

Revised Final Report



**Project for Formulation of
Master Plan on Logistics in
Northern Economic Corridor**

Market and Value Chain Survey - Additional 3
VCs

JICA Study Team

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file 15-300

registration number Pan-15-110

version 1

Friday 5 February 2016

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LIST OF ABBREVIATIONS

AGOA	African Growth Opportunity Act
ASAL	Arid and semi-arid lands
BBN	Bureau Burundais de Normalisation et Contrôle de la Qualité
BOPP	Biaxially Oriented Polypropylene
BRIC	Brazil, Russia, India and China
CAGR	Compound Annual Growth Rate
CODA	Cotton Development Authority
COMESA	Common Market for East and Southern Africa
CPO	Chief Purchasing Officer
DCs	Developing countries
DEAS	Draft East African Standards
EAC	East African Community
EASC	East African Standards Committee
EBA	Export Business Accelerator
EPA	Economic Partnership Agreement
EPZ	Export Processing Zone
EU	European Union
FCML	Friendship Container Manufacturers Limited
FIBC	Flexible intermediate bulk container
FMCG	Fast Moving Consumer Goods
FPEAK	Fresh Produce Exporters of Kenya
FTA	Free Trade Area
GDP	Gross Domestic Product
GMO	Genetically Modified Organism
GVC	Global Value chains

HACCP	Hazard analysis and critical control point
HFO	Heavy Fuel Oil
HS	Harmonized System
IBC	Intermediate Bulk Container
ICT	Information and Communication Technology
ISIC	International Standard Industrial Classification
ITAD	Institute for Textile and Apparel Development
JKIA	Jomo Kenyatta international Airport
KEBS	Kenya Bureau of Standards
KMC	Kenya Meat Commission
KRA	Kenya Revenue Authority
KwH	Kilo watt hour
MFA	Multi-Fibre Arrangement (MFA)
MoIED-	Ministry of Industrialization and Enterprise Development
MT	Metric Tonne
MVC	Market and Value Chain Survey
NBA	National Biosafety Authority
NEC	the Northern Economic Corridor
NIB	National Irrigation Board
OPP	Oriented Polypropylene
PE	Polyethylene
PEDv	Porcine Epidemic Diarrhea Virus
PET	Polyethylene Terephthalate
PPM	Panafrican Paper Mills
PVC	Polyvinyl Chloride
RSB	Rwanda Standards Board
RVR	Rift Valley Railways

SADC	Southern African Development Community
SMEs	Small and Medium Enterprises
SSA	Sub Saharan Africa
TORs	Terms of Reference
TSB	Tanzania Bureau of Standards
UAE	United Arab Emirates
UNBS	Uganda National Bureau of Standards
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
VC	Value Chain
WTO	World Trade Organization

PROJECT SUMMARY

Project:	Project for Formulation of Master Plan on Logistics in Northern Economic Corridor
Objectives:	Carryout Market and Value Chain Survey
Client:	JICA/Nippon Koei Co. Ltd
Consultants:	PANAFCON Ltd
Report Title:	Revised Final Report - Market Analysis for 3 Additional VCs
Submission Date:	February 2016

1 INTRODUCTION

1.1 Background

This report is the final draft report that forms the deliverable for the extended Survey entitled, “Market and Value Chain Survey” (MVC) which is part of the preparation of the “Master Plan on Logistics of Northern Economic Corridor”. The Northern Economic Corridor (NEC) “is a critical regional trading route supporting the major part of economic activities in Kenya, Uganda, Rwanda, Burundi, with its feeder lines also connecting South Sudan and the Democratic Republic of Congo” (NIPPON, 2015:1). NEC starts from Mombasa to reach the inland major part of economic activities in Kenya, Uganda, Rwanda, and Burundi with its feeder lines also connecting South Sudan and the Democratic Republic of Congo. It is expected that the formulation of an integrated development plan of logistics network along the NEC can greatly catalyse the economic development of the region. It is this transport infrastructure under development and the need to use the infrastructure to catalyse tradable economic activities along the corridor that inter alia, motivates the Survey. The VC analysis is aimed at catalyzing the increased export production through the NEC infrastructure to increase trade and development along the NEC.

1.2 Objectives of the Survey and Scope of Work

In line with the first Phase of the Survey that covered 4 VCs, the objectives of this extended Survey covering 3 additional VCs are articulated in the Terms of Reference (TORs) and are as follows:

- To identify key commodities which are expected to grow as major export commodities of the areas along the corridors. The commodities should be export-oriented with the potentials of higher value addition in Kenya along the area of the corridor,
- To estimate the size of export markets of selected commodities produced in Kenya, and
- To identify critical issues regarding logistics for the development of the value chain (VCs) of the commodities.

In consonant with the objectives of the extended Survey, there are 2 key components to the assignment. These are as follows:

1. End-market analysis and estimation of market size; and
2. Detailed VC survey and analysis .

In the revised Scope of Work in light of the adjusted TORs and Work Plan (attached as **Annex 1**), this draft final report combines the above mentioned deliverables.

1.3 Methodology for the Study

1.3.1 Desk Study and Selection of the 3 additional VCs

The study undertook both desk studies as well as field work in line with the TORs on 3 the following additional 3 VCs submitted by the Client:

- 1) Packaging Materials,
- 2) Textile and Apparel, and
- 3) Meat and Meat Products.

1.3.2 Field Survey on the 3 VCs

A field survey was conducted in October and November 2015 to obtain more detailed information from different stakeholders on inputs, production, regulatory environment, and export marketing of the 4 VCs. The list of respondent stakeholders is attached as **Annex 2**. A total of 25 firms were visited and 26 interview schedules administered to the respondents. By VC these were as follows:

- (a) Packaging Materials -8
- (b) Meat and Meat Products -7
- (c) Textile and Apparel -11

They ranged across each individual VC from input suppliers and the producers themselves. Copy of the questionnaire is attached as **Annex 3**. As requested by the Client, we have separately submitted copies of the Filled Questionnaires. This draft report combines the desk study as well as the results from the field survey.

The report is organised as follows. **Section 2** gives the overview of the 3 VCs. **Section 3** presents the findings on the textile value chain while **Section 4 and 5** discusses similar findings on the packaging products and meat and meat products value chains respectively. **Section 6** gives concluding remarks and a summary of the main recommendations from the Study.

2 OVERVIEW OF THE 3 ADDITIONAL VALUE CHAINS

2.1 Need to reduce Trade Costs

There is general agreement that infrastructure plays an important role in economic growth, through increasing the competitiveness of the goods and services traded and lowering the costs of key inputs in production, such as fertilizers for farmers, raw materials and capital goods for manufacturers and final goods for consumers (WTO, 2014:43). The inverse relationship between trade costs and income — the poorer countries are, the higher the trade costs they face — underlines the need to do more on improving infrastructure. Lowering trade costs is particularly important for a country like Kenya that seeks to take advantage of the fragmentation of production through global value chains (GVCs), which offer new opportunities to generate growth and income gains through trade. The emergence of GVCs has been an important driver of developing country participation in the global economy. Declining transportation and communications costs, along with improved technology, have made it easier for firms in developing countries (DCs) to provide particular tasks or activities (services as well as goods) to value chains that extend across countries.

More than half of DC exports in value-added terms are being generated just through trade from developing to developed countries — the share of trade in parts and components (a good approximation of GVC-related trade) between developing countries has quadrupled over the last 25 years (WTO, 2014:81). Indeed initial integration into GVCs typically leads to a productivity-enhancing movement of labour from agriculture to manufacturing and services. When a country gets sufficiently close to having the capacity to produce at world-standard quality and efficiency levels, technology and knowledge transfers – often facilitated through foreign direct investment (FDI) – can catapult it over these thresholds. At later stages of development, upgrading to higher value-added tasks in GVCs can help to drive development.

Box 1: GVCs and the Domestic Economy

Given that sharing of production across different locations is a business strategy, it is the decisions taken by firms at the lead position in GVCs that determines their structure. GVC connectivity and upgrading can contribute to productivity gains and growth through several ways: First, GVC lead firms tend to require more or better inputs from local suppliers, and can assist local suppliers in becoming more productive by adopting better technology and management practices. Second, GVCs can also help foster greater competition in the domestic economy, through competition between the GVC lead firm and local firms. Spillovers in knowledge and technology from GVC to domestic firms can also boost overall firm competitiveness. Third, investments in infrastructure and backbone services (like logistics or information and communication technologies) related to the GVC lead firm are likely to have positive benefits for other parts of the economy, which would not have been achieved without GVC participation. Finally, increases in demand for skilled labour, training to local firms, and turnover in skilled workers from firms related to the GVC lead firm (e.g., their suppliers) and the rest of the economy can increase productivity.

However while GVCs participation may have sizable benefits, there may be risks of GVCs through risks of generating competitive pressure to initiate, maintain or upgrade participation within GVCs. While labour, social and environmental standards set by GVC lead firms can lead to the application of higher standards, the results of this have been mixed.

Source: Adapted from World Bank/WTO (2015)

2.2 Centrality of Technical Adaptability in Production

Manufacturing, particularly with an eye on the export market is increasingly dependent the ability of the firms to rapidly adapt its physical and intellectual infrastructures to exploit changes in technology as manufacturing becomes faster, more responsive to changing global markets and to customers. Successful firms need to harness a wider skills base, with highly qualified leaders and managers whose expertise combines both commercial and technical acumen.

In the future irrespective of the value chain, “constant adaptability will pervade all aspects of manufacturing, from research and development to innovation, production processes, supplier and customer interdependencies, and lifetime product maintenance and repair” (UK, DBIS (2013:1). This addresses itself to the need for products and processes to be sustainable, with built-in reuse, remanufacturing and recycling for products reaching the end of their useful lives. Closed loop systems need to eliminate energy and water waste and to recycle physical waste.

Whereas Kenya’s competitors in the 3 VCs under study are already adapting and are world class, Kenyan companies are only slowly positioning themselves to succeed in a future world where greater opportunities will be balanced by greater competition. Competing economies are already ahead, and catching up will require an adaptive capacity that Kenyan firms have as not yet broadly demonstrated. Achieving this is essential, as the future competitiveness and health of Kenyan manufacturing will affect many other parts of the economy through its numerous linkages.

2.3 The NEC and the 3 Additional VCs

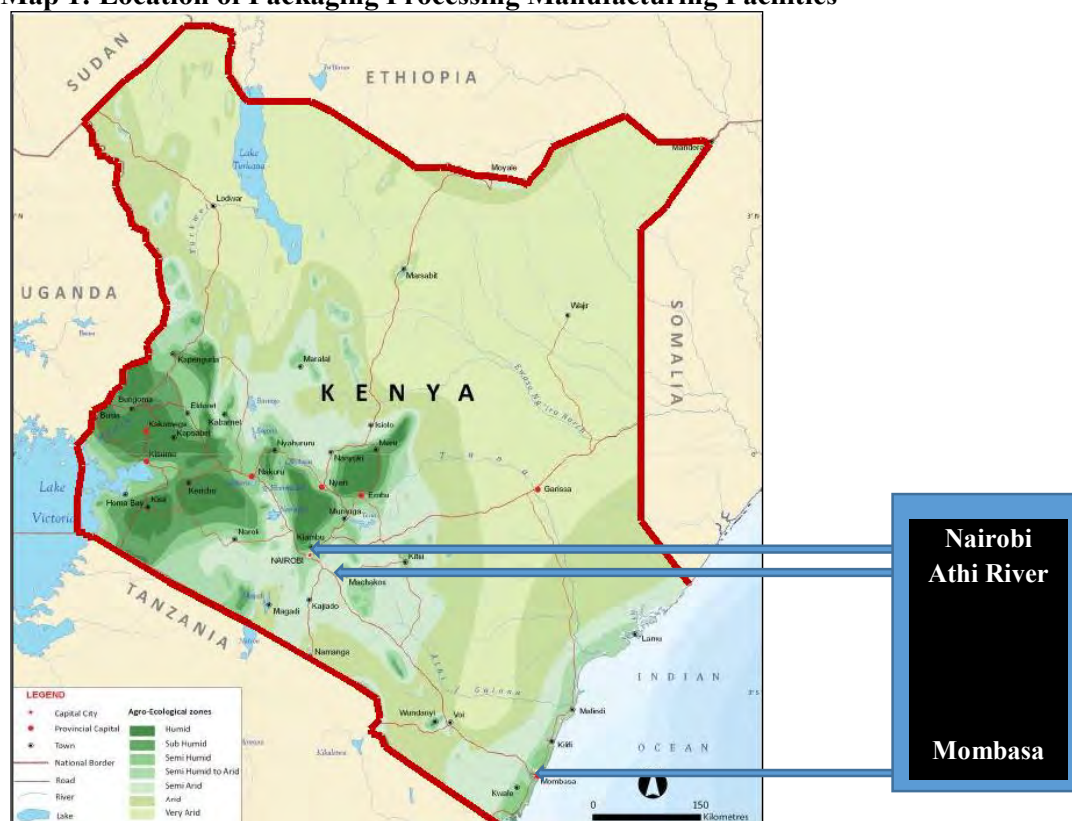
2.3.1 Packaging Materials

Kenyan firms manufacture a wide range of packaging materials ranging from plastic to metal. The main categories are as follows:

- Plastic packing,
- Paper and paperboard packing,
- Glass containers,
- Gunny and sisal bags,
- Iron & Steel reservoirs and tanks/steel containers for compressed or liquefied gas, and
- Aluminum reservoirs and containers.

Invariably, almost all the major firms that make these packaging materials are located near where the major manufacturers are based. Hence Nairobi’s industrial area, Athi River, and Mombasa are the locations where the packaging firms are located (see map overleaf).

Map 1: Location of Packaging Processing Manufacturing Facilities



Source: Adapted from KNB (2015)

Better performance of exports, particularly of processed produce can be catalysed by good quality of packaging materials. Indeed low standards or non-availability of ready packaging material for exporters in a country and proper certification process can be a major challenge hindering exports, particularly Small and Medium Enterprises (SMEs). As SMEs go into exports of e.g. fruits and vegetables, coffee, tea, pyrethrum and minerals, packaging becomes an important factor since an exporter may have a good product but when it is packed poorly, its sale is hard. In Kenya the locational factor is very much evident for the cement industry, whose paper sacks are mostly kraft-based, i.e. the 50-kilogramme bags. There are four Kenyan manufacturers that feed the East African market. Cement maker Athi River Mining who, like Bamburi and East African Portland, uses polypropylene (alternative for kraft) bags. In addition, Fresh Produce Exporters of Kenya (FPEAK), an industry association, says manufacturers have members who use cartons for packing produce for exports.

2.3.2 Textiles and Apparel

Despite its importance as a potential engine for growth, there are serious deficiencies in the textile sector. Currently, there are 52 textile mills in Kenya though only 15 are operational: even those operate at less than 45% of total capacity partly because of using outdated technology and suffering from low levels of skilled labor and low productivity (GoK, 2015b:9). Whereas cotton used to be a booming sector of agriculture, the growing and processing of cotton in Kenya is dead. Challenges that beset cotton growing include poor post-harvest handling, and ginning, all the way to sub optimal textile and cottage industry manufacturing that inhibits the demand.

In addition, there here are inadequate quality control measures at post-harvest handling while the main challenge in the processing and manufacturing is how to attract investments in the subsector given the current operating environment (ACTIF, 2013:45). In addition, the processing and manufacturing is characterized by closures, scaling down of operations and deferring of investment decisions due to an uncertain future business outlook. This has resulted in limited range cotton and textile products. Of the 15 operational mills in the country, if they were to operate at their installed capacity, they would create demand for cotton lint of more than 70,000 bales per annum, on top of the current annual demand of 130,000 bales to be able to meet the increasing demand for the increasing Kenyan population.

2.3.3 Meat and Meat Products

The livestock sector employs close to 50 % of Kenya's agricultural labour force and is a primary source of livelihoods for the 6.5 million pastoralists and agro-pastoralists that live in the country's arid and semi-arid lands (ASALs). Estimates of the livestock sector's contribution to Kenya's gross domestic product (GDP) is around 6% (KNBS, 2015).

According to government records, (KNBS, 2015) bovine meat and white meat is widely available in Kenya, and it is estimated that Kenyans consume an average of 15-16 kg of red meat (meat and offal from cattle, sheep, goats and camels) per capita annually for a national total of approximately 700,000 MT of red meat per year. Cattle are the most important source of red meat, accounting for 80% of Kenya's ruminant off-take for slaughter. Approximately 80 to 90% of the red meat consumed in Kenya comes from livestock that are raised by pastoralists within Kenya and neighbouring EAC countries. Another 3% comes from livestock raised on ranches, and the remainder comes from the highlands. Of the total red meat supply, it is estimated that 20-25 % comes from livestock that originates in neighbouring countries with significant livestock populations (Ethiopia, Somalia, Tanzania and Uganda), making Kenya a meat deficit country. Small volumes of meat are also imported from European countries, Brazil and the United Arab Emirates (UAE), but these are limited to high-end hotels and supermarkets in Nairobi, and (with the exception of processed pork imports from Brazil) volumes are extremely small. Kenya's livestock population includes 15 million indigenous cattle, 4 million exotic (primarily dairy) cattle, 18 million sheep, 30 million goats and 4 million camels. Over 70% of the national livestock herd is raised by pastoralists.

2.4 Kenya's Economy and Main Exports

Kenya though the biggest and most advanced economy in east and central Africa, however still has agriculture as the backbone of the economy. Hence the country has been the source of many agricultural products for export. Though economic prospects are positive largely because of expansions telecommunications, transport, construction and a slow recovery in agriculture, tourism has been hit hard as a result of terrorism threats. The economy has slowly expanded from 4.5% in 2012 and 5.3% in 2014 supported by strong performance in most sectors of the economy which offset the contraction in the tourism sector. The economy, is expected to expand further by between 6.5 – 7.0 % in 2015 giving an average rate of just under 6% between 2013 and 2001 (see **Table 1** overleaf).

Table 1: Kenya, selected key economic indicators

	2011	2012	2013-15
GDP	4.5	4.5	5.9
Export of goods and services (%)	7.9	-2.4	12
Import of goods and services (%)	-7.5	5.7	-7.9
Inflation (%)	9.4	5.7	5.6
Exchange rate (per \$)	89	85	99
Population (%)	2.8	2.7	2.6

Source: Adapted from KNBS (2015)

Export growth while good has not led to a good current account situation and the deficit (gap between Kenya's imports and exports) continue to widen. It widened a massive 59 % or Ksh.38 billion in the first quarter of 2015 compared to the same quarter last year, explaining the significant depreciation of the shilling. Central Bank of Kenya data shows the shilling has depreciated progressively since 2012.

Whereas the average for the 3 year period to 2015 is likely to be 91, the shilling has depreciated by 10.9 % since the beginning of 2015 touching 103 by early November 2015, underlining the extent to which the current account deficit is weighing down on the domestic currency. The shilling is expected to remain under siege in the third quarter of this year, owing largely to the large current account deficit. In addition, the increase in government spending by nearly 30 % in 2015/16 fiscal year, massive borrowing compared to last year would likely result in increased imports, thereby keeping the deficit high and the shilling weak.

Domestically, activity continues to be led by construction, electricity and water, financial services and manufacturing, the latter supported by the strong regional performance in East Africa offsetting weaker global demand. With investor interest in Africa rising and East African trade opportunities expanding, growth of around 6% in both 2015 and 2016 is expected. Looking forward on growth, strong growth in the construction, trade and transport sectors helped save the Kenyan economy from slowing down in the second quarter of 2015, with the economy grew by 4.9 % in the first quarter of the year, slightly higher than the 4.7 % recorded in the same quarter last year. Poor performance in the manufacturing and tourism sectors continued to drag growth. The manufacturing sector activity slowed down to 3.5 % compared to 6.4 % in a similar period last year. The construction sector, which mainly consists of infrastructure projects such as roads, rail and real estate, grew at the highest rate of 11.3 % mainly helped by the ongoing construction of the standard gauge railway that started a few months ago. In terms of main exports, tea, re-exports of petroleum products and cut flowers and related horticultural products Though tea has been having mixed results in the last few years. (See **Table 2** overleaf).

Table 2: Kenya: Top 10 exports by Value, Selected Years (US\$ '000)

HS		2010	2013	2014
902	Tea	1,163,630	1,218,162	907,696
2710	Petroleum oils, not crude	205,151	203,665	744,482
603	Cut flowers and flower buds for bouquets, fresh or dried	396,239	479,998	695,885
901	Coffee	207,473	190,805	240,715
708	Leguminous vegetables, shelled or unshelled, fresh or chilled	75,037	126,707	171,902
6204	Women's suits, jackets, dresses skirts etc & shorts	39,096	76,922	107,785
6203	Men's suits, jackets, trousers etc & shorts	22,225	40,888	74,103
2008	Preserved fruits nes	57,241	70,765	72,828
2836	Carbonate;peroxocarbonate, commercial ammonium carbonate	95,464	107,835	71,755
802	Nuts nes	22,525	1,959	68,964
	All other Exports	3,567,219	2,519,719	3,158,129
	Total Exports	5,851,300	5,037,425	6,314,244

Source: ITC Trade Map Data Base

Despite paying higher tariff to access EU markets, the Kenyan horticulture sector registered growth in earnings for 2014. The EU is the country's biggest export market, largest for the horticulture sector and accounts for 65-70% of the value of export earnings. The marginal growth represented a 0.8% increase. Delays by Kenya and the European Union to sign an Economic Partnership Agreement (EPA) in the last half of 2014, affected expected performance during the period. Fruits registered the most growth as it rose 20% and cut flowers registered a growth of 7% from 2013 figures. However, earnings from vegetables declined by 18%. Total export volumes grew by 10.5 % in 2014 from 2013, while fruits rose by 13% in the same period. As a member of the integrated East African Community (EAC), Kenya's external performance will also depend on the growth rate of East African countries, especially Uganda and Tanzania with whom Kenya has significant trade ties. These blocs are key components of Kenya's trade volumes.

In terms of export performance, non-price factors (cost of inputs, labour costs, access to credit, etc.) play a vital role in production and export supply response. Potential for export supply response exists for most value chains though there is need for incentives that boost exports. The positive response to a price incentive (depreciation of real exchange rate) could be taken as an indication that while maintaining a stable exchange rate is important, strategies that maintain a highly overvalued exchange rate could be a disincentive to export. This implies that flexibility in the exchange rate movements, in line with the fundamentals of the economy, might be favourable. However, increased openness is likely to be associated with increased volatility, especially for commodity exports, therefore justifying the need for strategic domestic policies to help those sectors that might not be able to cope with the wave of globalisation. Additionally, there is need for further diversification of export products and markets while at the same time improving their quality.

3 THE TEXTILE AND APPAREL VALUE CHAIN

3.1 Textile and Apparel and Kenya's Industrialisation Ambition

Kenya recently launched its Industrial Transformation Programme (GoK, 2015a) as a means to revitalise the economy of Kenya. It is aimed at driving Kenya towards becoming a primary industrial hub of Africa and enable the country to achieve its goals of creating meaningful jobs, increasing GDP and addressing its trade balance. The programme builds on strategies that Kenya has already developed with a strong focus on implementing national priorities. Unlike previous plans, it has actions outlined in the programme that are specific, with projects that have clear owners and timelines. In addition, the MoIED has developed detailed budgets to mobilize the resources required to achieve them and dedicated implementation teams to focus on the flagship projects, drawing on resources from within the Ministry as well as relevant agencies. A dedicated Delivery Unit has been established within the Ministry to drive the activities of the Industrialization Transformation Programme by tracking delivery of priority projects, ensuring that there are appropriate levels of collaboration with other ministries, agencies and private sector players and in the mobilization of expertise and tools to ensure success.

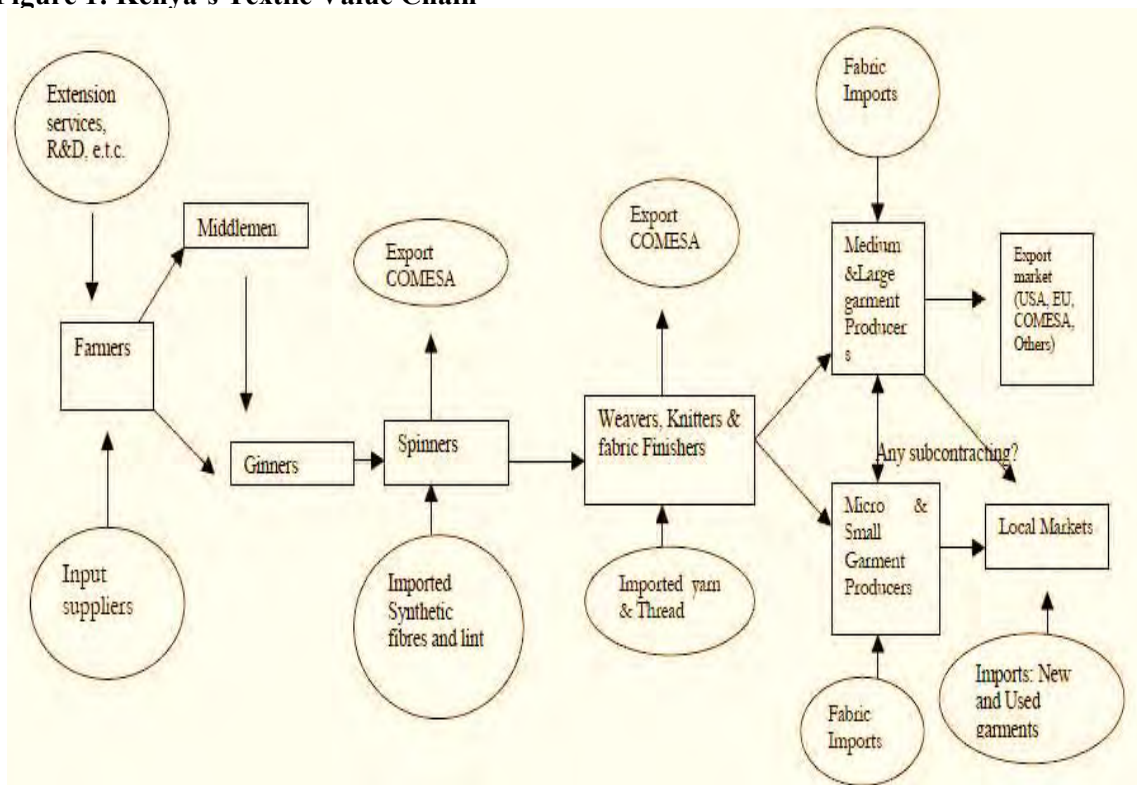
The textile and apparel sector is part of the Pillar 1: growing global export engines - and has been duly identified as an engine of growth in Kenya's industrialization strategy and indeed there are ambitions to "Develop an integrated textile cluster in Naivasha and attract anchor investors" (GoK, 2015a:13). This is aimed at pushing the share of manufacturing from the current 11% to 15% by 2030.

3.2 VC Map and Analysis of Survey Findings

3.2.1 Cotton Production

Cotton is the single most important textile fibre in the world, accounting for nearly 80% of natural fibre use and more than one-third of total fibre demand worldwide. Global demand for cotton products by consumers has grown significantly since the end of the 1990s, and textile mills around the world have expanded their cotton consumption accordingly. Despite all this, cotton production in Kenya is faced with numerous challenges emanating from the small scale nature of production, overdependence on rain-fed production, inadequate quality seeds system and high cost of production. In limited operations, irrigation has been introduced. The lint processed in the local ginneries is marketed to the textile industries for fibre while the seeds are returned to farmers for planting or are used for animal feed manufacturing and oil extraction. Figure 1 overleaf shows the key players in the textile and apparel sector in Kenya.

Figure 1: Kenya’s Textile Value Chain



Source: Adapted from ACTIF, (2013)

At the peak of the cotton/textile performance in the mid-1980s, the country produced 70,000 bales of lint. Further government subsidies came in form of supporting irrigation through the NIB. The key schemes accounting for almost 40% of cotton lint were Bura, Pekera and Hola irrigation schemes. Area under seed cotton fluctuates largely influenced by producer prices, with average yield of 0.6 per Ha on average. This compares unfavourably with the top cotton producers worldwide and within the continent. There has been misinformed campaigns against disease resistant GMO cotton but it appears in a few years they might be licensed for growing in Kenya (see Box 2 below).

Box 2: Country close to adopt genetically modified cotton seed

Kenya is in the last stage of adopting genetically modified organisms if an application to secure a licence to supply cotton seeds is approved. In late 2015, Monsanto Kenya Ltd — a subsidiary of Monsanto Company—submitted an application to release GM cotton seed. If NBA approval is granted, Kenya would become the fourth African country to allow cultivation of GM crops after South Africa, Bukina Faso and Sudan. The seed is known as MON 15985 or Bollgard II and has been genetically engineered to produce an insecticide from the bacteria *Bacillus thuringiensis*, making it poisonous to butterflies and moths. Kenyans had been given up to December 19 to submit comments — 30 days since the advert was published. The authority expects to release the results by 2018.

According Dr Charles Waturu, the principal investigator of the Bt cotton project, the Monsanto technology is the only solution to the ailing cotton sub-sector. “The industry has been in a sorry state. In 1985, we used to produce 70,000 bales of cotton but in 2013 we could only produce 20,000. In the same year, Tanzania and Uganda produced 700,000 and 400,000 bales respectively.” This has seen Kenya import cotton from Tanzania as the little that is grown is not enough for the industry.

Source: Adapted from Nation Newspaper (2015a)

3.2.2 Ginning Operations

There are 24 ginneries in the country with an installed capacity of approximately 140,000 bales annually but utilised capacity is a meagre 20,000 bales (about 14%), meaning that if the cotton production capacity were increased by 400% the ginneries would still be able to handle the production. Out of the 24 registered ginneries, some have been leased to the private sector. In total there are only about 10 ginneries that are working currently. Some of the ginneries like Hola ginnery eased operation as a result of the collapse of the Hola Irrigation scheme, after River Tana which was supplying water changed course and left the pumps dry. Some of the major ginneries that are privately owned include Kibos & Nyanza Ginneries in Nyanza Province and Tharaka Ginnery in Eastern Province.

The total installed annual ginning capacity of the cotton ginneries is 140,000 bales. The combined actual operating ginning capacity is 70,000 bales at full capacity for 6 months. The combined actual ginned cotton from the operating ginneries is estimated at 5,000 bales which are believed to be an underestimate. These ginneries are underutilized due to the low supply of seed cotton, which currently stands at less than 15,000 MT. From the survey, the above issues with obtaining cotton was cited as an important constraint, with cost of raw materials – and quality issues being cited as two critical problems by 80% and 65% of the respondents in this sector.

