the goat population 3-fold and the sheep population by a factor of 1.4. The Tanzania red meat value chain from supply and use of inputs, via production and processing to marketing and retailing is confounded by many technical and institutional impediments. The chain is fragmented, unorganized, uncontrolled (in spite of being over-regulated) and uncoordinated [2]. It is dominated by large numbers of small holder stock owners [3], an unknown but undoubtedly immense number of middlemen who operate across every link and a similarly unknown number of small processors and butchers who put products on the market for the consumer but who mainly lack the technical and financial ability to run it efficiently and profitably. The horizontal and vertical linkages of the value chain are generally weak and uncompetitive and in need of support to strengthen them [4].

In Tanzania the "red meat" value chain includes live animals, meat, processed meat products and by-products from cattle, sheep and goats that are sold both locally and in the export market. Primary processed meat and meat products are derived after animals are slaughtered and include carcasses, red offals (liver, lungs, tail, heart and kidneys), hides, skins and other by-products such as blood, bones, horns, hooves, hair, wool, glands, intestines, stomachs and gut contents.

Participants in the value chain include primary producers, traders in animals, in meat and in by-products, processors, butchers, other

retail outlets and consumers. Most actors are not specialized, and their functions relate to various segments of the value chain. Many primary producers, for example, engage in trading of animals and some upstream actors, such as butchers, trade in animals and meat and undertake primary processing for production of higher value cuts, minced meat and sausages.

## Materials and methods

This study derives from a period of study in Tanzania. A thorough review of the literature was first undertaken. Field visits were made to all the areas in the country, except the western provinces, where livestock are reared. Discussions were held with individual participants operating throughout the chain, with focus groups and with technical and administrative personnel in both public and private sectors. Analysis and report production were then carried out according to standard methods [5,6].

## The value chain map

The value chain map (Figure 1) shows that the whole is suspended from the consumer. If the link to the rest of the chain were broken the whole would be susceptible to collapse. This situation is similar for all other links in the chain. Each link takes the product from its immediate predecessor and "processes" it to an output that is used by the next link (Figure 2). Nominally, the value of product increases at each stage until it reaches the consumer.

It is possible to provide a succinct list of most of the participants in the chain (Table 1) but pivotal roles are played by the middle links of the chain through which all products must pass. Many participants (Table 2) occupy more than one role. Some small-scale livestock producers

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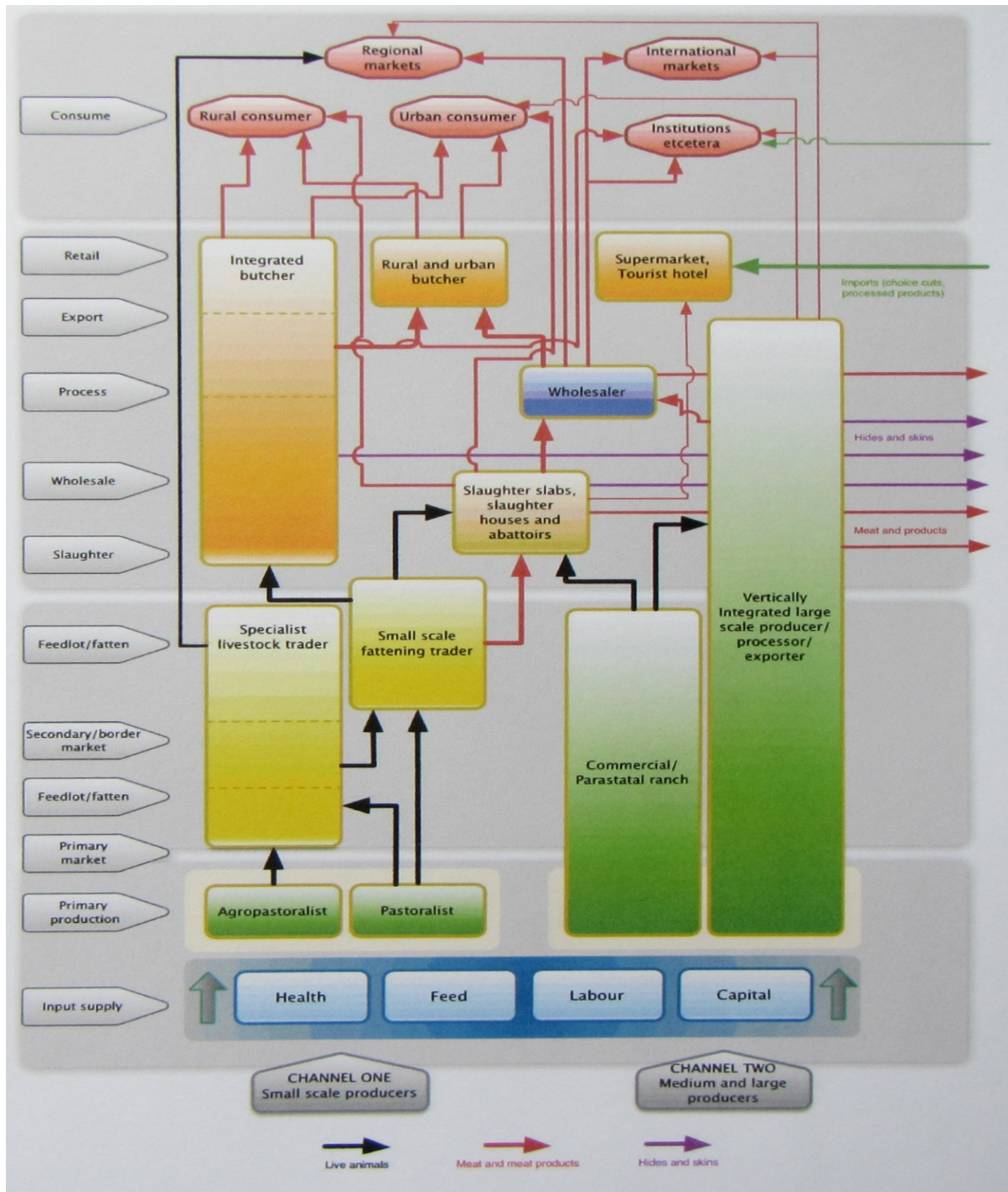


