The United Republic of Tanzania

Ministry of Agriculture Livestock and Fisheries

Commodity Value Chain Brief No 4.

Dairy

Key Messages:

- *Dairy production and productivity remain much lower than expected.*
- *Post-harvest losses in milk and dairy products are high.*
- *Poor adherence to sanitary and phytosanitary issues hinder access to high value market.*
- *Persistent marketing challenges are mostly caused by inadequate transport and marketing infrastructure, limited access to marketing information and weak cooperatives.*
- *Need to improve business environment for the dairy industry.*

1. INTRODUCTION

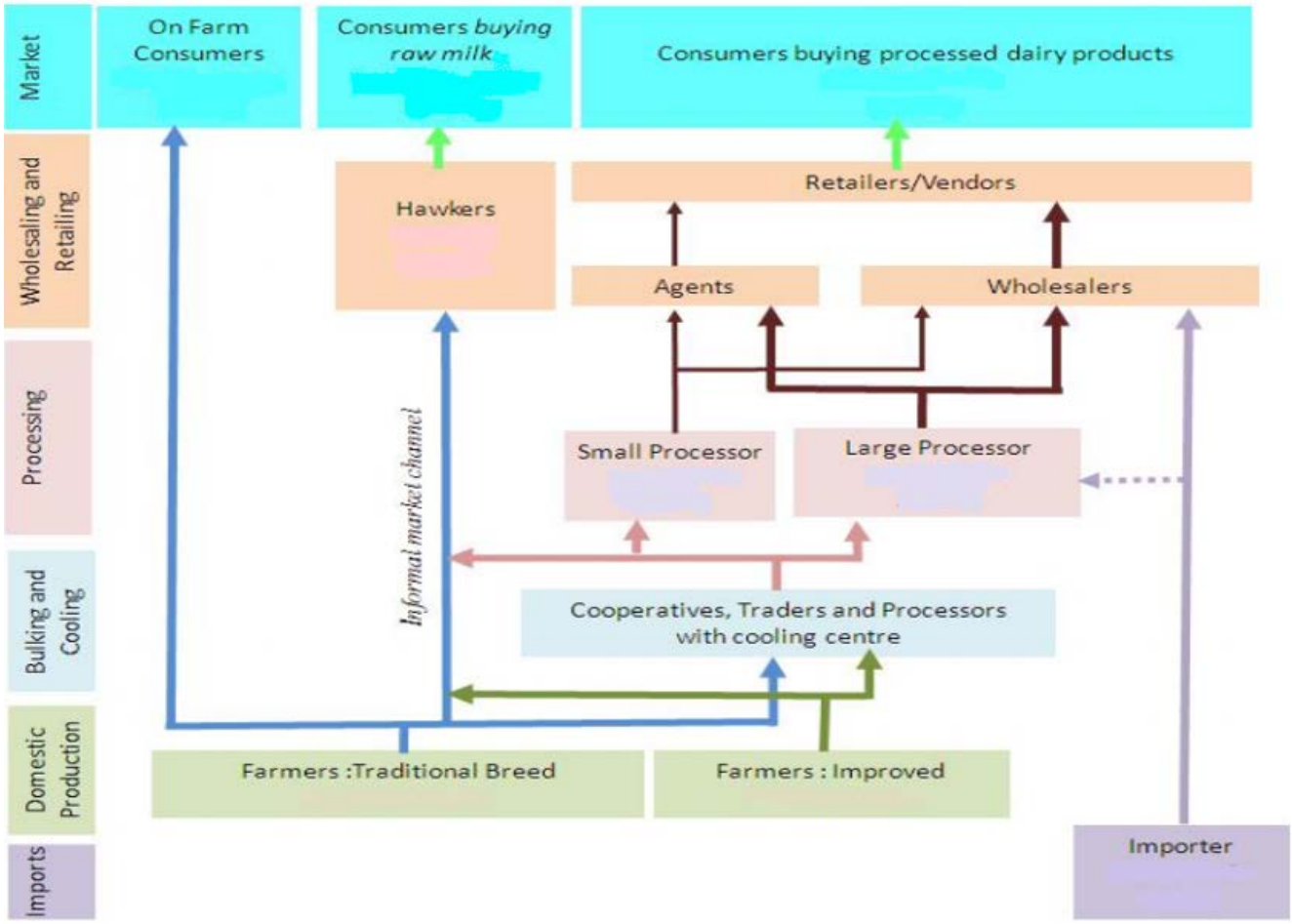
The dairy sector has been identified by the Tanzanian government as an important growth area for the agricultural sector. While demand for milk and other dairy products has grown in Tanzania as a result of population and income growth, domestic production has lagged behind. Tanzania is a consistent net importer of dairy products, despite a large cattle population and appropriate agro-ecological zones for dairy production. Enhancing the performance of the dairy sector in Tanzania has the potential to improve rural incomes through market linkages to expanding urban demand, improve nutrition outcomes for producers and consumers through increased milk availability that will contribute to an improved balance of trade for the agriculture sector. This commodity value chain brief seeks to provide an empirical assessment of the Tanzanian dairy sector in order to identify priority public investment and policies needed to enhance the performance of the sector.