The cotton co-operative societies used to own four cotton ginneries in Nyanza and Western provinces, namely Ndere, Nambale, Malaba, Malakisi and Luanda. Three had been leased to private ginnery operators while only Nambale ginnery was operated by the cooperative society before they closed down. Except for Luanda Ginnery, the other cooperative ginneries are at poor state of maintenance, following many episodes of mismanagement and the high operation costs. Out of the existing private ginneries, six were originally owned by the Cotton Board of Kenya (Mwea, Makueni, Kibos, Meru, Salawa and Hola) but were later sold to private entrepreneurs through divestiture in the 1990s.

3.2.3 Textile/Milling Operations

In 2014, Kenya only manufactured less than 12 million square meters of woven fabric per year, which is estimated at 7% of the potential market. The other 93% is being imported. It is cheaper to import fabric/garments into Kenya because the cost of production in Kenya is high. This includes post-harvest handling, ginning, textile and cottage industry manufacturing. There are inadequate quality control measures at post-harvest handling while the main challenge in the processing and manufacturing is how to attract investments in the subsector given the current operating environment. Furthermore, most of the fabric/garments are distributed through illegal hubs while some are disguised as used clothes whose import duties are very low. Kenya is therefore losing out on the massive opportunity of sustaining the textile requirement locally.

The processing and manufacturing is characterized by closures, scaling down of operations and deferring of investment decisions due to an uncertain future business outlook. This has resulted in limited range cotton and textile products. According to a recent study (GoK, 2015b:12), Kenya has 52 textile mills, of which only 15 are currently operational and they operate at less than 45% of total capacity. The existing mills operate using outdated technology and suffer from low levels of skilled labour and low productivity.

According to a recent study done for the Ministry of Industrialization and enterprise development (MoIED), there are some semi-integrated mills, which cover the entire production value chain from spinning to knitting, dyeing, and finishing. Two semi-integrated mills are oriented to knitting and four to weaving. Stand-alone knitting and weaving companies import yarns from India, Indonesia, China, and Taiwan but also utilize 80-90% of domestic yarns.

The 15 mills that are in the weaving, knitting, and finishing business see a capacity utilization of 40-50%. There are no stand-alone dyeing and finishing plants and services in Kenya since this part of the production value chain is deeply integrated with textile mills (GoK,2015b:14).

3.2.4 Garment Manufacture

According to the MoIED study, outside the EPZ-export oriented firms, garment manufacture is basically consisting of design and sewing in non EPZ firms (small/micro as well as medium and large apparel companies). Firms inside the EPZs, are divided into foreign investment firms, accessory producers, and local micro firms located in the Export Business Accelerator (EBA). These firms work at 100 % capacity utilization, and around 93% of their fabric supply is imported from China, Hong Kong, Taiwan, India, and Pakistan, as are the trims, machinery, and spare parts utilized in apparel production. There are significantly more apparel companies than textile manufacturers—170 medium and large companies, 74,576 small and micro companies, 22 foreign firms, and 9 accessory producers (GoK, 2015b:14).

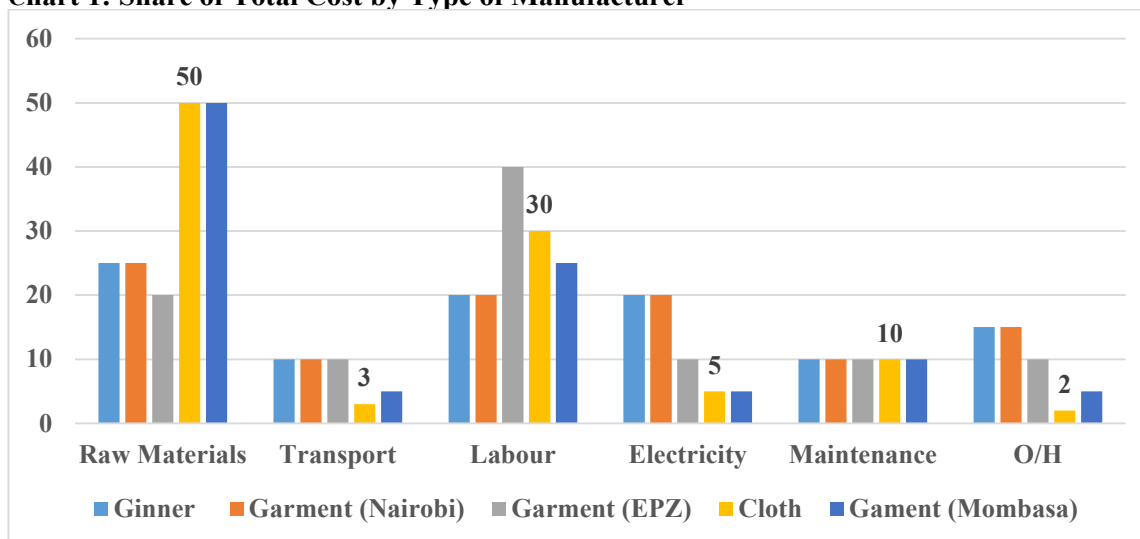
3.3 Labour Skills and Costs

Kenya's dynamism of capacity building along the entire apparel value chain is crucial for the development of the sector. Majority of players in the value chain are characterized by inadequate institutional capacity to support adoption and absorption of modern skill. Despite the conventional wisdom that labour is cheap in Kenya, a recent study found that Kenyan labour has the lowest value added per worker among select comparator countries, reflecting poor levels of productivity given current wage rates. It was found that labour costs in Kenya have actually increased precipitously over the past three years (as much as by 30%), and manufacturers are unable to pass on this increased cost to the buyer, particularly for cut-and-make apparel. In comparing Kenya's labour costs, the study found that Kenya's minimum wage is higher than that in Lesotho, India, and Vietnam, and lower than that in South Africa and China. Existing data for Ethiopia also suggests significant disparities in labor costs: the average wage rate for a sewing operator in Kenya is approximately 3.7 times more than in Ethiopia (US\$180/month and US\$60/month, respectively), and generally 214 % greater than a global competitive wage benchmark (GoK 2015b:17).

In our field survey, it was found that labour is a significant contributor to total costs of production depending on the type of textile/apparel under consideration. As chart 1 overleaf shows, the labour costs ranged from a high of 20% in the case of ginners, to 40% in the case of garment sewers in the EPZs. Garment manufacturers in Mombasa have a much lower labour cost compared to their Nairobi EPZ counterparts.

Privilege

Chart 1: Share of Total Cost by Type of Manufacturer



Source: Survey results

In the MoIED study it was found that a factor that affects the way in which garment manufacturers respond to new export orders is the duration of change-over times. Change-over is the amount of time required by a line worker to adjust to a new production run with an efficiency rate of approximately 80%. In Bangladesh, change-over time is 2-4 hours, while in Kenya change-over can range from 2-4 days, and to get to optimal production, up to two months. Long change-over time means that Kenyan manufacturers are unable to respond to orders for fast-fashion products (GoK 2015b:21). It was also found that there is also low value added per worker Kenya’s textile sector which can be partially explained by meagre investments in managerial and technical skills, technology, and equipment. The latter is compounded by the lack of financial incentives for line workers: Kenyan workers are given a flat wage rather than a piecemeal rate which would incentivize efficiency. An important finding was that whereas line workers, are easy to find and readily available, but a third of them require substantial training, while the rest only need task specific training. Furthermore, firms (29%) perceived that specialized training for line workers is not available from local training institutions, or that when it is available, it is of poor quality (57 %). In particular, multi-skilling— the ability to operate more than one type of equipment—is lacking due to equipment-specific training programmes in Kenyan institutions In the MoIED study it was found that a factor that affects the way in which garment manufacturers respond to new export orders is the duration of change-over times. Change-over is the amount of time required by a line worker to adjust to a new production run with an efficiency rate of approximately 80%. In Bangladesh, change-over time is 2-4 hours, while in Kenya change-over can range from 2-4 days, and to get to optimal production, up to two months. Long change-over time means that Kenyan manufacturers are unable to respond to orders for fast-fashion products (GoK 2015b:21). It was also found that there is also low value added per worker Kenya’s textile sector which can be partially explained by meagre investments in managerial and technical skills, technology, and equipment. The latter is compounded by the lack of financial incentives for line workers: Kenyan workers are given a flat wage rather than a piecemeal rate which would incentivize efficiency. An important finding was that whereas line workers, are easy to find and readily available, but a third of them require substantial training, while the rest only need task specific training. Furthermore, firms (29%) perceived that specialized training for line workers is not available from local training institutions, or that when it is available, it is of poor quality (57 %). In particular, multi-skilling— the ability to operate more than one type of equipment—is lacking due to equipment-specific training programmes in Kenyan institutions.

Regarding workers for repair and maintenance, only 17 % of firms felt they are readily available. On the other end of the spectrum, 33 % of firms felt they are difficult to find. Overall, firms perceived that most repair and maintenance workers only need task-specific training, but that the training available is of poor quality or not specialized (GoK 2015b:21). Regarding workers for repair and maintenance, only 17 % of firms felt they are readily available. On the other end of the spectrum, 33 % of firms felt they are difficult to find. Overall, firms perceived that most repair and maintenance workers only need task-specific training, but that the training available is of poor quality or not specialized (GoK 2015b:21).

Therefore the main human capacity issues requiring attention given the relatively low skills but high costs include the need to address deficiency of capacities of institutions along the textile value chain with specific attention to accessing latest market requirement skills, support their specific needs for the sector in research, production, designs and manufacturing. In addition, there is need for specialized on-job skills training at mid-management level especially at ginning, textiles, fashions and designs.

3.4 Energy Access and Affordability

The poor and inadequate infrastructural conditions are one of the many constraints affecting the competitiveness of textile and apparel exports among Kenya producers, as well as between SSA producers and global competitors. Inadequate infrastructure, such as unreliable electricity, poor road quality, and limited access to international shipping, increases production costs and limits speed to market. Additional constraints include, but are not limited to, geographic distances to major markets, lack of access to affordable capital, and political instability.

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According to the MoIED study electricity prices in 2014 were particularly high, over 20 cents per kWh, and even though prices have come down significantly in 2015, they are still higher than those in other apparel and textile producing countries such as China (at seven cents per kWh), or Ethiopia (at six cents per kWh) (GoK 2015b:15). As shown in Chart 1 above, electricity in 2015 accounted for as high as 20% for ginners and 5% for garment manufacturers. Putting Kenyan firms on a fundamentally unequal footing to firms in other countries.

3.5 Need to upgrade and modernise equipment

Information from the field survey, establishes that there is an urgent need to assist sector stakeholders (who have not done so) improve their production process, upgrade technology, and repair machinery. As rightly pointed out by the recent survey, “Replacement of old equipment would benefit firms in two ways: firms, it would offer potential capacity improvement based on installed capacity ranging from 100-1,567%. Second, it would result in potential energy savings between 4-26 %, and potential cost savings ranging from 10-50 % per annum” (GoK 2015b:22). Importantly, for improvements in capacity to happen, equipment upgrading needs to take place hand-in-hand with skills training.

More significantly, “Most textile and apparel companies operating in Kenya have not conducted thorough energy audits; given the old age of equipment, this constitutes a missed opportunity.

Preliminary assessments indicated the largest energy and cost savings would be from converting old heavy fuel oil (HFO) boilers to an efficient biomass system” ”(GoK 2015b:22). The same study estimates that the payback period for the various possible energy investments ranges from two months for fixing compressor leaks to 47 months for switching to light weight spindles.

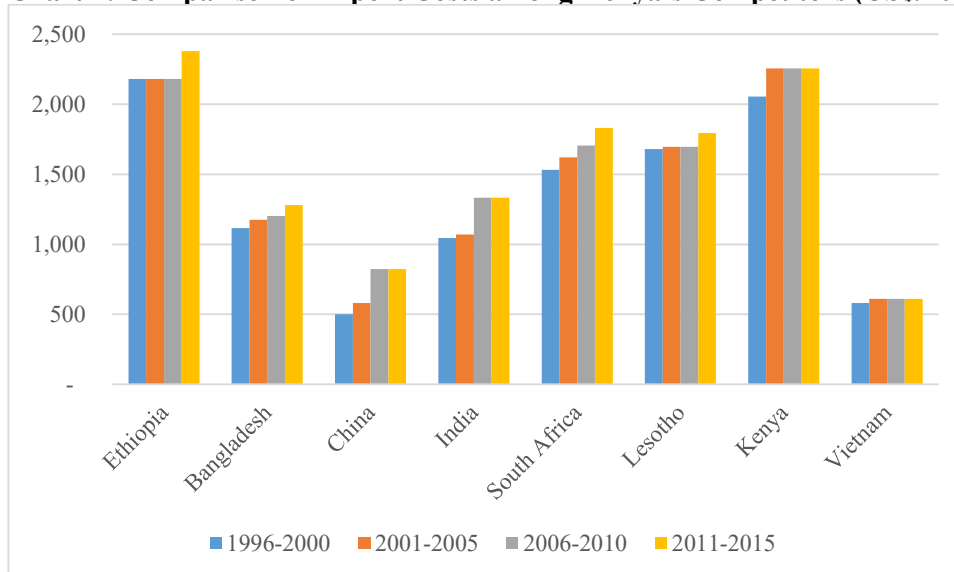
The old age of equipment needs to be upgraded to improve productivity and expertise imparted to ensure timely scheduled equipment maintenance. In the survey, 18% of the respondents reported that they wish to invest in new modern machines so as to make use of opportunities in product design and production. Indeed 55% of the respondents indicated they had recently bought new machines as a way of improving technical quality of your products or services. As a way to improve efficiency, respondents indicated that there were several things they wished to change in the next 2 years. 55% indicated they will still buy new machinery and equipment, while 73% indicated they will get ICT (Computer system) in their operations.

What emerges from the above is that there is a consciousness amongst the manufacturers of the need to modernize equipment, improve logistics of delivery of raw materials and improve design skills in order to keep costs down and also to respond to competition in foreign markets in terms of modern designs, processes.

3.6 Transport and Logistics

According to the findings from the MoIED report (GoK 2015b:17), roads and logistics in Kenya are difficult for export businesses which rely heavily on imported inputs. For the apparel and textile sector, they fundamentally constrain time to market, and thus, the market segments in which firms can compete. The next few paragraphs describe the operational costs, number of required documents, and length of time for import and export, and logistics performance among Kenya and comparator countries. As Chart 2 overleaf shows, Kenya has the highest import-export cost among its Asian and African competitors except for Ethiopia. In addition, its road transport costs are four times the globally competitive rate (KShs 4/Kg/km vs. KShs 1/ kg/Km). Although Kenya requires a high number of import-export documents, average import/export time is relatively competitive compared with African countries, but generally not with Asian countries.

Chart 2: Comparison of Export Costs among Kenya’s Competitors (US\$/20ft. Container)



Source: World Bank, 2016

These transport and logistics constraints have been confirmed by findings from similar studies. According to McKinsey Company, “At the moment 42 % of CPOs perceive inefficient hard infrastructure in Kenya as highly challenging, and 45 % of CPOs perceive inefficient customs processes as highly challenging and another 9 % perceive these as very highly challenging: the capacity of Mombasa port, which cannot serve mother vessels, and the prevalence of weighbridges on the roads adding waiting time to truck transport, which still accounts for 93 to 95 % of transport. These are just two examples of the complications one can encounter in Kenya” (McKinsey, 2015b:16).

There have been initiatives since 2008 at the port of Mombasa, international airports and border ports including administrative reforms to make procedures and processes more efficient for importers and exporters involved in international trade and trade across borders. A case in point is the National Single Window Project currently under implementation by the GoK. The introduction of this system has resulted in some reduction in import cargo delays both at the port of Mombasa and JKIA.

The in country transit transportation also needs to be improved. In particular, there is need to reduce the number of road blocks which have turned into toll stations for fleecing the business community. Continued operations of cross border ports of entry even with a fully operational customs union and Common market, causes delays in the clearance of goods which do not attract any duty.

3.7 Institutional Framework

The government has undertaken a number of studies to evaluate the cotton/textile industry institutional framework. Kenya’s cotton industry is manifested by lack of strong producer associations; weak or ineffective mechanism for overseeing critical issues such as quality seed production and distribution; provision of inputs to producers on credit; quality of such important inputs as pesticides and lack of extension services and limited extension services. Cotton farmers and small scale garment producers are weak in terms of institutions for lobbying.

They lack broad representation and aggressive associations. In order to revitalize the cotton textile industry there is need for various stakeholders to form their respective organizations for lobbying purposes, realizing economies of scale and harnessing the synergies within the stakeholders.

The existing farmers’ associations are bedevilled by governance problems with limited farmers’ representation and participation. In addition the organization’s operations have inadequate coordination mechanisms and structures to undertake the overall goal of revitalizing the cotton industry.

The Cotton (Amendment) Act, 2006 created Cotton Development Authority (CODA) which is the body charged with the mandate of regulating, coordinating, promoting and directing the cotton industry in Kenya. In the year 2008 the State Corporations Advisory Committee categorized the CODA as a regulatory State Corporation. However, the Act accords CODA both commercial and regulatory roles. This has resulted to conflict of mandate of the organization.

3.8 Recent Demand Trends

Global demand trends for textile and apparel have been summarized by the recent MoIED report (GoK, 2015b) as being characterized by three things: firstly, fast fashion/direct marketing to suppliers, leading secondly to small batch production, and thirdly, demand for green production by environmentally conscious consumers mainly in the western world. Traditionally, consumers have been restricted in their buying choices as products reach them only after being filtered by retailers, whose purchases are first filtered by the wholesalers they purchase from, who in turn purchase from manufacturers. Currently, retailers are going directly to the manufacturers.

With improvements in logistics and information flows, retailers are increasingly bypassing wholesalers to procure apparel directly from manufacturers. This trend opens up a range of possibilities for the future as manufacturers can market not only to wholesalers and retailers, but also directly to consumers. These trends also mean that growth is moving toward a fully integrated “farm-to-fashion” production system, under which buyers and brand leaders are able to control quality along the entire value chain.

Secondly, small batch is a by-product of the reduction in production costs and the improvements in logistics is that buyers are increasingly requiring smaller order runs—often of premium products—that many large scale producers are not configured to supply. Smaller batch runs cover a range of products, from the small, quick turnaround runs required by the pinnacle of fast fashion buyers to new niches such as crowd-sourced designs. Customized production, which focuses more on product quality, and individualized, personalized products is becoming a new frontier. Thirdly, green production is emerging as consumers are increasingly demanding ‘green products’—products produced in energy efficient facilities. Among the premium and niche market segment, green manufacturing is considered to be the fastest growing. Apparel companies are already focusing on energy and emission reduction efforts in company-owned offices, stores, distribution warehouses, and vehicles. Now the focus is shifting to suppliers, as buyers increasingly purchase from emission- hat can be much more reducing and energy-efficient production facilities. Among the brands leading this trend are Adidas, Gap, H&M, Levi’s, Nike, People Tree, Stella McCartney, Target, and Timberland.

Green manufacturing can be defined as both the manufacturing of green products using renewable energy systems and clean technology equipment and the greening of manufacturing—reducing pollution and waste by minimizing resource use, recycling and reusing waste, and reducing emissions. Not only does green production command a price premium (as much as two to four times that of conventional products), it is also less sensitive to short seasonal production cycles which generally force factories to focus primarily on low-margin, high-volume production.

3.9 Global Production and Market Shares

Textiles and apparel play an important role in catalyzing growth, particularly for developing and least-developed countries. However its growth over the past two decades has been influenced substantially by three major developments.

Firstly, the phasing out of the long-standing Multi-Fibre Arrangement (MFA) which ruled the sector for almost 40 years, allowing countries to protect their domestic textile industry through quotas came to an end. Secondly, the accessions to the WTO by China in 2001 and Viet Nam in 2005 allowed both China and Viet Nam to benefit from the phasing-out of the MFA quota system and enlarge their share in the global textile and clothing market. Thirdly, there has been a significant transformation of the world textile industry through increased outsourcing, and the proliferation of global value chains and global production networks.

These three major developments have had a substantial impact on the pattern of world trade, the distribution of market shares, as well as the global value chains in the textiles and clothing sector, including the adjustment to new emerging powers in the field of manufacturing and export. Since the return of normal trading rules in 2005, when the MFA quota system ended, world imports of textiles and apparel have surged. As table 3 below shows, the global textile and apparel market is a multibillion dollar industry of which imports reached US\$ 670 billion in 2014, from US\$ 542 billion in 2010 thus growing at almost 6% annually over the period. Grouping textile and apparel by 2 digit HS codes it can be seen in the table that by far, the biggest component of textile imports are the garments in the HS 61, 62 and 63 categories, i.e. knitted apparels, on-knitted wear and other textile clothing together comprising 71% of total textile and apparel imports. Cotton and synthetic yarn and fabrics used to make apparel comprise a smaller component of the total, i.e. the balance of 29%.

Table 3: Global Imports of Textile and Apparel

HS	Product label	2,010	2,011	2,012	2,013	2,014
HS 52	Cotton Yarn and Fabrics	53,459,785	68,341,791	61,065,266	62,044,104	57,988,719
HS 54	Synthetic Yarns	35,380,534	42,382,795	40,323,179	42,067,513	44,977,286
HS 55	Synthetic Fibres	33,739,295	41,532,021	38,270,838	39,192,491	39,968,407
HS 59	Laminated Textiles	18,493,988	21,281,705	21,009,664	21,701,862	22,951,878
HS 60	Knitted/Crocheted Fabrics	20,116,287	23,169,683	23,753,020	26,107,468	28,903,198
HS 61	Knitted/Crocheted Apparels	166,689,507	190,818,052	181,487,812	192,725,522	209,197,840
HS 62	Non Knitted/Crocheted Apparel	169,644,587	197,631,888	187,224,066	196,495,689	208,892,591
HS 63	Other made textile clothing	44,220,464	51,097,689	49,667,441	52,891,176	57,369,089
	Total Textile and Apparel	541,746,457	636,257,635	602,803,298	633,227,838	670,251,022

Source: ITC Trade Map Data Base

The MoIED report suggests that China even though supplying to its local market given rising wages, is expected to diversify away from exporting and/or making certain product categories. Predicted annual growth rates until 2020 reflect this; overall sales growth is suggested to be 4 % per year, with sales in Japan, EU, and US at 2 % growth per year, and sales in Brazil, China, and India at 8 % growth per year.

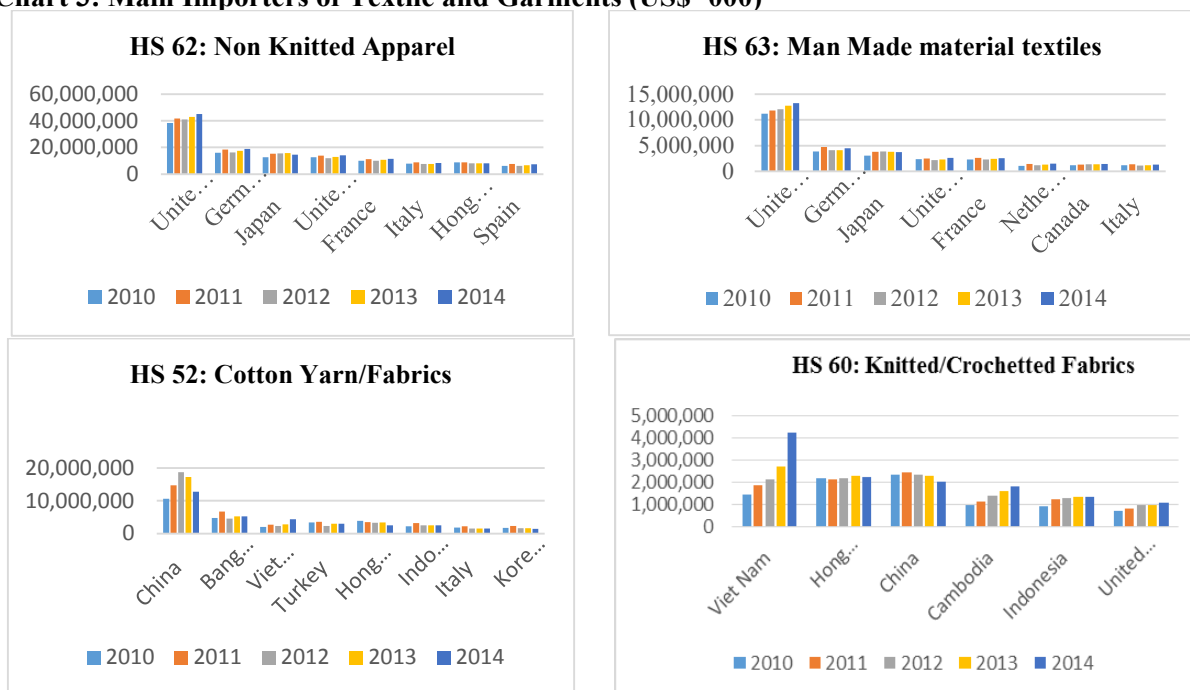
The report indicates that China has already reduced sales to the US in cotton garments, leaving a demand gap which is being filled by other market players in Asia and Africa.

Kenya is taking advantage of the decreasing Chinese market share in women's and girls' clothing for instance, especially cotton clothing products. US is still the largest apparel market, valued at US\$83 billion in 2013, and its apparel imports have increased at a compound annual growth rate (CAGR) of 5.8 % between 2009 and 2013 (GoK,2015b:14).

In terms of specific types of textiles and apparel for non-knitted apparel, as Chart 3 shows, the USA is the most dominant market the same way it dominates the man-made textile material imports. As would be expected China, not growing cotton but the biggest exporter of cotton garments dominates imports of cotton yarn/fabrics that it uses to make garments. Bangla Desh closely follows in these imports of material for making cotton apparel.

Vietnam, a major exporter of knitted apparel dominates in imports of knitted fabrics used for making exported knitted apparel.

Chart 3: Main Importers of Textile and Garments (US\$ ‘000)



Source: ITC Trade Map Data Base

3.9.1 Sources of Raw Materials

Of the 8 garment manufacturers interviewed in the study, 50% cited local procurement of raw material inputs over and above imported cloth and related inputs from foreign sources. China was the most common source of raw materials (63%) followed by India and Taiwan (25%), and then Hong Kong, USA and Dubai (13% each). Given the above situation, garment manufacturers often rely on imported fabrics—which means considerably longer lead times. A serious problem cited by the 8 garment manufacturers related to specific problems they have in relation to obtaining imported raw materials. The response related to what is variously described by 75% of the 8 respondents as “bureaucratic KRA procedures”, “long lead times at the Port”, “inability to get raw materials on time”.

According to a recent study, fabrics from overseas can take up to 40 days to make their way through customs and to a garment factory (McKinsey and Company, 2015a: 1). In yet another recent study, 33% of the garment manufacturers experienced 60-90 days elapsed time between making orders and delivery of imported fabric raw materials, while a similar %age experienced 30-45 days lead time. Only less than 1% reported a lead time of less than 15 days (GoK, 2015b:23). Issues around transport and logistics at the Port of Mombasa and the new for greater efficiency were already discussed in section 3.6 above.

As a way to cope with such long lead times, garment manufacturers are forced to make larger than needed orders in order to maintain adequate stocks of raw materials in-between deliveries. This of course means that large stocks translate to higher than optimal cash flow efficient financing of such working capital elements of the production process. It may be pointed out of course that bulk purchase is accompanied by generous discounts, but the point to be made here is that the driver of bulk purchase should be quantity discounts and not the need to keep large stocks due to inefficiencies in the supply chain.

In the MoIED study cited above, firms prioritised the ability to make bulk purchases of raw materials as a key element of coping amongst the garment manufacturers. For the cloth manufactures who supply the garment manufacturers, there was preference for the establishment of a price-stabilisation fund to counter the imported cotton price volatility (GoK, 2015b:23).

3.9.2 Quality Requirement in the Export Markets

The emerging trade scenario at the global level has brought challenges to exporters of textiles and garments. The issues like child labor, human rights, and environmental pollution and management standards have started sounding the note of warning for our major exports. The dynamic broad spectrum of non-tariff trade restrictions include the above issues. Specifically, these relate to Product and Process Standards – which refer to the quality and specification of particular product and also processes, and Social Accountability – pertaining to the responsibility of manufacturers and industrialists to provide due social protection to the workers including hygiene at the work place, proper working environment, etc. In addition, there is Environment; probably the broadest area imposing restrictions on processes and certain intermediate processing products which are detrimental to the overall environment. In general, consumers, retailers, and wholesalers are more attune to environmental and social standards and increasingly, consumers are demanding ‘green products’—products produced in energy efficient facilities.

Box 3: Levi Strauss & Co. Global Sourcing & Operating Guidelines

The Guidelines guides our decisions and behaviour as a company everywhere we do business. Since becoming the first multinational to establish such guidelines in 1991, LS&CO. has used them to help improve the lives of workers manufacturing our products, make responsible sourcing decisions and protect our commercial interests. They are a cornerstone of our sourcing strategy and of our business relationships with hundreds of contractors worldwide. The Levi Strauss & Co. Global Sourcing and Operating Guidelines include two parts:

- (1) The Country Assessment Guidelines, which address large, external issues beyond the control of LS&CO.’s individual business partners. These help we assess the opportunities and risks of doing business in a particular country.
- (2) The Business Partner Terms of Engagement (TOE), which deal with issues that are substantially controllable by individual business partners.

We do not conduct business in countries prohibited by U.S. laws.

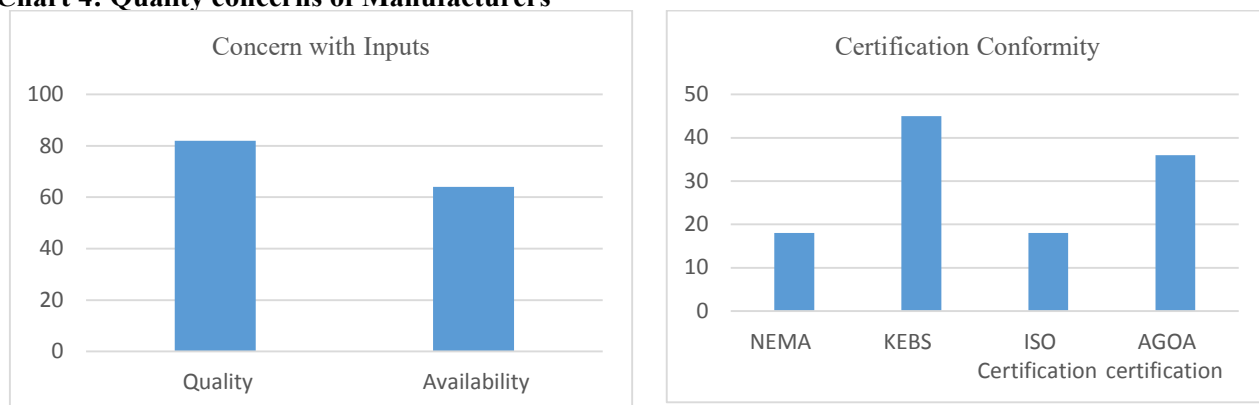
Source: Cited in PSMED (2009)

3.9.3 Meeting Quality Requirements

Kenyan garment exporters have issues with quality of raw materials as shown in chart 4 below where almost 80% reported that quality is an issue to them and availability is a problem for 62% of the respondents. However, in their export markets they conform to the required standards as reported in chart 4 below.