Figure 1. The red meat value chain in Tanzania.

Table 1. Simple listing of supply and service participants in the Red Meat Value Chain.

Core actors	Service suppliers
Producers (Agropastoralists, Pastoralists, Dairy farmers, Commercial Ranchers)	Research
Traders and agents	Training and Education Institutions
Slaughters and facilities	Extension service
Wholesalers	Inputs (Veterinary, Feed)
Butchers (Rural, Urban, Quality butcheries and supermarkets)	Transport
Meat product retailers (Street vendors, shops, supermarkets)	Financial services
Importers (live animals, meat and meat products)	Meat inspectors and abattoir workers
Exporters (animals, meat and meat products, hides and skins)	Associations (Producer, Processor, Trader, Exporter)
	Tanzania Meat Board



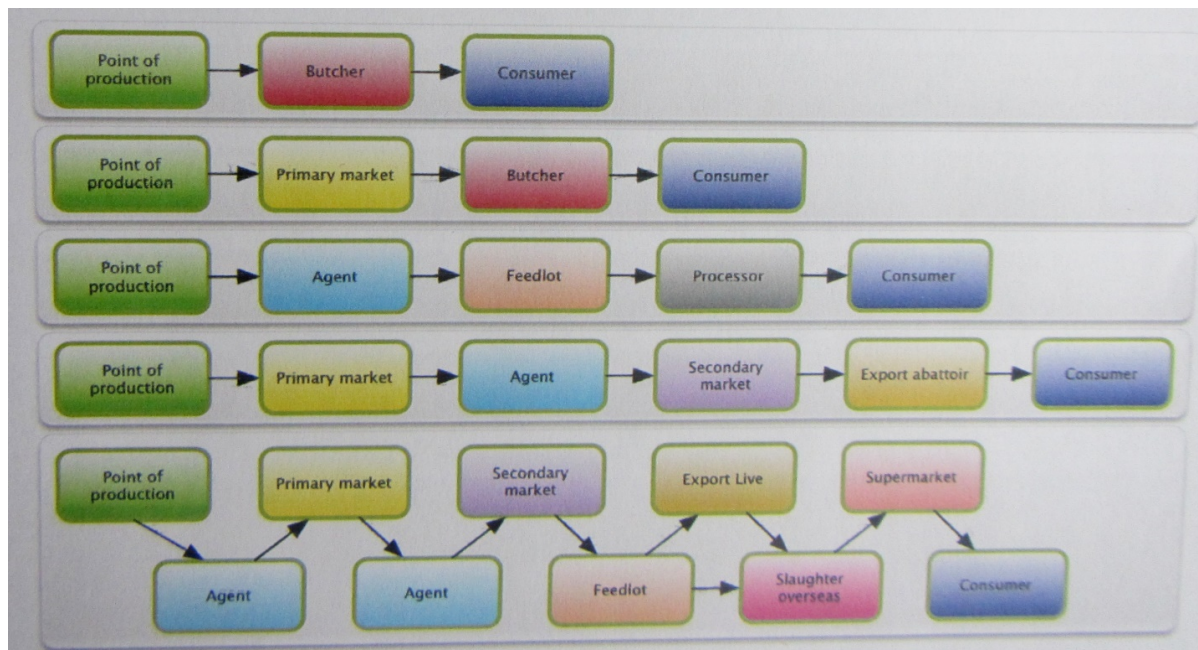


Figure 2. Some examples of red meat pathways from point of production to final consumption.

