The United Republic of Tanzania

Ministry of Agriculture, Livestock and Fisheries

. *Commodity Value Chain Brief No.xxxx- May2017*

Pulses

Implications for Enhancing Commodity Competitiveness

Key Messages:

- Pulses are important food and cash crops in Tanzania. Productivity is way below potential, due to:reliance on rain-fed agriculture and limited use of improved seeds, fertilizer, agro chemicals and improved agronomic practices. Enhanced access to these inputs and agriculture extension will contribute towards enhancing productivity.
- Demand for pulses is growing at national, regional and international levels; supporting farmers and traders to get better access to market information and trade facilitation services will enable them tap into that potential.
- Collective action is very important in Tanzania especially because many actors along the pulses value chain operate at a small scale. It will be useful to support farmers to establish or strengthen producer and traders associationsto increased access to inputs, bargaining power and access to market information.
- To stimulate investment in crop pulses, the Government should improve business environmentfrom production to marketing including maintenance of reasonable tariffs and removal of non-tariff barriers.

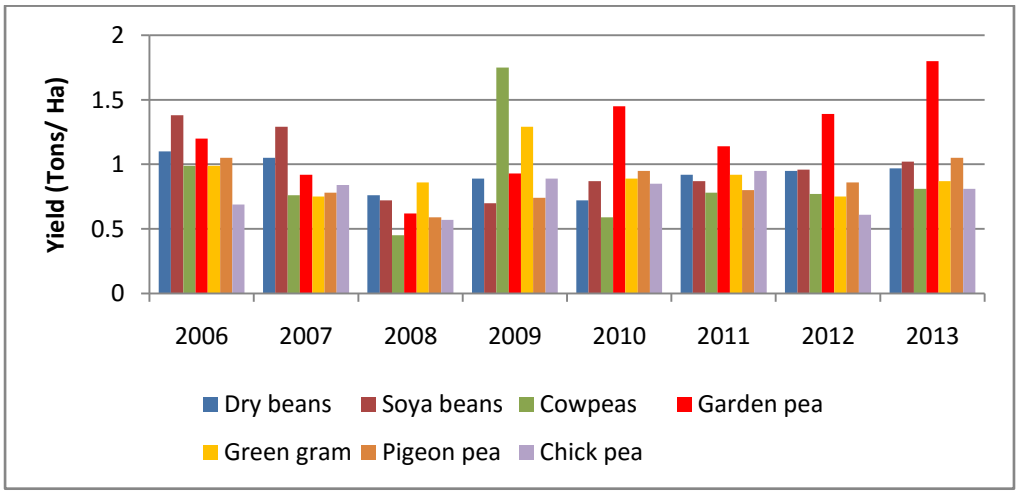
1. Introduction

Pulses (leguminous plants) are widely grown in Tanzania, more than half of the farmers in the country grow pulses (NBS, 2012; Stahley et al., 2012; Bennett et al, 2014).Theyoccupy about 12% of the land cultivated for annual crops (NBS, 2013). Pulses varieties cultivated in the country include common bean (also known as dry beans), cowpeas, pigeon peas, green gram, soybean, chickpeas, mung beans and groundnuts.Pulsesare of high importance to human nutrition and are also a key source of income for smallholder farmers in Tanzania (Chemonics International, 2010; URT, 2016; Karanja, 2016). They contribute heavily to the national food securitythrough provision a range of essential nutrients including protein, carbohydrates, dietary fibre, minerals and vitamins.They are an affordable substitute for animal protein, especially among the poor. Furthermore, some pulses such as groundnuts and soybean are rich sources of edible oil and are also important sources of animal feed. Pulses also bring environmental benefits, they offer natural soil maintenance benefits through nitrogen fixing, which improves soil fertility thereby, reducing the need for application of nitrogenous fertilizers to support plant growth (Maredia, 2012; FAO, 2015).