Itinerary

Chart 4: Quality concerns of Manufacturers



Source: ITC Trade Map Data Base

3.9.3.1 USA/AGOA Market

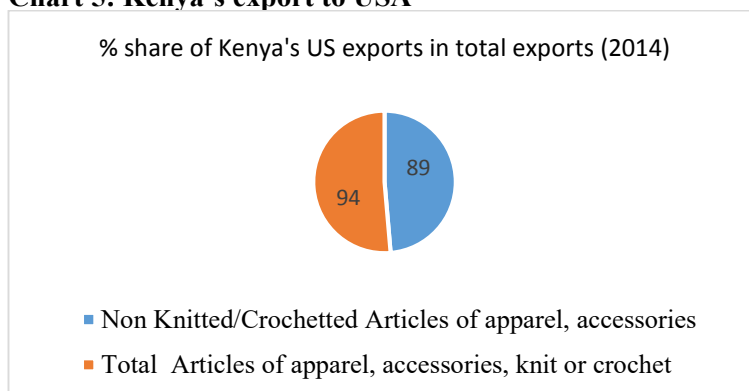
Kenya’s long-established domestic textile and apparel sector was given a boost with the adoption of AGOA in 2000 and indeed was the first AGOA-eligible country to fulfil the additional requirements for the apparel provision in January 2001. This enabled Kenya to gain access to the US market, quota and duty-free with single transformation rules of origin (allowing Kenyan manufacturers to import fabric from outside the region). This, along with the quotas that existed on Chinese and other Asian exporters as part of the Multi-fibre Arrangement (MFA), made Kenya an attractive location for producing mass market clothing for the US market.

More recently, and partially spurred by assurances of AGOA renewal, Kenya has seen a return of investment and growth, with some firms scaling up their operations and new firms arriving into the Export Processing Zones (EPZ). According to a recent report (MIED, 2015:12) Kenya’s apparel exports within the EPZ under AGOA grew at a 17% CAGR between 2010 and 2014 to reach US\$332 million. Over the same period, investment grew at a 21 % CAGR while employment grew at a 12 % CAGR to reach 37,758 people. In the last year alone, exports, employment, and investment grew by 24 %, 14.7 %, and 10.3 %, respectively. The fact that exports have been growing faster than employment suggests labor productivity in the EPZ apparel companies may have improved. The increased number of employees per company may partially explain this.

Hence between 2000 and 2004, Kenya’s apparel exports— virtually all going to the United States— increased slowly, from US\$8.6 million to US\$17 million. With the end of the MFA in 2004, apparel exports rose steeply, hitting a high of US\$283 million in 2008. However, uncertainties over the continuation of AGOA’s relaxed rules of origin combined with the global financial crisis led Kenyan apparel, like the rest of the African apparel sector, to suffer. While exports never collapsed, they dropped and stagnated through the second half of the decade.

As shown in chart 5 below and detailed in Annex 5, Kenya’s cotton/textile exports to USA is lately dominated with export of made up garments and the exports intensified with the entry of AGOA. Indeed export of garments in the category of product HS: 61, i.e. articles of apparel, accessories, knitted or crocheted and HS: 62, i.e. articles of apparel, accessories, not knitted or crocheted are the two most important categories. Kenya’s 2014 export were valued at US\$ 183 million out of total USA imports of US\$ 4.6 billion (4% of total) and Kenyan exports of US\$ 196 million out of total USA imports of US\$ 37.9 billion (0.48% of total) respectively.

Chart 5: Kenya’s export to USA



Source: ITC *Trade Map* Data Base

3.9.3.2 COMESA

Kenya’s cotton/textile trade within COMESA picked up with the entry of the FTA in 2000. New cloth exports originate from the EPZs... There will be need to review further the current benefits of EPZs with the entry of the COMESA-EAC-SADC tripartite under discussion. The imports are dominated by cotton lint and fabric. While trade was registered during all policy environments, it picked up with the signing of COMESA Treaty in the 80s. This in effect confirms that market access creates trade opportunities.

3.9.3.3 EAC

Kenya’s cotton/textile trade within EAC is mixed; with exports of both fabric, new and re-exports of used clothing and cotton lint import. There was very little trade in used clothing within EAC. However, cotton lint was the major import while fabric and new clothing were the exports.

3.9.3.4 Potential Future Markets and Market Shares

In section 3.9.4.1 it was presented that the main market for Kenya’s garments is USA on account of the AGOA benefits of free duty and quota exports. This is a great incentive given that AGOA offers a price advantage of 16 to 32 %. As detailed in Annex 5, there are specific garment items for which Kenya is exhibiting high values and rapid growth in exports. At the top in value of exports is women's suits, jackets, dresses skirts etc & shorts for which at US\$ 96 million exported to USA in 2014, the growth in 2014 over 2013 was 9%. It is noteworthy that men’s suits, jackets, trousers etc & shorts grew sharply from US\$ 36 million to US\$ 64 million in 2014, exhibiting a massive 77% growth rate. The picture that emerges from Kenya’s recent AGOA export of garment performance is that Kenyan-based foreign and domestic garment manufacturers are cognizant of the AGOA opportunity and wish to take advantage of it. In assessing the likely market growth for Kenyan garment exports to the AGOA market, it is useful to posit different scenarios.

Adopting the methodology for a recent study (McKinsey, 2015:15) we may conceive of three scenarios. First is a rather conservative one which would place Kenya remaining a niche market for US garment orders and assuming continued volatility in currencies and equity markets. This would imply the prospects for Kenya exports being affected by low level of foreign and domestic investments in the sector and the scenario assumes that buyers with existing relationships will continue their purchasing, and other vendors will launch pilot initiatives in the region. A modest 5% growth would be made under this scenario. The second scenario suggests that Kenya might become a new alternative for selected large players in the garments categories, and the level of investment and exports will rise at a faster pace, with e.g. exports increasing at 10% annually: not inconceivable given that the 2012 to 2014 period exhibited an annual average growth rate of 21% for the 2 segments of HS 61 and HS 62.

The third and most optimistic scenario assumes that Kenya attracts a great deal of attention, growing at a rate even comparable to Bangladesh's historic growth while becoming a major force in the apparel industry over the next decade. At that pace, the industry base across the region will quickly attract the funds to upgrade facilities and attract skilled workers. Over the next decade, should this scenario play out, Kenya's export volumes could approach countries such as Mexico or Pakistan on apparel industry league tables. This spectacular export growth could see the region's output rising at a rate of 20%. These scenarios translate projected exports shown in table 4 below. As shown in the table Kenya's AGOA exports would respectably increase right into the year 2020 middle of the current AGOA term to increase to US\$ 1.1 billion annually. As shown in section 3.9.3.1 these are still minor shares of the massive USA market for garments and with sustained policy support and factory-level increases in competitiveness are achievable.

Table 4: Projected Kenya's Garment Exports to USA in 2020 (US\$ '000)

	Actual Exports			Projected Exports in 2020		
	2012	2013	2014	10%	15%	20%
Crocheted and Knitted Garments	117.073	160.322	182.555	323.414	422.268	545.109
Non-Crocheted and Knitted Garments	137.167	148.278	196.284	347.737	454.025	586.104
Total Garment Exports	256.252	310.613	380.853	671.151	876.293	1.131.213

Source: Projected from ITC *Trade Map* Data Base

From the field interviews, the 8 garment manufacturers were quite optimistic of the future of garment exports. They generally indicated that the AGOA market was limitless given Kenya's small contribution to that market.

3.10 Summary of Emerging Issues for the Value Chain

As a policy response, it is granted that the government and local stakeholders are working to streamline key aspects of the transport and processing of garment inputs and on-going initiatives include the installation of a standard gauge railway, productivity improvements of customs processes, and port efficiency improvements. According to the MoIED report, "Given the current condition of the textile and apparel sectors and the constraints outlined previously, continuing to play in the high-volume, low-margin space created by AGOA, with no improvements in macro or firm-level competitiveness, would not bode well for Kenya's apparel sector. There is a need for a paradigm shift that targets new product segments that match the industry's current cost structure and time-to-market, and a need for an overall effort to markedly improve Kenya's productivity, delivery times, and ability to attract new investment" (GoK, 2015b:27).

The above strategy implies focusing on two aspects of the textile and apparel trade: Firstly, focus on global green market given its premium and niche market segment. The above-mentioned report regards this as to be the fastest growing and the green apparel consumer market is estimated at 15-24 % of developed markets' consumers, with an annual market size of US\$2.7 billion in the United States alone (GoK, 2015b:27). This is seen as offering a significant opportunity for Kenya, a country whose competitiveness in the low-margin, high-volume space is weak. Shifting into the high-margin, low-volume green niche requires a two-pronged response: reconfiguring production to make it more energy efficient – generating substantial cost-savings in the process – and then marketing towards green buyers in the United States and EU. Kenyan firms can participate in green production by improving energy efficiency at the factory level and by switching from thermal fuel inputs to biofuels such as bio-briquettes.

Secondly, is the strategy to focus on small batch market, given the reduction in global costs of production and improvements in logistics and information flows. Since buyers are increasingly requiring smaller order runs—often of premium products—than many large scale producers are not configured to supply this is good news for small batch production given that it is ideal for companies in the EPZ that are organized to respond to orders with long production runs, small batch markets offer opportunities for smaller, local firms capable of responding to small batch sizes, but on the higher end of the quality spectrum. For example, there are a number of SMEs currently operating in the Kenyan apparel sector in small batch production that are producing high quality products for the tourism sector. Such companies are ideal candidates to exploit the growing small batch market in the EU and in the US where premium prices can be as much as three times the price of a standard product ” (GoK, 2015b:27).

Does this strategy conform to the findings from this study? **Partly, in the short run.** It is clear that Kenya has buoyed by foreign investment and exports due to adoption of AGOA in 2000 with apparel exports grew in spurts from US\$8.6 million in 2000 to upwards of US\$332 million in 2014. AGOA was set to expire at the end of 2015 - June 2015 for another 10 years. It is important to note that this provides both investors and companies with a significant window of time to capture market opportunities duty and quota-free.

Kenya is in a strong position to capitalize on AGOA: the country already captures more than a third of all apparel exports from Sub-Saharan Africa to the US. In addition, 70 % of Kenyan apparel firms have a US dominant market orientation. Of Kenya’s top ten apparel exports, six are cotton products and four are man-made fibre products.

Almost half of Kenya’s apparel exports to the US are in women and girls’ cotton trousers, slacks, and shorts, and manmade fibre slacks, breeches, shorts, knit shirts, and blouses. Therefore the proposed strategy can catapult Kenya to both increase investment in the sector aimed at improving competitiveness of Kenya’s textile industry. However, it must be realized that the domestic textile and garment market is unfortunately dominated by second hand clothing for which such improvements in competitiveness of domestic production needs to address. A strategy that builds on export competitiveness must turn around to also address domestic consumption and prepare to use the excess capacity that will surely remain when the generous AGOA market and is eventually closed and use it for the national and regional apparel market.

4 THE PACKAGING PRODUCTS VALUE CHAIN

4.1 Advent of Fast Moving Consumer Goods

Fast Moving Consumer Goods (FMCG) drive the packaging industry worldwide. FMCG retailers generally operate in a low-margin environment and hence the existence of a large market is crucial to the success of these companies. Despite Africa having a population of around one billion, the continent remains relatively under-served by FMCG companies. However for countries like Ethiopia, South Africa Nigeria, Egypt and Kenya the population is fast growing both in terms of population and income levels.

Packaging contains, protects, provides information, and serves as a marketing tool for a product and therefore satisfies the obvious requirement to contain the product with some protection. Minimally packaged products however compete poorly against products offering a better presentation to the consumer irrespective of the destination, i.e. domestic or export. In particular, for a principally agricultural exporting country like Kenya, packaging for agricultural products is typically corrugated shippers, wood or plastic crates. Other components include labelling and pulp or foam separators for produce. Food products also employ glass, metal, plastic and other paperboard containers. Corrugated shippers are the largest packaging component for agricultural products. Competitiveness is important when built with packaging specification, guidelines to match packaging specifications to product performance, building cross-industry capabilities.

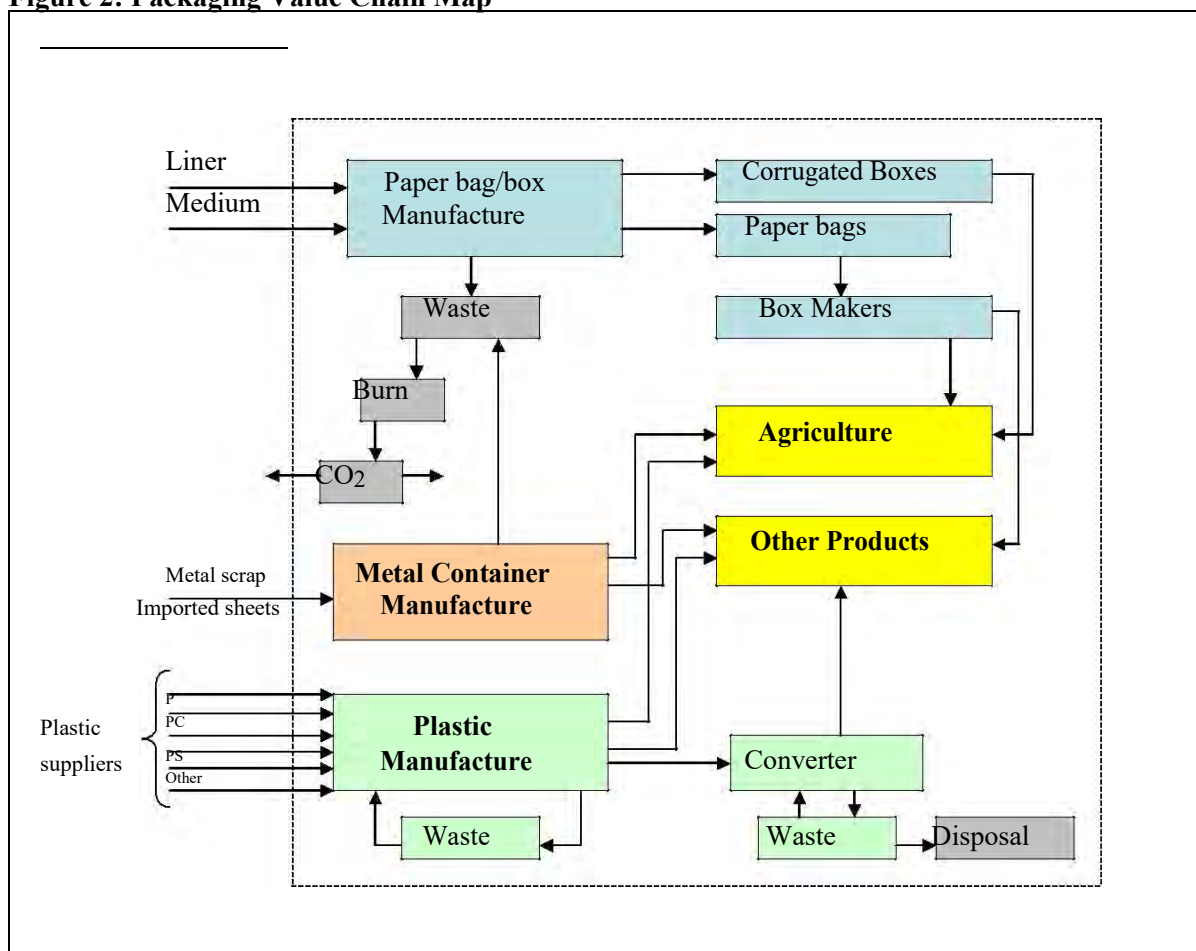
4.2 VC Map and Analysis of Survey Findings

It is important to note that unlike many other industries, packaging **does not** have its own Standard Industrial Classification (SIC). It consists of portions of many industries including glass, wood (mostly hard wood), metal (steel and aluminium), plastic and machinery. As an industry, packaging is one of the largest, being a component of virtually any product which is brought to market. Hence the packaging industry, in its broad definition, serves virtually all products in Kenya and any other country. For ease of classification, packaging can be seen to include:

- a) Primary packaging: packaging that is in direct contact with the product.
- b) Secondary packaging: packaging for the product but that is not in direct contact with the product such as a carton in which a bag of cereal is contained.
- c) Transportation packaging: packaging used to transport products including shipping containers and pallets.

However, some packaging components serve multiple functions. For example, a shipper (wood or corrugated) used for agricultural produce is both primary and transportation packaging. As figure 2 overleaf shows there are various actors in the Kenyan packaging value chain.

Figure 2: Packaging Value Chain Map



Source: Constructed from Field Survey

4.2.1 Metal Packaging

There are three major manufacturers of metal containers. Friendship Container Manufacturers Limited (FCML) is located in Nairobi and deals in rectangular and cylindrical cans, drums and related containers. Thika based Nampak Kenya Limited is a fairly big manufacturer of various types of containers including metal crowns and other types of containers e.g. aluminium closures for sealing of glass bottles and jars. They also make kraft-based sacks. Greif Kenya Limited based in Mombasa makes a wide range of steel drums and steel pails.

As shown in figure 2, for the metal packaging firms, they use a combination of locally obtained recycled scrap metal and imported sheets. Imported sheets are often imported directly by the firms. To ensure that e.g. the tin plate packaging meet the requirements for quality and safety, design and functional use demanded by a specialized market, they use imported sheets. This is critical for firms like FCML that apart from larger containers, also make aluminium safety closures for medicine bottles, metal caps for glass bottles and containers for various pharmaceutical preparations. Suppliers of scrap metal to these firms are plenty in Kenya. Main actors include R.N. Muchiri Scrap Metal Dealers (Mombasa), Suskenruth Ltd (Nairobi), Gilgil Metal Dealers (Nairobi), Shree Metals Kenya Ltd, (Nairobi), Macxs Services Ltd (Mombasa), and Mombasa Recyclers Ltd (Mombasa)

4.2.2 Plastic Packaging

Kenyan plastic packaging manufacturers make a wide range of injection molding, blow molding, containers. Major categories include packaging bags, and crates. The major ones include Acme Containers, Elgon Kenya, Kenpoly Manufacturers, Nas Plastics, BlowPlast, Thermopack, and Printpack amongst others. A wide range of products for which local production is available include those for dairy packaging, juice and squash packaging, edible oils, pharmaceuticals, chemicals, cosmetics, and lube oils.

Almost all the plastic packaging firms use a combination of imported raw materials. For the firms that make packaging for the food and pharmaceutical issue of standards become important and even when they use recycled plastics, they ensure standards and quality is maintained. They have fairly modern technology machines for injection, extrusion and stretch blow moulded processes and facilities to handle and recycle rejection in a modern way. All of them have in-house facilities for product design with solid modelling, and in-house facilities for design and development of moulds and mould maintenance. In Kenya, over 24 million plastic bags are used monthly, half of which end up in the solid waste mainstream (Ong'unya et al, 2014:1). Plastic bags waste forms the largest proportion of solid waste. Hence recycling of plastics of all types, paper, bottles has become big business. Major players in the recycling of plastic bottles and paper which are supplied to the makers of containers include Mukuru Recycling Centre, Green Loop International Limited and Kayole Environmental Management Association.

4.2.3 Paper and Paperboard packaging

The printers and converters in Kenya churn out about 300,000 metric tonnes of paper with a capacity utilization of 45% which is however down from 54% four years ago. The paper conversion industry is a major component of the packaging sector in Kenya. Major players include East African Packaging Industries Limited which is the market leader and makes paper sacks and corrugated cartons and is based in Nairobi. Allpack Industries Limited makes kraft wrapping paper while Rhino Box, ASL Limited, and Dodhia Packaging Limited make corrugated cartons e.g. for the horticulture industry and are located in Industrial Area, and Mombasa Road Nairobi.

4.2.4 Glass Packaging

There are two main manufacturers in the Country producing glass bottles. Central Glass Industries, manufactures glass bottles for the beer and beverages industry while Milly Glass, based in Mombasa also supplies bottles for the carbonated drink industry.

4.2.5 Packaging Machinery

Apart from the packaging material there are also firms that make packaging machinery e.g. ASL Heavy Fabrication Division that makes milk tankers and milk mixing tanks. Signode Packaging Systems Limited manufactures protective packaging systems that apply plastic and steel strapping, stretch film and pressure sensitive tape as well as semi-automatic and automatic strapping machines. Other packaging accessories made in Kenya include printing labels, food industry labels, and other specialty labels. Firms in this sector also include Manipal press, Interlabels Africa, Label Craft (Paper Converters Limited) and Kartasi Industries.

4.3 Input Supply and Production

On the supply side, Kenya imports its plastic packaging stock from local (60% of respondents) as well as foreign suppliers (40% of respondents) who are typically large global producers. Locally, packaging companies (known in the materials industry as “converters”) are also engaged in the conversion of commodity raw materials such as polymer, board or paper into value-added inputs for the manufacturers. Major raw materials usually comprise more than half of the total cost base of a packaging manufacturer, hence it is crucial for packaging businesses to manage the stability of their input raw material costs. Indeed as Chart 6 overleaf shows, whereas availability is an issue, the cost of raw materials as well as quality issues were cited as two critical problems by 80% and 65% of the packaging materials respondents respectively.

Chart 6: Packaging Raw Material Issues



Source: Field Survey

Commodity raw material prices are of course driven by global energy prices and supply capacity, which change very often and supply can fluctuate with the global economy, regional weather conditions and many other factors.

In October 2014, (see box 4 below) the Kenyan government, increased from 10% to 25% the duty on paper packaging raw materials not made in EAC. This led to price of local packaging materials going up and threatened the survival of the sector and raise costs for the industry at large, especially for essential consumer goods such as maize and wheat flour, bread, food and beverage products, books, pharmaceuticals and tea products. In addition this went against the basic duty structure of zero for raw materials, 10 % for intermediate products and 25 % for the finished products and the rest of the value chain. In the case of Kenya, paper which is an intermediate product is being charged 25 % instead of 10 % compared to other EAC countries which are charging 10 % duty. Clearly the decision to base the tariff for paper at 25 % was ill- advised. In addition, Tanzania is able to import paper from Southern African Development Community (SADC) at zero duty while Uganda applies COMESA rates of 10 % and all the other countries in the COMESA region charge 10 % duty except Kenya.

Similarly, in the 2015/2016 Budget, manufacturers of plastic tubes had the import duty rate on plastic tubes for packaging toothpaste and cosmetics increased from 10% to 25%.

Box 4: New tax on imported paper will kill packaging industry

Barely three months after a collective decision by East Africa Community ministers to correct the duty structure on paper to reflect the correct value chain position and make the EAC packaging industry more competitive, has the Kenyan government, through its Cabinet Secretaries of Finance and Industrialization and Enterprise Development made an about-turn. Kenya has curiously decided to take the backward step of making its own packaging industries and converters uncompetitive by reintroducing a higher duty of 25 % on products not made in EAC. The correction of the duty structure to reflect the intermediate status of paper in the value chain was achieved after numerous petitions and comprehensive studies in the EAC which correctly advised that the duty rate be put at 10 %.

Kenya has, however, reversed this and quickly moved to gazette the new rate without consulting the sector. The reintroduction of duty on imported paper and paper board not made in EAC on Kenyan packaging industries means that this Kenya is the only country which will be importing paper at 25 % duty.

Source: Nation Group (2015), Tuesday, October 21, 2014

Putting duty on raw materials at the same rate as that of finished products does not make economic sense. EAC and COMESA manufacturers enjoy a duty differential between raw materials and finished goods. It is understood that the decision was premised on the EAC ministers agreeing to maintain a few grades of paper previously made in East Africa by the collapsed Panafrican Paper Mills (PPM) and other paper mills in the region at 25 % in recognition of the high costs of doing business. But they applied the correct tariff of 10 % for all other grades of paper used in packaging. The reason that was advanced for backtracking was that there were plans to revive PPM, which would be most welcome. But it was odd that this measure was taken before the paper mill was operational and covered grades of paper not previously produced by the miller and of which there is no proof of sufficient supply, quality and price to foster competitiveness. PPM remains **closed** to date.

4.4 Transport and Logistics

The existing infrastructure for distribution of packaging products depend very much on the type of packaging. Typically high volume but relatively light packaging e.g. paper is transported by road to customers. Most transport within Kenya and to neighboring Uganda is by trucks. All the respondents in this sector use road transport while 20% also reported using sea transport for their goods (exporters). Of the respondents, 80% cited poor road infrastructure as a constraint to their operations and 40% specifically mentioned transport challenges as an issue that needs to be resolved if they are to increase their access to foreign markets. Not surprisingly, 40% of the respondents in this sector cited better roads and infrastructure as a major incentives that they need for investing in / promoting change in the value chain. The existing infrastructure for distribution of packaging products depend very much on the type of packaging. Typically high volume but relatively light packaging e.g. paper is transported by road to customers. Most transport within Kenya and to neighboring Uganda is by trucks.

The existing infrastructure for distribution of packaging products depend very much on the type of packaging. Typically high volume but relatively light packaging e.g. paper is transported by road to customers. Most transport within Kenya and to neighboring Uganda is by trucks. Railway transport has not been used much due to the high cost and unreliability in getting wagons. The situation appears to be changing as discussed in Box 5 overleaf.

Box 5: Rift Valley Railways receives Sh5m duty wagons

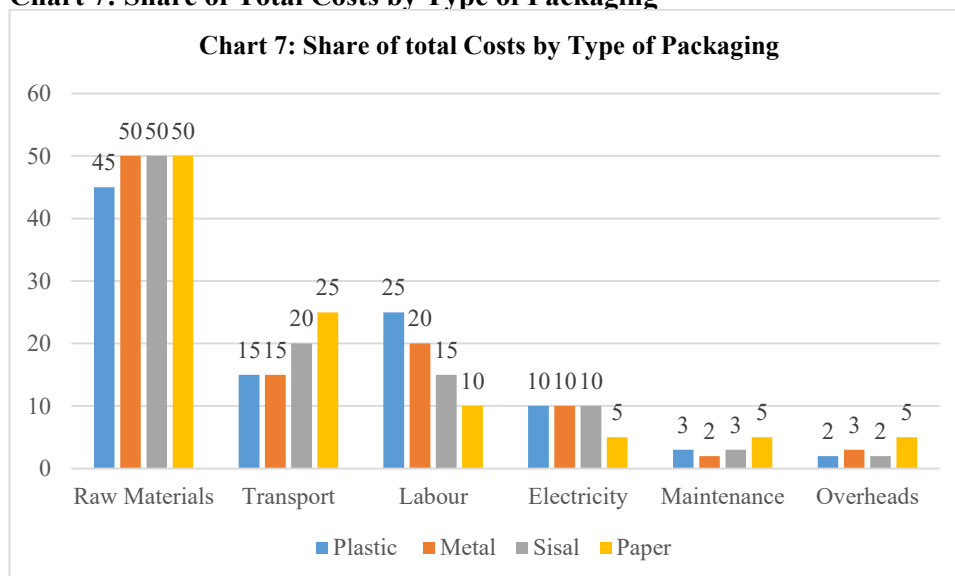
Rift Valley Railways (RVR) has received 120 new heavy-duty railway wagons which arrived at the port of Mombasa on Saturday, as part of the 480 wagons the operator plans to purchase to boost its haulage capacity by 50%. The new 120 wagons purchased from China CNR Corporation at Sh5.41 million will increase RVR fleet size and enable to move 60 tonnes on each wagon per trip. Currently, rail transport accounts for less than five % of cargo transported from the port of Mombasa and RVR says the wagons RVR is operating can transport 40 tonnes.

The new wagons come at a time the Government is racing against time to complete the construction of the standard gauge railway line. The new trains will boost transit time from Mombasa to Kampala and lead to the drop in the freight costs by a half. It costs an average of Sh8, 160 to transport a 40ft container from Mombasa to Kampala and an average of Sh2, 550 to Nairobi and will reduce circle times to four hours from the current 4-5 days.

Source: Standard Group (2015)

Transport is therefore a critical element in the competitiveness of locally made packaging materials. Chart 7 below shows the findings on the components of production cost amongst the different types of packaging materials.

Chart 7: Share of Total Costs by Type of Packaging



Source: Field Survey

As shown, raw materials constitute the highest proportion of total costs followed by labour and transport costs. Amongst the different types of packaging materials, calculations based on unit costs of exports and average composition of cost of production is shown in table 4 below. It is clear that there are differences even in transport costs depending on the type of packaging material. For example glass would be expected to be exceptionally high in transport costs. It is known that the glass manufacturer who was one of the respondent is based in Mombasa and hence unit transport cost for exports are much lower than would be expected given the brittle nature of the product.

Table 4: Estimated Unit Production Costs (US\$/tonne)

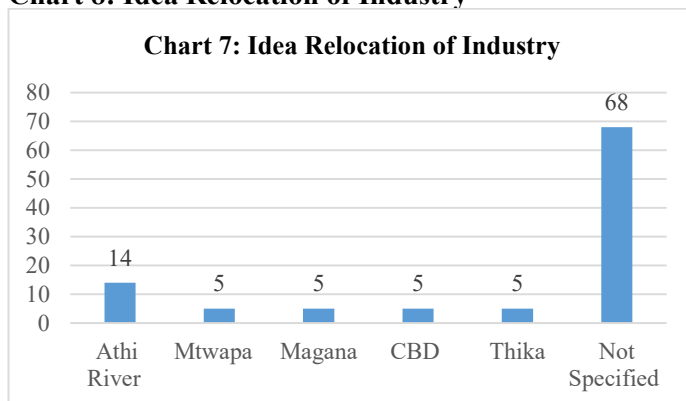
	2014 Unit Cost of Exports	Unit Production Cost	Raw materials	Transport	Labour	Electricity	Maintenance	Overheads
Product: 3923 Plastic packing goods	2335	1401	630	210	350	140	42	28
Product: 4819 Paper, paperboard packaging	2214	1328	664	332	133	66	66	66
Product: 6305 Sisal Sacks and bags	1431	859	429	172	129	86	26	17
Product: 7010 Glass containers	1747	1048	630	210	262	73	31	52
Product: 7309 Iron & Steel reservoirs,tanks	2315	1389	625	278	347	97	42	52
Product: 7611 Aluminum reservoirs and containers	2571	1543	694	309	386	108	46	77

Source: Calculated from Trademap data base and field survey results

4.5 Location of Production

As discussed earlier, the respondents in this sector are located in Nairobi, Thika, Athi River and Nairobi. Whereas 60% did not specify whether they would wish to relocate production if there was an opportunity, 20% variously cited the wish to move to Athi River, Magana and Thika (see chart 8 overleaf).