Table 2. Participants and functions in the Tanzania Red Meat Value Chain.

Participant	Functions
Research	Livestock production and development research is carried out at the Uyole Livestock Research Centre which is located in the same facilities as the Uyole Agricultural Research Institute (ARI) some 11 km from Mbeya. Professional staff include 2 PhD, 7 MSc, 0 BSc, 10 Diplomates and 1 Certificate. In addition to limited applied research the centre has responsibilities in training and extension. Major collaborative areas with other ARIs are socio-economic studies and natural resources management for integrated management of crop-livestock-environment towards sustainable agricultural development. The Iringa Veterinary Investigation Centre is the reference laboratory for the Southern Highlands
Feed manufacturers and suppliers	Energy Millers and Animal Feeds in Sumbawanga produce livestock feed, mainly for dairy and poultry and mainly for the Dar es Salaam market on demand. Numerous (as many as 500 with trading licences) small private retailers sell small quantities of feed and feed additives and supplements.
Other input suppliers	MIFUGO (Ministry of Livestock Development) and the municipalities provide limited extension and animal health services. Financial services are extremely limited and available only to a favoured few.
Producers	Most stock are kept by sedentary agropastoralists. Since the 1960s there have been incursions of pastoralists mainly from the area to the south of Lake Victoria. NARCO (National Ranching Corporation) has a ranch at Macama 45 km from Sumbawanga and there are other smaller private ranches.
Traders	Primary buyers, primary brokers and secondary buyer-agents operate throughout the region. Trading takes place at the point of production and at primary and secondary markets. Some long-distance trade towards the Dar es Salaam market by road transport is undertaken but most is more local
Slaughterers	Most slaughtering of goats and sheep is "informal" and done at the point of production. Cattle are slaughtered at rural slabs, usually small and out of date slaughterhouses at many of the larger villages and towns and at some larger municipal facilities.
Processors	Small primary processing to 'nyama kawaida' cuts is carried out on a variety of scales. Offals are processed by small scale processors who deal in both red (edible) and green (inedible) varieties usually in proximity to the point of slaughter. A private company, Sumbawanga Agricultural and Food Industries Limited (SAAFI) has the capacity to slaughter and process 150 cattle per day for the export and high-end domestic market.
Retailers	Retailing is done by usually small-scale street vendors, often unsalubrious one-man butchery operations and by rather more hygienic urban butchers.

but especially those of slightly larger scale also act as processors and retailers. Further up the chain some processors are also wholesalers and retailers and operate in both the domestic and export markets. Primary producers may sell cattle, goats or sheep directly through a market, to a trader or to a processor or may use a combination of all three outlets. A trader can sell to another trader, directly to a wholesaler or retail butcher or to a processor or, again, may broaden his option by using a combination of these channels. Processors, especially the smaller enterprises, may buy animals directly from farmers or from traders and sell the products to wholesalers or retailers.

Every link in the chain relies on goods and services in order to enable it to fulfil its role(s). At the various stages, goods and services include land, labour, live animals, veterinary supplies, feed supplies, transport, energy, finance and (perhaps above all and what is most lacking) institutional support. Also required are clearly defined and enunciated standards and a regulatory framework under – and applied

by – law. Many of these requirements continue to be weak or non-existent in Tanzania.

### Technology generation

Technology in livestock production includes inputs such as feed or veterinary medicine at the producer level, machinery use in slaughtering and processing and proper and hygienic presentation of products at the retail level [2]. Technology has a key role in improving competitiveness and especially vis-à-vis near neighbours operating in and competing for the same environment.

Red meat production in Tanzania is based on traditional systems that use very little modern technology. Indigenous cattle (Tanganyika Shorthorn Zebu), sheep (undifferentiated African long-fat-tailed types although the Red Masai is recognized in the north of the country) and goats (Small East African) (Figure 3) that are considered of limited potential for production dominate the herds and flocks [7]. Animals



**Figure 3.** Indigenous livestock of Tanzania: Tanganyika Shorthorn Zebu cows; Masai-type sheep; Small East African goats.

derive their feed almost in its entirety from the natural rangeland and some crop residues which are usually in low supply and for much of the year have minimal nutritional value. Most herds receive little in the way of animal health treatments such as vaccination (only 29 per cent of cattle are vaccinated regularly), protection from ticks (and the diseases they carry) or control of internal helminth parasites [8]. As a consequence, if the animal does not succumb to its miserable life style (death rates are very high in calves and may reach 70 per cent of those infected by East Coast Fever (ECF) which can be reduced to less than 30 per cent with regular dipping), reproductive rates in cattle are only about 50 per cent (a cow calves first at 4 years of age and then produces a calf only every 2 years) and overall growth rates are low (and characterized by the gain-loss-gain annual cycle). Thus, overall output is greatly reduced (annual offtake for slaughter may reach 12 per cent but is more likely to be 10 per cent) and if an animal survives to the slaughter stage (at a minimum of 4 years and often at 6-8 years) the resultant product (meat) is of very poor quality.

