STAPLE FOODS VALUE CHAIN ANALYSIS

COUNTRY REPORT - TANZANIA

June 2010

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ACRONYMS AND ABBREVIATIONS

ACE	Agriculture Commodity Exchange for Africa
AGRA	Alliance for a Green Revolution in Africa
AISP	Agriculture Input Subsidy Program
ADMARC	Agriculture Development and Marketing Board
ASDS	Agricultural Sector Development Strategy
ASDP	Agricultural Sector Development Programme
CISANET	Civil Society for Agriculture Network
CHDI	Clinton Hunger Development Initiative
COMESA	Common Market for Eastern and Southern Africa
COMPETE	Competitiveness and Trade Expansion Programme
DAP	Director of Administration and Personnel
EAC	East African Community
EAGC	Eastern Africa Grain Council
FA	Farmers Association
FEWSNET	Famine Early Warning System Network
FNSJTF	Food Nutrition and Security Joint Task Force
GAC	Group Action Committee
GMAC	Grain Marketing Advisory Council
GTPA	Grain Traders and Processors Association
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
NASC	National Agricultural Sample Census
NEPAD	New Partnership for Africa's Development
NFCC	National Food Control Commission
MAFC	Ministry of Agriculture Food Security and Cooperatives
MAFS	Ministry of Agriculture and Food Security
PMG	Producer Marketing Group
SMIP	Sorghum and Millet Improvement Programme
SPS	Sanitary and Phytosanitary
SABI	Sustainable Agri-Business Initiative
SADC	Southern Africa Development Community
USAID	United States Agency for International Development
VCA	Value Chain Analysis
WFP	World Food Program
WRS	Warehouse Receipt System

Table of Contents

SECTION 1 – INTRODUCTION

1.1. Context

The USAID Competitiveness and Trade Expansion (USAID/COMPETE) program, in collaboration with EAC and EAGC has selected Staple Foods, among other sectors, for Value Chain Analysis (VCA) with the objective of enhancing economic growth and food security in East and Central Africa.

COMPETE is part of the United States Agency for International Development office for East Africa (USAID/EA), and is supported by the WTO Aid for Trade framework. It responds to four major US Government initiatives – AGCI (African Growth and Competitiveness Initiative), IEHIA (Initiative to End Hunger in Africa), GFRS (Global Food Security Response), and AGOA (African Growth and Opportunities Act). COMPETE is part of USAID/EA's new regional Agriculture, Competitiveness and Trade Activity (ACT). ACT has the central aims of increasing African trade and competitiveness in regional and global markets by firstly, reducing barriers to trade, secondly, improving market access, and thirdly, furthering regional integration.

1.2. The Significance, Objectives and Scope of the Study

Trade in staple foods is acknowledged to be of particular significance throughout Tanzania as the majority of small holder farmers depend on this trade for their livelihood and food security. Value chains can be used in order to generate a positive impact of poverty alleviation and food security and thus their accurate analysis and critique is invaluable.

The overall objective of this report is to collate information and facts on recent staple foods value chain and trade policy environment assessment for specific staple foods in Tanzania. It is hoped that the outcomes of this report will provide information critical in aiding the generation of a framework for the development of a strategic plan to improve the volume and value of Tanzania's staple foods trade.

The commodity coverage is as follows; maize, wheat, rice, sorghum, millet, beans and pulses (pigeon pea, cow pea, chick pea), cassava and ground nuts. The value chains will be analysed from with production/farm gate, moving through all points of market transfer and value-added, to wholesale and retail.

1.3. Methodology

This report reviews the material and information contained in the following documents forwarded by COMPETE on Tanzania staple food value chains:

USAID. 2009. *Tanzania Value Chain Synthesis And Analysis.*
HELMS, P., AND STRAUSS, J., 2009. *Tanzania Value Chain Analysis.*

The information and data was organised according to the standard COMPETE VCA report outline and analysed to bring out the issues under each staple food sub-sector. The following additional sources were used to supplement the information:

MINISTRY FOR AGRICULTURE FOOD SECURITY AND CO-OPERATIVES. 2007. *Annual report 2007* [online]. Government of Tanzania, Dar es Salaam. Available at < www.agriculture.go.tz > [15.03.2010]

NGIRWA, W., KOMBA, L.C., AND MAHIZA, B.A. 2006. *Agricultural Sector Development Strategy* [online]. Government of Tanzania, Dar es Salaam. Available at < www.agriculture.go.tz > [15.03.2010]

MINISTRY FOR AGRICULTURE AND FOOD SECURITY. 2007. *Medium Term Strategic Plan 2007- 2010* [online]. Government of Tanzania, Dar es Salaam. Available at < www.agriculture.go.tz > [15.03.2010]

MINISTRY FOR AGRICULTURE FOOD SECURITY AND CO-OPERATIVES. 2009. *Agstats for Food Security: Volume One, The 2008/09 Preliminary Food Crop Production Forecast for 2009/10 Food Security* [online]. Government of Tanzania, Dar es Salaam. Available at < www.agriculture.go.tz > [15.03.2010]

WORLD BANK. 2009. *Tanzania at a glance* [online]. The World Bank. Available at < www.devdata.worldbank.org> [15.03.2010]

MINOT, N. 2010. *Staple food prices in Tanzania.* Prepared for the Comesa policy seminar on "Variation in staple food prices: Causes, consequence, and policy options", Maputo, Mozambique, 25-26 January 2010 under the African Agricultural Marketing Project (AAMP).

1.4. Limitations

The main limitation faced when writing this report was the scope of information made available in recent VC studies in Tanzania. Although some crops, namely Maize, Rice and Beans were discussed in depth, information from other staple food sectors was significantly lacking. Furthermore, to explore fully the complexities of a single product value chain requires substantial field visits, alongside interviews with small and large traders and processors and government officials. This time and resource consuming process was clearly not possible and thus there is a limited depth to the detail available for any one value chain. In compensation to this fact, the report was able to identify cross-cutting issues impacting across the value chains, recognising key interventions that could impact broadly rather than for each specific crop.

A second limitation was the quality of the raw data available; the reliability of data provided has not been verified with data sources stating that some data is unofficial, semi-official, or estimated. It would be ideal to have a data set containing confirmed and trusted data so that accurate and robust analysis can be completed.

The final limitation encountered was the issue of informal trade. The extent of production, processing and consumption in the informal sector of the economy, especially in the rural context, is simply not known to an accurate degree.

1.5. Report Structure

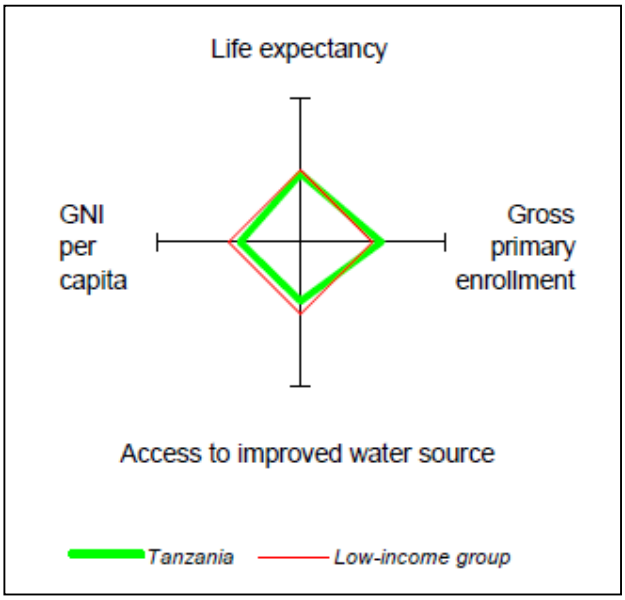
The paper is organized in five sections including the present introduction. Section one has provided a brief overview of the context, objectives, methodology and study limitations for this value chain analysis research. Section two provides the country economic context highlighting the importance of agriculture to the Tanzanian economy. Section three sets out the value chain analysis for each of the select staple commodities in nine sub-sections covering, respectively, maize, wheat, rice, sorghum, millet, beans, pulses, cassava and groundnuts. Section four examines the business enabling environment for trade in agricultural commodities with two sections covering the policy environment and regulatory framework. Section five presents the conclusions, policy implications and recommendations. A list of references is provided.

SECTION 2 – OVERVIEW OF TANZANIA'S ECONOMY & AGRICULTURE

Tanzania has an area of 947 000 square kilometres. The majority of Tanzania has a single rainy season; occurring between December and April. Northern and north-eastern parts of the country have a bimodal rainfall pattern, consisting of a shorter *vuli* rainy season (October to December), and a longer *masika* rainy season (March to May). The southern highlands region is considered the "breadbasket" of Tanzania, producing most of the marketed maize. The northern highlands region is also a significant agricultural zone, producing coffee and horticultural products. The central and northwest areas are drier producing, sorghum, tobacco, and cotton.

Tanzania is classified as a low-income nation. It is recognised to be politically and economically stable. The population is 42.5 million, 23% of which live in urban areas (Minot 2010) with the majority living in rural or semi-rural areas. Population growth rate is set at 2.8% with importantly a labour force growth rate of 2.7%. The GNI per capita is $440 which is below the World Bank's low income group average of $524, see *Figure 1.*

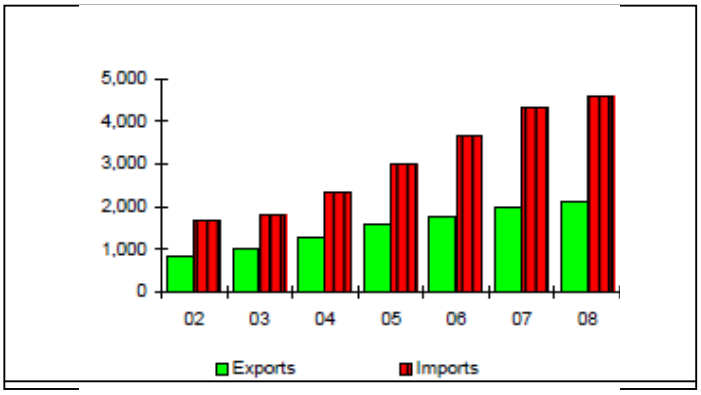
Figure 1 – Standard of Living Indicators, Tanzania and Low Income Group



(SOURCE: World Bank 2009)

GDP growth has been substantial; standing at $5.1 billion in 1988 and rising to $20.5 billion by 2008. In 2008 the GDP growth rate stood at 7.5% rivalling most other nations in the low-income group. In terms of trade, Tanzania has seen a growth in both import and export volumes, but significantly the growth of imports is increasingly higher than the growth in exports, (*Figure 2).* The division of imports and exports by sector can be seen in *Figure 3*. Notable is the fact that food imports are signified as a strong import sector.

Figure 2 – Imports and Exports (US$ millions) per Year



(SOURCE: World Bank 2009)

Figure 3 – Trade Components per Year

TRADE

	1988	1998	2007	2008
(US$ millions)				
Total exports (fob)	373	588	1,981	2,141
Coffee	97	109	73	79
Cotton	75	48	126	136
Manufactures	73	36	155	169
Total imports (cif)	1,171	1,569	4,321	4,598
Food	91	216	217	213
Fuel and energy	158	97	1,224	1,242
Capital goods	508	734	1,232	1,339
Export price index *(2000=100)*	82	92	126	127
Import price index *(2000=100)*	123	110	167	166
Terms of trade *(2000=100)*	67	84	75	77

(SOURCE: World Bank 2009)

2.1 The Significance of the Agriculture Sector

Agriculture is seen as the foundation of the Tanzania economy; underpinning employment, food production and export (MAFS 2007). The agricultural sector accounts for about 45% of GDP, and actively employs over 70% of the population (USAID 2009). Although clearly a significant sector it is important to also note the influence, and the growth of the other key sectors in the Tanzanian economy, namely the industry, manufacturing and services, (*Figure 4).* The agriculture sector is dominated by food crop production with livestock equalling only about 3% of the sector (MAFS 2007). Food crop production is limited mainly to small-scale subsistence farming. The Tanzanian agriculture sector, like the economy, is the process of moving from a command-based production system to a market-based production system. The transition began in the mid-1980s as part of the structural adjustment programmes supported by the Bretton Woods Institutions. Macroeconomic reform however is yet to create the agricultural growth and poverty reduction initially foreseen, but despite this it is still widely thought that the potential for increased production is greatest in the agriculture sector. Growth in agricultural productivity is hoped to be generated mainly by recent reforms encouraging the shift of resources away from export crops towards domestic food production. Tanzania has a diverse geography and ecology indicating that high levels of growth would be sustainable.

Figure 4 Annual Growth per Sector per Decade

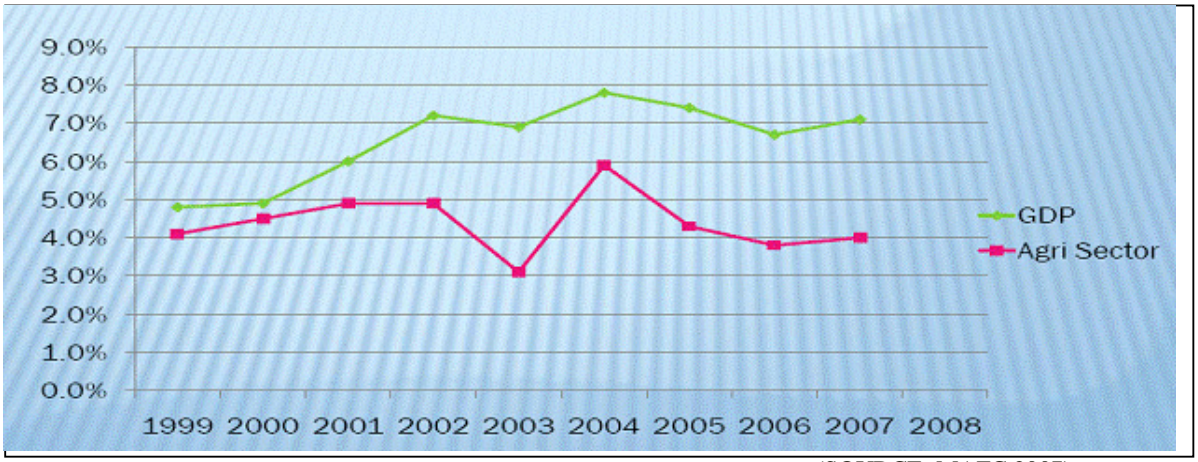
	1988-98	1998-08
(average annual growth)		
Agriculture	3.2	4.7
Industry	1.8	8.8
Manufacturing	1.8	7.1
Services	2.1	6.1
Household final consumption expenditure	4.7	2.0
General gov't final consumption expenditure	-9.9	18.7
Gross capital formation	-3.2	6.9
Imports of goods and services	3.1	3.4

(SOURCE: World Bank 2009)

2.2 Dynamics of Growth in the Agriculture Sector

In 1999 the agricultural sector accounted for 49.1% of GDP, this figure had dropped to 46.3% in 2004 and stood at 45% in 2007 (MAFS 2007). Despite the fact that over the last decade the sector has become a slightly smaller proportion of economy, it has maintained a fairly consistent steady growth rate of over 3% per annum (Ngirwa et al. 2006), please refer to *Figure 5.*

Figure 5 – GDP Growth vs. Agricultural Sector Growth per Year



(SOURCE: MAFC 2007)

Food crop production stood at 10,782,006 tonnes in 2006 and rose by 7.4% to 11,579,000 tonnes in 2007. Cash crop production also rose, by 8.1%, giving a production of 733,886 tonnes. The growth rate of the agricultural sector is greater than the population growth (2.9%) signifying a theoretical positive impact on food security. The change in the Food Self Sufficiency Ratio (SSR) is displayed in Table 1. In 2007/08 it was 104% implying that the nation was largely food self-sufficient (MAFC 2007). The most recent data available electronically from the Tanzanian MAFS is for the 2008/2009 season with a forecast for 2009/2010 also available. It is predicted that food production will marginally increase with a net surplus of 343,340 tonnes available (MAFC 2009). It is stated that a production decline in Sorghum, Rice, Maize and Pulses has been observed due to poor seasonal rainfall, soil degradation and the prevalence of pests and vermin.