Chart 8: Idea Relocation of Industry



Source: Field Survey

On being asked why they would prefer to relocate to the above locations, 20% cited better availability of space, 80% cited even nearer to their clients, while a further 20% cited better transport network.

4.6 Nature of Linkages

Linkages can be seen from the perspective of linkages to consumers in terms of need to keeping prices of FMGs low, and importance of consumer hygiene and Food Safety. In addition, linkages to economy and Employment, i.e. through recycling is important from the environmental Impact perspective. There is increasing concern with natural resource usage and emissions of gases.

The manufacture of products from waste e.g. liner board and fluting medium has just started in Kenya as a user of recycled paper and paperboard. Liner board and fluted medium is slowly replacing imported paperboard (increasing domestic sales) but not significantly increasing corrugated production, however, the impact on waste utilization is still low. It is estimated that the current recycling level is less than 5% and substantial efforts will be required to build the network. The estimated quantity of recyclable paper in Kenya is 1.5 million tonnes per year.

An example of a company that has integrated its raw material inputs into the local waste paper recycling industry is Chandaria Industries. Over the last five decades Chandaria Industries has grown to become one of the largest tissue and hygiene products manufacturers in East and Central Africa. The company currently manufactures in Kenya and Tanzania, and sells its products in 15 African countries. Chandaria Industries manufactures its tissue products by recycling waste paper, which it buys from local waste paper collectors. It endeavours to be “the only Tissue and Hygiene products manufacturer in Kenya that manufactures its products 100% in Kenya” (Chandaria Industries, 2016). Its recycling operations in Kenya and Tanzania have saved over 30 million trees since 1964, a measure based on the weight of waste paper recycled.

4.7 Global and Regional Context and End Market Analysis

4.7.1 Global Production and Market Shares

“Industrial packaging” may be defined as a form of packing products provided by industries mainly comprising raw materials, components, consumer goods, partially manufactured or finished goods, apparels, accessories and various other articles.

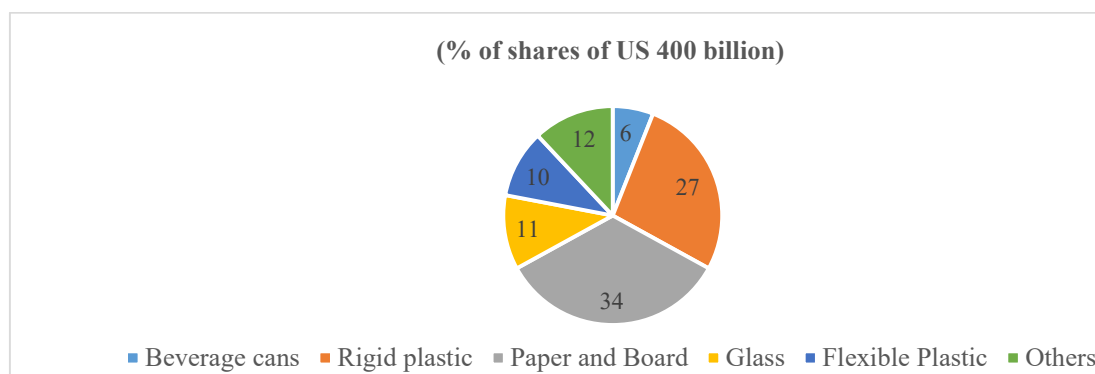
“Consumer packaging” similarly relates to goods directed at the consumer. According to projections based on Ernst and Young (2013), the 2014 global consumer and industrial packaging market was estimated at US\$ 400 billion and US\$500 billion respectively hence totaled about US\$ 900 billion in 2014.

4.7.2 Consumer Packaging

Brazil, Russia, India and China (BRIC) markets comprise approximately 30% of global demand, increasing as their economies further develop. Packaging sales in these emerging markets are expected to continue to show strong growth as both increased consumption and demand for consumer goods drives the need for more sophisticated packaging, due to a growing middle class. Africa as a whole takes up less than 5% of the total global market. As shown in Chart 9 below, a broad categorization can be made of consumer goods packaging as follows: paper and board (including paper bags and cartons) is the largest consumer packaging category with approximately 34% share of the total packaging market.

Rigid plastics (tubs, pots and jars etc.) is the second-largest packaging category with a ~27% share and is one of the faster-growing categories, forecast to grow above real GDP (~4% per year) until 2020. The global macroeconomic environment has been challenging for the packaging industry in recent years, given pressures on consumer spending and their exposure to fast moving consumer good (FMCG) producers.

Chart 9: Global Consumer Packaging by Region and by Type



Source: ITC *Trade Map* Data Base

The economy of the Middle East having one of the highest GDP per capita, means consumers have more disposable income to spend on e-commerce retail, luxury retail and retail in stores. Countries like Qatar have GDP per capita more than US\$ 100,000 so as the purchasing power increases so does the packaging market. Generally in all these growing economies, with increase in sales of products the packaging market will be growing to cater to the needs of both the consumers and retailers.

East Africa and some parts of Africa are on the rise. Economy, for the most part, is booming given the relatively stable political scenario in the region. Africa’s GDP growth from 4.7% in 2013 to a projected 5.2% in 2015 and the FDI growth of 16%, reaching \$45 billion in 2015, show a positive economic trend. Countries across Africa, from mineral-rich Sierra Leone and Congo to agrarian economies like Ethiopia and Rwanda, have shown growth across multiple macro-economic parameters. With inflation in the region going down from 10.7% in 2013 to 6.2% in 2014, domestic spending is on the rise. Retail, from e-commerce to mom and pop stores, has racked up the biggest gains. Packaging in Africa is fast catching up to meet the growing needs of a continent that is booming with investment from a vast number of foreign players. Given the relative lack of proper infrastructure, the vast distances that goods need to be transported over land from a few international ports make flexible packaging a necessity.

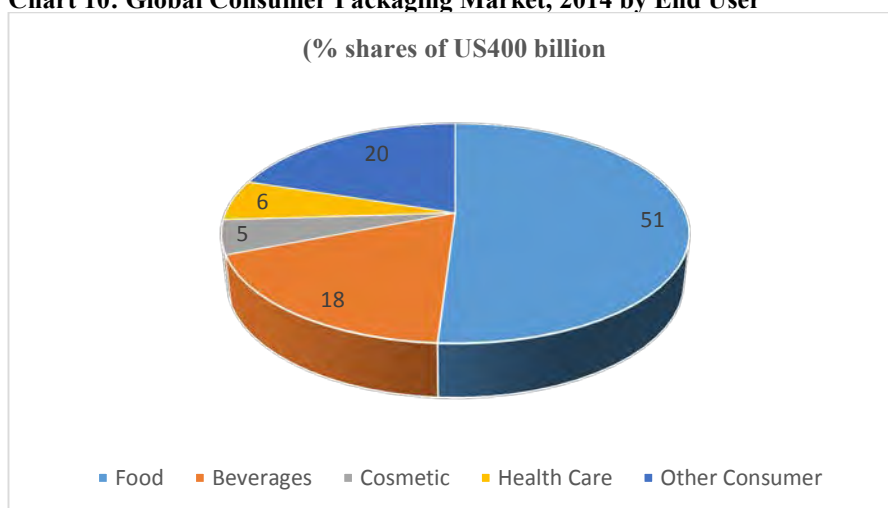
Food and industrial goods imports into Africa make up a significant share of the flexible packaging market in the region. Rising demand for packaged foods, a need to keep costs down and investments in food processing are propelling the growth of flexible packaging in the region. Nigeria is expected to have the highest growth in terms of adoption and investment of flexible packaging, with the rest of Africa showing single-digit growth for the market. While missing and underdeveloped supply chains remain an obstacle for rapid growth in demand for flexible packaging in the region, the opportunities for vertical growth in manufacturing and food processing are tremendous. Widely spread population with minimal densities could pose a challenge in the near term, although investments from countries like China are facilitating the creation of new economic hubs with much higher population densities and better standards of living.

Fluctuations in overall economic activity provide a good indicator of movements in industrial packaging demand. The global economic downturn and subsequent patchy recovery have had an impact upon demand for drums, IBCs, sacks and other materials. The industrial packaging sector is also dependent upon the fortunes of the key user industries, notably chemicals, lubricants, bulk food and beverages; building and construction.

The combination of Eurozone economic uncertainty and raw material and energy price inflation has also had a negative impact on packaging producers though recent fall in price of oil has slightly reduced the cost of plastic raw materials. Growth in emerging markets has been both a threat and an opportunity.

As chart 10 overleaf shows, in terms of use food industry takes up just over half of the market of consumer packaging, followed at a distant fifth by other consumer goods. Beverages take up just under 20%.

Chart 10: Global Consumer Packaging Market, 2014 by End User



Source: ITC *Trade Map* Data Base

Manufacturers across the globe mainly face two challenges. One is to maintain environmental regulations and the other is to reduce costs to minimum. To meet both the challenges as well as keep customers happy, they need to deliver products in robust and attractive packaging, which serves their cause of selling the product.

The key determining factors of packaging are varying consumer trends, light weight of the products, different sizes, shelf life and ease of recycling. Flexible packaging helps in addressing these concerns and that is why it is being widely adopted for several products across different industries. Increasing demand for packaged foods is also one of the major growth drivers of this industry. The companies are also looking to serve bottom of the pyramid to expand their operations. For this, they require smallest of packaging solutions to meet the customer needs.

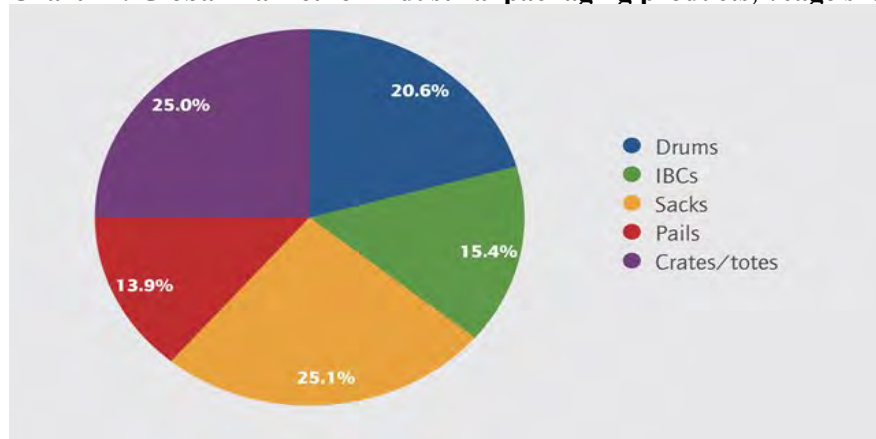
4.7.3 Industrial Packaging

Asia accounts for the largest share of the industrial packaging market at 31% in 2013 and will continue to see the highest growth: the region will increase its share of total demand to 34% by 2020, according to the report’s findings. In contrast, West Europe is expected to see its share fall to 28% by 2020 as overall growth falters, with some key markets in decline.

Rigid industrial packaging accounts for the majority of industrial packaging, although sacks represent the largest single sector under review. Drums and IBCs together accounted for just under a third of the market in 2013, but are forecast to represent 36% of total usage by 2020, with the strongest growth expected in IBCs.

Sacks are expected to lose share from 27% to 25% as moves are made away from manual handling towards greater mechanization and greater emphasis on bulk supplies in fast growing Asian markets.

Chart 11: Global market for industrial packaging products, %age share by value in 2020



Source: Smithers Pira (2015)

In terms of end use markets for industrial packaging, the chemicals and pharmaceuticals sector is the most significant, accounting for more than 30% of total sales. The chemicals sector represents over three quarters of the steel drum and rigid IBC market and accounts for more than half of all plastic drums in use. In addition, a high proportion of lower volume chemicals and pharmaceutical products are packed in sacks. The building and construction sector and the food and beverages sector each account for around 15% of the total market with usage predominately focused on flexible packaging, including PE and paper sacks and FIBCs. Plastics and rubber along with oil and lubricants account for around 17% of the total market, with usage centred on drums and IBCs, both rigid and flexible.

4.7.4 Kenya’s Volume of Trade

Kenya exports a wide range of packaging materials of which plastic, paper/paperboard, and glass packaging comprising about 51%, 23% and 14% of the total value of exports in 2014 as shown in table 5 below. Exports of plastic packaging materials have steadily increased from US 60 million in 2009 to almost US\$ 91 million in 2013 but sharply fell to US\$ 57 million in 2014. Paper and paper board packaging exports have also grown steadily but also sharply fell to US\$ 17 million in 2014. Exports of glass containers have been rather erratic with value of exports fluctuating over the 5 year period. Another important category of packaging exports is iron and steel containers of different capacities of which the larger capacities of over 300 litres exhibit erratic but improving performance in exports. Total exports of iron and steel reservoirs though modest compared to other types of packaging grew at the annual rate of almost 9% over the period 2009 to 2014.

Table 5: Kenya’s Exports of Packaging Materials (US\$ ‘000)

	2009	2010	2011	2012	2013	2014
1. Product: 3923 Plastic packing goods	59,763	68,405	84,998	87,543	90,632	57,207
2. Product: 4819 Packing containers, of paper, paperboard	30,210	32,317	39,059	35,434	36,011	17,113
3. Product: 6305 Sacks and bags of a kind used for the packing of goods	7,912	12,456	14,708	12,543	10,022	3,386
4. Product: 7010 Glass containers	26,093	23,291	34,109	34,312	20,944	19,200
5. Product: 7309 Iron & Steel reservoirs, tanks, vats (cap >300lts)	2,692	3,475	6,005	4,356	3,136	2,060
6. Product: 7310 Iron & Steel tank, cask, drum can, boxes (cap <=300lts)	2,647	2,001	2,145	2,015	1,681	1,726
7. Product: 7311 Containers for compressed or liquefied gas, of iron or steel	1,431	1,294	838	802	810	2,421
8. Product: 7611 Aluminum reservoirs and container (cap >300lts)	153	79	4	5	2	18
9. Product: 7612 Aluminum container (cap <= 300l)	82	84	182	212	262	81
	130,983	143,402	182,048	177,222	163,500	103,212

Source: ITC Trade Map Data Base

In terms of imports, Kenya imports almost double the value of packaging materials as it imports. As table 6 shows, plastic packaging materials dominate followed by glass packaging. In volume terms Kenya annually imports about 54,000 tonnes of finished glass containers, 20,000 tonnes of ready to use plastic packaging materials, 12,000 tonnes of steel containers, 11,000 tonnes of paper packaging, and about 10,000 tonnes of aluminium containers. Figures on corresponding local production are not available. However very rough estimates would suggest that local consumption including imported volumes are in the range of 180,000 tonnes of finished glass containers, 90,000 tonnes of ready to use plastic packaging materials, 40,000 tonnes of steel containers, 45,000 tonnes of paper packaging, and about 50,000 tonnes of aluminium containers.

Table 6: Kenya’s Imports of Packaging Materials (US\$ ‘000)

		2011	2012	2013	2014
3923	Plastic packing goods or closures stoppers, lids, caps, closures	14.426	17.769	23.777	49.627
4819	Packing containers, of paper, paperboard, cellulose wadding, webs	21.497	24.855	23.908	27.243
6305	Sacks and bags of a kind used for the packing of goods	11.398	N/A	15.288	23.326
7010	Carboy, bottle & other container of glass	13.233	N/A	15.364	29.811
7309	Iron & steel reservoirs, tanks, vats (cap >300l)	1.308	N/A	6.835	9.485
7310	Iron & steel tank, cask, drum can, boxes (cap <=300l)	12.737		8.291	5.781
7311	Containers for compressed or liquefied gas, of iron or steel	12.999	N/A	10.097	17.319
7611	Aluminum reservoirs, vats & sim container (cap >300l)	-	N/A	3.000	29.000
7612	Aluminum container (cap <= 300l)	5.451	N/A	10.780	12.961
	Total	93.049	42.624	117.340	204.553

Source: ITC Trade Map Data Base

4.7.5 Quality Requirement in the Export Markets

4.7.5.1 Product Trends Affecting Exports

There is a growing concern of environmental issues and the more stringent legislations on the use of packaging materials worldwide are influencing the choice of materials. Manufacturers use more recycled content in their production and make their products more readily recyclable. The use of biodegradable plastics will reduce the proportion of non-biodegradable and ozone depleting plastic bags. Biopolymers, which are generated from renewable natural sources, are also used. They are often biodegradable and not toxic to produce. New materials are being developed such as bioplastics from renewable biomass sources rather than fossil-fuel plastics. Packaging also tends to be lighter in weight and made of less material in order to meet the increasing recycling or recovery targets. Using fewer materials will also speed up packing and unpacking times. Using refilling reusable containers can also reduce packaging waste.

The major concern for food packaging is whether it contains any toxic constituents, particularly for packages which have direct contact with food. PVC has gradually faded out in packaging for direct food contact and outer packaging. Films made of other materials, e.g. OPP, BOPP, PET and PS, become popular in the sector. Besides, edible coatings and films, such as very pure soy protein films, milk-based edible films and cellulose surface coatings, are expected to have promising prospects. These protective films are made from fruit and vegetables. Some of them match the colour, taste and smell of a food product and can simply be digested as part of a prepared dish.

In the US, researchers have developed anti-microbial plastic films which inhibit bacterial growth. Food companies also make use of the new aseptic technology packaging systems to extend the shelf life of their products.

Demand for flexible packaging is expected to continue to rise since it offers longer shelf life for fresh foods, more consumer convenience, better economies for retailers and packaged goods manufacturers as well as reduction of packaging waste.

Apart from improved safety, additional functionality and added convenience would be the general trend in food and beverage packaging market. For example, there are pouches which feature handles and pouring spouts. These pouches can be heated in boiling water and stored under refrigeration and are especially ideal for soup and sauces packaging. There is also the trend for retail ready packaging which refers to retail goods which are ready to be displayed or with little set up for retail consumption. There are also more easy-open and easy-reclose options for flexible packaging.

4.7.5.2 Regional EAC Market Quality Requirements

The 5 EAC member countries have developed East African Standards necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. East African Standards are prepared by the East African Standards Committee (EASC) established in accordance with the East African Community Standardization, Quality Assurance, Metrology and Testing Act, 2006. The Committee brings together the National Bureaux of Standards of the Partner States [i.e. the Bureau Burundais de Normalisation et Contrôle de la Qualité (BBN), Kenya Bureau of Standards (KEBS), Rwanda Standards Board (RSB), Tanzania Bureau of Standards (TBS) and Uganda National Bureau of Standards (UNBS)] together with designated national metrology institutes, the legal metrology organizations, representatives of the private sector testing laboratories, certification organizations and representatives of national manufacturing/trading associations and consumer organizations.

(a) Paper Packaging

Where there are no standards, new ones are continually under preparation and Draft East African Standards (DEAS) are routinely posted for Public Review in accordance with the EAC Principles and Procedures for harmonization of standards. For example DEAS 866: 2015 for Multi-wall paper sacks for packaging of cement - Specification was recently posted with the request for stakeholders with the note that additional data on physical requirements on Natural sack Kraft was received during EAC Standards meetings and members agreed to incorporate it in the draft. However the data was to be subjected to further validation and results to be sent to the secretariat within one month. A deadline of 9th October 2015 was given for submissions (see EAC, 2015b).

(b) Plastic Containers

There are EAS standards for plastic carrier bags (EAS 481) the standard covers plastic carrier bags both domestically produced and imported, for use within the East African Community. It covers the thickness and printing requirement of these bags. However the standard does not cover some specific plastic packaging materials such as bread bags, candies, laundry bags, refuse bags, bin liners and cement bags. EAS 354 covers plastic containers for plastic containers of nominal capacities up to and including 5 litres intended for storage of commodities other than explosives, compressed gases and radioactive materials.

4.7.5.3 Other Markets' Quality Requirements

Many countries have imposed laws to regulate producer's responsibility for packaging materials. For example, the EU has obliged the industry to cut down on packaging, and consequently its waste, in a harmonized fashion since the adoption of Directive 94/62/EC in 1994. In order to further reduce the impact of packaging waste on the environment, the development trend is for a continued increase in the recycling and recovery targets. The minimum targets of recycling specific materials, including glass, paper, metals, plastics and wood, will also be increased.

Canada also introduces some policies to regulate the use and recycling of packaging materials. In the province of Ontario, Bill 90 or the Waste Diversion Act was enacted in June 2002 to help in the collection and recycling of packaging waste. The Bill requires that the net cost of recycling retail packaging materials be borne equally by the municipalities and by the brand owner or importer. In China, the Circular Economy Promotion Law has been enforced since January 2009. To facilitate the implementation of the law, a set of measures governing the recycling of packaging materials is expected to be released.

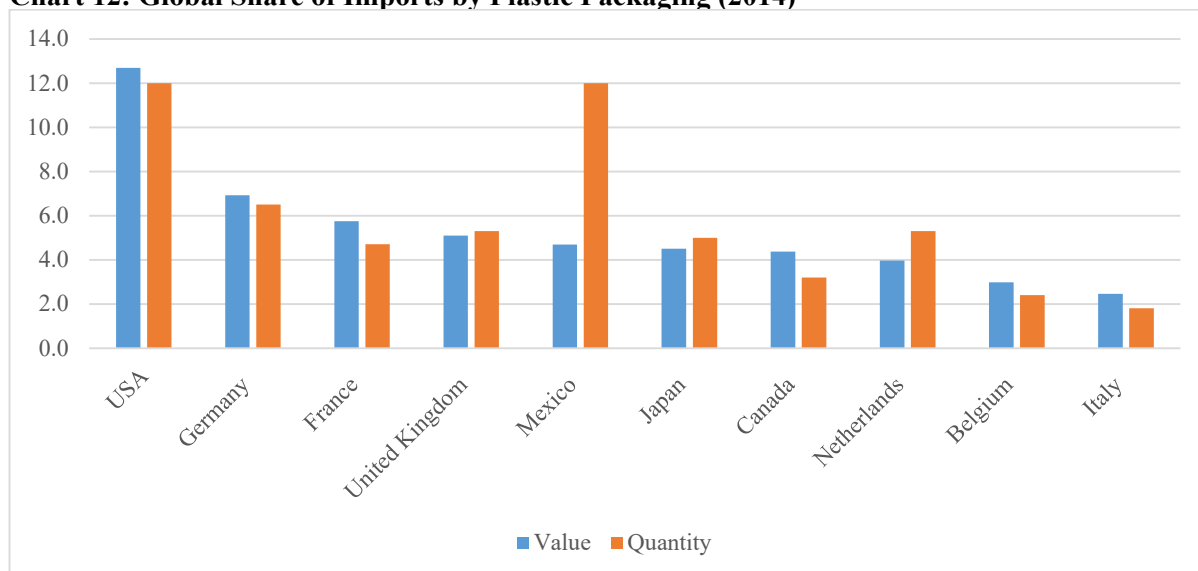
4.7.5.4 Meeting Quality Requirements

As will be detailed below, most of the Kenyan exports of various types of packaging materials go to the East and Central African market. It is heartening to note that 80% of the respondents reported that they do not have any problems with certification and indeed require and meet EAC and ISO certification in the markets where they sell. Only 40% of the respondents in this VC reported that their buyers request traceability of products that they buy and indeed 100% of the firms can actually trace their raw materials from source. 80% reported that they trace their raw material inputs from suppliers information provided, while 14% reported that they do this specifically through waybill number of exports and through the website/ and their clearing agents.

4.7.5.5 Global Trade in Plastic Packaging

The global import market for plastic packaging materials grew at an annual rate of 6.7% between 2010 and 2014, from US\$ 40.7 billion to US\$ 6.7 billion respectively. As chart 12 overleaf shows, the top 3 importers by value of imports are USA, Germany and France importing US\$ 6.6 billion, US\$ 3.6 billion and US\$ 3.0 billion in 2014. In terms of quantity, global imports were 14.7 million tonnes in 2014 with Mexico topping USA by importing 1.8 million tonnes, compared to USA’s 1.4 million tonnes and Germany’s 0.96 million tonnes in 2014.

Chart 12: Global Share of Imports by Plastic Packaging (2014)

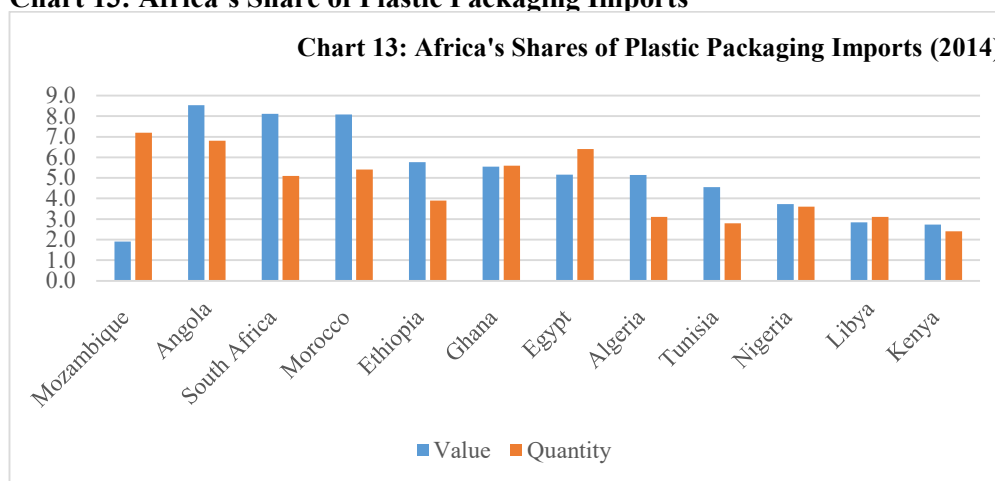


Source: ITC Trade Map Data Base

On the African import scene, value of total imports has increased at an annual rate of 14% and 9.8% by quantity between 2010 and 2014.

As chart 13 shows, the top 5 importers by value of imports are Angola, RSA, Morocco, Ethiopia and Ghana importing US\$ 154 million, US\$ 147 million, US\$ 146 million, US\$104 million and US\$ 100 million respectively in 2014. In terms of quantity, total Africa’s imports were 0.73 million tonnes in 2014 with Mozambique topping Angola by importing 53,000 tonnes (7.2% of Africa’s total), compared to Angola’s 49,300 tonnes (6.8%) and Egypt’s 47,000 tonnes (6.4%) in 2014. The top importer countries by value shown in chart 13 overleaf, imported 62% of Africa’s imports in 2014.

Chart 13: Africa’s Share of Plastic Packaging Imports



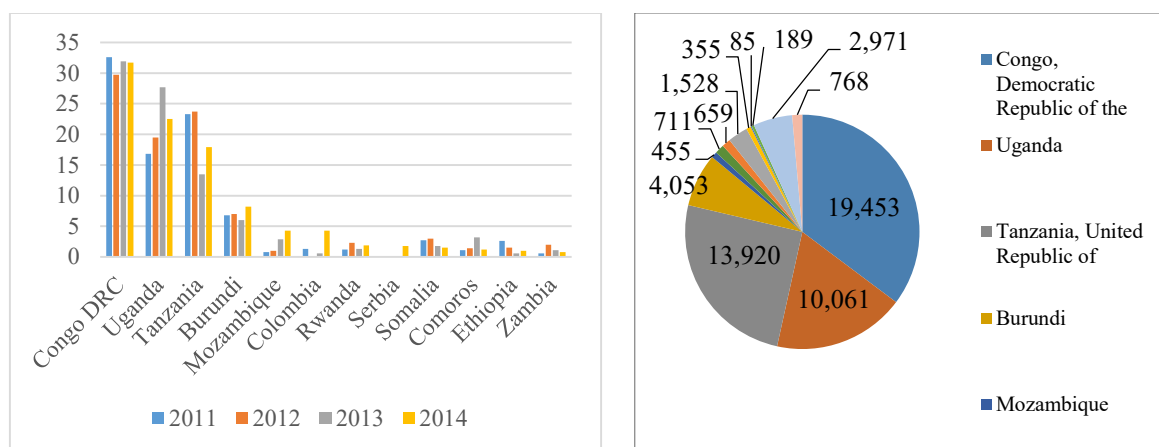
Source: ITC Trade Map Data Base

4.7.5.6 Kenya Export Performance

In 2014, Kenyan exports of plastic packaging materials totalled 24,500 tonnes worth US\$ 57.2 million. Plastic stoppers, lids, caps and other closures of plastics were the dominate type comprising 35.3% of total value of exports, followed by bottles, flasks and similar articles of plastics which comprised 19.8% of total. Other plastic packaging products comprised spools, cops, bobbins and similar supports, of plastics (18.8%), articles for the conveyance or packing of goods, n.e.s (2.8%), boxes, cases, crates & similar articles of plastic (6.3%), sacks and bags (including cones) of plastics n.e.s (5.2%) and sacks and bags (including cones) of polymers of ethylene (1.7%).

Regional markets takes up the largest shares of exports: As shown in **chart 14** below, Congo DRC is the single biggest destination of Kenya’s exports consistently taking up at least 30% of exports followed by Tanzania, Uganda and Burundi. Hence it would appear that EAC and DRC are the biggest market for Kenya’s plastics exports.

Chart 14: Kenya's % Destination Shares and Values of Plastic Packaging Materials (2014 values in US\$ '000)

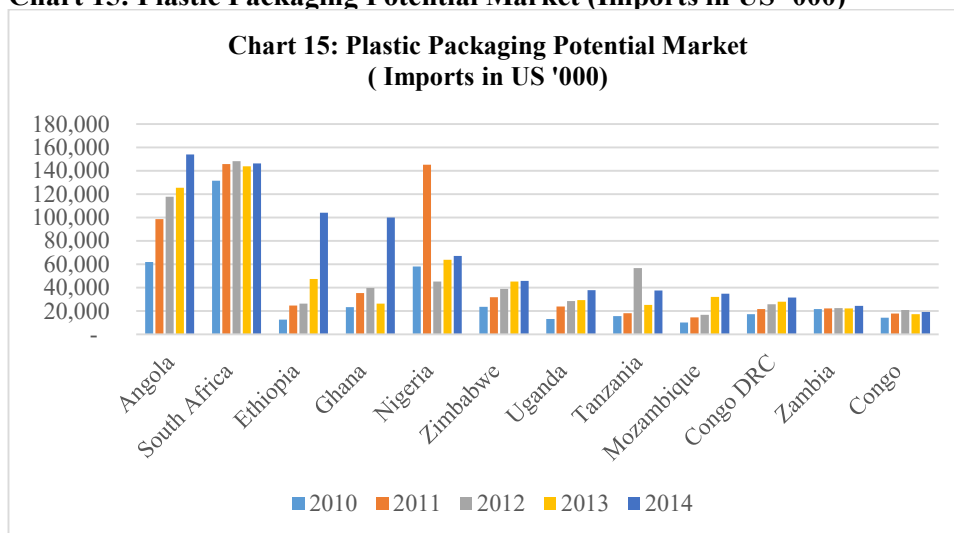


Source: ITC Trade Map Data Base

4.7.5.7 Competition in the Plastic Packaging Market

Other than Kenya's dominant exports to DRC, other exporters include Singapore, RSA, and Zambia. China, Malaysia, Spain and Uganda. Notably Singapore has become a major supplier to DRC with no exports reported in 2010 and 2011 but sharply increasing to US\$ 5 million from only US\$ 1.3 million in 2012. RSA exports sharply declined from US\$ 10.8 million in 2012 to only US\$ 4.7 million in 2014 as did China's fall from US\$ 8.2 million in 2011 to only US\$ 2 million in 2014. Uganda the EAC competitor's exports marginally fell from a peak of US\$ 1.5 million in 2011 to US\$ 1.2 million in 2014. Whereas Kenya exported only US\$ 57 million worth of plastic packaging material in 2014, there is a big potential in other non-traditional export markets. As chart 15 below shows, countries like Angola, South Africa, and Ethiopia are huge markets yet to be exploited.