2. *Production, Productivity, Structure Conduct and Performance*

Production and Productivity

Production levels of pulses in Tanzania have increased from around 760 thousand tons in 2000 to close to 1.6 million tons in 2014 (URT, 2016). Common bean is most widely grown grain legumes in Tanzania;the country ranks 7thin global bean production (Ronner and Giller, 2012). Tanzania produces about 13% of the entire African bean crop (USAID-COMPETE, 2009).Productivity among the smallholder legume farmers is quite low, ranging between 0.5 and 1.8 tons per hectare compared to the potential of production of up to 3 tons per hectare (Figure 1). Most of the production increase is attributed to growth in areas under production than to rapid productivity increase. Area under production has increased for most legumes in the recent past (Ronner and Giller, 2012). Pulses have short maturation period and considerable adaptation to high temperature and drought, hence they are grown widely in Tanzania including in semi-arid and drought prone areas.Every region and agro ecological zone in Tanzania produces one or several types of pulses. The leading zones in terms of pulses production are: Lake, Central, Southern and Northern zones(URT,2016). Major legume producing region in each of these zone are: Dodoma (Central region), Arusha, Manyara (Northern), Iringa, Njombe, Lindi, Mbeya, Mtwara,Rukwa, and Ruvuma (Southern) and Shinyanga and Mwanza(Lake region).



Source: Ministry of Agriculture, Livestock and Fisheries (MALF) Statistical Database, 2015

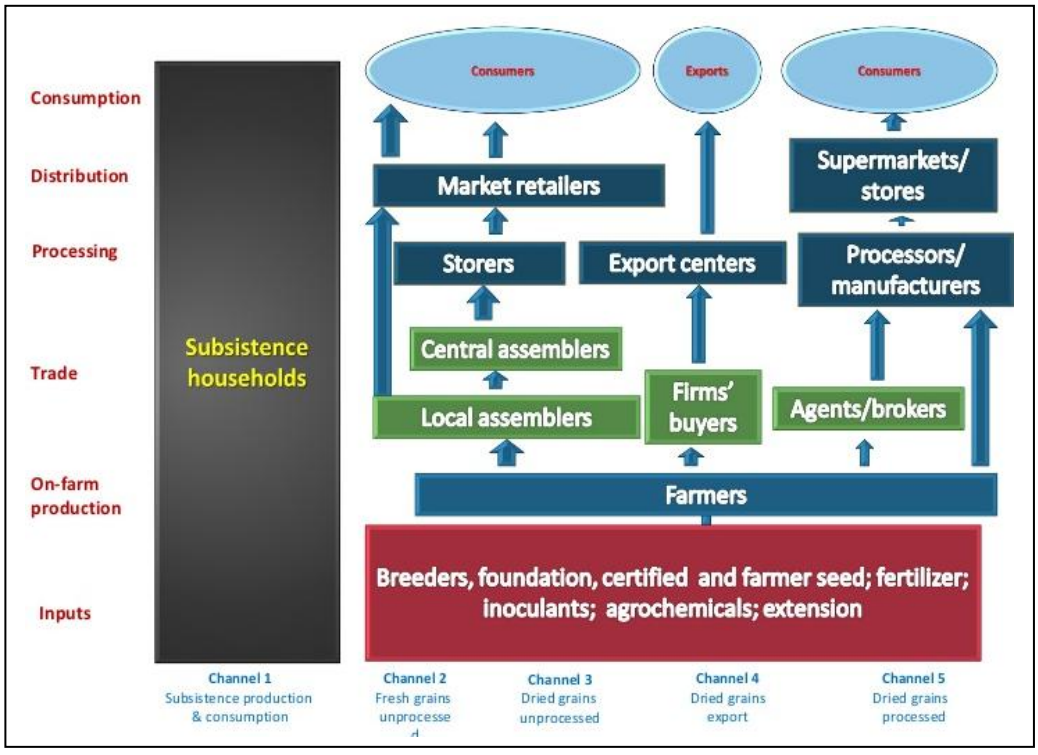
Figure 1: Annual yield ofselected pulses in Tanzania (2006-2013)

Structure, Conduct and Performance

About 30 percent of pulses are produced by large-scale farmers while the remaining 70 percent is produced by small-scale farmers with less than four acres of farming land (USAID-COMPETE, 2009). The smallholder farmers grow pulses primarily for subsistence and only sell a small proportion of their produce. The market structure is relatively competitive. (URT, 2016). Buyers (traders) are of two types: there many small buyers that buy pulses for local markets and a few big buyers who buy large volume of pulses for processing, selling in the local market and for exporting. The big buyers have large modern storage facilities for storing large volume of pulses and sell it in future.