Table 1 - Change in Food Self Sufficiency Ratio per Season

Year	Production (Metric Tons)	Self Sufficiency Ratio (%)
2002/2003	7,372,720	88
2003/2004	8,838,136	103
2004/2005	9,668,817	102
2005/2006	10,945,350	112
2006/2007	10,660,301	106
2007/2008	10,782,006	104

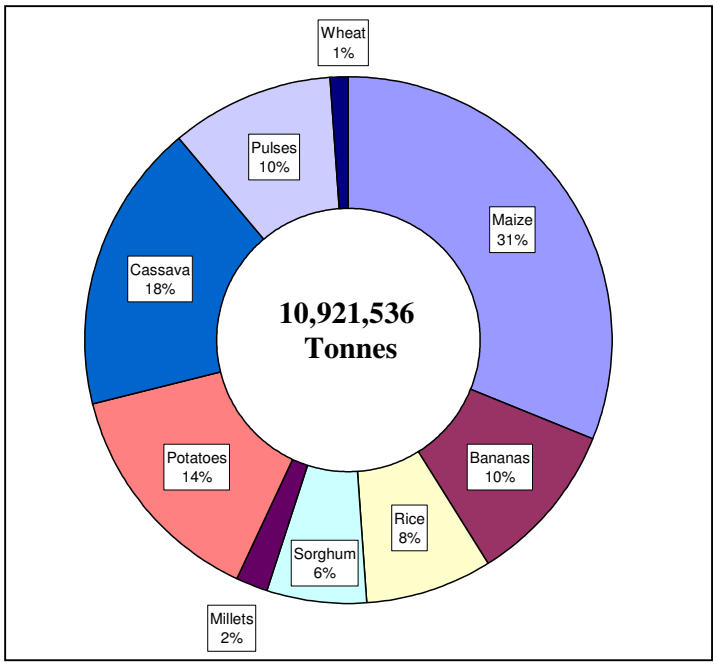
(SOURCE: MAFC 2007)

2.3 Main Commodities Produced

Throughout Tanzania there are estimated to be between 4 and 5 million small-scale and over 1,000 large-scale private sector agricultural operations. Of the small-scale farms 70% are less than 2 hectares (ha) each, with 64% producing crops alone, 35% producing both crops and livestock, and only 1% farming livestock only. With regards to the large-scale operations, 58% specialise in crops, 22% are mixed farms and 20% produce livestock only (USAID 2009).

When examining the production of staple foods *Figure 6* demonstrates that Maize is clearly the crop produced in the greatest volume, with pulses, potatoes and cassava also produced in significant quantities.

Figure 6 - Cropwise Proportional Contribution 2008/9



(SOURCE: MAFC 2009)

Maize and Cassava are the most important staple foods in Tanzania (Table 2). Per capita consumption of cassava is twice that of maize, 157 kg per capita and 73 kg per capita, respectively. Maize is the greater source of calories. It makes up 33% of the total calorie intake whereas cassava only makes up 15%. Based on the calorie contribution of maize, Tanzania is more dependent on maize than its neighbours Uganda and Ethiopia but less so than Malawi and Zambia. It is important to also note the role of rice, wheat, and sorghum; they each represent 4 to 8% of the caloric intake.

Table 2 Crop Contribution to Calorie Intake

Commodity	Quantity consumed (kg/person/year)	Daily caloric intake (kcal/person/day)	Share of caloric intake (percent)
Maize	73	655	33
Cassava	157	298	15
Rice	16	154	8
Wheat	10	79	4
Sorghum	9	79	4
Other		730	35
Total		1,917	100

(SOURCE: Minot 2010)

Table 3 provides a useful summary of salient crop production, and significant import and export values and trends.

Table 3 – Staple food crop production and import/export trends

Commodity	Production (1000 tonnes)	Imports (1000 tonnes)	Exports (1000 tonnes)	Imports as a share of apparent consumption (percent)	Exports as a share of production (percent)
Maize	3,405	116	70	3.4%	2.1%
Cassava	6,099	0	1	0.0%	0.0%
Rice	817	71	10	8.1%	1.3%
Wheat	96	643	31	90.9%	32.4%
Sorghum	780	1	1	0.0%	0.1%

(SOURCE: Minot 2010)

2.4 Main Challenges and Constraints

Scale of cultivation

Tanzania has a land area of 94.5 million ha. out of which 44 million ha. is classified as suitable for agriculture. Part of the land indicated to be arable may be only marginally suitable for agricultural production. This is for a range of reasons, including soil leaching, drought proneness, and tsetse infestation. According to recent studies, only 23% of the arable land is under cultivation (Ngirwa et al. 2006). The main constraints to the development of this land are the development of physical infrastructure and the eradication of tsetse, but if progress could be made a largely untapped resource could be taken advantage of.

Low productivity

The central challenge to increasing the productivity of the agriculture sector, and thus reducing rural poverty, is the effective utilisation of the land available. The salient constraint is the restrictive technologies available and consequently the low levels of labour productivity. Although the labour force is growing, concerns including rural-urban migration, non-farm employment opportunities, and health concerns such as the HIV/AIDS and Malaria all stand to lessen the agricultural labour force and hence agricultural output. Not only is the volume of the workforce significant but also the quality of labourer available. Declining literacy rates may impact on the potential to transform the agricultural sector using improved technologies and methodologies.

Poor coordination and limited capacity

The agricultural sector involves many actors within the public sector who are currently poorly coordinated in terms of policy formulation, programme planning and implementation. Public institutions also lack the capacity; staff, funding, and facilities, to provide the necessary services to a high standard. The private sector is still relatively undeveloped and commercial farming suffers due to poor quality marketing systems, a lack of private investment, and poor incentives. Many of those currently involved in agribusiness lack the entrepreneurial skills, information and capital to expand their productivity and thus profits.

Women and Agriculture

The role of women in agriculture is a key issue. 70% of the actual work carried out on smallholder a farm is undertaken by women (MAFS 2007); however it is universally acknowledged that they have relatively less access to land, capital, credits, gender-friendly labour saving equipment and membership to rural development institutions. These impeding factors ultimately impact upon small scale farm productivity and must be addressed.

Underdeveloped supporting facilities

Weak agro-industries and poor connections within marketing, processing and production affect the performance of the agriculture sector. The predominately low quality rural infrastructure creates high transport costs both the distribution of inputs and the delivery of produce. This consequently leads to lower farm gate prices for the producer. Incomplete liberalisation and continued poor regulation of food markets critically constrains agricultural development and damages the profit margins of the sector.

Private sector productive capacity is adversely affected by the lack of support services for agribusiness development as previously mentioned, and by non-conducive legal, trade and tax regimes and underdeveloped or lack of financial services in agriculture (Ngirwa et al. 2006).

2.5 Agricultural Sector Policies

The agricultural sector is directed by two main policies; the **Agriculture and Livestock Policy of 1997**, and the **Cooperative Development Policy of 1997**. The Agriculture and Livestock Policy seeks to ensure that the direction and pattern of agricultural sector

development is in line with social welfare objectives. The policy emphasises the importance of competitive markets, with the Government providing priority public goods and services alongside the conservation of the environment, as a rational basis for agricultural development. The Cooperative Development Policy evolved on the basis of experiences in implementing the Cooperative Development Act of 1991. It is pioneering in the fact that cooperatives are no longer state controlled institutions but independent private organisations. The policy provides the framework for the restructured co-operatives to operate on an independent, voluntary and economically viable basis and to develop into centres for providing and disseminating agricultural inputs, implements, technologies and information, thus empowering the producer directly.

Since 2006 MAFC has implemented the Agricultural Sector Development Strategy (ASDS) through the Agricultural Sector Development Programme (ASDP). The ASDS is a strategy that addresses agricultural growth in terms of enhancing agriculture production, profitability and farm incomes through implementation of the ASDP. ASDP is linked with the National Strategy for Growth and Reduction of Poverty (MKUKUTA).The 2007/08 report outlines the major agricultural sector approaches undertaken in order to boost agricultural performance, they are:

- To increase farm profitability and incomes through access to better technology, advice and markets.
- To increase private sector investment in agriculture based on improved regulatory and policy environment.

The key design principles outlined in the ASDP include:

- Increasing the control of resources by beneficiaries.
- Stressing the importance of increasing the voice of farmers in local planning processes and increasing their control in the design and implementation of priority investments and in the type of service that they need.
- It aims to empower farmers through placing greater control of resource allocations in the hands of groups and communities to improve the relevance and responsiveness of services.

The ASDS has determined the strategic areas for intervention based upon the objectives listed above. In practical terms, the ASDS can only address some of the many issues that constrain the performance of Tanzanian agriculture and lead to continuing rural poverty. Within a given timeframe and resource envelope, focusing on the following issues is considered critical: (The following is taken directly from ASDS)

a. **Strengthening the institutional framework** for managing agricultural development in the country. In particular, there is a need to define what Government, at central and local level, can and cannot do versus the role of the private sector in agricultural development. Actions are proposed to strengthen public sector organisations and restructure the Commodity Boards. Farmers' organisations will be promoted and the Government will help to overcome the constraints experienced by the private sector and strengthen its capacity.

b. Increased private sector participation and agricultural development in general requires the **creation of a favourable climate for commercial activities.** This assumes that macroeconomic stability will be maintained and that actions will be taken to: monitor agricultural lending rates; rationalise the taxation regime and devise appropriate investment incentives for the agricultural sector; review energy tariffs and oil prices; review, harmonize and publicize the agricultural sector legislation and that of collaborating sectors; provide legal empowerment for stakeholders to control Commodity Boards; legalize and promote cross-border trade; formulate and implement a food security policy; streamline procedures for legal access to land, and; undertake land demarcation and surveys in agricultural investment zones.

c. Clarifying **public and private roles in improving support services**, including agricultural research, extension, training, regulation, information and technical services and finance. The private sector will increase its role in providing a wide range of demand-driven support services to smallholder farmers. The public sector will gradually, but increasingly, limit its role to financing the provision of collective goods and services that the private sector is unwilling to provide, and the targeted financing of goods and services to overcome rural poverty. Mechanisms will also be developed for private and public sector collaboration in the delivery of effective support services. Specific actions are proposed for research, extension, training, regulatory services, animal health and crop protection services, rangeland management, land and water resource utilization and management, agricultural mechanization, agricultural information services and investment and finance services.

d. Improving net farm returns and commercializing agriculture both require attention to be paid to **marketing inputs and outputs**. Proposed actions include: a private agribusiness sector support unit; promoting agro-processing and rural industrialization; increasing access to inputs in rural areas; strengthening marketing information collection and dissemination; improving rural marketing infrastructure; promoting partnerships between smallholder farmers and agribusiness, and; implementing incentive mechanisms.

e. Mechanisms will need to be found for **mainstreaming planning for agricultural development in other sectors** so that due attention is paid to issues such as rural infrastructure development, the impact of HIV/AIDS and malaria, gender issues, youth migration, environmental management, etc. Most of these will be more adequately addressed in the Rural Development Strategy.

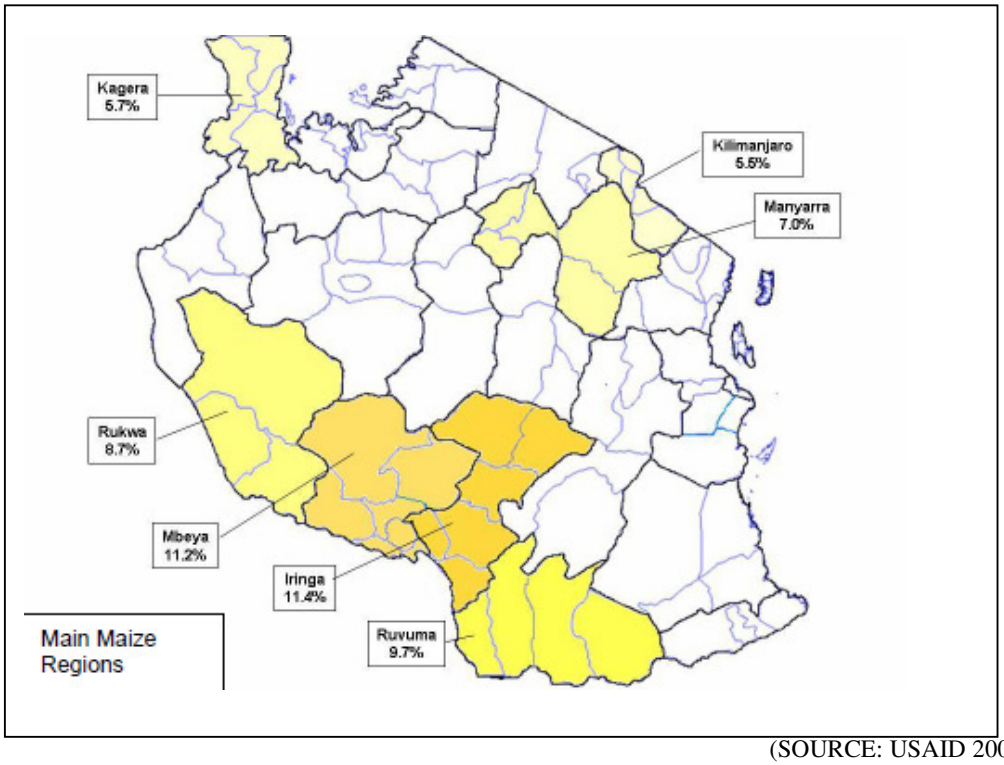
SECTION 3 – VCA FOR SELECT STAPLE COMMODITIES

3.1 The Maize Sub-Sector

3.1.1 Production and Consumption

The USAID Tanzania Value Chain Synthesis and Analysis Report, 2009 states that maize is considered the most important food crop in Tanzania. It is grown on 45% of the total arable land. About 50% of rural incomes come from maize. Though only an estimate, in 2008 marketed maize averaged about US$100 per household producing maize. Official estimates suggest that in 2003 some 4 million households were growing maize on an area of about 3.7 million ha. Maize cultivation is dominated by smallholders, on average smallholder farms are less than 1.2 ha in size and are rain-fed. Although maize is produced by farmers all over the country, over half the national production comes from only a few regions; namely Iringa, Mbeya, Ruvuma and Rukwa. Arusha is also an important production region as it is located in the bimodal area and thus able to provide maize stock at the onset and during the main production period, see Figure 7.