Chart 15: Plastic Packaging Potential Market (Imports in US '000)



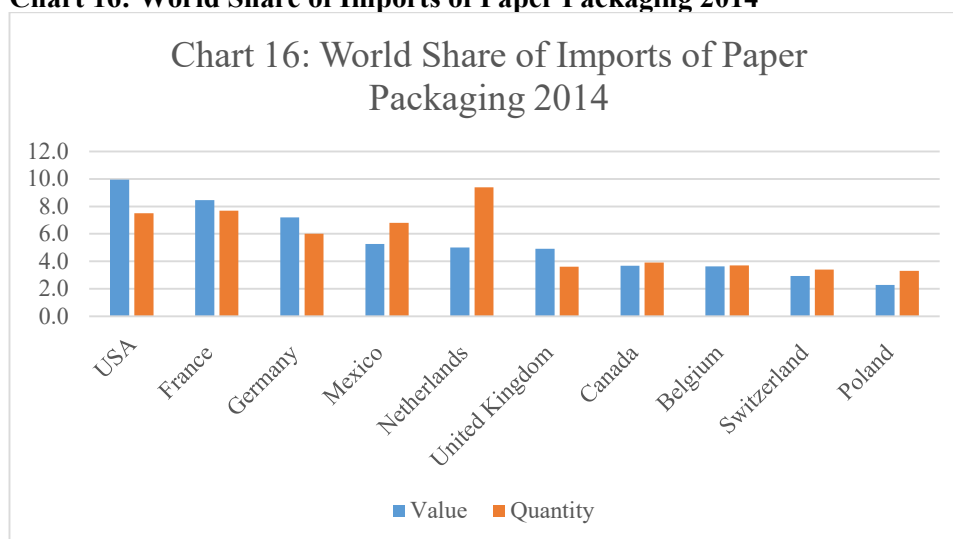
Source: ITC Trade Map Data Base

4.8 Competition in the Paper Packaging Market

4.8.1 Global Trade

The value of world imports of paper packaging increased by an annual rate of 29.8% between 2010 and 2014 standing at 9.9 million tonnes worth S\$ 22 billion in 2014. As chart 16 overleaf shows, in 2014 the top 3 Importers by value are USA, France and Germany though by quantity, Netherlands tops all three countries in 2014 suggesting a higher quality and value of paper packaging imported in the USA, France and Germany.

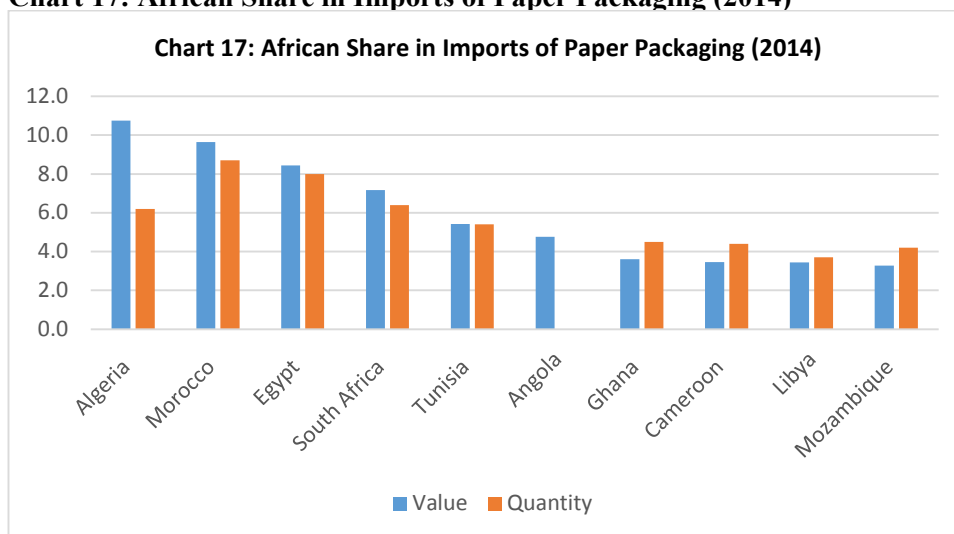
Chart 16: World Share of Imports of Paper Packaging 2014



Source: ITC Trade Map Data Base

On the African scene, the Continent imports less than 5% of the global imports of paper packaging, with 2014 imports totalling 502,000 tonnes valued at US\$ 958 million. It is noted that imported quantities have been quite erratic, e.g. growing by 29% between 2010 and 2011, but falling sharply by 16% the subsequent 2011/2012 period and then again falling sharply by 50% between 2013 and 2014. As chart 17 overleaf shows, Algeria, Morocco and Egypt are the biggest importers by value while Morocco beats Algeria by imported quantities in 2014.

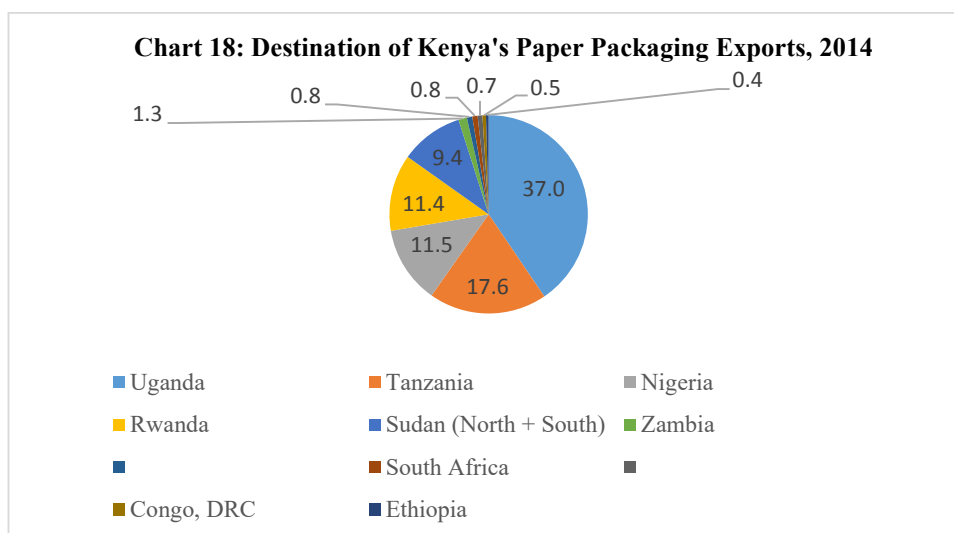
Chart 17: African Share in Imports of Paper Packaging (2014)



Source: ITC Trade Map Data Base

In 2014, Kenya exported 16,500 tonnes of paper and paper board packaging material worth US\$ 17.1 million. As chart 18 shows, the key export destinations are Uganda, Tanzania and Rwanda. Other important importer markets like Sudan (North + South), Zambia, Eritrea, Ethiopia, South Africa, Somalia, and Congo, DRC are hardly exploited with minimal quantities of paper packaging materials exported to these growing markets.

Chart 18: Destination of Kenya's Paper Packaging Exports, 2014



Source: ITC Trade Map Data Base

4.9 Summary of Emerging Issues in the Value Chain

The packaging materials market is end-user oriented and mostly driven by the switch in packaging solutions from plastic packaging to paper & paperboard packaging. With the increasing problems of landfill and non-biodegradable or very slow degradation of plastic & metal packaging, paper & paperboards are the preferred products. The eco-friendly appeal of paper has helped in acceptance and penetration in the global market.

A lot of innovations in designs & technological advancements have been witnessed by the industry in the last decade, which has helped in entering new segments such as, frozen foods, multi-pack beverage holders, recycled paperboard for packaging of dry food, and healthcare products.

In terms of potential exports, table 7 below gives an indication of what the likely situation will be by 2020. Given the stiff competition in plastic packaging, not more than 10% annual growth is likely to be achieved and focusing on the regional markets as discussed above. It would appear that focus on promotion of packaging exports could focus on plastic, glass and paper packaging. As mentioned before, critical policy initiatives need to focus on the rationalisation of the external and common EAC tariff regime for imported raw materials while concurrently providing policy and regulatory incentives to encourage recycling of paper, glass and plastic waste.

Table 7: Kenya’s Packaging Materials Potential Export Situation in 2020 (US\$ ‘000)

	2,014	2,020
1. Product: 3923 Plastic packing goods	57,207	101,348
2. Product: 4819 Packing containers, of paper, paperboard	17,113	30,317
3. Product: 6305 Sacks and bags of a kind used for the packing of goods	3,386	5,999
4. Product: 7010 Glass containers	19,200	34,015
5. Product: 7309 Iron & Steel reservoirs, tanks, vats (cap >300lts)	2,060	3,649
6. Product: 7310 Iron & Steel tank, cask, drum can, boxes (cap <=300lts)	1,726	3,058
7. Product: 7311 Containers for compressed or liquefied gas, of iron or steel	2,421	4,289
8. Product: 7611 Aluminum reservoirs and container (cap >300lts)	18	32
9. Product: 7612 Aluminum container (cap <= 300l)	81	143
	103,212	182,850

Source: ITC Trade Map Data Base

In discussions with the Kenya Investment Authority, it is understood that there are plans for two new foreign investments in the packaging sector. An interest has been shown to invest in a new glass container factory as well as a new integrated aluminum can packaging factory in Nairobi. Whereas these plans are still in the exploratory stages, it suggests that there is growing interest in foreign investment in the sector.

From the study, it is clear that fluctuation in prices and high cost of inputs where raw materials on average take-up 50% of costs are two related important issues. Transport and labour costs vary across the different packaging products Except for paper packaging electricity is 10% of costs. Paper packaging has high maintenance costs – old vintage of machines. All sectors in the VC use road and a further 20% use sea to transport goods. The major incentives needed by respondents was better road networks and infrastructure mentioned by 40% of the respondents as being needed for investing in / promoting change in the value chain. . In addition, in terms of accessing foreign markets, the need to address the transport challenges was raised by 40% of the respondents. Added to the fact that cumbersome KRA import procedures was cited as a specific government policies/regulations that is an obstacles to growing respondents, of their businesses, it needs to be addressed.

5 MEAT AND MEAT PRODUCTS VALUE CHAIN

5.1 Importance of the Sector

The livestock sector employs close to 50% of Kenya's agricultural labour force. Livestock population consists of:

- 15.1 million indigenous cattle
- 4.4 exotic (primarily dairy) cattle
- 20.1 million sheep
- 30.4 million goats/sheep
- 3.5 million camels
- 70% of the national livestock herd is raised by pastoralists

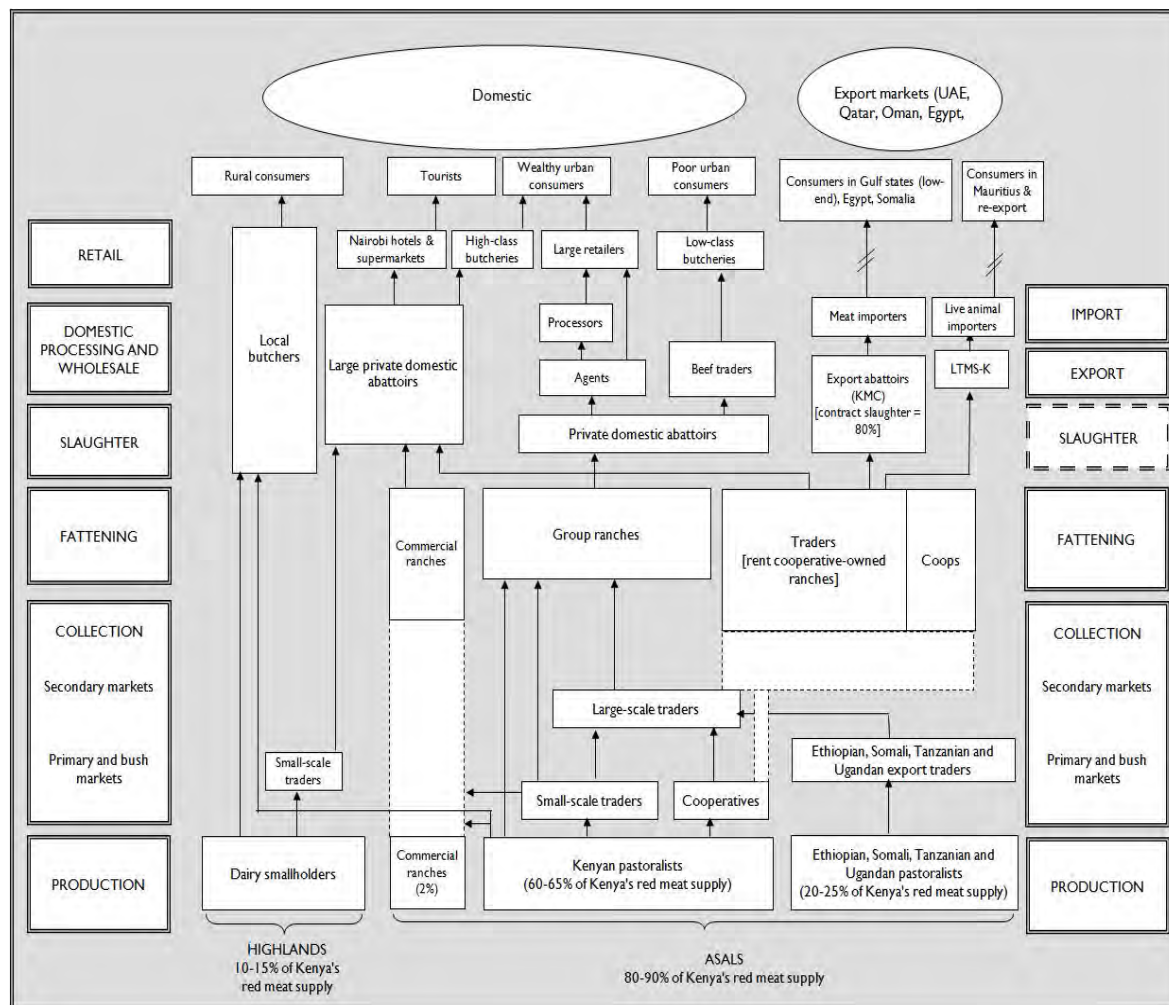
5.2 VC Map and Analysis of Survey Findings

5.2.1 Input Supply

5.2.1.1 *Cattle and small ruminants*

As figure 3 overleaf shows, domestic processing of cattle dominates the meat sector Kenya. Although slaughter facilities and processing have improved over the last 10 years – e.g. all slaughter facilities use now a captive bolt for stunning and have to have a knocking box by law, and people wear white coats, caps and gum boots (but still walk freely in and out of the facilities) – there is still a lot to do in the slaughtering, deboning, transport and retail to meet minimum standards of hygiene and public health and even more to meet international SPS standards. The design of the slaughterhouses is not adequate to the present needs and capacity and extensive remodelling and overhaul, if not new construction, will be required to meet the current international standards.

Figure 3: Meat and Meat Products Value Chain



Source: Adapted from USAID (2013)

At the moment, ten slaughterhouses meet the standards for export (beef, sheep goats, pork, turkeys), but there is very little actual export at the moment (slaughterhouses have recently undergone inspection in relation to export to Saudi Arabia). The handling of wastewater and high-risk materials is a challenge in most slaughterhouses. A few have biogas systems in which waste products are digested, but also here effluent runs freely into the open, as it does in the other slaughterhouses. Especially the development and maintenance of a cold chain is important: most meat is still being transported in galvanized steel boxes, painted white with a red stripe and the word ‘meat’ plus the registration number of the trader written on it, as it was in the colonial time. Most butcheries, especially in slums and high-density areas, do not have cool displays. Meat is sometimes kept in a fly screened area, but most of the times it is in the open.

The Veterinary Services as the competent authority in the field of meat production feels that public–private partnerships offer the best chance to develop successful slaughterhouses in Kenya. So far the government has built a number of slaughterhouses, but they are empty shells. The government restructuring from provinces into counties has complicated the matter of how to put these slaughterhouses to work.

The Meat Control Act 356 categorization rules of 2010 categorized the different slaughterhouses in Kenya and the categorization makes it difficult for specific value chains to transport their product to markets, unless animals are slaughtered in a category a slaughterhouse (channeling and transport of live animals over large distance). Officially, high income consumers in urban areas and tourists cannot be supplied from anything else but a category a slaughterhouse. There is a need to revise this law and make it more realistic and in line with modern requirements and needs.

5.2.1.2 *Poultry*

Poultry industry in Kenya is characterized by both smallholder and large-scale poultry producers, with the former forming the majority in terms of population of birds. The commercial hybrid production system relies on imported exotic parent and grandparent stock and is exclusively market oriented. The commercial hybrid production system is further divided into layer and broiler subsystems. Commercial poultry production constitutes 23.8% of the total poultry population, with broilers representing 16.2% and layers another 7.8%. Other poultry species such as ducks, guinea fowl, Quails and turkeys comprise about 2.2% of the total poultry population produced by commercial production systems.

Several large and medium sized vertically integrated poultry processors have their own state-of-the-art poultry slaughterhouse, including processing plant. In these slaughterhouses, animals are slaughtered from the own integration as well as the animals from out growers schemes/contract farms. A number of other poultry slaughterhouses are related to live bird markets in large cities such as Nairobi and Mombasa. Many clients, however, take their live birds' home and slaughter them there. Besides these slaughterhouses, where 30% of broilers are slaughtered, the rest are slaughtered onsite at the primary farms and are brought as fresh (seldom cooled) chicken to, for example, the city market in Nairobi. Although more than 1,000 animals are slaughtered on a single day at these on-site slaughter places, they only have rudimentary facilities. Especially food hygiene, adequate cooling and waste management are issues of concern in these places. Most of the backyard chickens are slaughtered on-farm or at the consumer's home.

5.2.1.3 *Pigs*

There are four main slaughter facilities for pigs in Kenya. Farmer's Choice Limited: Kenya's largest abattoir is located at Kamiti, on the outskirts of Nairobi. Besides the large Kamiti slaughterhouse of Farmer's Choice, there are three others: Ndumboini Farm slaughterhouse, Lyntano slaughterhouse and Kabati slaughterhouse. These all have a slaughtering capacity of 15–50 animals per day. These slaughterhouses have basic facilities, and do partly service slaughter and partly slaughter of own pigs, which are sold to local butchers and pork restaurants. The remaining pigs are slaughtered on-farm in cramped, poorly equipped and limited hygienic conditions. Simple pig slaughterhouses, preferably linked to local pig producers' associations, would become the place where all animals are slaughtered. This would allow for veterinary inspection and a better utilization of offal and by-products (e.g. blood meal).

5.2.2 **Characterisation of the Actors in the Value Chain**

5.2.2.1 *Pastoralists*

The producers in Kenya's livestock and meat value chain are primarily pastoralists living in arid and semi-arid districts. It is estimated that 70-75 % of the meat consumed in Kenya comes from livestock raised within the country, while 25-30 % comes from livestock originating in Ethiopia and Somalia or, to a lesser extent, Tanzania and Uganda. Whichever the country of origin, however, pastoral production systems are similar.

5.2.2.2 *Collectors*

Traders: Small-scale primary (i.e. local and/or itinerant) traders purchase small numbers of livestock from pastoral producers on a daily basis and sell them to secondary traders. Secondary traders purchase larger numbers of livestock from producers as well as primary traders, and sell them in terminal markets. Traders purchase animals individually and transport has one of the largest stud herds of pure Boran cattle in Kenya. The breeding herd is a pedigree herd and helps to maintain herd genetics for future generations. The ranch also has Boran trading stock bought from the ASALs.

In Marsabit sheep and goats are initially sold at producers' homes, at grazing lands, or at watering points. This was due to the post-drought situation where few animals were being sold in formal markets and where demand exceeded supply, leading traders to search for livestock in more remote areas. Of these small ruminants, approximately half of goats and two-thirds of sheep were sold in local markets (by primary traders) before being sold to terminal markets, while the remainder were purchased by secondary traders and sold directly to terminal markets. The study also found that secondary traders often formed business partnerships in order to share costs, particularly related to transport. These low profit margins—particularly in a highly concentrated market for secondary traders—seem to suggest that the market is controlled by buyers in the terminal market. Traders incur high costs and are—absolute price takers. What keeps traders from leaving the industry are high capital requirements and illiteracy.

Livestock marketing groups: In Garissa, nine Pastoralist Production Groups, representing over 500 pastoralists, were established by CARE to improve horizontal linkages and increase pastoralists' bargaining power when selling livestock. Other districts, including Ijara and Wajir, also report a small number of livestock marketing groups. These groups remain relatively small market actors and their success is mixed—although a recent partnership with Equity Bank for the provision of working capital could enable them to expand their operations.

5.2.2.3 *Service Providers*

Although they are not technically value chain actors, because they do not take ownership of livestock within the value chain, several service providers play a critically important role at the collection and marketing stage of Kenya's livestock value chain. Four types of service providers deserve a specific mention here:

Transporters: Transporters operate from primary and secondary markets to terminal markets, using livestock as a —return load after transporting consumer goods up-country. The vehicles used are not designed for transporting livestock, and animals often suffer injury. These injured animals are rejected by the abattoir or purchased at lower prices—thereby causing traders to incur significant losses. Transporters employ loaders and, in some areas, security staff.

Brokers: Brokers are important players in the livestock marketing chain, particularly in secondary and terminal markets where they link potential buyers and sellers. In the terminal market, newcomers would find it very difficult to sell their animals without going through a broker.

County councils: County councils own the markets at which the various livestock transactions are carried out. They charge a levy for livestock sold and issue a receipt to the buyer. The receipt is proof of ownership of the animal and in some cases it indicates the identification number of the person who sold the animal. This can be used to limit the chance of purchasing stolen animals.

Animal health service providers: The provision of animal health services was privatized in the early 1990s as part of the Structural Adjustment Program (SAP) fronted by the World Bank and IMF. Under the SAP, the role of the DVS was reduced to veterinary regulation and management of epizootic diseases, while curative animal health care was pushed to the private sector.⁶⁶ However, this restructuring was effected before the establishment of alternative suppliers within the private sector and the enactment of policies and regulations that could ensure the quality of animal health services.

The private delivery of animal health services has been a challenge in marginal ASAL areas, due to the cost of the services and business viability of offering these services, especially in the sparsely populated and underdeveloped districts. To ensure access to animal health services, a number of donor-funded programs have invested in training of community animal health workers who provide these services at a minimal fee. Other attempts have been training and support to establish private agro-vets to ensure access to drugs and technical services.

Veterinarians are government agents who play a vital role in inspecting and licensing livestock movement to avoid the spread of diseases. They also inspect and stamp meat at slaughterhouses and issue transport permits for the meat.

Slaughterhouses, abattoirs and meat operators: Kenya has two formal types of slaughterhouse and abattoirs: those licensed to slaughter for the domestic market (the majority) and those licensed to slaughter for export in addition to the domestic market. The distinguishing factor between domestic and export slaughterhouses and abattoirs is the procedure followed in licensing and the type of license issued, as spelled out in the Meat Control Act Cap 356. Local slaughterhouses and abattoirs operate under local slaughterhouse regulations, which meet national requirements under the Act. With the exception of KMC—which is publicly owned but provides contract slaughter services to private exporters—all slaughterhouses and abattoirs are privately owned.

Abattoirs differ slightly from slaughterhouses in that they are, by law, processing plants, and hence they often process meat in addition to slaughtering it. Abattoirs slaughter their own animals as well as (in some cases) providing slaughter services for a fee, whereas slaughterhouses are essentially fee-based slaughter service providers.

5.3 Comparative Trends in Meat and Meat products Consumption.

The country consume on average 15–16 kg of red meat per capita annually, which amounts to a national total of around 600,000 MT. This quantifies Beef for 75–80% of this. Meat and related consumption has more than doubled over the past 20 years and the trend is likely to continue (South Africa's beef consumption, country with a similar developmental pathway, grows at 2% annually). This implies that of the total amount of meat consumed, 80–90% comes from livestock raised by pastoralists, who are also an important link in the trans-border trade and in 'turning' foreign cattle into local cattle before selling into the urban markets. A good number of the cattle come from neighboring countries and Kenya is currently a meat deficient country. The total herd of both beef and dairy cattle stands at more than 13 million. The numbers of livestock vary from year to year due to drought shocks and high mortality and destocking. In general, the conditions in the pastoral areas for livestock keeping are deteriorating because of increasing incidence of droughts and in many places also of security incidents. Livestock marketing in Kenya is ad hoc and hardly regulated. Most farmers practice distress sale: when money is required, animals are offered for sale.

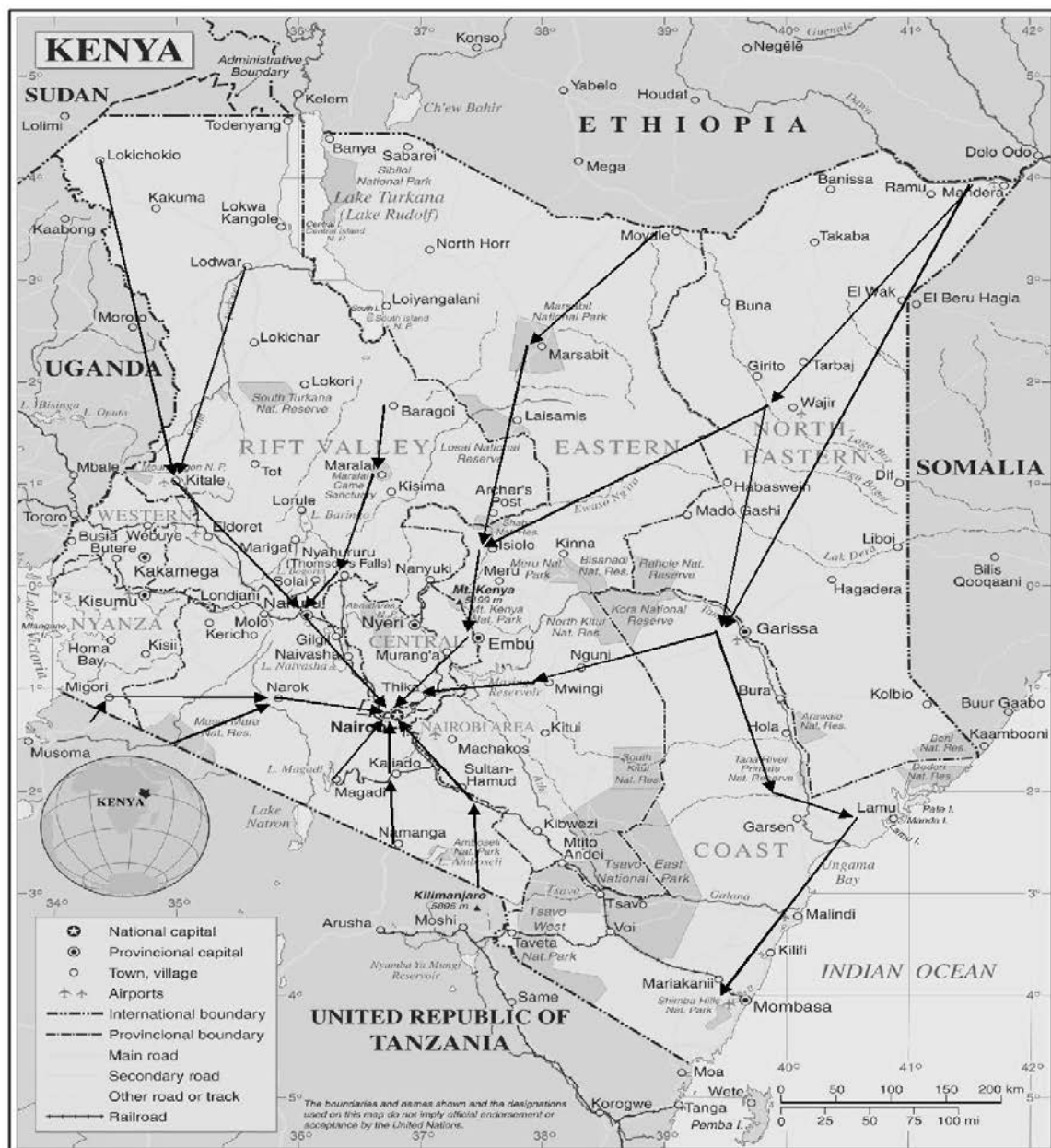
This means that many animals on offer are not really ready for slaughter. The capacity to finish such animals is low and many animals are slaughtered at sub-optimum weight. Although slaughter facilities and processing have improved over the last 10 years – e.g. all slaughter facilities use now a captive bolt for stunning and have to have a knocking box by law, and people wear white coats, caps and gum boots (but still walk freely in and out of the facilities) – there is still a lot to do in the slaughtering, deboning, transport and retail sectors to meet minimum standards of hygiene and public health and even more to meet international SPS standards. Especially the development and maintenance of a cold chain is important: most meat is still transported in galvanized steel boxes, white with a red stripe and the word ‘meat’ plus the registration number of the trader written on it, as it was in colonial times. Most butcheries, especially in slums and high-density areas, do not have cool displays. Meat is sometimes kept in a fly-screened area, but most of the times it is in the open.

Kenya’s ruminant off-take for slaughter. The bulk (about 70%) of beef production comes from the ASALs. There are many enterprises that can be started along the beef value chain, including supply of inputs and services for production of beef animals and trading in live animals and products. Most of the beef produced in the country is for domestic consumption, however; as will be detailed later, there are exports to the regional markets (Uganda and Tanzania), COMESA (Democratic republic of Congo, Mauritius, Madagascar, etc) and United Arab Emirates. The domestic meat market is primarily urban and is stratified according to income. The local demand for beef is higher compared to other meats. Poor beef production conditions/practices have resulted to low-quality carcasses that cannot compete effectively on the export market. Ineffective disease surveillance and control measures have rendered the ASALs sub-optimal for export beef production. The major constraints to the growth of the beef industry are lack of the prerequisite institutional framework, inadequate research based on ecological potential for beef development, endemic and emerging livestock diseases, recurrent droughts especially in ASALs, poor finishing, rampant insecurity especially in the Northern Rangelands, vulnerable traditional pastoral production systems, diminishing animal genetics, poor marketing channels and static prices of beef products.