Pulses Value Chain

The pulses value chain in Tanzania is comprised of various actors working at different nodes (from production to consumption). Figure 2 presents the pulses value chain map.



Source: Rusikeet *al*, 2012

Figure 2: Pulses value chain map in Eastern and Southern Africa

The figure maps out the main elements along the pulses value chain classified according to the activities played by the chain actors. The activities are: research and seed production/ multiplication, input supply, production, assembling/trading, wholesaling, processing, and retailing/outlets (Table 1). Rusike*et al*, 2012 and Mponda*et al*, 2013, indicate that the movement of legumes from production to consumption generallyfollows five channels namely:

- Channel 1: Subsistence production, in which the farmers consumes their own produce
- Chanel 2: Production and sell of fresh unprocessed pulses
- Chanel 3: Production and dried unprocessed pulses within the country
- Chanel 4: Production and dried unprocessed pulses for exports
- Chanel 5: Production and dried processed pulses within the country and outside the country

The types and number of actors involved in pulses marketing varies depending on the channel. Quality controllers are important actors in the pulses value chain especially at the input, storage, processing, consumption and international trade stages.

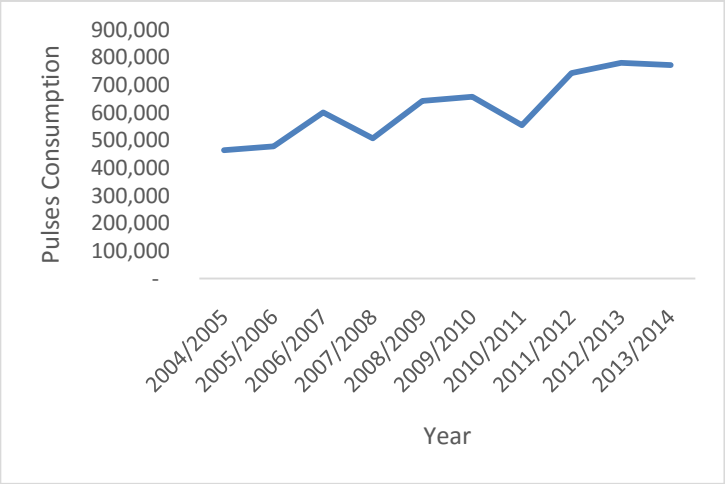
Table 1: Key actors in the pulses

Node	Key Actors
Consumers	Household consumers, hotels and restaurants, schools, colleges, hospitals and government institutions (military, prisons, hospitals)
Retailers	Retailers, supermarkets
Processing	Food and feed manufacturers, packaging and grading companies
Wholesale/Export	Inter-regional traders, international exporters
Local Trading	Primary local traders, village collectors, local assemblers, firms' buyers and agents/ brokers, transporters
Production and on farm storage	Smallholder farmers, medium scale farmers and large scale farmers, farmer groups/associations, private agribusiness companies
Input	• Suppliers (agro dealers, seed traders, seed companies, fertilizer companies, chemical companies, machinery agents and companies) • Stakeholders involved in seed production and multiplication such as: breeders, researchers, seed certification agencies, seed producers (multipliers) (individual/farmer groups/associations), seed companies Organisations involved in research and seed production and multiplication this includes national research institutions and international research institutions

Source: Compiled by the authors based on Rusike*et al*, 2012 and URT, 2016

3. Consumption

There is a general increase in the consumption at national, regional and international levels. Domestic annual consumption for pulses increased by 43 percent in the last decade from 450 tons in 2004/05 to 790 tons in 2013/2014 (Figure 3). At the regional level, there is a growing demand for common beans and soybeans in the Southern Africa Development Community (SADC) and East Africa Community (EAC) countries. At a global level, South Asian region (including, India, Pakistan, Bangladesh, Nepal, Bhutan and Sri Lanka) account for the largest proportion of global consumption followed by European countries. South Asia region imports more than 4 million tons of pulses every year, with India leading the way (URT, 2016).