Figure 7 – Maize Producing Regions in Tanzania



(SOURCE: USAID 2009)

Table 2 displays the five year production of Maize in '000 MT. It can be seen that despite fluctuations the average production is fairly consistent. Table 3 shows the 2008/09 preliminary food crop production versus requirement, alongside the gap/surplus analysis. It can be seen that there is an expected gap of over 700,000 tonnes. This is a significant finding. Table 4 presents a comparison of the 2008/09 preliminary forecasts in comparison with

2007/08, and period averages. It is clear that although the Maize crop may not be meeting the present demand, the production of Maize, on average, is increasing.

Table 2- Five Year Production of Maize ('000 MT)

	2005	**2006**	**2007**	**2008**	**2009#**	**Ave**
Maize	3,219	3,423	3,660	3,556	3,425	3,331

(SOURCE: Helms and Strauss 2009)

Table 3 – Maize Gap/Surplus Analysis 2009/10 (MT)

Maize	
Production	3,424,984
Requirement	4,131,782
Gap(-)/Surplus(+)	-706,798

(SOURCE: MAFC 2009)

Table 4 - A Comparison of the 2008/09 Preliminary Forecasts with Period Averages ('000 Tonnes)

Maize	
Preliminary 2008/09	3425
2007/08	3556
22 year average	2624
5 year average	3331
% change from 5yr av.	31
% change from 22yr av.	3

(SOURCE: MAFC 2009)

3.1.2 Exports and Imports

Maize is both consumed on farms by growers and sold into chains where it ends up consumed domestically. Maize is also exported but it should be noted that in some season there are ban on exporting Maize. Ground maize is used to prepare the staple edible food called Ugali. Tables 5 and 6 show the monthly exports and imports, respectively, between Tanzania and Kenya over the past six years. Exports on the whole are variable and are clearly in line with the crop size and maize demand per year. The periods during which export bans were implemented are clearly visible. The importation of Maize is clearly less than the exportation. It can be concluded that during poor productive season, when export bans were implemented, the need for maize was high to ensure food security and thus Maize was imported; for example the 2005/06 season.

Table 5 – Monthly Maize Exports to Kenya per Year (MT)

Month	**Commodity**	**Source Country**	**Destination Country**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
January	Maize	Tanzania	Kenya	7,100	6,790	0	47,935	0	17,088
February	Maize	Tanzania	Kenya	6,500	7,368	0	5,409	0	6,813

March	Maize	Tanzania	Kenya	4,000	4,723	0	12,820	0	6,834
April	Maize	Tanzania	Kenya	3,956	3,246	0	9,086	560	11,061
May	Maize	Tanzania	Kenya	4,274	4,256	140	1,208	4,234	7,605
June	Maize	Tanzania	Kenya	14,363	7,944	5,950	8,064	3,577	5,769
July	Maize	Tanzania	Kenya	5,041	11,191	3,914	9,860	24,384	0
August	Maize	Tanzania	Kenya	11,699	10,110	8,973	9,276	9,623	0
September	Maize	Tanzania	Kenya	16,000	8,890	14,944	7,728	4,944	0
October	Maize	Tanzania	Kenya	5,334	7,468	2,945	6,671	10,625	0
November	Maize	Tanzania	Kenya	5,536	4,188	5,436	3,096	14,392	0
December	Maize	Tanzania	Kenya	5,055	697	12,253	0	10,000	0
Total (Maize: Tanzania to Kenya)				**88,858**	**76,871**	**54,555**	**121,153**	**82,339**	**55,170**

NB This data is compiled for selected border crossings in East Africa.

(SOURCE: RATIN 2009)

Table 6 - Monthly Maize Imports from Kenya per Year (MT)

	Commodity	**Source Country**	**Destination Country**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
January	Maize	Kenya	Tanzania	0	0	6,952	0	1,120	0
February	Maize	Kenya	Tanzania	0	0	1,225	0	1,927	0
March	Maize	Kenya	Tanzania	0	0	5,840	0	0	0
April	Maize	Kenya	Tanzania	0	0	3,940	0	0	0
May	Maize	Kenya	Tanzania	0	0	1,150	0	0	0
June	Maize	Kenya	Tanzania	0	0	14	0	0	0
July	Maize	Kenya	Tanzania	0	0	3	0	0	0
August	Maize	Kenya	Tanzania	0	0	0	0	0	0
September	Maize	Kenya	Tanzania	0	0	0	0	0	0
October	Maize	Kenya	Tanzania	0	0	0	0	208	0
November	Maize	Kenya	Tanzania	0	2,839	0	0	0	0
December	Maize	Kenya	Tanzania	0	4,305	0	0	0	0
Total (Maize: Kenya to Tanzania)				**0**	**7,144**	**19,124**	**0**	**3,255**	**0**

NB This data is compiled for selected border crossings in East Africa.

(SOURCE: RATIN 2009)

The import and export revenue of Maize differs considerably, see Table 7. The average tonnage of Maize imported, and the cost of this, far exceeds the exported tonnage, 138,573 tonnes costing $27,093,000, against 96,948 tonnes earning $96,948,000 respectively. Based on the regional transfers of Maize observed earlier, it must be concluded that international importation of Maize plays a large role in the sector.

Table 7 – Maize Imports and Exports per Year

	Item	2002	2003	2004	2005	2006	5 Year Avg.
Import Quant. (Tonnes)	Flour of Maize	23,200	340	764	4,953	396	5,931
	Maize	63,373	77,991	211,300	44,500	295,700	138,573
Import Value (1000 $)	Flour of Maize	7,850	79	164	1,172	136	1,880
	Maize	11,953	11,462	44,400	9,100	58,550	27,093
Export Quantity (tonnes)	Flour of Maize	14,851	11,542	116	3,398	264	6,034
	Maize	152,310	156,192	53,747	98,985	23,507	96,948
Export Value (1000 $)	Flour of Maize	2,161	1,191	58	634	98	828
	Maize	24,490	18,482	8,149	10,578	6,054	13,551

(SOURCE: FAO 2009)

The Maize channel flow (MT) is outlined in Table 8. It can be seen that the majority of Maize produced it consumed by the producer themselves. This is to be expected considering the proportion of Maize producers that are smallholder farmers. What is interesting is that it is not reported that the volume of Maize used for other purposes changes per year. If this data is taken to be accurate then after consumption by the producer, maize is next used as Emergency Food stock. Only a small percentage of the Maize production proceeds to the markets.

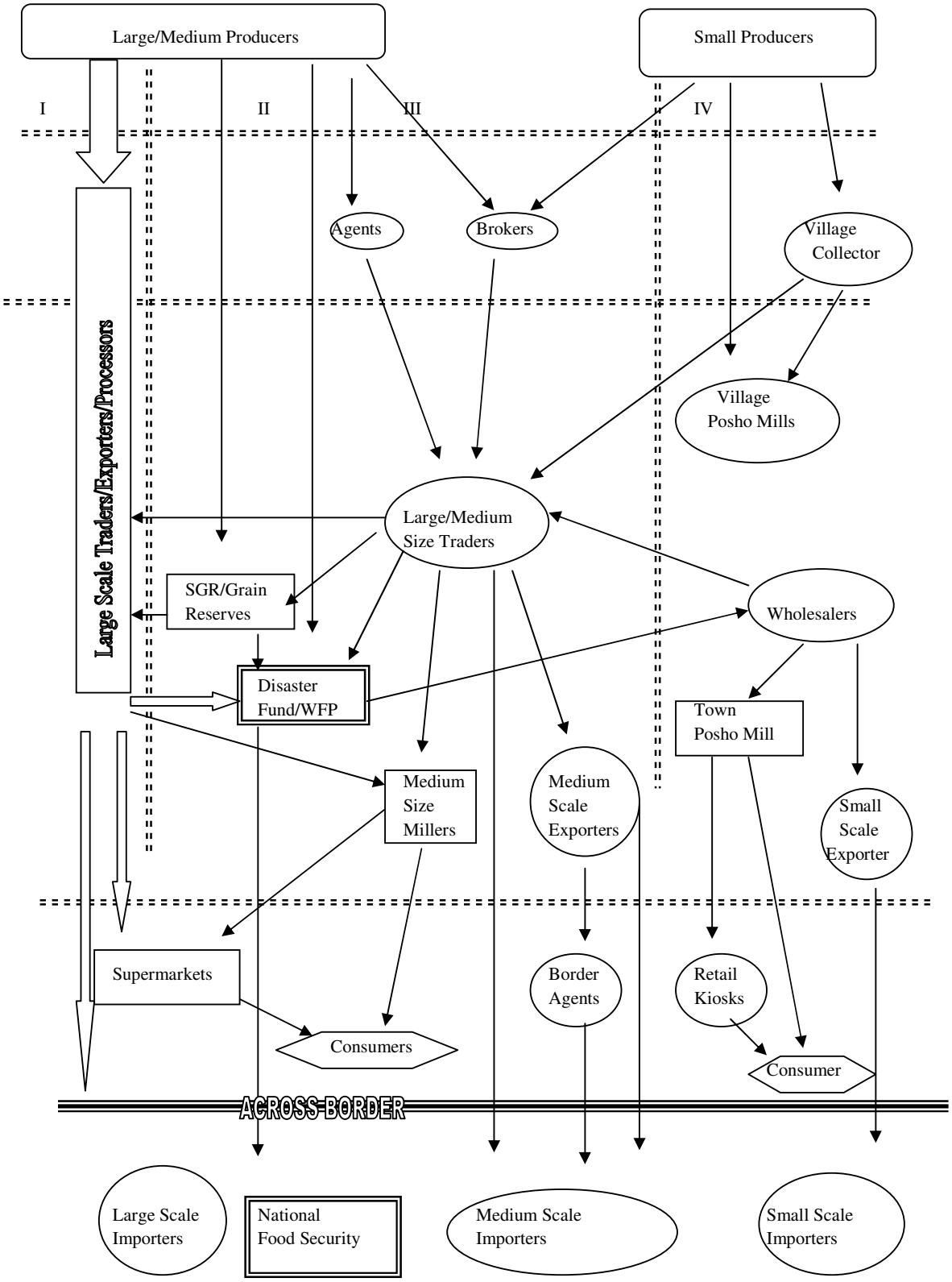
Table 8 - Maize Channel Flow per Year (MT)

	2003	2004	2005	2006	2007
Consumed On Farm	1,934,338	3,442,014	2,317,391	2,533,035	2,707,660
Integrated Traders	36,279	36,279	36,279	36,279	36,279
Independent Grain Millers	120,931	120,931	120,931	120,931	120,931
Municipal Markets	145,117	145,117	145,117	145,117	145,117
Export Markets	60,465	60,465	60,465	60,465	60,465
Emergency Food Relief Operation	302,327	302,327	302,327	302,327	302,327
Animal Feed	14,512	14,512	14,512	14,512	14,512

(SOURCE: FAO 2009)

Maize Value Chain Mapping

Figure 8 - Tanzania Maize Value Chain Map: Taken from: Helms and Strauss (2009)



The maize marketing value chain in Tanzania is comprised of four main channels.

- The first channel entails the large traders/processors such as Mohamed Enterprise and Export Trading Co. They mostly buy directly form the large producers and integrate a number of the value chain functions (in other words, they are partially vertically integrated). These big companies not only trade in maize but also process and export maize. They operate both in the Southern and Northern areas of Tanzania and, due to their volume of trade, are price setters. They have a number of buying posts in the town areas which are managed by their own staff but they also buy through networks of agents. Moreover, they own big go-downs that enable them to buy large quantities when the price is low and store the same until the price improves.
- The second channel is the Strategic Grain Reserve (SGR) and the World Food Programme (WFP) disaster fund. Prior to liberalisation, SGR was one of the key players in the Northern and Southern regions of Tanzania. After liberalisation its role has diminished due to competition and internal constraints, for example, lack of funds and bureaucracy. WFP are a different player. They are buying maize for food relief elsewhere, either in the country or outside the country, and are a most preferred buyer by many of the larger farmers. They pay a premium price for good-quality maize.
- The third channel is comprised of the agents, brokers and traders that are able to handle reasonably large quantities. They buy from large/medium farmers, either directly or from village collectors and small farmers, either directly or from village collectors and small wholesalers. Their outlets include millers, exporters, WFP and also the large traders.
- The last channel is a band of small producers selling their maize to village collectors and via brokers to larger traders. Mostly these farmers sell in small quantities and are therefore of less interest to the larger traders. Only the surplus maize is sold the rest is consumed by the household, often after processing it through the village *posho* mill. Part of this channel is also the small wholesalers who mainly buy from village collector. They provide the town *posho* shops and sometimes even sell to small exporters.

3.1.3 Constraints and Opportunities

Seeds

For maize, a variety of improved seeds are available in Tanzania. Monsanto, Pioneer, Pannar, and hybrids developed in Kenya and other countries are used throughout the country. There are also locally formulated open pollinated varieties (OPVs); however, the OPVs, which are specially developed to be suitable to the local climate and conditions are not readily available. There are several obstacles to improved seed stock. The first is that the ASA, the parastatal organisation responsible for improving seed, is severely underfunded, limiting new seed production. Theoretically the ASA produces foundation seed to be sold to the private companies to produce certified seed; and, for crops that are not served by private companies,

the ASA produces certified seed to sell directly to farmers. (Private companies focus much more on producing certified maize seed so ASA intends to stay out of this market.) However, due to severe funding issues, much of this production is not happening. The ASA inherited five seed farms from the Government but, the farms are in poor condition and produce far below capacity. All of the farms have poor infrastructure and are in need of extensive repair. None have irrigation. The ASA director estimates that $20 million would be needed to fully equip the five farms with adequate irrigation; this would double output.

Storage

Storage capacity on own farms is not well designed for long-term storage; poor conditions cause significant post-harvest losses and erratic and inconsistent drying makes further processing and sorting difficult. Maize is the staple food that is far and away the most vulnerable to rot and pests and losses can exceed 30%. Rice and pulses are largely, though not totally, immune to losses. A corollary benefit is that storage capacity allows serial processes within the maize supply chain to be 'de-coupled' from one another. Storage capacities allow buffer inventory stocks to build up between process steps and thus allow their independent scheduling and programming. This is important when serial processes cannot otherwise be precisely managed. Third party warehousemen also provide the same opportunity to farmers and small scale traders that are available to market arbitrageurs. Third party warehousemen provide storage, cleaning and fumigation services on a cost for service basis. They do not buy maize for their own account but do rent out their storage capacity to other chain participants.

Milling

For maize, Tanzanian grain millers do not, for the most part, recognize different quality categories for dried maize. Rather, particular consignments of the product are either accepted or rejected based upon physical inspection by buyers who embrace very different standards. Mini millers enforce no standards whatsoever and large scale millers enforce their own individual standards. For example, the buying standards enforced at Azam Bakhresa millers deal with moisture content, percent of broken kernels and percent of foreign matter and no other parameters. Generally accepted standards and third party inspection regimes apply primarily to the formal, cross border trade and not at all to the domestic trade. This is quite significant for poverty alleviation. Without embracing objective standards and without being able to transmit differential price incentives associated with a hierarchy of quality standards backwards through supply chains to farmers, farmers are not able to move up the value ladder from marginal production to more profitable production. In other words, they are stuck in a 'low product quality' trap. In terms of inputs, mills usually run on electricity and electricity supply and cost is an issue. Tanzania has very high rates for electricity relative to other East African countries (and relative to the rest of the world) and electricity quality is poor, i.e., subject to spikes and brownouts. Diesel fuel, which can be used to run electrical generators, is not a cost-saving alternative because it is expensive, as well. Finally, access to spare parts for milling equipment is also an issue, particularly in remoter rural areas. Lack of spare parts can harm quality and/or shut down the machines altogether.