5.4 Transport Networks

As shown in map 2 overleaf, most cattle in Kenya are marketed along stock routes consisting of primary, secondary and terminal markets. Cattle traded along these routes typically change hands once or twice and may even change hands three times, but only in very few cases. In general, cattle are trekked from remote pastoral areas to primary and secondary markets and then trucked from secondary markets to Kenya’s main terminal markets in Nairobi and Mombasa. However, in some cases, trekking is also the main system of transport from secondary to terminal markets, especially along the Garissa – Tana River – Mombasa Route. Economic agents along Kenya’s stock routes operate in a variety of ways. At the primary market in pastoral areas, some traders purchase young cattle, keep them for about two years and then sell them once they have matured. Other traders purchase animals at primary markets in Kenya, like Wajir, or in neighboring countries, like Somalia and Ethiopia, and trek them to secondary markets in Kenya, such as Garissa, where they may receive a higher price. At Kenya’s secondary markets, such as Garissa and Isiolo, middlemen often purchase cattle and truck them to terminal markets in Nairobi and Mombasa. Middlemen in Garissa also trek cattle to Mombasa, allowing them to graze and put on weight along the way. Some of these traders rent ranches to fatten their cattle for several months before selling them for export or slaughter.

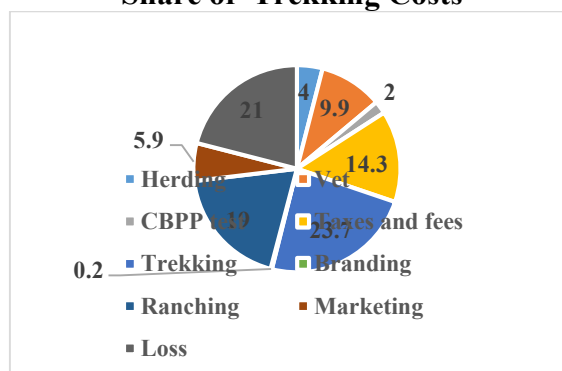
Map 2: Geographical Supply Chains



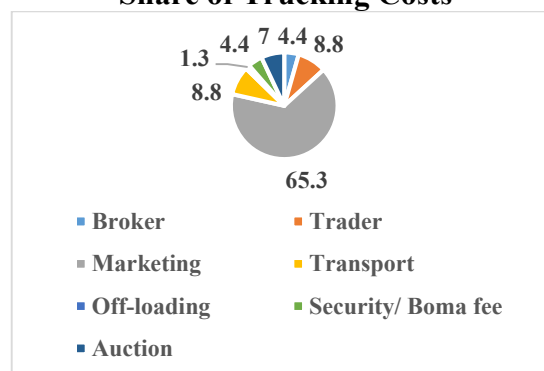
Map No. 4187 Rev. 1 UNITED NATIONS
Source: Adapted from USAID (2013)

Cost of transport figures may be estimated from average gross margins based on raw material (e.g. auction prices of standard beef cattle) in 2015. Average prices ranged from Ksh40, 000 to KSh30, 000 in Nairobi auctions. (US\$ 390 to US\$ 290 e.g. US\$ 485 per head of cattle. Cattle are moved to Nairobi either by trekking or by trucking and sometimes by a combination of both modes. Estimates of 2015 trucking and trekking costs from North Eastern Kenya to Nairobi are KShs. 12,600 and KShs. 11,500 (US\$ 124 and US\$ 113) respectively. Chart 19 overleaf provides average shares of components incurred in trucking and trekking costs.

Chart 19: Trekking and Tucking Costs for Cattle (% Shares)
Share of Trekking Costs



Share of Trucking Costs



Source: Projections based on Makokha S., Witwer M., 2013

The above-mentioned study comes up with an important conclusion in respect of transport and logistics: “It is evident that the current market structure hinders cattle producers and wholesalers. If traders consistently realize high profit margins relative to their invested costs, then pastoralists and wholesalers will not be able to fully capture the benefits of rising domestic prices and high export prices. Furthermore, government taxes and fees imposed on trekkers may hinder the movement of cattle from remote pastoral areas to markets and even reduce the prices offered to producers. Unless these issues are addressed, they will continue to serve as major barriers to Kenya’s stated goal of expanding its cattle export market as a strategy for poverty alleviation in ASAL regions” (Makokha and Witwer M., 2013: 36).

5.5 Domestic Market Wholesalers/Distributors and Retailers

In Nairobi, most cattle are sold in Dagoretti and Njiru markets, while Kiamaiko, Njiru and Dandora markets are important for sheep and goats. Animals are purchased by slaughterhouses, butchers and retailers, then slaughtered and sold to butcheries throughout the city. There are also wholesale meat traders who purchase animals for slaughter and then distribute the meat to butcheries in the city. Others purchase animals, slaughter them and wait for meat buyers at the slaughterhouse.

5.5.1 Supermarkets and high-end butcheries

Supermarkets and high-end butcheries have cold storage facilities. The meat is supplied fresh and is stored and displayed under refrigerated conditions. Nakumatt supermarkets are patronized more by the high- and middle-income groups, with the high-income groups most likely to purchase meat from their outlets. Uchumi supermarkets cater more to middle-income groups. Hence the price differentials between the two outlets (see Table 5 in the End Markets chapter, above) reflect the income of people who patronize the outlets. Uchumi meat outlets mainly sell meat sourced from KMC and Farmers Choice, while Nakumatt offers meat from select and well-finished animals either from Hurlingham Abattoirs (Quality Meat Packers) or Farmers Choice (Choice Meats), from animals sourced from ranches in Naivasha.

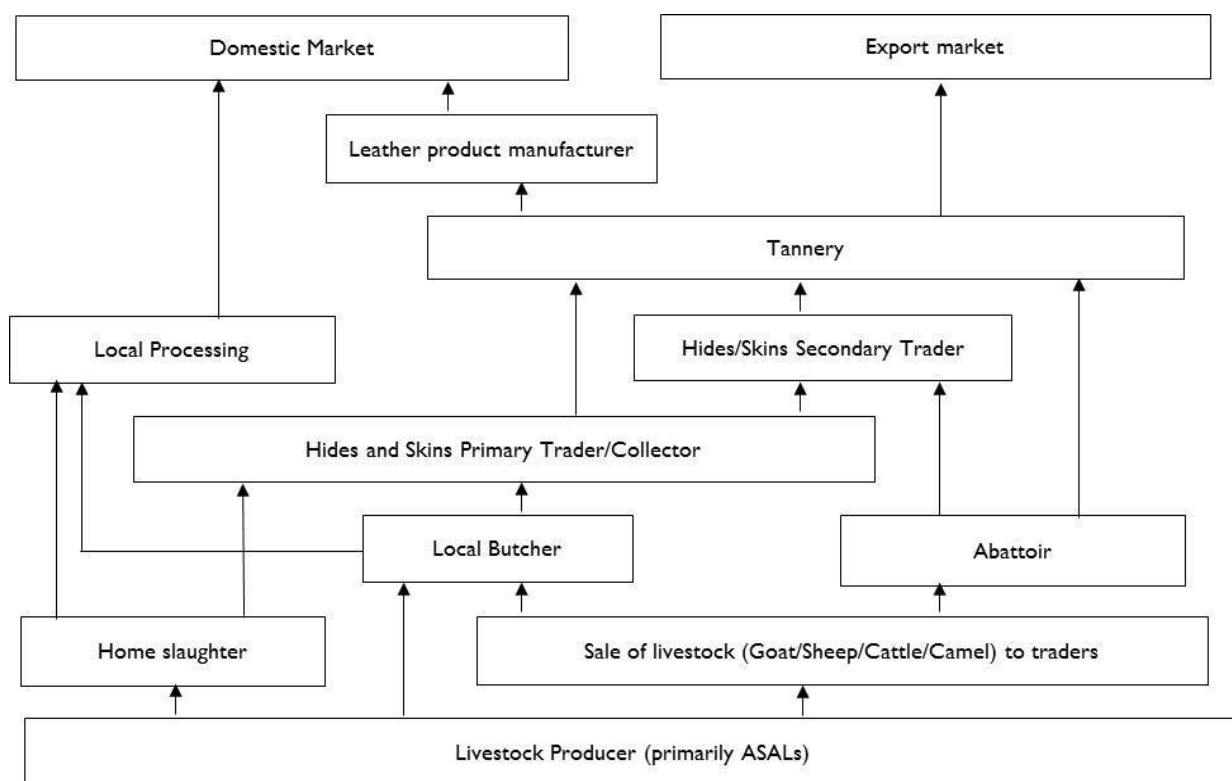
5.5.2 Butcheries

Low-class butcheries display their meat in an open and unrefrigerated environment, but some have deep freezers to store unsold meat overnight. For more on supermarkets and butcheries, see the section on market segmentation in the End Markets chapter, above.

5.6 Linkages with Hides and Skins Value Chain

Although this study was **not meant** to cover the separate but very important value chain of hides and skins, we look at a few issues in relation to its linkages with the meat sector. The hides and skins (HS) value chain is an offshoot of the meat value chain (see figure 4 below). After slaughter (at home or at butcheries or abattoirs), hides and skins are preserved through sun drying (ground and suspension drying) or wet salting. Wet salted hides earn higher prices than sun-dried hides and skins. Traders collect hides and skins and deliver them to tanneries, of which there are currently 13. Semi-processed and processed hides and skins (wet blue, crust or finished leather) are exported to China, Italy and India, with smaller volumes going to Turkey, Pakistan and Switzerland, where they are manufactured into shoes as well as leather garments. Finished leather is also supplied to local leather product manufacturers, such as shoemakers.

Figure 4: Standard HS Value Chain, Kenya



Adapted from USAID (2013)

5.7 Traceability and Food Safety

Meeting food safety standards is a precondition for the further growth and development of the poultry meat sector. This means that the various broiler producer associations must come up with a solution to the problem. Most changes in the meat sector in Kenya have been made by the government through legislation. If a ban is imposed on the way broilers are currently slaughtered on-farm, the associations could develop a mobile slaughter facility that moves from farm to farm. The larger farms should eventually create their own cold rooms (second-hand cooling containers were seen being used as cold stores), from which they supply the markets.

In the survey, all the respondents indicated that they are aware of the issue and take measures to ensure that their products can be identified by the purchasers. There has been a recent study (Matete,2010) whose objective was to assess the feasibility of implementation for an electronic Livestock Identification and Traceability System (LITS) in Kenya. It was envisaged that LITS would enable Kenya to ascertain origin and ownership of livestock and to discourage stock theft and thus livestock related insecurities; support disease surveillance and minimize the spread of trans-boundary animal diseases (TADs); and improve external market access through exports.

It was established that the cost, when calculated for the nearly three million beef cattle in arid and semi-arid lands (ASALs), was US\$ 7.4/head for registration and US 7.3/head for annual maintenance. The BCA revealed that the Net Present Value (NPV) was approximately US\$ 350 million at 2007 prices and the Benefit Cost Ratio (BCR) was 4.73 - implying that the return on investment was computed at nearly five times the unit cost per dollar. These efforts to popularize traceability should be encouraged throughout.

5.8 Global and Regional Context and End Market Analysis

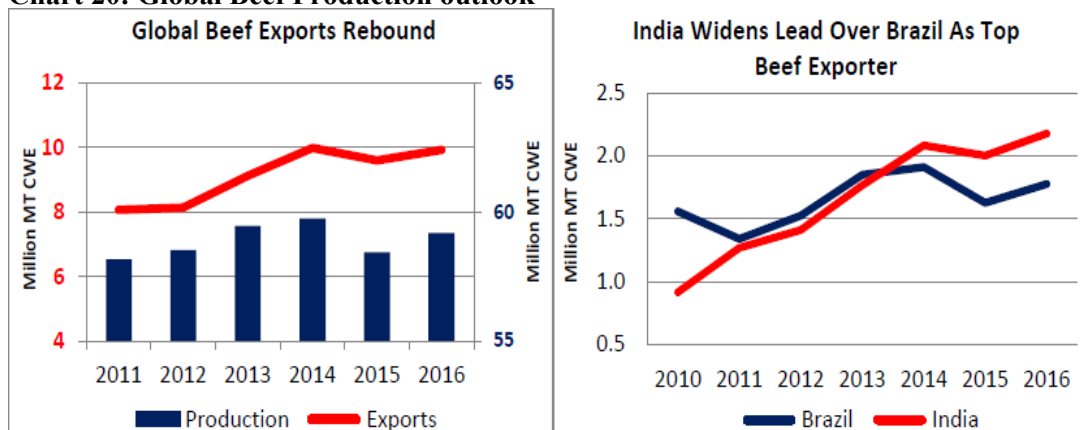
5.8.1 Global Consumption and Production Meat and Meat Products

5.8.1.1 *Beef*

Forecast by USDA (USDA, 2015) indicates that in 2016, global production of beef will rebound 1 % higher to 59.2 million tons compared to 2015 (see chart 20 overleaf). Continuing herd expansion will drive production higher for major traders – particularly the United States, India, and Brazil. India continues to expand on growing foreign demand; exports account for 48 % of production compared to only 18 % for Brazil. Reduced slaughter will drive Australian production lower as inventories have been depleted and the return of favorable pasture conditions will spur herd rebuilding. Exports by major traders are forecast 3 % higher to 9.9 million tons on stronger demand. Gains are expected for most major traders including India, Brazil, and the United States. India will remain the top exporter as demand improves in Southeast Asia, the Middle East, and North Africa. Brazilian exports will rebound as a weaker real increases competitiveness and the reopening of the Chinese market creates new opportunities.

U.S. production is expected to rise for the first time since 2010 as cattle inventories recover on improved pasture conditions and lower feed costs. Exports are forecast 6 % higher as growing domestic supplies put downward pressure on prices. A reduction in Australian exports will enable the United States to regain market share in Asia which will offset stagnant shipments to Canada and Mexico.

Chart 20: Global Beef Production outlook

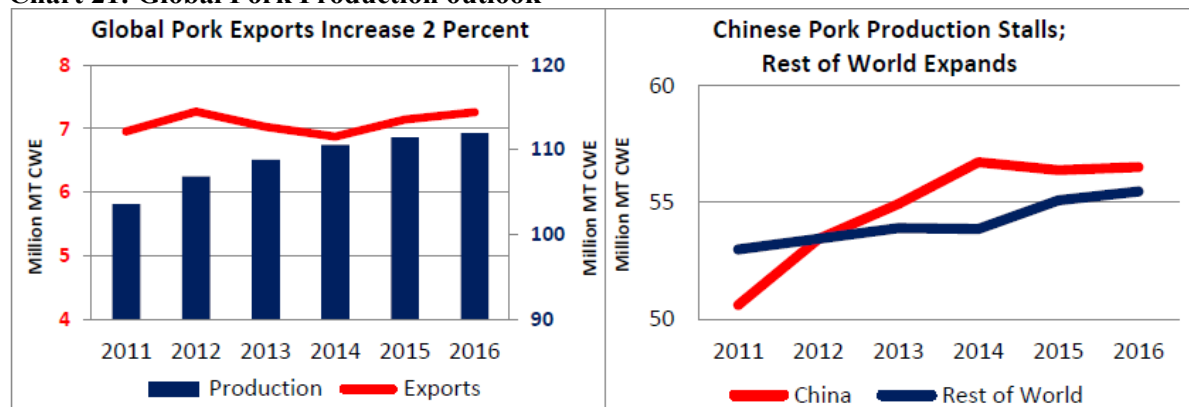


Source: USDA (2015)

5.8.1.2 Pork

According to USDA (2015) global production of pork is forecast virtually unchanged at 112.0 million tons (see chart 21 below) on marginal expansion by most countries. After three consecutive years of contraction, Chinese swine inventories are forecast stable in 2016 as lower feed costs and higher pork prices spur a slight increase in sows and improved efficiency (pigs per sow and industry consolidation). However, Chinese pork production will remain flat as a decline in slaughter offsets heavier weights. Russian production is higher on significant capacity investments, industry consolidation, stable feed prices and robust domestic demand.

Chart 21: Global Pork Production outlook



Source: USDA (2015)

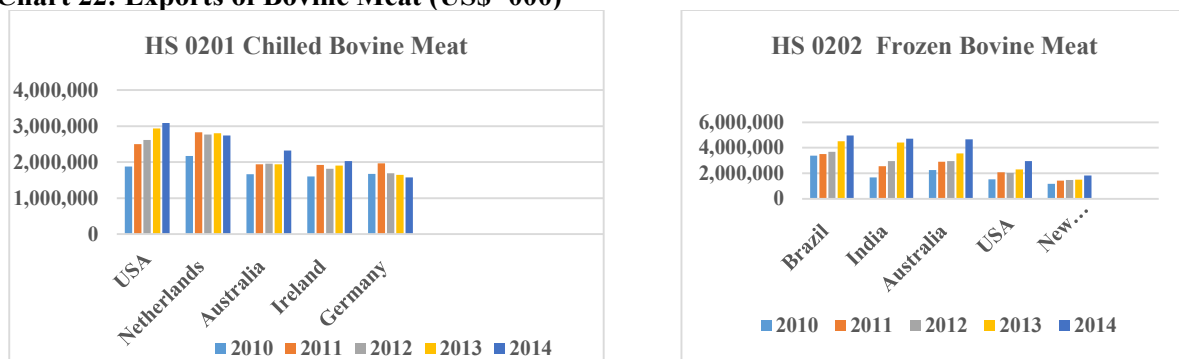
Exports by major traders are forecast 2 % higher to nearly 7.3 million tons as robust supplies drive prices lower, stimulating consumption. Marginal increases in purchases by most major importers will more than offset a further decline in imports by Russia. Among key suppliers, only the United States will undergo significant export expansion. U.S. production is forecast up 1 % to a record 11.3 million tons on continued strong recovery from PEDv. Exports are forecast over 4 % higher to 2.4 million tons as competitive prices will bolster shipments to most markets, particularly Mexico.

5.8.2 Global Export Performance of Meat and Meat Products

Detailed product level analysis of exports of meat and meat products give a clearer picture of the above situation.

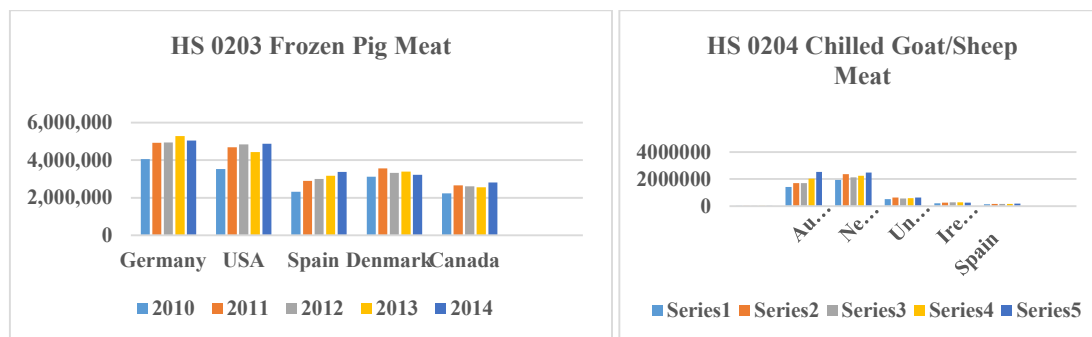
As chart 22 below shows, USA dominates the export of chilled bovine meats followed by the Netherlands though Brazil dominates exports of frozen beef. As mentioned above India is set to take top position in 2016.

Chart 22: Exports of Bovine Meat (US\$ '000)



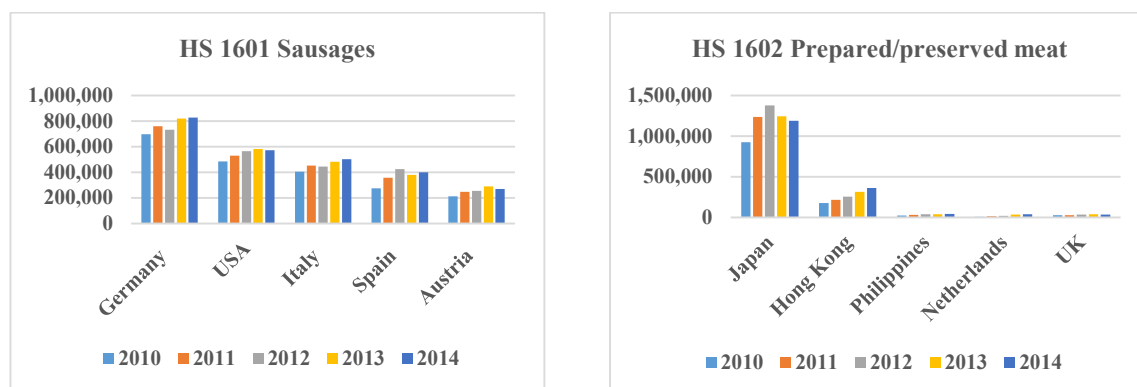
For pig meat, Germany dominates world exports while Australia and New Zealand dominates exports of frozen sheep and goat meat as shown in chart 23 below:

Chart 23: Exports of Pig and Goat/Sheep Meat (US\$ '000)



When it comes to processed meats, Germany dominates in exports of sausages, while Japan is the key player in exports of other processed and preserved meats as shown in chart overleaf.

Chart 24: Exports of Sausages and Processed Meats (US\$ ‘000)



Source: USDA (2016)

5.9 Kenya’s Export Performance

Kenya has experienced an important rise in meat exports since 2005, with volumes increasing by a factor of 11 over the five-year period between 2005 and 2010. However, the 2009-2010 period saw the most dramatic increase (table 8), with a doubling of volumes, although the export volumes remain small and account for only 1 % of Kenya’s meat production.

Table 8: Kenya Meat and Meat Product Exports (US\$ ‘000)

	2009	2010	2011	2012	2013
Product: 0201 Chilled Bovine Meat	435	257	445	678	1,274
Product: 0202 Frozen Bovine Meat	979	3,270	3,101	3654	6,216
Product: 0203 Frozen Pig Meat	2,702	2,245	3,593	n/a	2,787
Product: 0204 Chilled Goat/Sheep Meat	851	4,340	8,747	n/a	7,788
Product: 1601 Sausages	3,958	4,844	3,157	n/a	3,261
Product: 1602 Prepared or preserved meat	67	20	108	n/a	78

Source: ITC Trade Map Data Base

Kenya’s exports of meat and meat products are small, constituting only 0.2-0.3 % of the country’s export earnings. There are three major export abattoirs, but only one of these (KMC) slaughters significant numbers of animals for export. The other two (Farmers Choice—which primarily processes pork for the domestic market, albeit with limited amounts exports to the Middle East and Mauritius, primarily target the domestic market, with minor exports on the side.

The country’s main export destinations (see table 9) for meat and meat products are the Gulf States—with exports historically limited to the UAE but expanding to Qatar, Oman and Kuwait in 2010—, Tanzania and Somalia, with other African countries accounting for the remainder. In 2010, Middle Eastern countries (including Egypt) surpassed sub-Saharan African countries as the largest importers of Kenyan meat, accounting for 63 % of all exports. African countries counted for the other 37 %, with Asian and European importers accounting for 0.36 % and 0.03 % respectively.

Table 9: Kenyan Exports of Meat and Meat Products by Type (US\$ '000)

	0201 Chilled Bovine Meat						0202 Frozen Bovine Meat				
	2009	2010	2011	2012	2013		2009	2010	2011	2012	2013
Total Exports	435	257	445	678	1,274	Total Exports	979	3,270	3,101	3,654	6,216
Tanzania	0	0	231	345	550	Somalia	119	1,442	1,881	1,865	1,938
Congo, DRC	0	0	0	8	418	Sudan (North + South)	53	144	279	345	1,756
Serbia	0	0	0	6	152	Tanzania	759	937	303	453	1,491
Congo	0	0	0	7	124	Serbia	0	0	0	564	487
						Congo, DRC	15	3	3	3	421
	0203 Frozen Pig Meat						0204 Chilled Goat/Sheep Meat				
	2009	2010	2011	2012	2013		2009	2010	2011	2012	2013
Total Exports	2,702	2,245	3,593	n/a	2,787	Total Exports	851	4,340	8,747	n/a	7,788
Tanzania	1,153	704	1,980	n/a	1,116	Oman	22	580	565	n/a	3,993
United Arab Emirates	942	834	876	n/a	986	United Arab Emirates	615	2,299	6,743	n/a	2,416
Serbia	0	0	0	n/a	286	Somalia	17	247	336	n/a	691
Uganda	133	179	252	n/a	279	Tanzania	77	141	0	n/a	210
Oman	48	68	98	n/a	65	Serbia	0	0	0	n/a	173
						Angola	0	0	0	n/a	167

Source: ITC Trade Map Data Base

The publicly-owned KMC is the largest licensed abattoir in East Africa. The abattoir is ISO 22000 certified and has the capacity to slaughter 1,000 and 1,200 small stock per day, although utilized capacity is far lower. Since 2010, KMC has begun slaughtering carcasses for export by air to UAE, Kuwait, Qatar, Saudi Arabia, Tanzania, Uganda, DRC, Sudan and Egypt. KMC slaughters export livestock on contract and delivers chilled carcasses to the airport. In one day, KMC may export approximately 20 MT, of which only 20 % belong to KMC while the other 80 % belong to private exporters. Most of the exports are sheep and goat carcasses.

Tanzania and the UAE are Kenya’s most consistent markets for meat exports in recent years, and illustrates the importance of 2010 as the year in which large new markets were opened or expanded. These markets are Qatar, Oman, Kuwait, Somalia and Egypt. The volumes reported in this graph include ham and other pork products (e.g. sausages), which account for a total of 6 % of all meat exports (primarily destined to Tanzania).

5.10 Middle Eastern Markets

Kenya’s meat exports to the Gulf States and Egypt expanded rapidly in 2010 with the re-opening of KMC as an export-licensed facility for use by private exporters. Exports are mainly comprised of goat and lamb meat, both chilled and frozen, which are destined primarily to the hotel industry and other retail outlets. Demand is particularly high during the month of Ramadan. Although Kenya’s overall share of these meat markets is fairly low (less than 1 % in most markets), in several countries Kenya supplies 10-15 % of goat meat imports.

(a) UAE market

The UAE is an important market for beef as well as shroat meat and is—as of 2010—Kenya’s most important meat export destination. In the UAE market segments to which Horn of Africa exporters sell, importers seek skin-off sheep carcasses weighing 8-12 kg and goat carcasses weighing 5-7.5 kg. According to the KRA, Kenya exported 574 MT of meat—primarily chilled sheep and lamb carcasses and frozen goat meat—to the UAE in 2010, up from 188 MT in 2009 and just 7 MT in 2006.

(b) Qatar market

Qatar represents an important new market for Kenya. According to the KRA, in 2010, Kenya exported 356 MT, consisting mainly of chilled goat meat, to Qatar—up from just 3-6 MT per year between 2005 and 2009. Within the same period (2010) the total imports of goat meat into Qatar were estimated at 2,487 MT of fresh or chilled goat meat valued at U.S. \$9.6 million (UN-COMTRADE)—suggesting that Qatar sourced nearly 15 % of its goat meat from Kenya. In the same year Qatar imported 5,976

MT of fresh, chilled and frozen lamb carcasses valued at U.S. \$22.4 million. The preference was for the frozen carcasses, which accounted for 69.2 % of the imports.

(c) Oman market

In 2010, Kenya exported 264 MT of mainly chilled goat meat to Oman, up from virtually no exports (under 6 MT per year) every year between 2005 and 2009. The total imports of goat meat (fresh and chilled) into Oman were estimated at 2,746 MT (valued at U.S. \$11 million), suggesting that Kenya's share of Oman's goat meat imports is nearly 10 %. In 2010 the total imports of lamb and mutton (chilled and frozen) into Oman were estimated at 382 MT (UN-COMTRADE).

(d) Kuwait

According to the KRA, in 2010, Kenya exported 155 MT of goat meat and chilled and frozen sheep and lamb carcasses to Kuwait, up from 16 MT in 2009 and virtually none before then. Kuwait's total meat imports for 2010 are unavailable on UN-COMTRADE, hence it is not possible to determine what share of the market Kenya holds.

(e) Egypt market

Kenya's ability to process boneless beef has enabled it to penetrate the important Egyptian market, with 183 MT of meat exports in 2010—all frozen boneless beef (KRA data). Since an outbreak of foot and mouth disease in January 2006, Egypt has banned live cattle and carcass imports and accepted only boneless beef imports. According to UN-COMTRADE, Egypt imported 23,725 MT of fresh or chilled bovine meat (valued at U.S. \$55.5 million) and 491,703 MT of frozen bovine meat (valued at U.S. \$706 million) in 2010. This suggests that Kenya's share of the Egyptian market is fairly insignificant. However, given Egypt's high consumption and the fact that Egypt is a member of the COMESA trading block, there is opportunity for Kenya to increase meat exports if proper sanitary conditions along the value chain are observed.

5.11 Sub-Saharan African Markets

The most important African markets are Tanzania, Somalia and Egypt, followed by Uganda, Sudan and the Democratic Republic of Congo (DRC).

(a) Tanzania market

From 2005 to 2009, Tanzania was Kenya's number one export destination for meat and meat products, with export volumes reaching a high of 360 MT in 2009. In 2010, with Kenya's dramatic increase in meat exports, the country fell to third behind the UAE and Somalia, or fourth (behind Oman) if only red meat exports are considered, as 35 % of Kenya's exports to Tanzania were ham and pork products. The majority (52 %) of Kenya's exports to Tanzania are frozen bone-in beef cuts, while the rest are bone-in mutton cuts, boneless beef and offal, all exported frozen. Today, Choice Meats (a subsidiary of Farmers Choice) reports exporting 35 MT of assorted meat products to Tanzania (Dar es Salaam and Arusha) every week, suggesting that total export volumes have likely increased since the 333 MT exported in 2010.

(b) Somalia market

Kenya's meat exports to Somalia have increased dramatically in recent years, going from 80 MT in 2009 to 474 MT in 2010. The majority of these exports are frozen boneless beef, followed by goat meat.

(c) Sudan market

Sudan has traditionally been an important export destination for Kenya meat, with export volumes totalling 135 MT in 2008 and 109 MT in 2009. These exports were mostly frozen beef and frozen and chilled bone-in beef cuts.