2. THE DAIRY VALUE CHAIN IN TANZANIA: AN OVERVIEW

Figure 1 depicts the dairy value chain in Tanzania. Dairy products enter the Tanzanian market through domestic production or imports. Domestically produced milk is from either traditional or improved management systems. The type of production system, in turn, influences the dominant market channel used. In general terms, traditional dairy producers market their milk through informal market channels, often reaching end consumers in raw, unpasteurized form. Conversely, producers with improved breeds and management system typically sell through more formal channels which are linked to small and large processing facilities. These are subsequently sold to consumers through formal retail and wholesale market channels.

Variations in production systems, market channels, and consumer markets have important implications for the performance of the dairy sector in Tanzania. In the following sections, we examine the value chain in detail in order to identify necessary investments and public policies to improve the sector's performance.

Figure 1. Dairy Value Chain in Tanzania



Source: NIRAS and RLDC, 2010

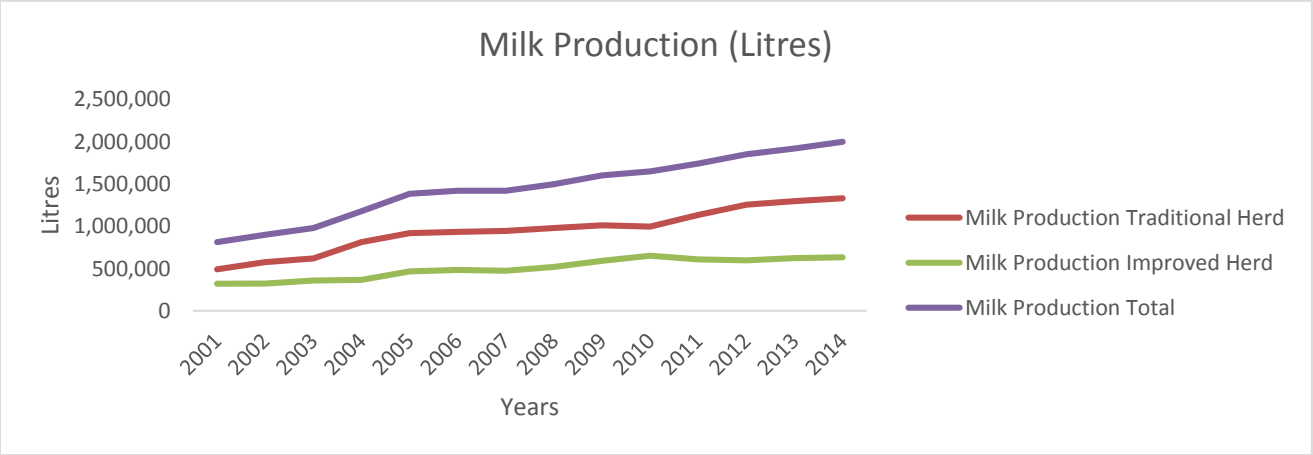
3. PRODUCTION SYSTEMS, PRODUCTION, AND PRODUCTIVITY

The dairy industry is divided into three distinct production systems, namely, the extensive, semi-intensive and intensive. Out of the 25.8 million cattle in the country, about 780,000 are improved dairy cattle mainly cross bred of Friesian, Jersey, Ayrshire, and Tanganyika Shorthorn Zebu (TSZ)/Boran. The remaining are indigenous cattle particularly TSZ.