Transport and Handling

Losses from bagging and handling are also an issue in Tanzania. Not surprisingly, the incidence of loss and damage experienced by maize traders is relatively high. Approximately 3% of maize inventory is lost in each transfer or handling. On average 5 or 6 handlings take place between farms and retail markets or mills. Thus, only 85% of the grain initially harvested and sold finds its way into the retail market, excluding losses during storage.

3.1 The Wheat Sub-Sector

3.1.4 Production and Consumption

Over the last three years wheat production in Tanzania has averaged 96,000 MT. Wheat is grown in the northern highlands region on a large-scale basis and in the southern highlands region by small/medium-scale farmers. According to the 2002/03 National Agricultural Sample Census, less than 1% of the farmers in Tanzania grow wheat (Minot 2010). Table 10 shows the 2008/09 preliminary food crop production versus requirement, alongside the gap/surplus analysis. It can be seen that the Wheat sector does not produce as nearly as much crop as the population demands. In comparison to previous years the Wheat sector is operating fairly well, Table 11. It is producing at a level well above the 5 year average, and slightly above the 22 year average. This suggests that in recent year the sector has been slightly neglected. In order to meet the demand and to bring up production of Wheat to the level it once maintained, significant attention and investment must be applied to the sector.

Table 10 - Wheat Gap/Surplus Analysis 2009/10 (MT)

Wheat	
Production	97,901
Requirement	204,156
Gap(-)/Surplus(+)	-106,255

(SOURCE: MAFC 2009)

Table 11- A Comparison of the 2008/09 Preliminary Forecasts with Period Averages ('000 Tonnes)

Wheat	
Preliminary 2008/09	98
2007/08	92
22 year average	81
5 year average	91
% change from 5yr av.	21
% change from 22yr av.	8

(SOURCE: MAFC 2009)

3.1.5 Exports and Imports

Wheat is grown almost exclusively as a commercial crop with 97% of the output being marketed. Wheat imports averaged 643,000 MT per annum between 2005 and 2007; this was 91% of the stated wheat consumption in the country. Small volumes of flour are exported

through cross border trade. Wheat and bread are a relatively expensive source of calories compared with other staple foods such as maize. As a result, per capita consumption of wheat products is much higher in urban areas and among high-income households.

3.1.6 Wheat Value Chain Mapping

The available data did not allow the value chain mapping to be completed. Further research would be required.

3.1.7 Constraints and Opportunities

See section 5 for a summary of cross-cutting constraints and recommendations.

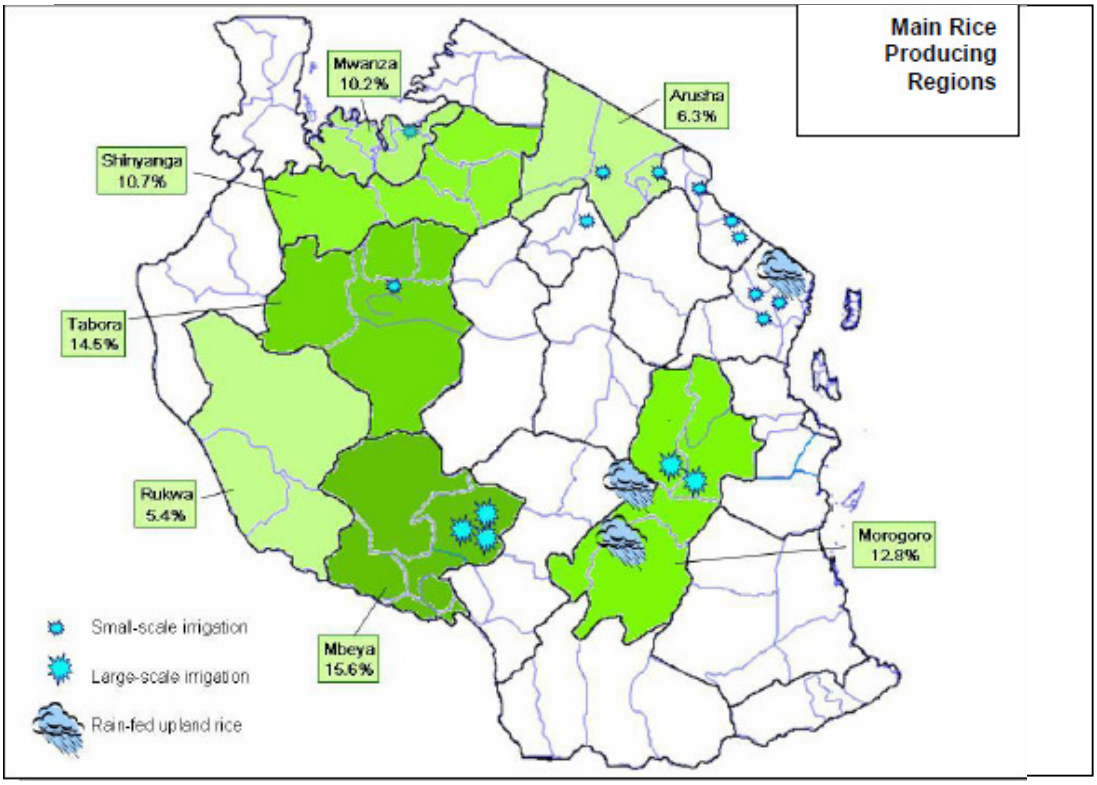
3.2 The Rice Sub-Sector

3.2.1 Production and Consumption

Rice, like maize, is a foundational component of Tanzania's broader agriculture sector. Total annual rice production has increased from 192,000 MT in 1994 to about 900,000 MT in 2007. Estimates of the number of farmers growing rice vary from 642,000 to 966,000. The total cropped area is about 900,000 ha (USAID 2009).

Rice is grown in almost all regions of the country and is mainly grown by small-scale farmers. Small traditional farmers typically cultivate 1 to 5 acres using traditional methods, small irrigation farmers grow about 2 to 2.5ha in an irrigation scheme often initiated and controlled by the government; larger irrigation farmers grow more than 5ha in an irrigation scheme, outsource ploughing , and hire most of their labour. Large-scale commercial rice production is limited to few private firms who bought farms when large-scale irrigated National Agricultural and Food Corporation (NAFCO) schemes were privatised. There are three large-scale rice irrigation schemes for rice in Mbarali District, namely, Madibira 3,000 ha, Kapunga 3,000 ha and Mbarali 3,200 ha, and a few others at Kilombero and Mtibwa. There are small irrigation schemes distributed throughout North-East Tanzania. Elsewhere rice is rain fed, or lowland rain fed. See Figure 9 for more details.

Figure 9 – Rice Producing Regions in Tanzania



(SOURCE: USAID 2009)

Table 12 demonstrates that the five year production of Paddy shows an optimistic growth although the peak year of 2007 as yet to be matched since. Despite this, Table 12 shows that Rice production is at such a level that it meets and exceeds the required production. Like Wheat, Rice production is at a stage that it is significantly greater than the 5 year average, but not yet competitive with the 22 year average, see Table 14.

Table 12- Five Year Production of Paddy ('000 MT)

	2005	**2006**	**2007**	**2008**	**2009#**	**Ave**
Paddy	759	805	917	875	844	801

(SOURCE: Helms and Strauss 2009)

Table 13 - Rice Gap/Surplus Analysis 2009/10 (MT)

Rice	
Production	843,556
Requirement	710,754
Gap(-)/Surplus(+)	132,802

(SOURCE: MAFC 2009)

Table 14 - A Comparison of the 2008/09 Preliminary Forecasts with Period Averages ('000 Tonnes)

Rice	
Preliminary 2008/09	844
2007/08	875
22 year average	553
5 year average	800
% change from 5yr av.	53
% change from 22yr av.	5

(SOURCE: MAFC 2009)

3.2.2 Exports and Imports

Rice prices are supported both by high international demand, as well as the potential for some regional demand. Due to the high labour requirements, and the fact that it is a profitable cash crop, farmers are sometimes specialised in this crop. Statistics on rice are difficult to interpret as often presented data does not differentiate between unprocessed rice (paddy) and processed rice. The difference is substantial; as 1 tonne of unprocessed paddy will mill down to 500 or 600 kg of processed rice; this limiting factor should be taken into account when interpreting the tables presented in this section.

Tanzania exports Rice regionally to both Kenya and Uganda (Tables 15 and 16). The rate of export to Kenya seems to have decreased from 2004 to present day, export to Uganda is intermittent but when exported it seems to be to a fairly high level. The rate of export tends to greatest when the Rice is available in the second half of the year.

Table 15 - Monthly Rice Exports to Kenya per Year (MT)

Month	**Commodity**	**Source Country**	**Destination Country**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
January	Rice	Tanzania	Kenya	408	1,193	626	3,270	175	600
February	Rice	Tanzania	Kenya	253	173	212	296	283	51
March	Rice	Tanzania	Kenya	199	737	52	468	309	227
April	Rice	Tanzania	Kenya	314	818	30	825	591	182
May	Rice	Tanzania	Kenya	935	1,342	373	580	5,047	342
June	Rice	Tanzania	Kenya	1,611	1,333	239	1,981	1,635	281
July	Rice	Tanzania	Kenya	1,677	1,947	463	1,794	538	0
August	Rice	Tanzania	Kenya	5,031	2,382	788	1,339	1,030	0
September	Rice	Tanzania	Kenya	4,300	1,792	627	1,371	443	0
October	Rice	Tanzania	Kenya	3,508	1,416	868	988	588	0
November	Rice	Tanzania	Kenya	1,924	745	974	695	454	0
December	Rice	Tanzania	Kenya	1,360	528	381	504	300	0
Total				**21,520**	**14,406**	**5,631**	**14,111**	**11,393**	**1,683**

NB This data is compiled for selected border crossings in East Africa.

(SOURCE: RATIN 2009)

Table 16 - Monthly Rice Exports to Uganda per Year (MT)

Month	Commodity	Source Country	Destination Country	2004	2005	2006	2007	2008	2009
January	Rice	Tanzania	Uganda	0	0	0	0	65	424
February	Rice	Tanzania	Uganda	0	0	158	0	110	341
March	Rice	Tanzania	Uganda	0	16	0	0	0	325
April	Rice	Tanzania	Uganda	0	229	0	312	582	185
May	Rice	Tanzania	Uganda	0	690	0	530	424	185
June	Rice	Tanzania	Uganda	0	427	0	442	130	349
July	Rice	Tanzania	Uganda	0	238	0	515	284	0
August	Rice	Tanzania	Uganda	0	186	0	415	314	0
September	Rice	Tanzania	Uganda	0	0	0	174	230	0
October	Rice	Tanzania	Uganda	65	164	0	186	588	0
November	Rice	Tanzania	Uganda	0	0	0	247	478	0
December	Rice	Tanzania	Uganda	34	0	0	215	312	0
Total				**99**	**1,950**	**158**	**3,036**	**3,452**	**1,385**

NB This data is compiled for selected border crossings in East Africa.

(SOURCE: RATIN 2009)

Broken Rice and Milled Rice form the bulk of imported rice, whereas Paddy also plays a role in terms of exports. Tanzania imports more Rice than it exports, with poor seasonal production resulting in a rise in imports, see Table 17.

Table 17 – Rice Imports/Exports per Year

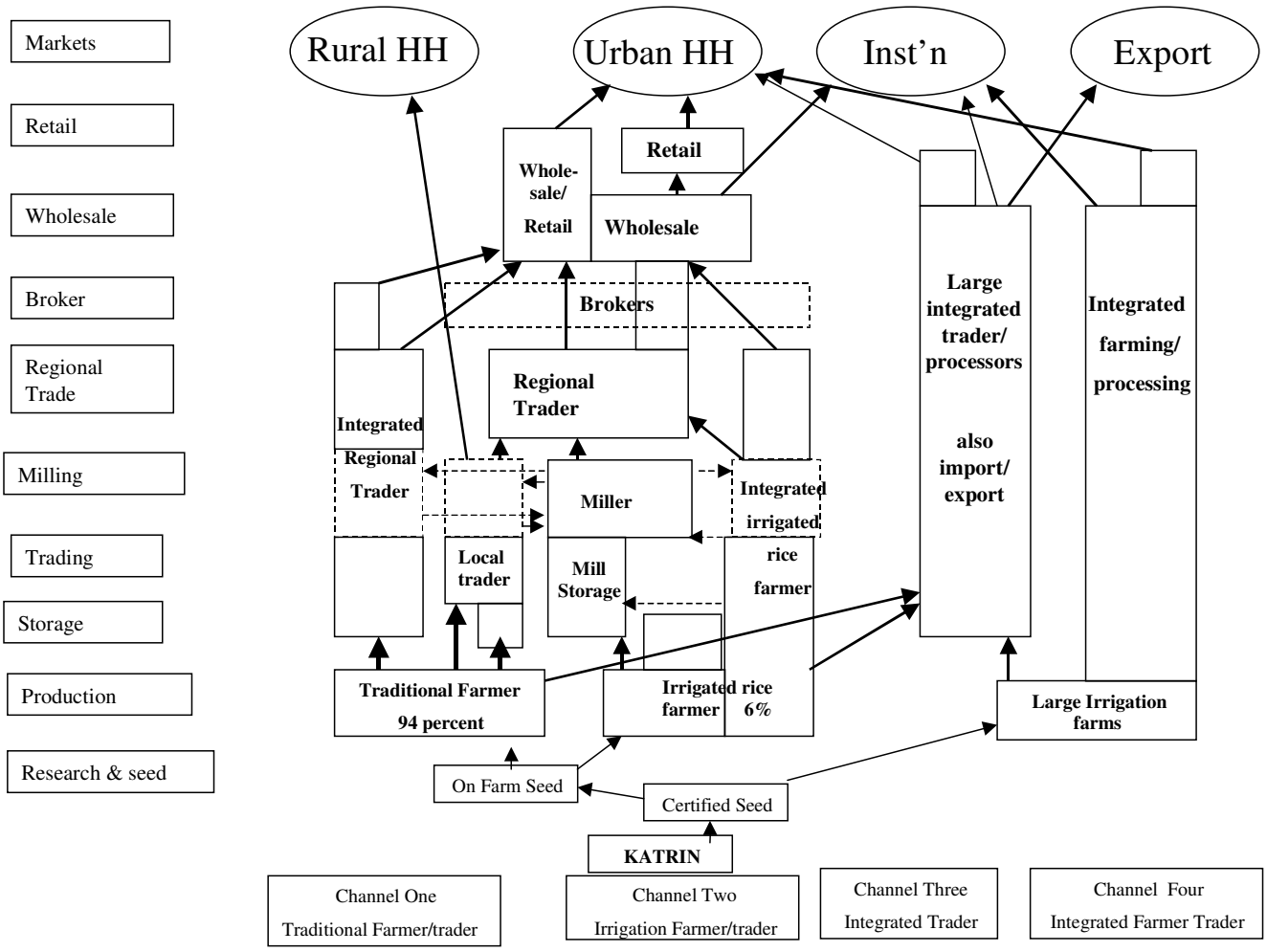
	Item	2002	2003	2004	2005	2006	5 Year Avg.
Import Quant. (Tonnes)	Rice Broken	56,705	125,150	107,253	47,980	62,740	79,966
	Rice Flour	2	6	2	2	8	4
	Rice Husked	302	4,198	10,085	546	289	3,084
	Rice Milled	19,523	60,273	77,950	26,550	31,200	43,099
	Rice, paddy	0	0	0	0	0	0
Import Value (1000 $)	Rice Broken	8,755	24,715	25,264	8,070	14,088	16,178
	Rice Flour	1	1	1	0	4	1
	Rice Husked	64	741	3,606	50	60	904
	Rice Milled	3,097	8,608	21,900	7,050	8,350	9,801
	Rice, paddy	0	0	0	0	0	0
Export Quantity (tonnes)	Rice Broken	2,370	2,309	1,705	870	4,291	2,309
	Rice Flour	450	513	0	10	0	195
	Rice Husked	80	11	526	2,218	0	567
	Rice Milled	3,155	3,501	165	3,717	48	2,117
	Rice, paddy	5,308	7,825	140	4,158	78	3,502
Export Value	Rice Broken	337	324	461	130	1,390	528
	Rice Flour	75	68	0	0	0	29

(1000 $)	Rice Husked	9	2	19	256	0	57
	Rice Milled	479	483	25	697	11	339
	Rice, paddy	1,147	869	19	651	9	539

(Source: RATIN 2009)

Rice Value Chain Mapping

Figure 10 – Tanzanian Rice Value Chain, taken from Helms and Strauss (2009)



3.2.3 *Constraints and Opportunities*

Seeds

In the rice area, Tanzanian farmers have historically used local varieties of rice that are descendants of the seeds imported by Arab traders before 1960. These varieties (supa) are well-adapted to the climate and the tastes of Tanzanians, but they have low-yields (about 2.5 – 3 tons per hectare). Higher yielding varieties, such as "subarimati" from India, are less popular in local markets and command significantly lower prices. So, despite the higher yield, the financial return on non-traditional varieties is often lower. Tanzania has invested in rice research to develop new varieties of rice that both appeal to local tastes and have the virtue of higher yields.