Source: MALF, 2015
Figure 3: Annual Trend of Pulses Consumption (tons) in Tanzania

4Constraints and opportunitiesin the pulses value chain

4.1 Constraints

Production level

The constraints at production level include: limited access to productivity enhancing inputs (such as quality seed, fertilizer and agro chemicals), reliance on rain fed agriculture, limited access to agriculture financing, limited access to land for investment, limited access to

agriculture extension and farmer support services, susceptibility to pests and diseases (e.g. Alectravogelii, a semi-parasitic weed), low soil fertility and poor crop management practices (Ronner and Giller, 2012).

Trade and Marketing

There are many constraints to the trade and marketing of pulses in Tanzania, thekey one is unfavorable policy environment to encourage trade investments in this value chain.Actors in the pulses value chain face various constraints in the form of tariff (e.g. import taxes, value added tax) and non-tariff barriers (e.g. cumbersome, costly or lengthy administrative procedures). Other constraints are: limited quality of transport infrastructure in rural remote areas, limited access to financing for trade, lack of proper marketing information, inefficiencies in pulses marketing system and limited integration of smallholder farmers in national and regional value chains (Birachi et al, 2016).

Value Addition and Agro-processing

Currently Tanzania has inadequate value addition and agro-processing activities for pulses. This contributes to high post-harvest losses and diminishes farmers' benefits on legume production. The key constraints to agro-processing and value addition are limited access to processing facilities, limited access to credit to establish agro processing facilities and limited adoption of improved technologies for post-harvest handling and value addition.

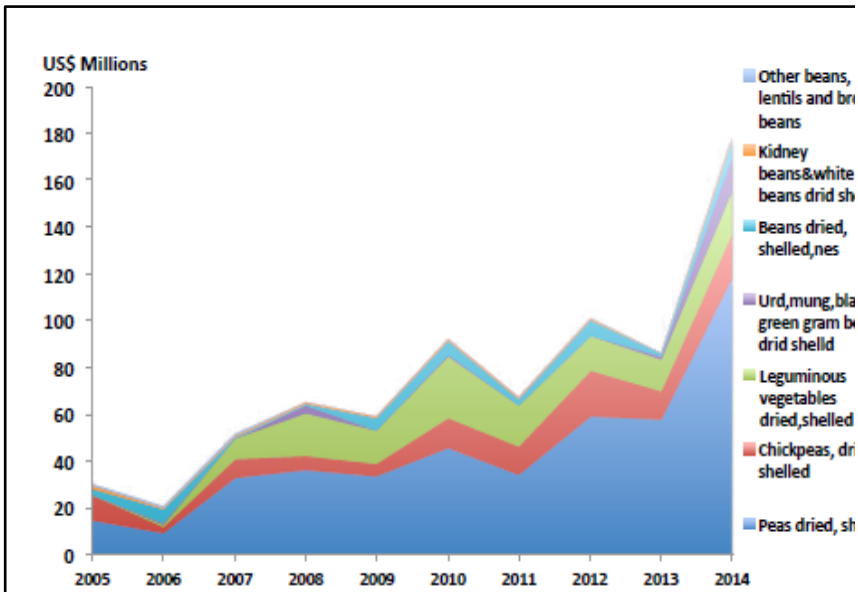
4.2 Opportunities

Increase in Production:There is growing demand for pulses due to population growth, awareness of pulses as an alternative source of protein and increase in demand for pulses as raw materials for animal feed processing plants. Growth in demand for pulses provides an opportunity for increased production to meet the growing demand.Pigeon peas, chickpeas and dry peas are the pulses showing the fastest global market growth today for consumption as dhal. The demand for soy bean for human food and livestock feed is growing as well at national regional and global levels. The potential for increased production for sale in Tanzania and for export is enormous given the country's suitability for production of pulses (FAO, 2015).

Expansion in pulses trade at national, regional and global level**:** There are opportunities to invest in pulses trade to trade at national, regional and international markets. Recent statistics illustrate this potential.Annual trend of export has been increasing since 2005 (Figure 4). Pigeonpea and chickpea constitute a large part of the export volume, followed by common bean, groundnut and soybean (URT, 2016). India is the main importer for URT's pigeon peas. About 27% of India's pigeon pea imports come from Tanzania (URT, 2016). Tanzania also exports pulses to the Netherlands. An estimated 80% of the bean export is destined to the Netherlands (URT, 2016). Other important markets for Tanzanian pulses are the United Kingdom, Italy and Canada (URT, 2016).