In 2010, however, exports to Sudan declined to just 36 MT, comprised nearly entirely of frozen bone-in beef and sheep meat.

(d) DRC market

According to KMC, DRC is a promising meat market for Kenya and they are exploring the possibility of expanding export volumes. In 2010, Kenya exported 19 MT of meat and meat products to the DRC, mostly (94 %) in the form of edible offal.

(e) Uganda market

Uganda imports small quantities of meat from Kenya, over 90 % of which is ham and other pork products (e.g. sausages). Uganda has maintained a ban on Kenyan beef since 1997, citing recurrent Rinderpest disease outbreaks in Kenya as the primary reason. Indeed, data from KRA show that there have not been exports of beef products to Uganda in the last five years.

5.12 Other Markets

(a) Asian market

Over the past five years, Kenya has occasionally exported very small volumes of meat (bone-in beef and hams/sausages) to India and Pakistan. However, given that these countries are important exporters of red meat themselves—particularly beef and buffalo meat—they do not present a significant opportunity for Kenyan exports.

(b) European market

Kenya has a small quota for meat exports within the EU market—142 MT—but is far from reaching this quota. Over the 2005-2010 period, Kenya only exported meat to three countries—the United Kingdom, the Netherlands and Switzerland—never exceeding 6 MT and never exporting to the same country for more than one year. Of these, only Switzerland imported red meat (bone-in and boneless beef, both chilled and frozen), while the Netherlands and the United Kingdom limited their imports to ham and sausages.

The publicly-owned KMC is the largest licensed abattoir in East Africa. The abattoir is ISO 22000 certified and has the capacity to slaughter 1,000 and 1,200 small stock per day, although utilized capacity is far lower. Since 2010, KMC has begun slaughtering carcasses for export by air to UAE, Kuwait, Qatar, Saudi Arabia, Tanzania, Uganda, DRC, Sudan and Egypt. KMC slaughters export livestock on contract and delivers chilled carcasses to the airport. In one day, KMC may export approximately 20 MT, of which only 20 % belong to KMC while the other 80 % belong to private exporters. Most of the exports are sheep and goat carcasses.

5.13 Summary of Emerging Issues for the Value Chain

Both livestock and meat exports from Kenya have been minimal in recent years with most recent figures indicating a total export market of beef/shoat at \$13.7 million in 2010 (and only \$4.7 million in 2011!), the majority of which went to the UAE (31%), followed by Somalia (21%) and Tanzania (14%). Kenya's livestock exports are even smaller at \$1.8 million in 2011, 64% of which shipped to Mauritius. While Kenya's poor export performance, fragmented systems, and insufficient supply to meet domestic demand suggest that the country should first focus on strengthening its domestic value chain, Kenya has successfully exported to the UAE, Somalia, Tanzania, Oman, Qatar, Egypt and other countries. And, Kenya exports more than most of its East African neighbours. It is the largest beef producer in East Africa, yet its exports are dwarfed by Ethiopia, whose agribusiness policies and government facilitate scalable foreign trade. Furthermore, Kenya has acquired a negative association with Middle Eastern and other export targets, where Kenyan traders and processors are largely viewed as unreliable in supplying consistent quality, promised volumes or competitive pricing.

Kenya will, therefore, need to strengthen its image, systems and facilities to meet quality control standards and demand in high potential markets, such as Saudi Arabia and Egypt.

This must include strengthening livestock traceability systems, eliminating disease and strengthening disease-free zones, improving stock management in order to offer consistent supply, and adhering to strict Halal and HACCP requirements. In the meantime, the East African Community- with its lower standards and lower volume requirements- poses a stronger near-term export opportunity.

6 CONCLUSION AND RECOMMENDATIONS

6.1 Textile and Apparel VC

6.1.1 Overview

It is clear that there is an urgent need to stimulate new investments in the textile and apparel in order to militate against the high capital investments required in the sector. Right from the input side to logistic for exports, there is a wide functional responsibility that needs to be targeted if the sectors to play its rightful role in increasing the share of manufacturing in GDP. In general, the industry should be supported to promote textile products locally and internationally.

6.1.2 Use AGOA to improve Competitiveness

Currently, except for the firma in the EPZs, domestic products are not competitive among high-priced products due to the quality gap with competing imports that is largely attributable to the quality of fabrics. AGOA will be the preferential access route for Kenya to deepen investment and increase exports but the experience over the next 10 years should be used to explore other regional and deepen the domestic market for fair prices garments.

6.1.3 Naivasha as a Textile Production Cluster

It is granted that the government and local stakeholders are working to streamline key aspects of the transport and processing of garment inputs and on-going initiatives include the installation of a standard gauge railway, productivity improvements of customs processes, and port efficiency improvements. The energy cost is an issue that warrants being addressed separately. The unreliable and expensive energy (though costs are slowly falling) needs to be addressed. The Ministry of Industrialization and Enterprise Development plans to set up a Textile City at the Export Processing Zone (EPZ) in Athi River through investments from at least 100 textile firms. The Ministry of Industrialization and Enterprise Development plans to set up a Textile City at the Export Processing Zone (EPZ) in Athi River through investments from at least 100 textile firms. The plan is expected create over 200,000 new jobs by December 2016. In addition, the proposed industrial cluster to take advantage of cheaper geothermal power is a step in the right direction. With the passage of the Special Economic Zones Act, this should be fast tracked as a SEZ. Related to the establishment of Naivasha as a textile cluster is the announcement that the standard gauge railway will be extended to Naivasha. This will be an important bonus that will greatly reduce cost of transport for the manufacturers.

6.1.4 Investment in New equipment and technology

There is an emerging willingness amongst manufacturers to purchase modern equipment and technology that can respond to fast changing consumer needs in garments. Equipment that is energy efficient is an imperative - growing consumer demand for environmentally-sustainable production processes. This needs to be supported through a dedicated government-funded programme. It is being done amongst all Kenya's competitors and such a publicly-supported programme through soft loans is an imperative.

6.1.5 Increasing Value Addition

The country needs to invest substantially in value addition to offer a wide range of fabrics and cotton products as a strategy to catalyse higher domestic consumption and enhance exports.

In particular, weak and poorly organized value addition stakeholder organizations which constraints acquisition and adoption of new technology should be catalysed and strengthened. As detailed in the report, obsolete technology and under-utilization of installed capacities should be addressed.

Institutional Support for training

There is need to establish a textile and apparel industry-wide institution to help ensure sustainable support to the sector and to also help create a platform to engage major buyers and investors in the development and growth of the sector in Kenya. An Institute for Textile and Apparel Development (ITAD) has been proposed. This will drive the skills of local labour and address productivity increase. Building skills to address productivity issues, at the managerial, technical, and factory floor level is important. In addition, it would help link them to international buyers and help Kenya to develop new markets at the high end of cotton garment demand.

6.2 Packaging Materials VC

6.2.1 Overview

The key challenges of the future for the packaging industry is that public expectations and strategic policy goals are shifting with national waste strategies focussing on recycling. In addition, perception of waste as a resource is increasing. The emerging attitudes of new generation is treating packaging as premium and proportion of trade online increasing.

6.2.2 Encouraging new investment to get better quality of machinery

Kenyan packaging manufacturers serve both the domestic as well as the foreign markets. In addition, global packaging firms are angling for a bigger piece of the Kenyan market as they seek to seal gaps responsible for domestic use of their products e.g. farmers' post-harvest losses. It appears that firms have expressed interest in entering the Kenyan market by investing in local firms or partnering with regional SMEs. The firms are also eyeing opportunities in the country such as a strong potential for growth, a growing middle class, and abundant resources. Such efforts should be catalysed to increase investment in the sector

6.2.3 Developing New Markets

Kenya's current market needs to be deepened in countries like Burundi and Eastern Congo. In addition, niche markets exist for specialized exporters who need high quality, well-branded packaging materials. They can benefit from local availability of e.g. high-quality printed boxes/paper bags etc. Additionally Kenyan products that could benefit from improved labeling are (Juices, Water, Honey and Sauces). The expense of transport and required scale of order sizes prevents many small and medium size enterprises from being able to order their own branded containers in the export markets. Local exporters should be more amenable to smaller batch demands.

6.2.4 Review tariffs for imported raw material

Manufacturers of packaging materials are faced with increases of duty on imported raw materials. The examples were given for kraft paper and packaging for toothpaste. In an era where there is a clear delineation of EAC duties on raw materials imports, these obvious tariff anomalies need to be corrected. Duty on raw material imputes should be uniformly levied at zero %.

Linking Consumers and Producers towards "Responsible Packaging"

Recycling as a way of encouraging reduction of waste and conserving resources is taking root even in developing economies like Kenya. Hence the need to optimize the use of renewable or recycled source materials should be catalysed through government programmes that clearly delineate the role of consumers, producers and all actors involved in the VC. If necessity financial incentives should be provided to catalyse this.

6.2.5 Provide Skills to address productivity

Building skills to address productivity issues, at the managerial, technical, and factory floor level is also important for the VC. Hence there is need to catalyse the establishment of a focussed packaging industry-wide institution to help ensure sustainable support to the sector. A study done by the International Trade (ITC) in 2008 recommended the establishment of a Packaging Resource Center in select African Countries to act as a focal point through which Micro, Small and Medium Enterprises (MSME) can acquire packaging related knowledge (JICA (2010:89). This should be pursued.

6.3 Meat and Meat Products VC

6.3.1 Overview

Kenya's exports of meat and meat products have been mixed in the recent past. There is need for better branding of the Country's meat and meat products through developing professional marketing campaigns. It would be important to popularise value-added retail products e.g. sausages, hamburger patties, and bulk minced meat. This would increase margins on sales of retail meat products, and create demand for the products.

6.3.2 Invest in cattle fattening, combined with stronger vertical linkages

There is need for less dependency on maize to other ingredients, such as cassava and sorghum. Processors should work with other stakeholders to lease existing ranches to fatten well-selected young steers for six months and to invest in feedlots to finish steers to the desired weight. There is need for better ranch management strategies

6.3.3 Improve sanitary and phytosanitary systems (SPS)

There is need to increase Veterinary Department enforcement of screening procedures to reduce risks and costs to traders and ranchers. Movement of animals across Kenya requires a movement permit by veterinary officers to certify that animals are disease-free. In some cases, these animals have found their way into ranches, thereby compromising the health of animals on the ranch. Given the strict import countries' requirements this is an imperative.

6.3.4 Invest in Key infrastructure

Livestock traders complain of the high cost of moving animals as a result of poor infrastructure. Road investments (to improve trucking) are already underway: the government of Kenya is currently in the process of tarmacking the major trade routes for cattle. However, there is particular need to improve infrastructure along trekking corridors, which are the critical routes through which animals move from primary to secondary markets.

These corridors are characterized by insecurity (risk of theft) as well as a lack of water and pasture. Hence there is need to encourage basic but hygienic on-farm slaughter systems. For bigger ones improve hygiene to serve better as service slaughter that is well-equipped and supervised

In addition, there is need to develop trekking routes through carefully sited water points with feed provisions along the routes Construct holding grounds (both on trekking routes and at market sites) and invest in appropriate truck designs—for safer movement of livestock.

6.3.5 Strengthen upgrading within the hides, skins and leather part of VC

There is need to improve tick control and branding by pastoralists and to increase the practice of wet salting of hides and skins. This can be done through enhancing peri- and post-slaughter operations.

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8 COLOPHON

Client	:	JICA Study Team
Project	:	Formulation of Master Plan on Logistics in Northern Economic Corridor - Market and Value Chain Survey
Length of report	:	68 pages
Author	:	PANAFCON Ltd.
Project Manager	:	David Ong'olo
Project Director	:	OKELLO, Richard O.
Date	:	5 February 2016
Name/Initials	:	oro/do

ANNEXES

Annex 1: TORs

Terms of Reference (TOR)
For
The Expanded Works
under
“Market and Value Chain Survey”
for
Project for Formulation of Master Plan on Logistics in Northern Economic Corridor

1. Background Information

1.1 Background of JICA Project for Formulation of Master Plan on Logistics of Northern Economic Corridor

The Northern Economic Corridor is a critical regional trading route supporting the major part of economic activities in Kenya, Uganda, Rwanda, Burundi, with its feeder lines also connecting South Sudan and the Democratic Republic of Congo. It starts from Mombasa and reach to the inland countries via Kampala and other major cities. However, various problems are observed such as the status of infrastructure, connectivities between different modes of transportation and inefficiency of logistics at the Port of Mombasa and on the corridor. These cause high logistics cost which is a major hinderance of the regional economic growth. However, existing development plans of the Northern Corridor rather focused on infrastructure development with less attention to the regional development. The Government of Kenya and Uganda, therefore, requested the Government of Japan to assist the formulation of the development plan of logistics network along the Northern Economic Corridor in order to facilitate the economic development of the region. Basaed on the request, the Japan International Cooperation Agency (JICA) launched the Project for Formulation of Master Plan on Logistics in Northern Economic Corridor (hereinafter referred to as “Project”). The Project was commissioned to the JICA Study Team comprising a team of consultant (hereinafter referred to as “the Consultant”).

1.2. Outline of the JICA Project

The brief outline of the Project is as follows;

Objective:	Formulate a Master Plan on Logistics for Northern Economic Corridor, along with integrated regional development strategy consistent with sub-regional development plans and national development plans.
Counterpart agency:	Ministry of Works and Transportation
Target of M/P	<ul style="list-style-type: none">• The target year of M/P will be 2030.• The target area of the study will cover the following routes with its surround area.<ul style="list-style-type: none">• Main route: Mombasa-Nairobi-Toror-Kampala-Katuna-(Kigali/Rwanda)• Sub-route: Eldoret - Nadapal – (Juba/South Sudan)• Sub-route: Tororo - Gulu – Elegu – (Juba/South Sudan)• Sub-route: Kampala- Gulu – Elegu – (Juba/South Sudan)• Sub-route: Mbarara- Mpondwe– (Kisangani/D.R.C)

2. Organization of the Market and Value Chain Survey

The Market and Value Chain Survey (hereinafter referred to as the “Survey”) aims at obtaining

the concrete idea on the types of commodities which may be vitally traded contributing economic development of the areas along the corridor. It also expected to identify the critical measures to be taken in the area of soft and hard logistics infrastructure development along the corridors for economic development. The Consultant commissions a local consultant (hereinafter referred to as the “Contractor”) in Kenya to conduct the Survey.

2.1 Objective of the Survey

The Survey specifically has the following objectives:

- To identify key commodities which are expected to grow as major export commodities of the areas along the corridors. The commodities should be export-oriented with the potentials of higher value addition in Kenya along the area of the corridor. They may not be necessarily resource-based products, but may include processed and/or manufactured good depending on their potentials.
- To estimate the size of export markets of selected commodities produced in Kenya.
- To identify critical issues regarding logistics for the development of the value chain (VCs) of the commodities

2.2 Contents of the Survey

Based on the review of the outputs of the Survey under the original contract, three (3) VCs are to be added for the expanded scope in addition to four (4) VCs which works have been already completed. The additional contents of the Survey for the second batch with 3 VCs as oppose to the first batch with 4VCs are as described in the table below.

	Firsts Batch	Second Batch
Components	<p>The Survey consists of the following 5 components:</p> <ol style="list-style-type: none"> 1) Development of the long-list of commodities 2) Selection of 4 commodities for VC analysis 3) End-market analysis 4) Detailed VC survey and analysis 5) Estimation of market size 	<p>The Survey consists of the following 5 components:</p> <ol style="list-style-type: none"> 1) End-market analysis 2) Detailed VC survey and analysis 3) Estimation of market size
1) Development of long-list of commodities	<p>a) Develop a long list of the commodities produced, processed, and/or assembled in Kenya which may have track-records of exportation and/or potentials for exportation in the foreign market</p> <ul style="list-style-type: none"> • The list should be compiled based on the review of existing literature and survey reports and statistical reviews. • The following factors shall be taken into consideration: the national and regional economic development policies, resource endowments (e.g., mining, agriculture, fisheries, 	<p>The task has been completed in the work under the first batch.</p>

	<p>and forestry), and current local business activities</p> <ul style="list-style-type: none"> • The export destination can be any markets outside of Kenya including other EAC countries, as well as outside of EAC. b) Compile the summaries of existing value-chain related documents. • Compile the summaries of existing value-chain documents reviewed in the component for further reference in the later stage of the Survey. 	
<p>2) Selection of 4 commodities for the detailed VC analysis</p>	<p>a) Out of the long-list developed in 1), select 4 commodities for further detailed VC analysis.</p> <ul style="list-style-type: none"> • Detailed selection methodology are to be proposed by the Contractor, but it should incorporate the following aspects observing the objectives of the Survey: <ul style="list-style-type: none"> ✓ Size of the existing market and/or potential of market growth ✓ Industrial development potentials with possibility in larger value-addition in Kenya ✓ Investment demand ✓ Volume of the traded commodities and the possible impacts on transportation modal shift (e.g., from vehicle to the railway). ✓ Technical feasibility for commodity development (level of the technology etc) • The review should utilize the collected information in 1), but additional information may be also collected by interviews with stakeholders. <p>b) Report to JST and consultation</p> <ul style="list-style-type: none"> • The result of the selection process under a) are reported to JST. JST may have further consultation with relevant stakeholders before final confirmation of the selection. • The report for submission shall contain the methodology applied for the selection and the process. It should be prepared after the above-mentioned consultation and confirmation from JST. 	<p>The task has been completed in the work under the first batch.</p>




<p>3) End-market analysis</p>	<p>a) Identify the final market of the selected commodities</p> <ul style="list-style-type: none"> • The export destination can be any markets outside of Kenya including other EAC countries, as well as outside of EAC. <p>b) Analyze the growth trends and situations of competition of the market of each selected product</p> <p>c) Overview competition in the final market</p> <ul style="list-style-type: none"> • Quality requirement of the final market and major players in the market shall be identified. • The information may be obtained through the direct interviews with the stakeholders available in Kenya or other secondary data and statistical analysis. <p>d) Develop a list of major buyers, processors and other outlets in the key intermediary products and final market for each commodity.</p>	<p>a) Identify the final market of the selected commodities</p> <ul style="list-style-type: none"> • The export destination can be any markets outside of Kenya including other EAC countries, as well as outside of EAC. <p>b) Analyze the growth trends and situations of competition of the market of each selected product</p> <p>c) Overview competition in the final market</p> <ul style="list-style-type: none"> • Quality requirement of the final market and major players in the market shall be identified. • The information may be obtained through the direct interviews with the stakeholders available in Kenya or other secondary data and statistical analysis. <p>d) Develop a list of major buyers, processors and other outlets in the key intermediary products and final market for each commodity.</p>
<p>4) Detailed VC survey and analysis</p>	<p>➤ The tasks under this component are expected to involve site observation, semi-structured interviews as well as further literature reviews. The data collection is expected to be done in Kenya, but research in Uganda or other neighboring countries may be proposed if the needs are realized.</p> <p>➤ Survey questionnaires shall be proposed by the Contractor and consulted with JST for finalization.</p> <p>a) Map out the processes and stakeholders involved in the supply chain, processing, logistics, distribution and other related industries for each selected VCs. Special attention should be also put on the current mode of transportation as well as the routes from the production areas to the final market.</p> <p>b) The information on geographical distribution of the process and stakeholders as well as the volume of economic activities (value and quantity) shall be compiled for each selected VC.</p> <p>c) Collect the data on the structure of each VC</p>	<p>➤ The tasks under this component are expected to involve site observation, semi-structured interviews as well as further literature reviews. The data collection is expected to be done in Kenya.</p> <p>➤ Survey questionnaires shall be proposed in case it is to be modified for the second batch. The modified version shall be presented to JST for finalization.</p> <p>➤ Further value-addition, diversification, up-grading and forward and backward linkages of the products shall be also analyzed based on the interviews.</p> <p>a) Overviews the VC and identify the major stakeholders involved in the supply chain, processing, logistics, distribution and other related industries for each selected VCs.</p> <p>b) Identify the material flows in terms of the location where the raw materials as from (if imported, maybe start from the Port of Mombasa/JKIA any port of entry) down to the ports of exit or final market. Indicate the</p>

	<ul style="list-style-type: none"> • The information to be collected in order to identify the critical factors for the development of the commodities and promote the higher value addition in Kenya. The following information are sought: <ul style="list-style-type: none"> ✓ Value-addition per process ✓ Dominant coordinator/governing actor of the chain ✓ The gaps between the final market requirement and currently available commodities in Kenya ✓ Mode of transportation, cost factors borne by the nature of the logistics (collection, transportation and distribution of the goods) d) Organize and hold a VC stakeholder workshop for each VC • Validate some information obtained through the research and complement the information. • Competitiveness and gap analysis as well as identification of necessary correcting measures shall be done with the participant. • The number of the participants shall be limited to the size where the effective discussion and exchange of opinions are realized. 	<p>flow on the map with the key production centers, logistics hubs and other important locations.</p> <ul style="list-style-type: none"> c) Collect the data on the structure of each VC • The information to be collected in order to identify the critical factors for the development of the commodities and promote the higher value addition in Kenya. The following information are sought: <ul style="list-style-type: none"> ✓ Value-addition per process to the extent which part of the chain earn the profit most and where less. ✓ Cost-breakdown in the production, processing and marketing; it cannot be very detailed, but to the extent that the bottlenecks of the growth of export or production can be identified. ✓ The gaps between the final market requirement and currently available commodities in Kenya d) Organize and hold a VC stakeholder workshop for each VC • Validate some information obtained through the research and complement the information. • Competitiveness and gap analysis as well as identification of necessary correcting measures shall be done with the participant. ➤ The number of the participants shall be limited to the size where the effective discussion and exchange of opinions are realized.
<p>5) Estimation of export market size</p>	<ul style="list-style-type: none"> a) Estimate the market size of each selected Kenyan commodity in the export market. • Estimation using trade and production statistics, market information by various industrial associations, both in Kenya and abroad shall be utilized. • The size of the market may be computed both by value and 	<ul style="list-style-type: none"> a) Estimate the market size of each selected Kenyan commodity in the export market. • Estimation using trade and production statistics, market information by various industrial associations, both in Kenya and abroad shall be utilized.

	volume based as long as it is possible.	b) The size of the market may be computed both by value and volume based if the data is available.
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2.3 Schedule and Arrangement

Total period of the Survey for the first batch started in April and ended in September. The survey period for the second batch is approximately **3.5 months**. Members of JST may join the VC workshops as well as interviews. The timeframe of the Survey is tentatively scheduled as follows:

Tasks	April - September	October	November	December/ January
Signing the contract/launch the Survey	■			
1) Development of the Long-List	■			
2) Selection of 4 VCs	■			
Preparation and submission of the Report 1	▲			
3) End-market analysis	■			
Preparation and submission of the Report 2	▲			
4) Detailed VC survey	■			
Preparation and submission of the Report 3	▲			
5) Estimation of export market size		■		
Preparation and submission of the Report 4			▲	
6) Detailed VC survey and estimation of export market size			■	
Preparation and submission of Final Report for expanded VCs				▲

3. Required experts

The team of the Survey shall comprise the following key experts:

- Team Leader
- Researcher (market analysis)
- Researcher (value chain research and analysis)

The Team Leader is required to have the track record of experience in the similar research with the understanding in the relevant issues as value chain, market development and export development. Other key experts shall also have the prior experiences in similar research projects with sufficient / communication and report writing skills. Research assistants and surveyors are left to bidders' proposal.

4. Reports and Language

All of the following reports shall be prepared and submitted in English. Prior to the submission of the finalized reports listed below, the Contractor shall submit soft copies to JST for their comment. The Contractor shall submit the finalized reports with the necessary revising and supplementing information answering to the requests and clarification required in the comments.

4.1 Report 1: The report on the short list of the product VCs

Three (3) sets of hard-copies as well as the soft copies in CD-ROM dully edited shall be submitted. The Report shall encompass the preliminary analysis, a long-list and a short-list of the product VCs for further analysis shall be submitted in accordance with the above schedule.

It shall include the following items:

- The long-list of products
- The summary of existing research outputs, statistical analysis and result of other desk reviews
- The short list of the products with the description of selection process including methodology and the results

4.2 Report 2: The report on the end-market analysis

Three of (3) sets of hard-copies as well as the soft copies in CD-ROM dully edited shall be submitted. It shall comprise the following research outputs of the end-market analysis including the following.

- The estimated size of the markets of each selected product
- The data on the major buyers, key processors and other market outlets identified for each selected product

4.3 Report 3: The report on the detailed VC survey and analysis:

Three of (3) sets of hard-copies as well as the soft copies in CD-ROM dully edited shall be submitted. It shall comprise the following research outputs per selected product VC, namely:

- VC mapping
- The reports on VC workshops
- Analysis on the problems and necessary measures for further VC development

4.3 Report 4: The report on the estimation of export market size

Three of (3) sets of a hard-copy as well as the soft-copy in CD-ROM dully edited shall be submitted. It shall comprise the output of the estimation of the export market size.

4.4 Final Report for first batch

Three of (3) sets of a hard-copy as well as the soft-copies in CD-ROM dully edited shall be submitted. It shall consolidate and summarize the overall process and findings reported in the previously submitted reports.

4.5 Report 1 for expanded VCs: The report on the estimation of export market size

A set of a hard-copy as well as a soft-copy in CD-ROM dully edited shall be submitted. It shall comprise the output of the estimation of the export market size.

4.6 Final Report for expand VCs

A set of a hard-copy as well as a soft-copy in CD-ROM dully edited shall be submitted. It shall consolidate and summarize the overall process and findings reported in the previously submitted reports.

Annex 2: List of respondents

PANAFCON Ltd.

Company	Physical Address	Town/City	Cell Number	Email
Textile VC Respondents				
Brilliant Garments EPZ	Mtwapa	Mombasa		
African Cotton Ltd	Off Mombasa Road	Nairobi		
Rivatex East Africa Ltd	Eldoret Town	Eldoret		
Makueni Ginneries	Wote	Makueni		
Global Apparels Ltd	Athi River EPZ	Athi River		
Hantex Garments	Marasala	Mombasa		
African Apparel EPZ	Athi River EPZ	Athi River		
Bedi Investment Ltd	Behind Nakumatt Nakuru	Nakuru Town		
Royal Garment Industries EPZ Ltd	Athi River EPZ	Athi River		
Kappric Apparels Ltd	Changmwe	Mombasa		
Longyun Garments	Miritini	Mombasa		
Sianzi Mimi Ltd	Biashara Street	Mombasa		
EPZ Authority	Athi River EPZ	Athi River		
Meat VC Respondents				
Farmers Choice	Kahawa West	Nairobi		
Kenya Meat Commission	Athi River	Nairobi		
Nyongara Slaughterhouse	Dagoretti	Dagoretti		
Nalai Farm	Thika	Thika		
Narok Slaughterhouse	Narok Town	Narok		
Muguku Farms	Ngong	Nairobi		
Packaging VC Respondent				
United Bags Ltd	Magana Lane, off Magana Road on Waiyaki Way	Nairobi		

PANAFCON Ltd.

Company	Physical Address	Town/City	Cell Number	Email
Dune Packaging Ltd	Station Road	Thika Town		
Premier Bag and Cordage	Juja Town	Juja		
Thermopack Ltd	Funzi Road, Industrial Area.	Nairobi		
Milly Glass Ltd	Liwatoni Rd, Near Twiga Chemicals, Mombasa	Mombasa		
Greif Kenya	Zanzibar Road off Unga Street,	Mombasa		
Friendship Containers Ltd	Between Pembe Flour Mill & Crescent Construction, Lunga Lunga Rd	Nairobi		

Annex 3: Survey Questionnaire

Annex 3: Phase 2 Revised Survey Questionnaire

*GOK/JICA Marketing and Value Chain (VC) Survey
for the Master Plan Study on Logistics of Northern Economic Corridor*

Interview Guide for VC Survey

1. CONTACT INFORMATION

Interviewer.....
 Date of interview.....
 Firm Name.....
 Principal product or service.....
 No. of employees.....
 Name of contact.....
 Address.....
 Telephone.....
 Email.....

2. INPUT SUPPLY

- a. What are your major concerns in the areas of inputs?
 - (a) Cost
 - (b) Quality
 - (c) Availability

- b. Who are your most important suppliers? Please name them, and Country of Origin
 - (a)
 - (b)
 - (c)
 - (d)

- c. What do you buy from each?
 - (a)
 - (b)
 - (c)

- d. What are the main problems in obtaining some important inputs?
 - a)
 - b)
 - c)

3. TECHNOLOGY / PRODUCT DEVELOPMENT

- 3.1. What are your major needs/ opportunities in product design and production?

.....

.....

.....

- 3.2. What other products do you produce/sell and what is percentage share of each product in terms of your gross revenue?
 - a)%
 - b)%
 - c)%
 - d)%

3.3. What have you done recently to improve technical quality your products or services?

.....
.....
.....
.....
.....

3.4. Is your current equipment or machinery an impediment to growth?

- (a) Yes
- (b) No

3.5. If Yes, what kind of equipment or machinery could improve your business?

.....
.....
.....
.....
.....

3.6. Is the current level of your workers training holding back growth?

- (a) Yes
- (b) No.

3.7. If Yes, what additional training do they need?

.....
.....
.....

4. MANAGEMENT/ORGANIZATION

4.1. In the area of organization and management, what are your major needs/opportunities?

.....
.....
.....

4.2. Which aspects of your business do you intend to change in the next 2 years?

- (a) Machinery and equipment
- (b) ICT (Computer system)
- (c) New products
- (d) Marketing strategy
- (e) Quality control
- (f) Management system
- (g) Worker skills
- (h) Other.....

5. OVERALL COST STRUCTURE

Please give us a summary of the cost composition of your standard product in % of total cost.

Item	% of total
------	------------

Raw Materials	
Transport	
Labour	
Electricity	
Maintenance	
Overheads	
Other	
Total	100

6. STANDARDS AND CERTIFICATIONS

6.1. What standards or certification requirements do your products need to conform to?

.....

6.2. Do you have any problems in this regard?

- a) Yes
- b) No.

6.3. If Yes, which specific issues?

.....

7. MARKET ACCESS, TRENDS, AND GOVERNANCE

7.1. What do you see as your main needs/opportunities in accessing foreign markets?

.....

7.2. To whom do you sell your product or service and in what shares?

- (a) large firms.....%
- (b) small firms.....%
- (c) wholesalers.....%
- (d) exporters.....%
- (e) retailers.....%
- (f) direct to consumers.....%

7.3. If you export, where are your main destinations of export?

.....

7.4. How do you promote and market your products/services?

.....

7.5. How strong is the market for your products/services right now? Next year? What trends do you see?

.....
.....
.....
.....

7.6. Do you ever collaborate with other firms on promotion and/or marketing?

- a) Yes
- b) No.

7.7. If No, why not?

.....
.....
.....

7.8. Who are your major competitors from Kenya?

.....
.....