Breeders at Katrin, the Tanzanian rice research institute in Morogoro Region, have developed three new varieties. TXD 85 and 88 came out in 2001. These are high yielding varieties (6.5-7.5 tons/ha at the research institute; actual farm yields are lower) but are of relatively low quality. In December 2002, Katrin came out with TXD 306 which has much higher quality but a slightly lower yield (4.5-5 tons/ha at the research institute; actual farm yields are lower). Research and breeding is on-going. Saro V, a new varietal, is being pushed heavily. It has strong and appealing aroma and flavour but it has not been grow for enough seasons and in enough types of growing conditions for its ultimate success and impact to be determined. Even should this and other varietals prove successful, there is insufficient capacity to multiply and distribute them. There is little private sector involvement apart from some rare cases of multiplication contracts.

Further compounding seed issues, many farmers' source seeds from their own harvest or buy from each other without being consistent with one variety. This habit leads to multiple varietals' being harvested together due to a mixture of varietals being planted together. This complicates appropriate use of fertilizer and other purchased inputs as well as making milling and sorting more complicated, costly, and less efficient. Quality of rice depends on production practice and processing technologies available. Brokerage in rice depends on the seed variety and the level of moisture and a "mixed bag" reduces or eliminates consistency, significantly reducing value by reducing the possibility of market segmentation and the margins that segmentation makes possible.

Farming Practices

In rice planting, for instance, planting seedlings in a row would have a meaningful impact on yield. The principal issue around improving farming practices is the underfunded Tanzanian agricultural extension service.

Storage

Storage capacity on own farms is not well designed for long-term storage; poor conditions cause significant post-harvest losses and erratic and inconsistent drying makes further processing and sorting difficult. Rice and pulses are largely, though not totally, immune to losses.

Milling

For rice, the quality of the milling (which removes the husk or rice bran from the paddy and thereby turns it into what is known in the trade as "rice") in Tanzania is very poor; consequently, farmers incur a greater loss of the valuable rice grain than necessary. The causes are poor quality milling equipment and poorly trained millers. A related issue is that mixed varieties of rice are presented for milling together. This leads to broken grains driving down the sale price of the rice significantly and increasing the amount of grain taken off of "softer" paddy before the "harder" paddy is finished. Broken rice and the presence of impurities and discoloured rice also reduce the quality and sale price of rice substantially. Colour sorting machines (e.g., Sortex Colour) are extremely expensive but sorting manually is extremely tedious and labour intensive. The best option is not to mix product to begin with.

The Sorghum Sub-Sector

3.2.4 Production and Consumption

In recent years sorghum production has averaged around 780,000 MT (Minot 2010). The 2002-03 National Agricultural Sample Census (NASC) states that 12% of farmers in Tanzania grow sorghum. Sorghum is grown in larger quantities in the semi-arid regions of the country. This is because it is drought tolerant and thus can thrive during the periodic droughts that frequent these areas. Sorghum is used mainly for direct human consumption and in the brewing of traditional beers. The consumption of sorghum is greatest in rural areas and amongst low income groups. Table 18 demonstrates that production of Sorghum over the past five years has remained fairly constant. Currently Sorghum production in Tanzania does not meet the required demand; the gap is of a significant margin, see Table 19 (please note Millet and Sorghum are grouped in this analysis, however they are taken to have equal responsibility for the gap in required production). Table 20 shows that the case of low Sorghum production is presently below the 5 year average and also below the 22 year average.

Table 18 - Five Year Production of Sorghum ('000 MT)

	2005	**2006**	**2007**	**2008**	**2009#**	**Ave**
Sorghum	654.5	658	828.8	744.8	629.3	708.4

(SOURCE: Helms and Strauss 2009)

Table 19 – Sorghum Gap/Surplus Analysis 2009/10 (MT)

Sorghum/Millet	
Production	898,869
Requirement	1,531,816
Gap(-)/Surplus(+)	-632,947

(SOURCE: MAFC 2009)

Table 20 - A Comparison of the 2008/09 Preliminary Forecasts with Period Averages ('000 MT)

Sorghum	
Preliminary 2008/09	687
2007/08	861
22 year average	719
5 year average	803
% change from 5yr av.	-4
% change from 22yr av.	-14

(SOURCE: MAFC 2009)

3.2.5 Exports and Imports

Farmers grow sorghum primarily for home consumption. The results of the 2002-03 NSCA indicate that just 17% of sorghum output is marketed with many suggesting that international trade in sorghum is practically non-existent.

3.2.6 Sorghum Value Chain Mapping

The available data did not allow the value chain mapping to be completed. Further research would be required.

3.2.7 Constraints and Opportunities

Seeds

For sorghum, access to improved seeds has been a challenge and a popular variety of sorghum '*Khalid,' w*hich is not attacked by birds is not yet recognized by MAFC and TOSCI. Another distributed variety developed by ARI, Ilonga is attacked frequently by birds but is planted extensively.

3.3 The Millet Sub-Sector

3.3.1 Production and Consumption

The Millet sub-sector displays similar trends to the Sorghum sub-sector. Millet is produced in fairly similar quantities each year, but in such a volume that is does not meet the required demand, see Tables 22 and 23 (please note Millet and Sorghum are grouped in this analysis, however they are taken to have equal responsibility for the gap in required production). Despite the fact that Millet production does not meet the required demand, production in 2008/09 was in line with the 5 year average, and just meeting the 22 year average. This is a significant difference to Sorghum which was not meeting either average and suggests the demand for Millet has increased and that Millet production is yet to respond.

Table 22 - Five Year Production of Millet ('000 MT)

	2005	**2006**	**2007**	**2008**	**2009#**	**Ave**
Millet	280.5	282	355	319	269.7	304

(SOURCE: Helms and Strauss 2009)

Table 23 – Sorghum/Millet Gap/Surplus Analysis 2009/10 (MT)

Sorghum/Millet

Production	898,869
Requirement	1,531,816
Gap(-)/Surplus(+)	-632,947

(SOURCE: MAFC 2009)

Table 24 - A Comparison of the 2008/09 Preliminary Forecasts with Period Averages ('000 MT)

Millets	
Preliminary 2008/09	212
2007/08	203
22 year average	171
5 year average	209
% change from 5yr av.	24
% change from 22yr av.	1

(SOURCE: MAFC 2009)

3.3.2 Exports and Imports

Millet is only imported in very small quantities. It is different to the other staple foods analysed in the fact that its export outweighs its import, see Table 25. Millet is exported in relatively small quantities, most probably because Tanzania struggles to meet the required demand for Millet.

Table 25 – Millet Imports/Exports per Year

	Item	**2002**	**2003**	**2004**	**2005**	**2006**	**5 Year Avg.**
Import Quant. (Tonnes)	Flour of Millet	0	0	0	0	0	0
	Millet	0	32	5	4	0	8
Import Value (1000 $)	Flour of Millet	0	0	0	0	0	0
	Millet	0	13	5	3	0	4
Export Quantity (tonnes)	Flour of Millet	0	0	0	0	0	0
	Millet	38	232	2,007	1,758	235	854
Export Value (1000 $)	Flour of Millet	0	0	0	0	0	0
	Millet	3	29	349	207	25	123

(SOURCE: RATIN 2009)

3.3.3 Millet Value Chain Mapping

The available data did not allow the value chain mapping to be completed. Further research would be required.

3.3.4 Constraints and Opportunities

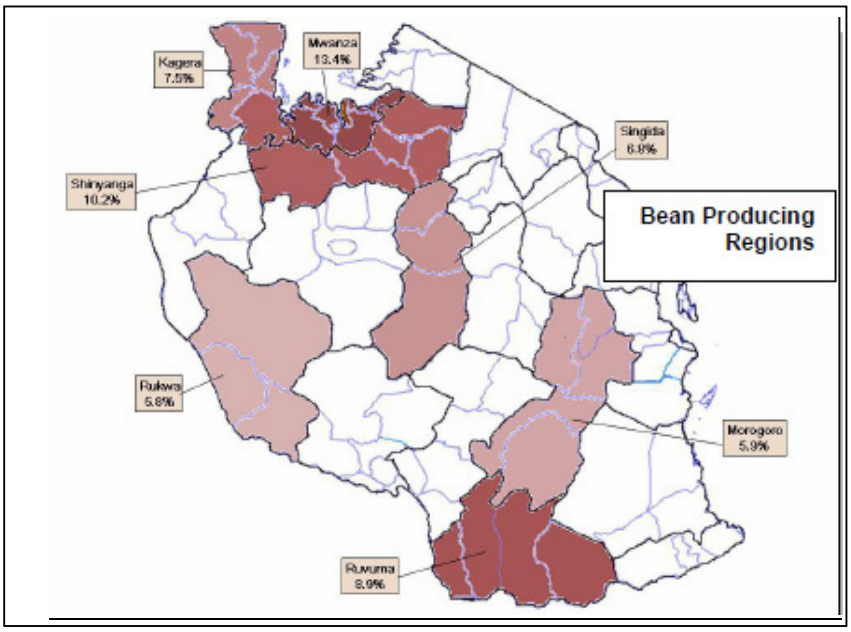
See section 5 for a summary of cross-cutting constraints and recommendations.

3.4 The Bean Sub-Sector

3.4.1 Production and Consumption

FAO estimates that Tanzania produces about 13% of the entire African bean crop. Beans are grown in Tanzania in areas of sufficient rainfall, and are typically intercropped with maize. Less than 3% of land where Beans are grown is irrigated. Beans are grown by small-scale farmers for mainly own consumption. MAFC estimates that about 30% of pulses are produced by large-scale farmers while the balance is produced by small-scale farmers, each farming an area ranging from 1 to 5 acres on average. Accurate statistics on beans are often difficult to obtain as they are frequently amalgamated with other legumes under the heading of pulses. In Tanzania, beans usually comprise about 80% of the overall pulse crop. Statistics on the planted area are complicated by frequent intercropping. MAFC figures indicate that total bean production increased from about 302,000 MT in 1995 to 708,000 MT in 2005. However, FAO provides slightly different data suggesting that from 1994 to 2001 total annual bean production has ranged between 374,200 to 689,951 MT. Approximately 4,000 MT of seed beans are produced annually by specialised large-scale farmers in Iringa, Arusha and Simanjiro, see Figure 11.

Figure 11 – Bean Producing Region in Tanzania



(SOURCE: USAID 2009)

3.4.2 Exports and Imports

Seed beans are for export; mainly to Dutch seed houses. Irrigated seed beans in Iringa are giving an average yield of over 2 MT/ha. It is believed that in low production areas like the Lake Zone farmers retains about 45% of total bean produced. In a survey taken in 1991, only 37% of total beans produced in Tanzania were consumed at household level while 63% were for market. It is expected that domestic consumption of beans will increase in line with population growth. Tables 27 and 28 show the volumes of beans exported to Kenya and

Uganda respectively. A larger volume is delivered to Kenya but in both cases the rate of export seems to a have declined from the peak year of 2005/06. Table 29 confirms the fact that beans are a profitable crop and that import rates are low; due to the consumption of the crop at the farm level.

Unlike rice and maize, there is tension between bean production for sale as a cash crop and bean production for home consumption. The market is interested in a large bean while the producer-consumer prefers the small size bean. There is in this case, a possible trade-off between poverty alleviation, through selling for cash, and food security through growing one's own food. This trade-off, of course, discounts achieving food security through the purchase of food with cash earned through the sale of cash crops.

Table 27- Monthly Bean Exports to Kenya per Year (MT)

Month	Commodity	Source Country	Destination Country	2004	2005	2006	2007	2008	2009
January	Beans	Tanzania	Kenya	0	471	456	2,267	0	432
February	Beans	Tanzania	Kenya	0	392	102	419	0	93
March	Beans	Tanzania	Kenya	0	301	0	1,742	0	93
April	Beans	Tanzania	Kenya	0	490	0	522	0	85
May	Beans	Tanzania	Kenya	0	386	566	142	1,042	69
June	Beans	Tanzania	Kenya	3	229	506	651	458	43
July	Beans	Tanzania	Kenya	0	391	906	694	288	0
August	Beans	Tanzania	Kenya	0	910	956	681	765	0
September	Beans	Tanzania	Kenya	0	559	1,045	633	90	0
October	Beans	Tanzania	Kenya	561	1,494	781	419	339	0
November	Beans	Tanzania	Kenya	529	696	1,646	231	293	0
December	Beans	Tanzania	Kenya	527	296	641	0	300	0
Total (Beans: Tanzania to Kenya)				**1,620**	**6,615**	**7,606**	**8,401**	**3,575**	**815**

NB This data is compiled for selected border crossings in East Africa.

(SOURCE: RATIN 2009)

Table 28 – Monthly Bean Exports to Uganda per Year (MT)

Month	Commodity	Source Country	Destination Country	2004	2005	2006	2007	2008	2009
January	Beans	Tanzania	Uganda	0	444	165	156	0	995
February	Beans	Tanzania	Uganda	0	678	86	174	0	560
March	Beans	Tanzania	Uganda	0	683	105	0	0	0
April	Beans	Tanzania	Uganda	0	423	0	80	0	80
May	Beans	Tanzania	Uganda	0	163	60	0	0	75
June	Beans	Tanzania	Uganda	0	0	210	0	0	0
July	Beans	Tanzania	Uganda	0	142	420	0	0	0
August	Beans	Tanzania	Uganda	0	60	141	0	0	0
September	Beans	Tanzania	Uganda	337	83	115	0	0	0
October	Beans	Tanzania	Uganda	250	0	0	0	0	0
November	Beans	Tanzania	Uganda	250	0	0	0	0	0

December	Beans	Tanzania	Uganda	208	0	0	85	0	0
Total (Beans: Tanzania to Uganda)				**1,045**	**2,675**	**1,302**	**495**	**0**	**1,710**

NB This data is compiled for selected border crossings in East Africa.