The current annual milk production stands at 2.14 billion litres (Figure 2), of which 70% is produced by indigenous cattle and 30% is produced by improved cattle. Milk yield range from indigenous cattle is 1-2 litres whereas for improved dairy cattle is 7-10 litres per cow per day (PASS, 2013). This suggests the need for genetic improvement for milk production whilst increasing the number of improved dairy cattle. Ninety-five percent (95%) of the milk is produced during the wet season whereas only 5% is produced during the dry season (PASS, 2013). This indicates a need for improved dry season feeding.

Most of the milk in the country is produced in the Northern, Lake, Southern Highlands and Eastern zones. Arusha and Kilimanjaro regions produce about two-thirds of the milk. Other significant milk-producing regions are Tanga, Mwanza, Kagera, and Dar es Salaam (Omore, 2011). Currently 10% of milk produced annually enters the market and the remaining is consumed at home or spoiled due to lack of collection system (PASS, 2013).

Figure 2. Milk Production Trends in Tanzania (2001-2014)



Source: MLFD, 2015

4. MARKETING, TRADE AND INVESTMENT OPPORTUNITIES

Marketing opportunities for dairy products from Tanzania to regional and international markets are promising. This is due to increasing population and demand for high nutritive food products as the income levels of people rise. Tanzania is yet to meet local demand for quality dairy products. A large share of the milk and other dairy products consumed in urban areas is imported. Additionally, about one third of processed milk is imported largely from outside the East African Community (Nelgen and Strutt, undated). Increasing quality and quantity of dairy products produced in the country will enable smallholder farmers to meet demand for quality dairy products and thereby reduce imports.

There is also huge potential in investing in modern dairy farming and milk processing industries in Tanzania. According to the Ministry of Agriculture Livestock and Fisheries, the total milk processing capacity is 167,620 litres per day, but only 26% of that capacity is being utilized. This implies that there is shortage in supply to those already installed processing industries (URT, 2016).

In terms of trade in dairy products in the regional and international market, Tanzania is a net importer of dairy products (Figure 3). This is because since 2005 the trend for export minus import is negative. This implies that, the milk production might be of low quality and the quantity to meet the demand or collection system of the produced fresh milk is insufficient. Thus, there is a high potential for investing in dairy collection and processing.

Figure 3. Milk Export and Import Trends in Tanzania (2005-2013)

Source: TRA database, 2016

5. CONSUMPTION

Per capita milk consumption in Tanzania is estimated at 45 litres per annum in the country (ESRF, 2016). This is below the recommended per capita consumption of 200 litres per head per annum (Gerosa and Skoet, 2012). Low milk consumption has made the domestic market to be relatively narrow compared to the existing human population.

Table 1: Trend in per capita milk consumption (litres) in Tanzania (2006-2015)

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Tanzania	40.0	39.0	41.0	43.0	43.0	42.0	44.0	44.5	45.0	47.2
FAO Recommendation	200	200	200	200	200	200	200	200	200	200
Gap	160.0	161.0	159.0	157.0	157.0	158.0	156.0	155.5	155.0	152.8

Source: URT, (2005–2016).

6. PROCESSING

Current milk processing capacity is around 30% (URT, 2016). There are 79 large-scale milk processing companies in Tanzania (URT, 2016). However, the largest one is Azam which processes around 28.1% followed closely by Tanga Fresh which processes around 26% of total processed milk in Tanzania. This implies that, processors of milk in Tanzania are operating in oligopolistic competition.

As previously explained, “most of the milk is produced from traditional livestock keepers and they depend on weather conditions” -- there is prominent seasonality in the country, meaning that, there is a significant decline in milk production during dry seasons, as the availability and quality of fodder and water deplete significantly. The total installed capacity of existing processing plants in Tanzania is 651,500 litres/day. However, the amount processed by these industries is around 168,000 litres/day (URT, 2016). This implies that there is low performance in the collection or production of milk within the country.

7. PROFITABILITY

Profitability in the dairy industry varies across farming systems. Farmers in intensive system receive significantly higher profits than the ones in extensive systems. This is because the cost of producing one litre of milk is higher in extensive system compared to those practicing intensive system (Baltazary *et al.,* 2016). Literature also shows that in less dry areas the production costs are likely to be significantly lower compared to dry area (Dillmann and Ijumba, 2011).