As can be inferred from the preceding paragraph many technological interventions are available. For the most part, however, they are not used by producers and probably not even communicated to them by technical staff. Some are, indeed, somewhat sophisticated or too expensive for use at the present state of development of the regional herd. A vaccine against ECF, for example, has recently been put on the market but is too costly for general use [9]: on the other hand, frequent and regular dipping or hand spraying (acaricides are subsidized by the public sector) would greatly reduce the incidence of tick-borne diseases, not only of ECF but heart water, anaplasmosis and babesiosis. The more widespread use of artificial insemination (AI) is often advocated as a means of improving the genetic make-up of indigenous stock but in the prevailing Tanzania conditions this technique can have only limited application and is fraught with such problems as supply of liquid nitrogen and actually getting to the cow while she is receptive to insemination [10]. Urea- or ammonia-treatment of fibrous feeds to improve their nutritional quality is a cheap, simple and very effective technique for accelerating weight gain but has little application in the country [11]. Low adoption of available technologies is caused by poor extension services, difficulties in gaining access to the technologies (cost/location) and the low level of knowledge among most livestock keepers.

Adoption of known improved but not over ambitious management and technological practices can, however, bring about spectacular

increases in the output and quality of livestock products (Table 3). Amongst such are:

- strict implementation of the tick control regime recommended by the veterinary authority;
- vaccination against epidemic and endemic diseases, both “trade” and “production”;
- matching the stocking rate to the carrying capacity and providing preferential access of target groups (pregnant animals and young stock) to set aside dry season pasture reserves and conserved fodders;
- regular (daily at least) access to water by livestock;
- use of mineral and vitamin supplements to target groups including breeding males;
- castration and early removal of inferior males and those unfit for service;
- sale of barren and unproductive females and of over age draught animals; and.
- sale of slaughter cattle when they are in good condition early in the dry season and try to avoid “emergency” sales for immediate cash needs.

## Conclusion

A plethora of reports, workshops, projects and programmes have masqueraded as — or been a proxy for — development of the livestock red meat industries. The simple fact is, however, that the ordinary people of Tanzania still do not have enough meat to eat and even were there to be enough they would not be able to afford to buy it [12]. Failure to overcome the lack of use of available, effective, cheap and simple technology will inevitably result in even further loss of competitiveness as the peers of Tanzania’s livestock producers and processors in neighbouring countries, especially Kenya, are making widespread use of it [13].

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**Table 3.** Potential improvements in red meat production with adoption of simple technology.

Production parameter	Current value	Intervention	Future value	Improvement (per cent)
<b>Cattle</b>	<i>Long intervals between watering are a major constraint to increased output</i>			
Reproductive rate (calving interval)	24 months	Strategic supplementation	18 months	33
Cow lifetime calf production	3	Strategic supplementation	4	33
Calf survival	30 per cent	Vaccination/dipping against ECF, anthelmintic treatment	70 per cent	233
Calf growth to 7 months	300 g/d	Supplementation	400 g/d	33
Long term growth, 1 to 4 years	200 g/d	Mineral/molasses/multinutrient blocks, crop residue treatment	250 g/d	25
Older animal survival, per year	80 per cent	Supplementation, dipping, anthelmintic treatment	90 per cent	12
Offtake rate, per year	10 per cent	Combinations of above	12 per cent	20
<b>Goats and sheep</b>	<i>Long intervals between watering are a major constraint to increased output</i>			
Reproductive rate (kids/lambs per year)	1.5/1.2	Strategic supplementation, anthelmintic treatment	1.6/1.3	41126
Growth to 2 years	300 g/d	Mineral/molasses/multinutrient blocks, crop residue treatment	350 g/d	16
Adult survival, per year	80 per cent	Mineral/molasses/multinutrient blocks, crop residue treatment	85 per cent	6
Kid/lamb survival	50 per cent	Anthelmintic treatment (including tapeworm), tender loving care	70 per cent	40
Death from Peste des Petits Ruminants/Rift Valley Fever	15 per cent	Vaccination	2 per cent	750
Offtake rate, per year	20 per cent	Combinations of above	25 per cent	20

Source: Author's compilation

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## Competing interests

The author declares no conflict of interest.

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