(SOURCE: RATIN 2009)

Table 29 – Bean Imports/Exports per Year

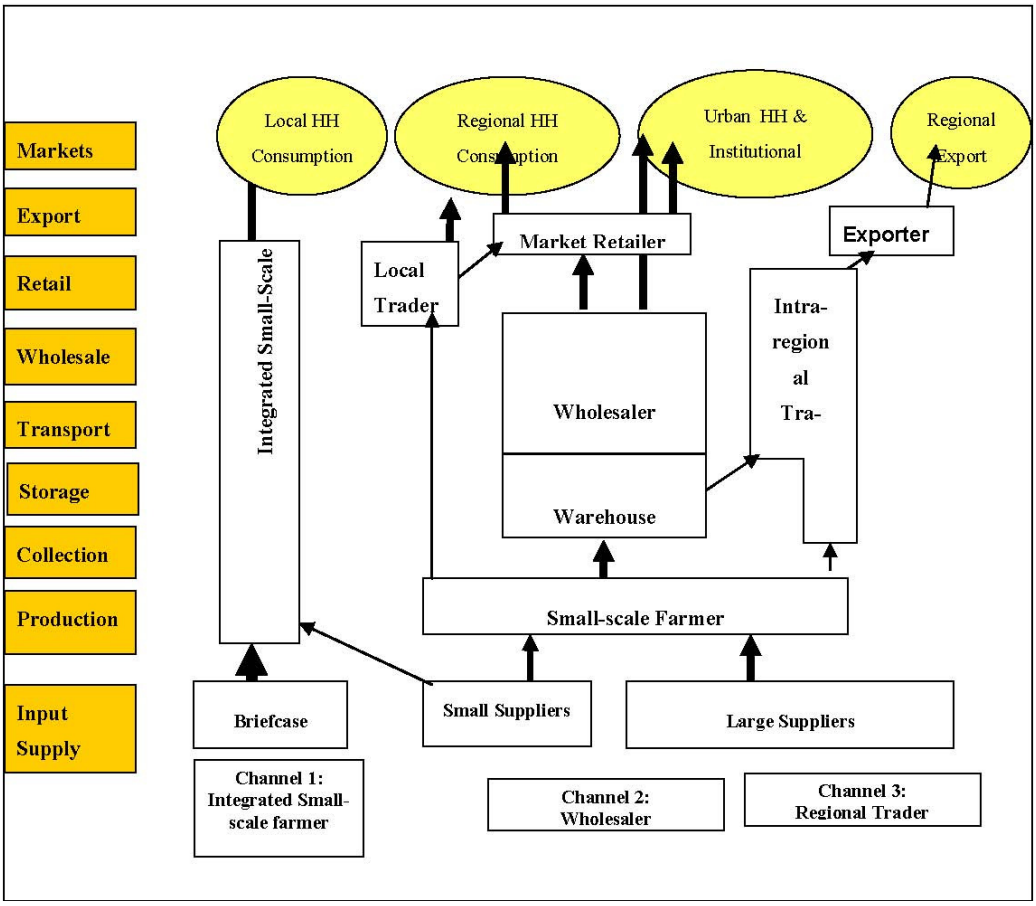
	Item	**2002**	**2003**	**2004**	**2005**	**2006**	**5 Year Avg.**
Import Quant. (Tonnes)	Beans, dry	1,000	141	4,975	12,750	619	3,897
	Beans, green	1	25	2	0	2	6
	Broad beans, horse beans, dry	*	*	*	0	2	1
	Soybeans	5,918	8,722	2,629	116	1,352	3,747
Import Value (1000 $)	Beans, dry	5,000	85	2,400	5,100	293	2,576
	Beans, green	0	15	2	0	0	3
	Broad beans, horse beans, dry	*	*	*	0	1	1
	Soybeans	1,465	2,334	916	12	506	1,047
Export Quantity (tonnes)	Beans, dry	10,500	15,714	5,443	10,056	13,813	11,105
	Beans, green	837	82	405	511	138	395
	Broad beans, horse beans, dry	*	*	5	0	0	2
	Soybeans	639	1,159	117	1,950	7	774
Export Value (1000 $)	Beans, dry	4,440	7,561	4,110	4,567	7,852	5,706
	Beans, green	545	75	1,508	251	511	578
	Broad beans, horse beans, dry	*	*	1	0	0	0
	Soybeans	186	259	28	445	3	184

(SOURCE: FAO 2009)

A key feature of beans that must be noted is its close relationship with the economically difficult corn value chain (bean plants have nitrogen fixing properties that are essential for successful corn cultivation; this mean that they might very well be cultivated whether they were profitable or not).

3.4.3 *Bean Value Chain Mapping*

Figure 12 - Beans Value Chain Map, taken from Helms and Strauss (2009)



3.4.4 *Constraints and Opportunities*

Seeds

In the bean area, improved varieties are not generally used as they are perceived as being too expensive and require a high seeding rate. One report indicates that "improved" seed is often of low quality and that, when compared to maize, little research has been done. Some high-yielding varieties of pigeon pea have been developed, but very little work has been done on other pulses.

3.5 The Pulse Sub-Sector

3.5.1 Production and Consumption

The pulse sub-sector and the bean sub-sector described above are often joined in analysis. Many of the comments and trends noted in the previous section are therefore applicable to Pulses, as indeed is the value chain map. The production of pulses has remained fairly steady over the last five years, see Table 30. Like beans, pulses are mostly consumed by the producer and thus production meets the requirement to significant levels, see Table 31. In terms of the longer term production trend, there is little change from the 22 year average, although the 5 year average is exceeded, see Table 32.

Table 30 - Five Year Production of Millet ('000 MT)

	2005	**2006**	**2007**	**2008**	**2009#**	**Ave**
Pulses	177	210	264.2	225.2	217	203.8

(SOURCE: Helms and Strauss 2009)

Table 31 – Pulses Gap/Surplus Analysis 2009/10 (MT)

Pulses	
Production	1,085,448
Requirement	654,840
Gap()/Surplus(+)	430,608

(SOURCE: MAFC 2009)

Table 32 - A Comparison of the 2008/09 Preliminary Forecasts with Period Averages ('000 MT)

Pulses	
Preliminary 2008/09	1085
2007/08	1126
22 year average	590
5 year average	1019
% change from 5yr av.	84
% change from 22yr av.	6

(SOURCE: MAFC 2009)

3.5.2 Exports and Imports

A surplus pulse production leads to a small but consistent export market, see Table 33. In terms of imports, dry peas are imported in the greatest volume and to the most considerable cost. When looking at exports, it is chickpeas alongside dried peas that make up the bulk of the exports.

Table 33 – Pulses Imports/Exports per Year

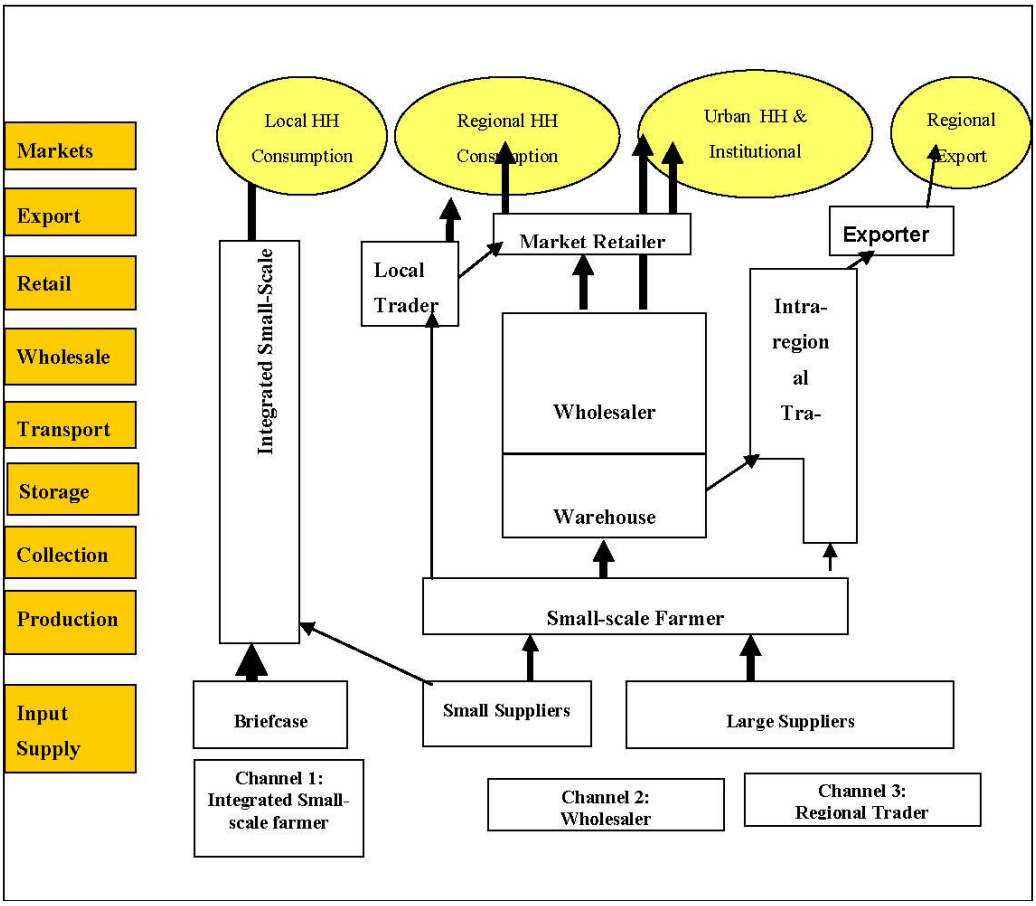
	Item	**2002**	**2003**	**2004**	**2005**	**2006**	**5 Year Avg.**

Import Quant. (Tonnes)	Chick peas	326	6	3	2	9	69
	Lentils	15	1,053	828	45	47	398
	Peas, dry	13,200	8,700	5,289	7,150	15,300	9,928
	Pulses, nes	17	80	1	5	2	21
	Pulses +	14,558	9,980	11,096	19,952	15,979	14,313
Import Value (1000 $)	Chick peas	88	2	1	1	4	19
	Lentils	14	517	750	23	49	271
	Peas, dry	6,900	4,500	2,200	2,800	5,750	4,430
	Pulses, nes	3	31	0	1	2	7
	Pulses +	12,005	5,135	5,351	7,925	6,099	7,303
Export Quantity (tonnes)	Chick peas	21,082	27,226	24,801	30,002	7,333	22,089
	Lentils	72	3,636	28	722	0	892
	Peas, dry	20,252	27,076	19,598	31,515	24,818	24,652
	Pulses, nes	47	2,940	333	576	1,726	1,124
	Pulses +	51,953	76,592	50,208	72,871	47,690	59,863
Export Value (1000 $)	Chick peas	6,033	7,804	7,393	10,454	2,861	6,909
	Lentils	14	668	6	205	0	179
	Peas, dry	4,718	6,741	5,677	14,462	9,277	8,175
	Pulses, nes	12	880	80	232	990	439
	Pulses +	15,217	23,654	17,267	29,920	20,980	21,408

(SOURCE: FAO 2009)

3.5.3 *Pulse Value Chain Mapping*

Figure 13 - Pulse Value Chain Map, taken from Helms and Strauss (2009)



3.5.4 *Constraints and Opportunities*

Storage

Storage capacity on own farms is not well designed for long-term storage; poor conditions cause significant post-harvest losses and erratic and inconsistent drying makes further processing and sorting difficult. Rice and pulses are largely, though not totally, immune to losses.

3.6 The Cassava Sub-Sector

3.6.1 Production and Consumption

Cassava is one of the important food crops grown in Tanzania, after Maize and Rice, providing energy from its roots and protein, minerals and vitamins from its leaves. Cassava plays an important role as famine reserve, rural food staple, cash crop, urban food staple, as well as industrial raw material and livestock feed. The stems that are often used as planting materials, when dry can also be used as fire wood. Cassava is of extreme significance, especially for rural farmers, because it can be produced under harsh conditions when other crops may fail. Cassava tolerates poor soil, adverse weather and can thrive well across a wider range of agro-ecological zones. The advantage of cassava over other staple foods is its tolerance to drought, and its ability to produce adequate yields with low requirements of external inputs like fertilisers. It has flexible planting and harvesting dates and can be stored in ground. The most important cassava producing areas in Tanzania include areas around Lakes Victoria, Tanganyika, and Nyasa; along the coastal strip of the Indian Ocean and along the Ruvuma valley (Msabaha and Rwenyagira, 1989).

Cassava production in Tanzania is 6.8 million MT per year. According to National Sample Census of Agriculture (2006), cassava production is higher than any other roots or tuber crop in Tanzania with a total production of 2,102,838 tonnes representing 84.6% of the total root and tuber crop production. The number of households growing cassava during 2002/2003 cropping season was 1,213,958 representing 25% of the total crop growing households in Tanzania. It is the only root and tuber crop that has increased its production over the period 1995 – 2000, whereas the production of other roots and tubers was stable over the 1994 to 2003 period. Table 35 also demonstrates the growth in cassava production; current production is above both the 5 year and 22 year average. Currently the requirement for Cassava is being adequately fulfilled leaving some surplus for export, see tables 34 and 36.

Cassava is mainly consumed by low-income earners, both in rural and urban areas; it is a cheap food which can be afforded by poor household budgets. There is no significant processing of cassava, (drying, making chips and pounding into flour takes place at farmer, trader or consumer level). The major form in which cassava is consumed is boiled fresh roots. In some instances cassava is locally processed into dry makopa whose flour is mixed with either maize crops or sorghum/millet flour at a ratio of up to 50% cassava during food shortages. Considering cassava is relatively cheaper than cereals, and is available during drier years, it inevitably constitutes an important energy source of food for the low-income households. The major source of cassava for both urban and rural consumers is retailers, however, rural consumers also obtain cassava directly from producers due to underdeveloped storage and processing facilities.

Table 34 – Cassava Gap/Surplus Analysis 2009/10 (MT)

Cassava	
Production	1,982,718

Requirement	1,830,567
Gap(-)/Surplus(+)	152,151

(SOURCE: MAFC 2009)

Table 35 - A Comparison of the 2008/09 Preliminary Forecasts with Period Averages ('000 MT)

Cassava	
Preliminary 2008/09	1983
2007/08	1797
22 year average	1687
5 year average	1782
% change from 5yr av.	18
% change from 22yr av.	11

(SOURCE: MAFC 2009)

3.6.2 Exports and Imports

Cassava is not imported in any real quantity by Tanzania and is only exported in fairly small volumes; please refer to Table 36 for more details.