Profitability of dairy industry depends also on the delivery channels. A study by Dillmann and Ijumba, {2011) compared profitability across three dairy delivery channels (to final consumers, to institutional buyers, and to processors). The study found that final consumers are the preferred option, because of higher margin (42.2%). The institutional buyers have higher margin (22.93%) compared to processors because they require larger amounts, the least preferred option is delivery of milk to processors as they have the lowest margin (Table 2).

Table 2. Cost, price and profit margins from milk producers to processors, consumers and institutions

Prices per litre	Producer to Processor	Producer to Consumer	Producer to Institutions
Cost of milk production	478	478	478
Cost of delivery	0	100	100
Sales price	525	1000	750
Gross profit	47	422	172
Margins (%)	8.95	42.2	22.93

Source: Dillmann and Ijumba (2011)

8. DEVELOPMENT PARTNERS SUPPORTING THE VALUE CHAIN

The Government and development partners have been working together to support the dairy industry through different inverventions. They include the Food and Agriculture Organization of the United Nations (FAO) which supported the dairy value chain in terms of production and marketing of dairy products; technical capacity building on policy and breeding activities; and enhancing the capacity of institutions governing the dairy sub-sector in Tanzania.

In 2012, the Irish Aid provided funds to the International Livestoch Research Institute (ILRI) to work with Sokoine University of Agriculture(SUA), the Heifer International, the Tanzania Dairy Board (TDB) and a local non-governmental organization (NGO) known as Faida Market Linkages-Faida Mali. The aim of the project was to achieve inclusive growth and reduced poverty and vulnerability among people with dairy dependent livelihoods of selected communitie in rural areas.

The Bill and Melinda Gates Foundation has supported the the dairy value chain through the East Africa Dairy Development (EADD) Project. The Project was implemented in Tanzania, Uganda and Kenya and was implemented by the Heifer International in partnership with ILRI, TechnoServe, the World Agroforesty Centre and the African Breeders Services (ABS). The Project has been designed to boost milk yields and incomes of small-scale farmers in Africa so that they can lift their communities out of hunger and poverty. The United States Agency for International Development (USAID) has supported the dairy value chain through a project known as Tanzania Dairy Enteprise Initiative (TDEI). The objective of the project was to increase the income of the dairy procuders and dairy related enterprises.

9. POLICY ISSUES

- ***Low production and productivity:*** elimination of production and productivity bottlenecks can be achieved through investments in various areas, namely, interventions to increase access to improved breeds, enhancing access to dairy extension services, provision of affordable veterinary services, encouraging the investment in animal feeds and promoting improved animal husbandry practices.

- ***Post-harvest losses:*** dairy products are highly perishable making it necessary to have infrastructure for effective post-harvest management such as collection centers with coolers, refrigerated trucks and storage facilities.
- ***Sanitary and Phytosanitary:*** The majority of smallholder farmers lack knowledge on the quality, hygienic practices of handling milk and adhering to technical specifications of dairy products needed by high value markets like supermarkets and big hotels. There is a need to strengthen training on good practices of handling milk and dairy products to farmers plus technical requirement for dairy sanitary and phytosanitary standards.
- ***Establishment of dairy associations/cooperatives:*** associations and cooperatives for producers, processors and traders are important in facilitating collective action in production and marketing. Most producer organizations have limited technical, financial and organizational capacity. Addressing these challenges is critical.
- ***Low consumption of dairy products:*** this limits market opportunities for farmers and processors. This challenge can be overcome by designing and implementing promotional and educational campaigns to inform consumers on nutritional benefits of dairy products.
- ***Need to improve business environment for the dairy industry:*** business and regulatory environment for the dairy sub-sector are unfriendly, creating disincentive to processors and investors. Dairy stakeholders are concerned that the sub-sector is overregulated. It is important to review and revise bottlenecks to create friendlier business environment for farmers, processors, traders and investors.
- ***Review of livestock policy to accommodate emerging issues:*** the livestock policy needs to consider issues like the competition of land between crops and livestock farming, land for producing animal feeds and food competition between livestock and feeding the human population.
- ***Link Research and Practices:*** research conducted by academic institutions and research centers should have a link to the practices in the field.
- ***Differences in import tariff between Tanzania Mainland and Zanzibar:*** this creates loop holes for processors to import powdered milk and re-process into liquid milk creating unfair competition to processors who have established supply chains from small livestock keepers.
- ***VAT on equipment for dairy industry:*** this increases production and marketing costs. The costs are passed on to consumers making locally processed milk unfavorable compared with imported milk.

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