Seed Production and Seed Trade: The growing demand for pulses provides an opportunity for investment in seed production, seed multiplication and seed trade.

Value Addition and Agro-processing:Investments in value addition for pulses is an emerging opportunity. Ares of investment could be on production of human food (e.g. in production of dhal, soy milk production, production of fortified bean) and also production of animal feed (through establishment of feed production facilities).



Source: URT, 2016
Figure 4. Annual Export Trends of Pulses from Tanzania

5. Development Partners Supporting the Value Chain

The development partners (DPs) have continuously supported pulses value chain development. Here are a few examples of the recent interventions:

- The United States Department of Agriculture (USDA) supported '*Soya nipesa project*' implemented by Catholic Relief Services (CRS) in Ruvuma, Njombe and Morogoro regions. The project provides training in various aspects of group organization and soybean production. The technical emphasis is on the quality control of seeds, seed processing (including provision of machinery), and bulking of basic seed for general distribution.
- Bill and Melinda Gates has funded a project known as "*Changing fortunes of farmers and empowering women in the Southern Highlands of Tanzania through legumes*".The aim of the project is to increase productivity by developing and disseminatingimproved varieties and good agronomic practices to enable farmers to quadruple yield.
- FAO has supported the value chain by funding analytical studies aimingat generating information to policy makers to make informed decision for the development of the value chain.
- World Trade Organization (WTO) has supported the Government to develop the Value Chain Roadmap for Pulses for 2016- 2020 (URT, 2016). The roadmap was developed on the basis of the process, methodology and technical assistance of the International Trade Centre (ITC) within the framework of its Trade Development Strategy Programme.

6. Recommendations and Policy Implications

Scale up production and productivity of pulses

Increased production of pulses has huge potential to contribute to food security and poverty reduction by facilitating: improved access to productivity enhancing inputs (such as quality seed, fertilizer, water for agriculture), enhanced access to agriculture financing, enhanced access to

land for investment and enhanced access to agriculture extension and farmer support services. One of the promising ways to increase production is through encouraging the out grower's and contracting farming schemes which facilitate enhanced access to inputs and market opportunities. For these to be effective, it is important to policy measures to protect all parts.

Create enabling environment for investments in pulses value chain

Private investment in pulse production and trade by local and foreign investors requires having in place friendly investment environment. It is important to not just focus on policy design but also policy implementation. In many cases policies and regulations to facilitate production or trade are in place, but are not implemented effectively either due to weak coordination among responsible organisation or weak capacity in enforcement of the procedures. Addressing these challenges will be useful.

Strengthen producer, processors and trader organizations

Collective action is very important in Tanzania especially because many actors along the pulses value chain operate at a small scale. Organizing agricultural actors in groups provides a means to channel support or interventions. When stakeholders are organized, they are able to undertake joint activities such as input procurement and marketing, learn from each other, and access capacity building or technical support activities. Unfortunately there are not many strong groups in the pulses value chain. The majority of the existing ones suffer from weak governance and inadequate technical, managerial and financial capacity. It is important for the Government to have strategic policy interventions to support strengthening of these organizations such as training and technical support activities to enhance production, governance, management and marketing of farmer associations and cooperatives.

Address infrastructure and technological issues

Commercialization of pulses requires having in place supportive infrastructure. The inadequate road services in remote areas result in high transport costs by farmers and traders. The Government needs to therefore prioritize investments on road network. It is also important to have other supportive infrastructure such as irrigation, storage, agro processing facilities and

physical market infrastructure. Similarly, it is important to support adoption of improved technologies for post-harvest handling and value addition.

Forward planning in market development

Under this, various strategic interventions are possible. These include among others, Strengthening of market development capacities of the sector, Capacity-building of key institutions in the "pulses network" to provide support services, Promotion of pulses as a viable and growing agricultural sector, Development of a network of institutions to improve sector coordination, Improvement of the quality of products through adherence to quality standards.

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Pulses farmers in Southern Tanzania happy with their harvest (Photo credit, International Institute of Tropical Agriculture (IITA)

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