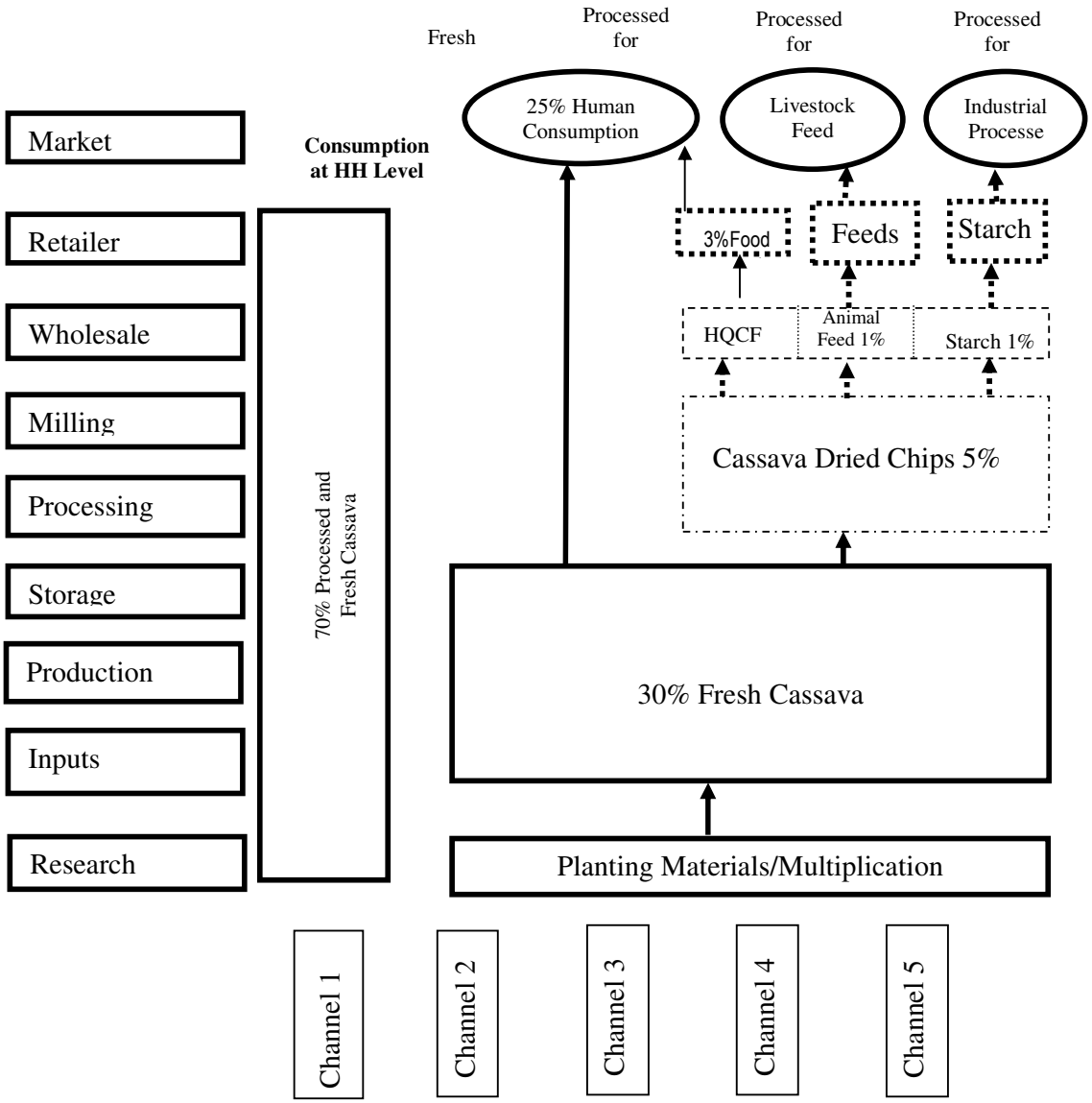
Table 36 - Cassava Imports/Exports per Year

	Item	**2002**	**2003**	**2004**	**2005**	**2006**	**5 Year Avg.**
Import Quant. (Tonnes)	Cassava Dried	0	0	0	0	0	0
	Cassava Starch	0	2	0	0	4	1
	Cassava Equivalent +	0	10	0	0	20	6
Import Value (1000 $)	Cassava Dried	0	0	0	0	0	0
	Cassava Starch	0	1	0	0	1	0
	Cassava Equivalent +	0	1	0	0	1	0
Export Quantity (tonnes)	Cassava Dried	4	22	18	278	23	69
	Cassava Starch	0	0	25	573	21	124
	Tapioca of Cassava	*	*	*	*	0	0
	Cassava Equivalent +	10	55	170	3,560	162	791
Export Value (1000 $)	Cassava Dried	2	8	1	12	1	5
	Cassava Starch	0	0	10	26	2	8
	Tapioca of Cassava	*	*	*	*	0	0
	Cassava Equivalent +	2	8	11	38	3	12

(SOURCE: FAO 2009)

3.6.3 Cassava Value Chain Mapping

Figure 14 – Cassava Value Chain Map, taken from Helms and Strauss (2009)



3.6.4 Constraints and Opportunities

See section 5 for a summary of cross-cutting constraints and recommendations.

3.7 The Groundnut Sub-Sector

There was no significant information available for the groundnuts value chain except for the production figures in Table 38. It can be clearly seen that Groundnut production has increased over the period between 2003 and 2007 and looks set to continue to do so in the future.

Table 38 – Groundnut Production per Year

Groundnuts	**2003**	**2004**	**2005**	**2006**	**2007**
Value ($)	69,043.00	151,370.00	139,400.00	137,530.00	142,362.00
Volume(MT)	159,730.00	331,660.00	293,870.00	290,000.00	300,000.00

(SOURCE: FAO 2009)

SECTION 4 - THE BUSINESS ENABLING ENVIRONMENT FOR TRADE IN AGRICULTURAL COMMODITIES

4.1 The Policy Environment

4.1.1 Pricing and Marketing Policies

The following summary of pricing and marketing policies in Tanzania was provided in Minot 2010:

Tanzanian food policy is characterized by relatively low level of intervention in agricultural markets. Over the period 1986-1995, Tanzania dismantled a centralized system of government control over agricultural production, processing, and marketing. Over 1986-89, private trade in food crops was deregulated. Controls on internal movement of food was abolished in 1987, and pan-territorial prices were eliminated in 1989. In the early 1990s, input markets were liberalized, including legalization of private fertilizer importation and distribution, the phased elimination of fertilizer subsidies, and decontrol of input prices. During this time, the role of state marketing boards in the management and marketing of traditional export crops was also scaled back. At the same time, macroeconomic reforms led to a decline in the rate of inflation and the adoption of a market-based exchange rate, which provided improved incentives for exporters.

However, the government remains involved in staple food markets in a number of ways. Here, we focus our attention on three of these: maize exports and the strategy grain reserve. Each is discussed below.

Maize export bans

Although exports of almost all agricultural commodities are liberalized, maize exports continue to be subject to occasional export bans. The main maize surplus region in Tanzania is the southern highlands, including the regions of Mbeya, Iringa, Rukwa, and Ruvuma. Because the southern highlands borders on northern Zambia and Mozambique, which are maize deficit zones, there is a strong economic incentive for maize exports, particularly during June and July when the southern highlands harvest takes place. Government policy is to allow the export of maize only when all regions of the country can be declared to be food secure. In practice, however, there is almost always a problem of food security in some part of the country, particularly in the semi-arid central region. Thus, in practice, maize exports are banned on an almost continual basis. The effect of this policy is to make the prices of maize in the southern highlands lower and more volatile than they would otherwise be. As discussed above, maize prices in Songea and Mbeya are lower and more volatile than in other parts of Tanzania. At the same time, the export ban presumably keeps the price of maize lower in deficit regions that it would otherwise be.

The continued sensitivity of the issue was highlighted at a recent workshop in Tanzania in which researchers from the International Institute for Tropical Agriculture (IITA) and a German research centre argued that removing the maize export ban would improve the

livelihoods of southern maize farmers without harming Tanzanian consumers. A government representative said that export bans would be necessary until Tanzania becomes self-sufficient in maize (Kanyabwoya, 2009). **Maize export ban lifted in April 2010 to allow export of surplus maize to the region. This came as a relief to the region in the face of maize deficit in Kenya and other countries in the region.**

Strategic grain reserves

Tanzania formed a strategic grain reserve in the 1970s following the food crises of 1971-74. It was originally managed by the National Milling Corporation (NMC), a state enterprise that was given a monopoly on the procurement, processing, and distribution of staple food crops. With the liberalization of grain trade in the late 1980s, the NMC was forced to compete with private millers and trader, eventually losing 95% of its market share. In 1991, the Strategic Grain Reserve was established as a separate entity. The objectives of the SGR are to advise the government on food security policy, supply food for emergency assistance, and stabilize staple grain prices. The SGR engages in procurement and distribution operations through seven depots, three in surplus zones in the southern highlands and four in deficit zones (Dar es Salaam, Arusha, Dodoma, and Shinyanga). The capacity of the SGR is 150 thousand tons, but in practice the quantities in storage have generally been in the range of 50-80 thousand tons (Mndogo, nd).

The SGR has not been successful in stabilizing grain prices. The volume of purchases and sales in a given year is generally less than 50 thousand tons, which is negligible compared to the volume of Tanzanian grain production (5 million tons) or even marketed surplus (roughly 1.25 million tons). In addition, the SGR suffers from bureaucratic procedures, political interference, under-utilization of capacity, and chronic operating deficits due to pricing policies that do not allow cost recovery. On the other hand, the global food crisis has increased the political support for tools to manage staple food price volatility.

4.1.2 Tariffs and Non-Tariff Charges

The table below provides a summary of applicable tariffs on various staple foods and grain products. Intra-EAC trade in these products is zero rated. Trade with SADC attracts tariff of 10% for the following products – wheat, maize and sorghum. Trade with COMESA is on mfn basis, as it attracts the prescribed EAC Common External Tariff.

Product	Code	Intra EAC	SADC without South Africa	SADC with South Africa	With COMESA	EAC CET
Buckwheat	1008.10.00	0%	10%	10%	25%	25%
Millet	1008.20.00	0%	0%	0%	25%	25%
Maize (Seed)	1005.10.00	0%	10%	10%	25%	25%
Maize (Flour)	1102.20.00	0%	10%	10%	50%	50%
Durum Wheat	1001.10.90	0%	0%	0%	0%	0%
Hard Wheat	1001.90.20	0%			35% SI	35% SI
Wheat (other)	1001.90.90	0%	10%	10%	35% SI	35% SI
Wheat Flour	1101.00.00	0%	10%	10%	60% SI	60% SI

Rice	1006.10.00 1006.20.00 1006.30.00 1006.40.00	0%	10%	10%	75% or $200/MT whichever is higher [SI]	75% or $200/MT whichever is higher [SI]
Sorghum	1007.00.00	0%	10%	10%	25%	25%
Beans	0708.20.00	0%	0%	0%	25%	25%
Pulses (Pigeon Pea, Cow pea and Chick pea)	0708.??.??	0%	0%	0%	25%	25%
Cassava	0714.10.00	0%	0%	0%	25%	25%
Groundnuts ('Other nuts')	0802.90.00	0%	0%	0%	25%	25%

[SI] Sensitive Item (EAC CET)

Note: Under the EAC Customs Union, which came into effect in January 2010 there are zero rates between the member states of Kenya, Tanzania and Uganda for all goods which meet the Rules of Origin.

Sources:
Tanzania Tariff Book, available online at:
http://www.tiscan.co.tz/TiscanClink/TariffBook/HSCodesBook.aspx

EAC Common External Tariff, 2007 version, available online at:
http://www.eac.int/customs/index.php?option=com_content&view=article&id=98:eac-customs-union-common-external-tariffs-2007&catid=3:key-documents&Itemid=141

4.2 The Regulatory Framework

4.2.1 Customs Documentation and Clearing Procedures

At a customs office, an exporter of staple foods from Tanzania must produce ten documents. These are:

1. The original invoice
2. An import declaration form
3. A pre-shipment inspection
4. Certificate of origin
5. The phytosanitary certificate
6. The quality standards certificate
7. A safety standards certificate
8. An export permit
9. An import permit
10. Certificate from a licensed customs broker that documents have been lodged with customs

4.2.3 Standards

The EAC countries recently harmonised their Maize quality standards; adopting common standards for two distinct qualities of Maize. This was a positive move as previously all three EAC countries used different and disproportionate standards. Please note that currently all of Tanzania's other Maize trading partners still do not use a common quality standard. The newly adopted standards address the following criteria:

- moisture content
- foreign matter
- broken grains
- insect damage
- incidence of rotten, diseased and discoloured grains
- incidence of immature or shrivelled kernels
- packaging

4.2.4 Sanitary and Phytosanitary Requirements

Phytosanitary standards are intended to protect Tanzania's farm ecology from external pests and diseases transmitted by imported crops. Prior to shipment from the exporting nation, certification must first be gained from the appropriate authorized Phytosanitary Agency, and must be presented upon entering Tanzania. Tanzania's phytosanitary standards for Maize are unique within the region. They require that the exporter secures a certificate to prove the Maize is free from Erwinia Stewartii; a bacterial wilt.

4.2.5 Trade (Import and Export) Restrictions

Permit restrictions

Maize is a good example of Tanzania's' regulations that affect the trade of staple foods within both the COMESA and EAC. The volume of regional maize trade is constrained by trade policy, for even though Tanzania is liberalising it appears to be doing so at a rate slower than many of its neighbours.

All traders must obtain a permit from the government before they can export maize from Tanzania. It has been a fairly common occurrence that the government has banned Maize exports due to internal shortages (this limited, but not exclusive, to Maize). Normally when no ban is in effect, a permit can be secured from the Food Security Department based in Dar es Salaam when exporting from the northern regions. When exporting from the south it is then sought from the appropriate Regional Agriculture Department. The export permit is a letter to the customs department, representing the quantity of export which the trader is allowed and the time period over which the permit remains in effect, typically one month. Stringent permit granting and export bans discourage private sector investment in Maize trading, and for other staple food crops. Traders perceive a refusal to provide a permit and/or an absolute ban as a significant transaction risk in Tanzania for it is costly if a trader has already entered into contractual commitments to deliver Maize to foreign buyers.

Imports are regulated in Tanzania; a permit is required for all imports, as is prior registration of the importer. Permits and registration are procured from the National Food Control Commission in Dar es Salaam. Permits are allegedly issued in order to more closely monitor staple food crop movements in and out of the country. In terms of Maize, every permit request to the NFCC must be accompanied by a sample of the Maize which is being imported. Each import permit it is only applicable to a specific gateway into the country and via a specific customs office. Consequently, imported staple foods are at times transported via a route that is not the most direct and cost effective route. Due to the administrative formality that surrounds permit issuance, and the costly and time consuming conditions they impose, it a frequent trend to witness informal trading chosen over formal trading.

Staple Foods Export Bans

A key policy intervention with regards to staple foods is the Government of Tanzania's periodic bans on the export of foods during periods of perceived food insecurity. Contrary to common belief export bans are not exclusively applied to Maize but are also employed to other staple foods that may run a surplus, for example Rice. The export of some staple foods, such as sorghum and millet, has not been banned. However this is for the sole reason that they are produced in low volumes and consumed entirely within the country.

There are a few contentious points with regards to the staple foods export bans. Firstly, although it is claimed that they are in response to a risk of food insecurity some state that they are largely driven by domestic and regional politics. The theoretical reasoning for banning exports is so that the net production of crops is fully available and is greater than the net consumption. However they do not account for the informal cross border trade and in fact may encourage it, hence meaning staple foods are not available in their entirety domestically. The theory behind export bans may also be questioned; domestic supply may not be the most efficient nor effective method to ensure food security. For example, the storage capacity of many rural players can be doubted, as can the transport infrastructure. In many cases, due to the geography of Tanzania, it may be more cost effective to import from another nation rather

than transport across Tanzania itself, and indeed this may enhance food insecurity is the supplier deems it not worthwhile to transport into particular regions.

The second contentious issue regarding export bans is the inconstancy is the market that they generate. The unpredictable nature of the staple foods ban means that tax impositions vary also. The on again/off again taxes on staple food imports (50% for maize and 75% for rice when in force, not including the mandatory 20% VAT) creates enormous uncertainty for growers, importers, and exporters. The bans and taxes also indirectly impact upon smallholders. The price of imports are one of the factors that the price setting large companies use when determining their prices (which in turn almost every other buyer uses to determine their price), thus throughout the value chain prices will fluctuate due to periods of high/low taxation. Whilst well established, high capital enterprises can handle these fluctuations small holders can often not. More generally, export ban induced uncertainty, makes it very difficult for market participants of any size to feel comfortable making investments that are dependent on importing or exporting staple foods. This holds back growth in the agriculture sector and impedes movement (for all players) up the value chain.

SECTION 5 – CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS

5.1 Main Conclusions

Table 39: Cross-cutting constraints

Land Clearing and Preparation	Land ownership	Tanzania has a limited and incomplete land registry system. Disputes over land ownership are lengthy and can cross generations. Problems associated with this problem include inability to use land as collateral for loans and farmers' reasonable reluctance to improve land that they may lose in the future.
		Any single farmer's land may be made up of several non-contiguous plots and thus farmers use time, money, and resources travelling from one plot to another. Because of land disputes, plot trading and buying/selling to achieve contiguous land is extremely difficult. One solution is to rent but this adds administrative costs and capital.
	Labour	Reports from some areas indicate that labour is in short supply. Labour scarcity is partially caused by migration away from rural areas. Rural-urban migration is a large-scale demographic trend and is difficult to slow. When labour is available it is not always dependable, this has an impact on the key 'window of opportunity' for small-scale farmers.
	Available resources	The vast majority of ploughing in Tanzania is done by hand hoe and ox-ploughs; a clear restraint on increasing productivity.
Planting	Fertiliser and other inputs	For all farmers, it is fertilizer that is reported to be their most significant cash cost. Even with subsidies, fertilizer is still the largest cost driver. For DAP, as of June 2008, the price of urea had increased 5 times over the previous 15 months. The price went from $252/ton in January 2007 to $1,230/ton in June 2008. Tanzania's fertilizer intensity is less than half that of the rest of sub-Saharan Africa, and is a mere 5% that of the rest of the world. The impact of this on growing and yield is enormous. The causes of this low use are in part financial and in part related to infrastructure.
		Financially, farmers do not have access to financial services that would allow them to get the working capital to purchase inputs on credit; and, for the agro-dealers part, the farmers' limited resources often force them to extend long payment terms. Compounding these problems are long delivery times to the agro-dealer which are generally recognised to be the result of poor port handling, delivery, and all-around poor rural transport

		infrastructure.
	Irrigation	Less than 1% of Tanzania's farmland is irrigated. Improvements in irrigation would significantly increase yields and reduce the impact of droughts.
	Farming Practices	Farming practices often fall short of what is known to be ideal. The Government's extension network is undermanned: officers have too much ground to cover and cannot adequately monitor farming practices in the village to which they are assigned.
Storage	Availability and accessibility	Storage of harvested crop has the central problems that available warehousing space is limited and that it is too expensive for many farmers. Storage capacity on own farms is not well designed for long-term storage; poor conditions cause significant post-harvest losses and erratic and inconsistent drying makes further processing and sorting difficult.
		Good quality storage is essential for it allow owners of stocks to postpone the sale of those stocks until a time during the annual production, harvesting, and merchandising cycle when demand exceeds supply and favourable prices can be realised. In this way, they help to smooth out annual price peaks and troughs. Warehouses are the critical fixed asset which market arbitrageurs require in order to balance supply and demand over time. Market arbitrageurs buy for their own accounts and lease or own warehousing capacity so that they will have safe storage for the inventories which they control.
Marketing	Pricing	In Tanzania there are two to six price setters in each value chain, these companies are large and vertically integrated with enormous buying power (see Appendix 1). They are able to set prices, usually in conjunction with the international price since they are also often importers, and then all others in the value chain set their prices accordingly using a standard "add-on" or margin. In other words, almost everyone but the large operations is a "price taker." Since the price is set at the end of the value chain and works its way backwards everyone but the person at the last stage of the transaction makes a guaranteed mark up. As an almost pure price taker, the farmer cannot raise prices to cover costs and may be forced to sell at a loss.
		Prices for staple foods rise significantly during the period between harvests. Prices are lowest immediately after harvest and highest in the huger period before the next harvest; the change in price can be quite significant. The price increase is not necessarily linear and prices paid vary depending on location and quality of the product. This is a huge constraint on farmers because they are often forced to sell early in the season

		when they take a loss rather than later in the season when they would make a profit. The reasons for this are firstly, poor storage and secondly, the need to generate cash to pay off debt and/or input costs.
Transport and Handling		An issue brought up by virtually every player along the value chain is that there must be effective transportation access to markets. Due to transportation issues; availability and cost, farmers are sometimes unable to sell their product and must incur the cost of storage as well as the loss of product to spoilage.
Value Adding Opportunities		Farmers have very few opportunities to move up the value chain due to poor horizontal linkages.
Support: PMGs, etc.		PMGs have poor management and are not "business-like." Lack of training in basic business skills to initiate changes is a major gap.
Support: Finance		There is an enormous need for access to capital, even working capital to enable smallholders to hold off on selling until market conditions improve as the season progresses.
Support: Extension Services		Extension services are underfunded and undermanned but could have a very significant impact on crop yield.

5.2 Recommendations

The recommendations this report makes are based on the interventions outlined in Helms and Strauss (2009) and by the 2009 USAID Tanzania Value Chain Synthesis and Analysis Report. They are outlined below with suggested implementation partners given in Appendix 2.

Intervention 1:Supporting Producer Marketing Groups, SACCOs, and Farmer Associations (FAs)

The objective of this intervention is to support the further creation of PMGs, SACCOs, and Farmer Associations. The main strengths of such an intervention are:

- It creates entities that can purchase and/or rent subsidised storage price;
- Means farmers can enjoy reduced purchase prices for bulk inputs (e.g., fertilizers and seeds);
- Farmers can collaborate to buy transport to markets; and other advantages of producer collaboration.
- It has enormous synergistic value in maximising the value of other interventions in areas such as storage and price sharing; SACCOS and other such organisations create access to finance by virtue of their purchasing power.

The impact of this intervention affects all aspect of the value chain. There is really no area of pre- or post-harvest that would not be helped by greater numbers of and more effective associations but two are especially relevant to post-harvest; bulk purchasing and vertically

integration into milling and processing. In terms of the bulk buying of fertiliser it has already been noted earlier in the report the problems of increased prices in recent years. Fertiliser is one of the most significant cost drivers and therefore collective buying would allow more farmers to purchase fertiliser at prices they can manage and indeed buy it in greater volumes. This would impact greatly on crop productivity and soil nutrition.

Table 40 focuses on maize and the huge margins to be in vertical integration; especially for small farmers. Even taking off 500 shillings for administrative overhead, farmers would still be able to move from 5,000 shillings to 10,000 shillings; a 100% increase in the value of their product. It is similarly worth noting that traders take margins in excess of 35% –the ultimate high-cost "middle man." Margins for rice (Table 41) are not as high but still strongly suggest vertical integration. There is clearly an opportunity in vertical integration and it is deemed that it is an effort best achieved by FAs and SACCOs.

Table 40: Maize value-added distribution

Transaction point	**Production Costs/Buying price**		**Selling price**		**Value Added in percent [(2)-(1)/(1)*100]**	
	On season	**Off season**	**On season**	**Off season**	**On season**	**Off season**
Large/medium farmers	7,000	8,000	9,000	11,000	14.2 percent	22 percent
Small Farmers	4,500					
Small Traders	5,500	7,500	8,000	9,000	36 percent	12.5 percent
Large Traders/SGR	7,500	9,000	10,000	12,500	20 percent	25 percent
Millers	7,500	9,000	10,000	12,500	33 percent	25 percent

(SOURCE: Helms and Strauss 2009)

Table 42 - An overview of pricing and margins in the rice value chain. Marketing Margins for Mbeya Produced Rice Sold in Dar es Salaam

Marketing agent	**Farmer**	**Village Collector**	**Broker/wholesaler**	**Retailer**	**Consumer**
Selling price (TAS/Kg.)	550	600	610	660	-
Buying price	-	550	600	610	660
Margin (TAS/Kg.)	-	50	10	50	-
Value added (percent)					

(SOURCE: Helms and Strauss 2009)

Synergies: There are extensive opportunities for synergies with RUDI (www.ruditz.org) which is undertaking significant work in the area of promoting farmer associations and SACCOS. RUDI is widely regarded as one of the most-effective development operations in Tanzania. RUDI is funded by a variety of public and private entities.

Intervention 2:Warehousing and Storage

This intervention will increase mid-value chain storage capacity for multiple staple foods in Tanzania. Invest in and strengthen WRS (warehouse receipt systems). This intervention is key as it allows the farmer to wait and sell at market peak; reducing losses from improperly stored grains and creating a regionally competitive advantage over other who still suffer from limited storage capacity.

Increasing warehousing and storage is a unique opportunity for, not only is there pressing demand for more storage and significant opportunities for increased revenue generation, there is an enormous amount of storage capacity that is currently inactive and can be brought 'on-line' without the time and cost constraints incurred when building from scratch. Storage capacity is a particularly desirable cross-cutting intervention because of the ease of switching between various grains. Installed capacity, in other words, is not value chain specific but can be re-allocated at no to minimal cost to the most economically viable value chain. It is also important to note that even though maize is the most susceptible to pest losses, maize, rice, and beans all have sale prices that predictably vary over the course of the post-harvest season so all growers would benefit from the opportunity to sell when prices are higher.

Synergies: There is no direct action currently conducted in this area by major NGOs, though smaller operations and operations focused on value chains (e.g., TASP I and II) may be active. It is important to note, however, that there are synergy opportunities as the GOT owns and operates existing warehouse infrastructure; there opportunities for synergistic collaboration with the federal government. At the municipal level, municipal markets are a logical choice for cooperation and collaboration since municipal markets often have storage and trading infrastructure.

Intervention 3:Supporting Delivery of Timely Market Pricing Information to Smallholders and Small Producer Groups

This intervention aims to increase the negotiating power of smallholders through the provision of real-time or nearly real-time pricing information. Because the cost of each incremental data point is effectively zero, once a distribution channel is established data for multiple value chains and multiple markets can be delivered at very low cost. We would suggest an SMS-query system in which farmers or co-ops can send an SMS to a pre-defined number and automatically get pricing and other information which can be shared throughout the local agricultural community. *In all value chains* smallholders are currently almost purely price takers. Part of this is due to seller fragmentation but a significant amount also has to do with their limited information on prices further along the value chain. A pricing information system corrects information asymmetry and empowers smallholder sellers.

Synergies: Marker Partners, a small private company, currently provides price dissemination services; however, this vital function may not be economically viable without support. Investment in this intervention gives an opportunity to pick up the funding of an important exercise that is already established and working well.

Intervention 4: Improve Extension Services

The central objective is to increase the technical skills and material resources available to smallholder farmers. The combination of improved skills and improved materials will significantly improve these farmers' ability to produce crops of greater value and increase their incomes. Extension services in Tanzania are reportedly underfunded and undermanned. The impact of improving extension services, particularly through FAs and PMGs, would be enduring and significant.

Currently, the GoT extension network is undermanned, officers have too much ground to cover and cannot adequately monitor farming practices in the village to which they are assigned. Transportation and accommodation issues limit the mobility of the extension officers. Officers typically cannot visit all of their assigned villages in a month, and they may visit only once in a period of two or three months. It is unlikely that the situation has changed much since two-thirds of farmers did not receive advice from an extension officer in 2002/03 when an official survey was conducted.

Synergies: There are two major synergy opportunities; one public and one private. The public opportunity is to work through the existing extension service infrastructure and improve and fund it. The existence of this knowledge sharing channel is significant as it will save costs and strengthen the extension officers at the same time as the smallholder farmers. The private synergy opportunity is to offer extension services through the FAs and PMGs that this document also proposes supporting.

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Appendix 1 – Major Commercial Stakeholders in Food Value Chain

Large companies (Turnover of more than $5 million)	Activities and products	Annual turnover or other indication of company size
Agro Processing and Allied Products Ltd Shekilango Road, Dar es Salaam, 022 2461372	Miller of wheat flour Nyota, Safi and Shibe wheat flour and Mo Sembe maize flour	$10 million (est.) 45,000 tons of wheat flour in 2001
Coast Millers Nelson Mandela Road, Dar es Salaam, 022 2400349	Miller of wheat and maize Nyati flour	$15 million (est.) 60,000 tons of wheat flour in 2001
Export Trading Company (Mahesh Patel) Dar es Salaam, 022 2124473/5	Exporters of wheat, maize, sorghum, rice and beans Suppliers to WFP and ICRC	$25 million 100 employees
Fida Hussein and Company Ltd. (Mustak Fazal) Vingunguti, Dar es Salaam, 022 2844510	Exporter of beeswax, cassava products, cow peas, green mung, pigeon pea, cardamom, cocoa, ground nuts, cotton seed cake, cashew, copra, castor, and sunflower	$6 million 300 employees
Mohammed Enterprises Ltd. (Mohammed Dewji) Textile House, Morogoro Road, Dar es Salaam, 022 18930	Exporter of bees wax, cashew, castor, cocoa, coffee, green mung, ground nuts, gum Arabic, pigeon peas, sesame, sunflower, yellow gram Manufacturers of cooking oil, juices, soaps, maize and wheat flour, sisal bags, sugar	$70 million (est.) Taxes = $3 million per year 3,500 employees
Said Salim Bakhresa and Bakhresa Food Products (Abubakar Bakresa) Kipawa Industrial Area, Dar es Salaam, 022 2842503	Manufacturers of Azam Food products including maize and wheat flours, ice cream, milk and juices Manufacturers of poly propylene bags	$40 million 2,400 employees 135,382 tons of wheat flour in 2001
Sumaria Group (Jayesh Shah) Dar es Salaam, Tanga, Morogoro, Bulambu	Manufacturer of soaps and food products, cotton ginner Sabuni and Foma Detergent,	$50 million (est.) 3,000 employees

	Royal and Ole Dairy, Sumagro, S&C Ginning	
Tanzania Breweries Ltd, Tanzania Malting Company, Tanzania Distilleries Ltd., Darbrew Ltd. (Owned by South African Breweries) Dar es Salaam, Arusha and Mwanza, 022 2182779	Brewer and distiller Safari, Kilimanjaro, Ndovu and Castle beer Konyagi liquor and Darbrew sorghum beer	$167 million 2,000 employees 360 million bottles of beer per year

SOURCE: (Helms and Strauss 2009)