8. FINANCE

8.1. Do you have need for additional financing at the moment?

- (a) Yes
- (b) No

If Yes, what would it be used for?

.....
.....
.....

9. POLICY/REGULATION

a. What government policies/regulations would benefit your business more?

- (a) Less bureaucratic registration
- (b) Less obstructive inspection
- (c) Subsidies
- (d) Other incentives.....(specify), etc.)?

b. What specific government policies/regulations are obstacles to growing your business?

.....
.....
.....
.....

c. What are the major incentives that you need for investing in / promoting change in the value chain?

.....
.....
.....

d. What risks or constraints do you face in making these investments?

.....
.....
.....

e. What do you think is the SINGLE greatest challenge facing your industry today?

.....
.....

10. INFRASTRUCTURE

10.1. Which mode do you use most for transporting your inputs and finished products?

.....
.....

10.2. What are the most important infrastructure constraints affecting your business' growth and profitability?

- (a) road/transport conditions (b) telephone service
- (c) electric supply (d) crime
- (e) corruption (f) storage
- (g) other..... (state)

10.3. What is your industry doing about these problems?

.....
.....
.....

10.4. Are you satisfied with the location of your production facilities?

- (a) Yes
- (b) No

10.5. Given the current location of your facility in this town, which would be your ideal location if you were to relocate?

.....
.....
.....

10.6 What reasons would you give for your response in 5 above?

.....
.....

11. TRACEABILITY

- a. Do buyers request traceability of products that they buy from you?
 - (a) Yes
 - (b) No

11.2. If Yes, (How much % is such buyers? %)

- 11.3. Can you trace your raw materials (e.g. the cow, pig, goats, cotton) to specific production areas e.g. from the farmers?
 - (a) Yes
 - (b) No

11.4. If Yes (How much of your inputs do you get from such sources?? %)

11.5. How do you trace your raw material inputs?

.....
.....
.....
.....

- 11.6. Can you trace where your products go to?
 - (c) Yes
 - (d) No

11.7. If Yes, How do you trace that?

.....
.....
.....
.....

Do you have any additional comments?

.....
.....
.....
.....

Thanks for you cooperation.

Annex 4: World Imports of Textile and Apparel (US\$ '000)

Annex 4: World Imports of Textile and Apparel (US\$ '000)

HS Code	Product label	2010	2011	2012	2013	2014
5201	Cotton, not carded or combed	16.303.450	24.572.751	21.807.837	19.168.249	15.512.022
5205	Cotton yarn (not sewing thread) 85% or more cotton, not retail	11.500.793	12.530.008	11.809.376	14.361.983	13.501.149
5208	Woven cotton fabrics, 85% or more cotton, weight less than 200 g/m2	10.495.983	12.161.533	10.380.418	10.758.164	11.308.745
5209	Woven cotton fabrics, 85% or more cotton, weight over 200 g/m2	8.160.487	9.695.141	8.801.644	8.878.131	8.339.915
5211	Woven fab of cotton, less than 85%, mxd with man made fibre, weight >200	1.917.921	2.542.045	2.487.367	2.762.956	3.005.428
5210	Woven cotton fabrics, less than 85% cotton, mxd with manmade fibers, w	1.747.768	2.376.004	1.943.709	2.008.762	2.445.395
5206	Cotton yarn (not sewing thread) less than 85% cotton, not retail	1.209.303	1.667.664	1.519.790	1.722.770	1.715.955
5212	Woven fabrics of cotton, nes	915.503	1.055.262	718.536	866.727	820.495
5202	Cotton waste (including yarn waste and garnetted stock)	466.669	756.732	663.011	681.285	513.445
5207	Cotton yarn (not sewing thread) put up for retail sale	309.205	458.246	460.388	363.445	397.756
5204	Cotton sewing thread	203.857	230.937	196.221	272.388	233.808
5203	Cotton, carded or combed	228.846	295.468	276.969	199.244	194.606
HS 52	Total Cotton Yarn and Fabrics	53.459.785	68.341.791	61.065.266	62.044.104	57.988.719
5407	Woven fabrics of synth. filam yarn (incl. hd no 54.04)	14.514.837	17.745.690	17.383.492	18.276.711	20.235.828
5402	Synthetic filam yarn, not put up	15.910.656	18.962.406	17.704.426	18.267.253	18.918.690
5403	Artificial filam yarn, not put up	1.349.373	1.531.957	1.349.899	1.405.659	1.495.360
5408	Woven fabrics of synth. filam yarn (incl. hd no 54.05)	1.232.256	1.363.803	1.283.996	1.359.191	1.476.165
5404	Synth mono >=67dtex, ..., syn tex mat wd <=5mm	1.160.092	1.341.780	1.314.708	1.380.524	1.448.836
5401	Sewing thread of man-made filaments	1.126.943	1.322.673	1.163.089	1.247.665	1.287.847
5406	Man-made filament yarn, put up for retail sale	69.472	92.911	100.398	106.880	93.318
5405	Arti mono >=67dtex, ..., arti texmat wd <=5mm	16.905	21.575	23.171	23.630	21.242
HS 54	Total Synthetic Yarns	35.380.534	42.382.795	40.323.179	42.067.513	44.977.286
5503	Synthetic staple fibres, not carded	6.876.616	9.007.352	7.759.442	8.321.632	8.509.323
5509	Yarn of synth staple fibre, not put for retail sale	4.844.156	6.040.895	5.331.337	5.551.437	5.422.049
5512	Woven fab of syn staple fibre (> 85% of such fiber)	3.546.996	4.337.676	4.071.625	4.023.330	3.894.614
5515	Woven fabrics of synthetic staple fibres, nes	3.620.580	4.192.281	4.316.409	4.483.077	3.622.593
5513	Woven fab of syn stapl fib (< 85% of such fiber), mixed with cotton (wt	2.303.016	2.938.888	2.584.553	2.569.412	3.297.338
5516	Woven fabrics of artificial staple fibres	1.712.053	2.140.811	2.149.640	2.452.423	3.241.983
5502	Artificial filament tow	2.292.216	2.548.700	2.691.152	2.815.306	2.927.358

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5504	Artificial staple fibres, not carded	2.476.222	3.137.101	2.932.541	2.580.799	2.628.216
5514	Woven fab of syn stapl fib (> 85% of such fiber), mxd with cotton (wt	1.551.722	1.924.224	1.671.060	1.627.861	1.732.338
5510	Yarn of artif staple fibre,not put up for retail sale	1.569.398	1.770.903	1.687.643	1.692.775	1.501.213
5501	Synthetic filament tow	1.421.266	1.574.844	1.275.984	1.241.663	1.327.947
5508	Sewing thread of man-made staple fibres	559.508	667.850	664.569	699.423	691.182
5511	Yarn of man-made staple fibres, put up for retail sale	309.178	397.518	424.252	467.465	468.745
5506	Synthetic staple fibres, carded, combed	330.356	428.690	352.796	335.283	396.334
5505	Waste of man-made fibres	282.217	367.787	318.988	286.159	269.313
5507	Artificial staple fibres, carded, combed	43.795	56.501	38.847	44.446	37.861
HS 55	Total Synthetic fibres	33.739.295	41.532.021	38.270.838	39.192.491	39.968.407
5903	Textile fabrics impregnated, coated, covered/laminated w plastics, nes	7.900.035	9.068.113	9.189.830	9.873.217	10.782.517
5911	Textile products&articles for tech uses	4.352.574	4.945.847	4.785.336	4.772.071	5.022.357
5902	Tire cord fab of high tenac yarn of nylon,or polyamide,polyester, etc	2.596.417	3.247.729	3.125.801	3.011.731	2.979.966
5906	Rubberised textile fabrics (excl 59.02)	1.184.882	1.407.897	1.348.132	1.418.903	1.486.269
5907	Textile fabric impreg:paintd canva (eg theatrical scenery)	708.897	776.616	739.373	802.488	794.649
5910	Transmission or conveyor belts	406.213	466.778	455.365	501.081	533.944
5901	Text fab ctd with gum,for book covering, etc	598.266	528.623	553.266	482.761	470.232
5909	Textile hosepiping and similar textile tubing	244.624	293.141	297.744	318.182	365.632
5904	Linoleum; floor coverings with a coating or covering on tex backing	381.600	412.882	380.216	373.067	360.865
5905	Textile wall coverings	71.737	83.519	84.509	94.840	101.797
5908	Textile wick for lamps,stoves,etc	48.743	50.560	50.092	53.521	53.650
HS 59	Total Laminated Textiles	18.493.988	21.281.705	21.009.664	21.701.862	22.951.878
6006	Other knitted or crocheted fabrics	9.951.981	11.464.244	12.026.456	13.088.473	14.555.054
6004	Knitted/crocheted fabrics width>30cm, cont >= 5% elast. yarn/rubber thread (excl. 61.01)	4.475.738	5.092.996	5.278.694	6.217.510	6.360.018
6001	Pile fabrics incl. long pile fabrics and terry fabrics, knitted or crocheted	2.363.267	2.795.740	2.755.389	2.931.700	3.805.675
6005	Warp knit fabrics (incl. those made on galloon knitting machines) excl. 60.01, 60.04	2.402.975	2.829.774	2.766.210	2.869.276	3.180.653
6002	Knitted/crocheted fabrics width<=30cm, cont >= 5% elast. yarn/rubber thread (excl. 61.01)	680.312	705.063	722.633	768.780	733.140
6003	Knitted/crocheted fabrics width<=30cm other than those of heading 60.01 or 60.02	242.014	281.866	203.638	231.729	268.658
HS 60	Total Knitted/Croached Fabrics	20.116.287	23.169.683	23.753.020	26.107.468	28.903.198

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6110	Jerseys, pullovers, cardigans, etc, knitted or crocheted	47.838.457	53.646.968	49.863.204	52.735.669	55.586.191
6109	T-shirts, singlets and other vests, knitted or crocheted	31.516.675	35.906.676	33.795.664	35.583.426	38.314.641
6104	Women's suits,dresses,skirt etc&short, knit/croch	17.824.252	21.032.905	22.584.000	24.673.918	29.819.408
6115	Panty hose, tights, stockings & other hosiery, knitted or crocheted	10.271.055	11.758.394	11.145.404	12.049.711	12.911.766
6108	Women's slips,panties,pyjamas, bathrobes etc, knitted/crocheted	10.405.577	11.260.510	10.286.447	10.952.353	11.729.345
6105	Men's shirts, knitted or crocheted	7.202.748	8.738.686	8.048.720	8.124.057	8.368.295
6103	Men's suits,jackets,trousers etc&shorts, knit/croch	4.430.448	5.388.207	5.722.948	6.518.060	8.347.181
6111	Babies' garments, knitted or crocheted	6.409.431	7.555.240	6.638.598	7.067.362	7.342.098
6107	Men's underpants,pyjamas,bathrobes etc,knit/croch	5.019.562	5.837.541	5.441.575	5.925.036	6.427.961
6106	Women's blouses & shirts, knitted or crocheted	6.231.759	6.637.374	6.336.149	6.381.562	6.006.342
6114	Garments, knitted or crocheted, nes	4.588.295	5.003.734	4.995.081	5.579.494	5.793.269
6112	Track suits, ski suits and swimwear, knitted or crocheted	3.768.236	4.372.357	4.011.644	4.237.916	4.489.545
6116	Gloves, mittens and mitts, knitted or crocheted	2.808.448	3.703.277	3.578.492	3.655.709	4.061.136
6102	Women's overcoat,cape, etc,knitted/crochetd,o/t of hd 61.04	3.132.134	3.764.385	3.131.842	3.119.758	3.562.048
6117	Clothing accessories,knitted/croch	2.516.152	2.867.645	2.780.134	2.880.497	2.979.184
6101	Men's overcoats, capes, etc, knitted/crochetd,o/t of hd 61.03	2.168.466	2.684.213	2.493.767	2.538.173	2.673.162
6113	Garment,made up of knitted/crochetd fabric of hd no 59.03,06,07	557.812	659.940	634.143	702.821	786.268
HS 61	Total Articles of apparel, accessories, knit or crochet	166.689.507	190.818.052	181.487.812	192.725.522	209.197.840
6204	Women's suits, jackets,dresses skirts etc&shorts	48.594.011	54.345.649	51.648.520	52.823.189	55.429.510
6203	Men's suits, jackets, trousers etc & shorts	35.488.895	41.931.320	40.126.042	42.081.979	44.375.050
6202	Women's overcoats, capes, wind-jackets etc o/t those of hd 62.04	12.228.482	15.089.003	13.677.289	15.015.482	17.355.136
6205	Men's shirts	12.823.548	15.569.154	14.814.811	15.137.116	15.724.944
6206	Women's blouses & shirts	12.236.742	13.434.032	12.999.337	14.302.404	15.118.829
6201	Men's overcoats, capes, windjackets etc o/t those of hd 62.03	9.049.773	11.787.856	11.119.644	11.947.450	13.496.688
6212	Brassieres,girdles,corsets,braces,suspenders etc&parts	9.602.064	10.577.395	10.425.124	10.918.067	11.667.590
6211	Track suits, ski suits and swimwear; other garments	7.967.823	9.562.565	9.194.468	9.597.847	10.274.715
6210	Garment made up of fabric of heading no 56.02,56.03,59.03,59.06/59.07	7.128.705	8.636.571	8.122.570	9.212.666	9.316.411
6214	Shawls, scarves, mufflers, mantillas, etc	3.213.393	3.901.992	3.929.752	4.296.877	4.594.100
6209	Babies' garments and clothing accessories	2.874.575	3.315.122	2.659.436	2.727.856	2.947.461
6217	Clothing accessories nes; o/t of hd 62.12	2.674.609	2.980.924	2.252.791	2.342.043	2.430.298

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6208	Women's singlets, slips, briefs, pyjamas, bathrobes etc	2.278.648	2.306.244	2.452.851	2.316.921	2.319.949
6207	Men's singlets, briefs, pyjamas, bathrobes etc	1.465.400	1.770.725	1.562.821	1.487.981	1.466.263
6216	Gloves, mittens and mitts	884.538	1.131.132	1.043.926	1.054.251	1.154.884
6215	Ties, bow ties and cravats	949.971	1.062.998	957.196	981.092	959.213
6213	Handkerchiefs	183.410	229.206	237.488	252.468	261.550
HS 62	Total Non Knitted.crocheted Articles of apparel, accessories	169.644.587	197.631.888	187.224.066	196.495.689	208.892.591
6302	Bed, table, toilet and kitchen linens	15.752.546	18.029.019	16.547.293	17.791.936	19.167.675
6307	Made up articles nes, including dress patterns	9.867.765	11.164.813	11.472.797	12.051.122	13.130.250
6305	Sacks and bags of a kind used for the packing of goods	3.164.591	4.020.420	3.981.341	4.280.755	4.643.864
6301	Blankets and travelling rugs	3.001.200	3.446.989	3.644.417	3.826.930	4.346.711
6303	Curtains, drapes & interior blinds	3.734.981	4.128.387	3.853.694	4.091.132	4.318.084
6309	Worn clothing and articles	2.555.564	3.179.419	3.339.502	3.730.407	3.824.790
6304	Furnishing articles nes, excluding 94.04	2.798.118	3.097.435	2.850.640	3.134.461	3.491.351
6306	Tents&camping goods, tarpaulins, sails for boats, etc	2.838.240	3.329.293	3.184.379	3.238.839	3.473.092
6310	Rags,scrap twine,crodage,rope	445.965	640.677	719.959	679.959	898.091
6308	Set consisting of woven fab&yarn for making up into rugs,tapestrie etc	61494	61.237	73419	65.635	75181
HS 63	Total Other made textile articles, sets, worn clothing	44.220.464	51.097.689	49.667.441	52.891.176	57.369.089
	Total Textile and Apparel	541.744.447	636.255.624	602.801.286	633.225.825	670.249.008

HS 60: Knitted/Crocheted Fabrics					
	2010	2011	2012	2013	2014
Viet Nam	1.464.305	1.896.968	2.158.168	2.744.629	4.256.590
Hong Kong, China	2.183.596	2.123.002	2.184.535	2.274.843	2.243.976
China	2.345.418	2.446.813	2.360.399	2.321.983	2.039.522
Cambodia	1.001.396	1.162.889	1.394.870	1.604.679	1.829.178
Indonesia	948.070	1.265.382	1.293.266	1.336.622	1.352.122
United States of America	729.742	850.324	965.401	964.014	1.062.509
Of which Global Total	20.309.538	23.318.066	23.951.291	26.209.970	29.045.188
HS 62: Non Knitted/Crocheted Articles of apparel, accessories					
	2010	2011	2012	2013	2014
United States of America	38.316.335	41.839.331	41.135.840	42.957.410	45.108.122
Germany	15.995.251	18.531.970	16.309.037	17.509.944	18.910.694
Japan	12.644.529	15.223.586	15.633.443	15.683.593	14.575.410
United Kingdom	12.654.778	13.844.268	11.958.431	12.830.510	14.045.357
France	9.991.443	11.205.838	9.988.335	10.788.883	11.422.726
Italy	7.760.018	8.854.477	7.567.568	7.601.487	8.243.902
Hong Kong, China	8.802.131	8.743.890	8.117.990	8.161.367	8.052.045
Spain	6.193.759	7.472.296	6.174.052	6.517.019	7.412.655
Of which Global Total	167.755.170	191.624.577	182.556.613	193.438.492	209.979.827
HS 63: Other made textile articles, sets, worn clothing					
	2010	2011	2012	2013	2014
United States of America	11.200.630	11.865.139	12.082.493	12.762.494	13.248.358
Germany	3.887.415	4.725.050	4.126.787	4.114.040	4.486.918
Japan	3.029.069	3.784.603	3.860.332	3.782.749	3.748.942
United Kingdom	2.368.290	2.512.509	2.174.080	2.322.114	2.623.221
France	2.329.347	2.620.994	2.328.058	2.433.701	2.570.538
Netherlands	1.093.694	1.435.907	1.220.441	1.331.819	1.497.854
Canada	1.180.011	1.287.883	1.375.056	1.400.998	1.413.204
Italy	1.167.089	1.372.391	1.117.010	1.210.718	1.305.941
Australia	902.879	1.092.909	1.176.234	1.200.501	1.268.085
Belgium	1.043.198	1.238.733	1.105.164	1.265.164	1.264.082
Of which Global Total	44.745.916	51.526.523	50.248.790	53.170.984	57.669.593
HS 55: Total Synthetic fibres					
	2010	2011	2012	2013	2014

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Viet Nam	1.830.730	2,371.518	2,398.369	2,536.057	3.246.422
China	3.018.440	3,598.573	3,383.435	3,391.698	3.067.584
Turkey	2.089.035	2,467.117	2,223.177	2,175.298	2.163.730
Germany	1.964.449	2,333.046	2,070.734	2,017.597	2.079.769
United States of America	1.585.379	1,882.256	1,767.520	1,734.873	1.850.885
Bangladesh	919.644	1,250.583	1,087.189	1,231.269	1.408.126
Indonesia	802.826	1,179.408	1,322.450	1,352.031	1.366.665
Italy	1.402.229	1,649.004	1,266.923	1,337.420	1.312.541
Of which Global Total	34.139.889	41.870.646	38.791.077	39.487.974	40.258.745
HS 52: Cotton Yarn and Fabrics					
	2010	2011	2012	2013	2014
China	10.619.616	14.730.025	18.681.444	17.229.073	12.755.962
Bangladesh	4.820.724	6.692.856	4.600.696	5.251.973	5.259.703
Viet Nam	2.054.030	2,726.418	2,367.016	2,871.831	4.336.180
Turkey	3.385.770	3,608.860	2,377.547	2,989.181	3.022.047
Hong Kong, China	3.937.504	3,536.311	3,285.800	3,419.832	2.543.325
Indonesia	2.232.085	3,169.086	2,513.837	2,554.849	2.499.608
Italy	1.813.218	2,261.887	1,517.343	1,605.596	1.581.326
Korea, Republic of	1.761.505	2,300.007	1,674.180	1,692.343	1.505.541
Of which Global Total	53.733.492	68.572.673	61.357.640	62.178.035	58.147.297

Annex 5: Kenya's Exports of Garments to USA (US\$ '000)

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HS	Product label	from Kenya			Kenya's exports to world			United States of America's imports from world				
		Value in 2012	Value in 2013	Value in 2014	Value in 2012	Value in 2013	Value in 2014	Value in 2012	Value in 2013	Value in 2014		
'6110	Jerseys, pullovers, cardigans, etc, knitted or crocheted	34,991	53,613	52,426		28,421	53,204		13,834,715	14,413,987	14,932,217	
'6104	Women's suits,dresses,skirt etc&short, knit/croch	34,929	35,824	50,092		29,296	53,878		5,080,332	5,480,518	5,998,841	
'6109	T-shirts, singlets and other vests, knitted or crocheted	14,714	20,519	28,109		16,442	36,181		5,266,907	5,346,352	5,474,658	
'6105	Men's shirts, knitted or crocheted	8,136	18,056	20,152		20,681	20,813		2,036,456	2,075,379	2,131,855	
'6103	Men's suits,jackets,trousers etc&shorts, knit/croch	11,349	16,021	17,807		13,160	18,598		1,073,216	1,170,511	1,392,870	
'6111	Babies' garments, knitted or crocheted	2,698	5,335	6,074		1,192	6,692		1,807,407	1,896,408	1,899,982	
'6101	Men's overcoats, capes, etc, knitted/crocheted, o/t of hd 61.03	3,655	2,467	3,250		21	3,372		1,008,520	958,279	974,856	
'6106	Women's blouses & shirts, knitted or crocheted	3,821	3,354	2,461		9,389	2,572		841,663	922,377	867,898	
'6102	Women's overcoat, cape, etc, knitted/crocheted, o/t of hd 61.04	698	860	1,275		-	1,313		949,116	898,222	949,670	
'6114	Garments, knitted or crocheted, nes	2,063	4,195	872		707	2,358		1,078,961	1,043,552	1,160,774	
'6117	Clothing access nes, knitted/croch	19	46	36		418	273		345,550	366,678	444,037	
'6116	Gloves, mittens and mlts, knitted or crocheted	-	-	1		31	1		709,402	724,337	865,814	
'6108	Women's slips, panties, pyjamas, bathrobes etc, knitted/crocheted	-	-	-		13,887	35		2,825,044	2,985,668	3,112,555	
'6112	Track suits, ski suits and swimwear, knitted or crocheted	-	-	-		19	5		770,727	828,218	860,456	
'6113	Garment, made up of knitted/crocheted fabric of hd no 59.03, 06, 07	-	-	-		7,418	16		178,495	197,744	219,163	
'6115	Panty hose, tights, stockings & other hosiery, knitted or crocheted	-	2	-		124	44		2,031,857	2,166,242	2,270,060	
'6107	Men's underpants, pyjamas, bathrobes etc, knit/croch	-	30	-		172	10		1,297,471	1,482,939	1,552,416	
	Total HS 61 Group	117,073	160,322	182,555	-	-	141,378	199,365	-	41,135,839	42,957,411	45,108,122
'6204	Women's suits, jackets, dresses skirts etc&shorts	73,225	88,552	96,772		76,922	103,798		10,789,815	10,749,523	9,855,065	
'6203	Men's suits, jackets, trousers etc & shorts	40,605	36,116	64,060		40,888	70,133		8,447,120	8,796,658	8,645,222	
'6211	Track suits, ski suits and swimwear; other garments	5,352	9,865	8,448		1,482	8,686		1,881,056	1,902,919	2,136,152	
'6209	Babies' garments and clothing accessories	8,225	6,827	8,415		142	8,656		509,970	505,041	520,725	
'6205	Men's shirts	7,098	3,754	6,821		1,521	7,163		3,458,789	3,666,804	3,751,604	
'6208	Women's singlets, slips, briefs, pyjamas, bathrobes etc	1	22	5,465		1,283	5,536		371,020	370,233	383,203	
'6206	Women's blouses & shirts	2,596	2,839	4,981		8,899	5,210		2,322,819	2,757,734	2,544,441	
'6201	Men's overcoats, capes, windjackets etc o/t those of hd 62.03	-	180	1,037		561	1,202		1,612,829	1,538,213	1,774,110	
'6202	Women's overcoats, capes, wind-jackets etc o/t those of hd 62.04	14	3	145		136	238		1,732,757	1,762,255	2,100,311	
'6214	Shawls, scarves, mufflers, mantillas, etc	50	99	93		7,133	914		536,934	617,272	624,831	
'6217	Clothing accessories nes; o/t of hd 62.12	1	11	23		72	88		185,221	197,083	192,382	
'6215	Ties, bow ties and cravats	-	9	12		10	20		247,057	270,307	265,742	
'6212	Brassieres, girdles, corsets, braces, suspenders etc&parts	-	1	10		698	241		2,369,949	2,589,922	2,527,691	
'6207	Men's singlets, briefs, pyjamas, bathrobes etc	-	-	1		226	26		388,323	328,263	343,241	
'6210	Garment made up of fabric of heading no 56.02, 56.03, 59.03, 59.06/59.07	-	-	1		75	178		1,560,546	1,612,237	1,797,503	
'6213	Handkerchiefs	-	-	-		-	1		37,449	45,421	47,047	
'6216	Gloves, mittens and mlts	-	-	-		3	2		333,605	310,627	368,559	
	Total HS 62 Group	137,167	148,278	196,284	-	-	140,051	212,092	-	36,785,259	38,020,512	37,877,829

Annex 6: Exports of Meat and Meat Products (US\$'000)

Annex 7: Exports of Meat and Meat Products (US\$'000)

Product: 0201 Chilled Bovine Meat		2009	2010	2011	2012	2013
	Total Exports	435	257	445	678	1,274
	Tanzania, United Republic of	0	0	231	345	550
	Congo, Democratic Republic of the	0	0	0	8	418
	Serbia	0	0	0	6	152
	Congo	0	0	0	7	124
Product: 0202 Frozen Bovine Meat		2009	2010	2011	2012	2013
	Total Exports	979	3,270	3,101	3,654	6,216
	Somalia	119	1,442	1,881	1,865	1,938
	Sudan (North + South) Metadata	53	144	279	345	1,756
	Tanzania, United Republic of	759	937	303	453	1,491
	Serbia	0	0	0	564	487
	Congo, Democratic Republic of the	15	3	3	3	421
Product: 0203 Frozen Pig Meat		2009	2010	2011	2012	2013
		2,702	2,245	3,593	n/a	2,787
	Tanzania, United Republic of	1,153	704	1,980	n/a	1,116
	United Arab Emirates	942	834	876	n/a	986
	Serbia	0	0	0	n/a	286
	Uganda	133	179	252	n/a	279
	Oman	48	68	98	n/a	65
Product: 0204 Chilled Goat/Sheep Meat		2009	2010	2011	2012	2013
	Total Exports	851	4,340	8,747	n/a	7,788
	Oman	22	580	565	n/a	3,993
	United Arab Emirates	615	2,299	6,743	n/a	2,416
	Somalia	17	247	336	n/a	691
	Tanzania, United Republic of	77	141	0	n/a	210
	Serbia	0	0	0	n/a	173
	Angola	0	0	0	n/a	167
Product: 1601 Sausages		2009	2010	2011	2012	2013
	Total Exports	3,958	4,844	3,157	n/a	3,261
	Tanzania, United Republic of	2,770	3,373	1,009	n/a	1,108
	Uganda	510	661	865	n/a	930
	United Arab Emirates	443	393	739	n/a	726
	Serbia	0	0	0	n/a	148
	Ethiopia	56	52	94	n/a	91
Product: 1602 Prepared or preserved meat		2009	2010	2011	2012	2013
	Total Exports	67	20	108	n/a	78
	Serbia	0	0	0	n/a	33
	Somalia	0	0	0	n/a	23
	United Arab Emirates	3	0	1	n/a	13
	Uganda	3	0	0	n/a	8

Annex 7: List of Importers

PLASTIC CONTAINER IMPORTERS	
BPI Address: BP. 1423 – Bujumbura Tel: (+257) 22 22 55 64 (+257) 22 22 29 48 Burundi	Burundi Plastics Address: Bujumbura Mairie ,Burundi Tel: (+257) 22 22 95 83 & 22 22 29 03 & 22 22 48 10 Burundi
Plastica- Bujumbura Address: Buterere Burundi Tel: (+257) 22 21 08 14 - 22 22 67 50 Burundi	Fabriplastic Address: BP. 2277 - Bujumbura, Burundi Tel: (+257) 22 22 65 01 , 22 22 31 91, (+257) 22 22 51 95 (+257) 22 22 84 80 Email: fabriplastic@yahoo.fr Fax: (257) 22 22 84 80
Mokoro Plastic Manufacturing (Pty) Ltd Address: P.O. Box 403373, Gaborone, Botswana Telephone:00267-000-3971262 Fax:00267-000-3971296	Momentum EM Address : Block 6, .South-Central., Telephone : +267-26774288711 Mobile:+267-74288711,+267-26774288711Botswana P O BOX 1082 ABG Sebele 0000 Gaborone, Botswana
Mayo SN Plasco Location: BP. 863 - Pointe Noire Tel: (+242) 222944578, 06667 1717 (+242) 22294 45 89 Email: dg-pnr@sourcemayo.net Website: www.sourcemayo.net Congo	Mayo SN Plasco Location: Brazzaville Tel: (+242) 22 281 33 70 & 05 536 01 11 Email: plascobzv@yahoo.fr Website: www.sourcemayo.net Congo
Dalemu Water Ltd Location: Kampala Tel: +256-772-538450 Address : P 7230, 0056 Kampala-East Africa, Uganda	Quality Plastics U Ltd. Location: Plot # 114, Sixth Street, Industrial Area, Kampala - 24573, Central, Uganda Tel: +25641-4348946 Uganda
Nice House Of Plastics Ltd Location: Plot 75B Mulwana Road, Industrial Area, Bugolobi Address: P. O Box 5961, Kampala Tel: 0312 263110, 0414 254169/259358 Fax: 0414 342455 Email: info@nice.co.ug Uganda	Bee-rachah Valley Enterprises Ltd Address : P O Box 2257, Uganda
Creamline Industries Address : 98, Bwinjifumu Road P.O. Box 261 Tel : +260-973-524507 Zambia	Afro Quality Service (Tanzania) Ltd Address : P 18021, Tanzania Tel: +255752309000, +255715807085 Fax: +255222848205
Ghalya Bakery Limited Address: Street 14, Tanga Tel: +255 717 585706 Fax: 255 717 585706 Tanzania	Plasco Limited Factory & Sales Office Plot No. 112, Mbozi Road, Chang'ombe P.O. Box 19956, Dar es salaam, Tanzania. Tel: +255-22-2199820/ 821/ 822/ 823 Fax: +255-22-2863551

	Tanzania
Kannamaz Marketing & Promotion Agents P.O Box 16516 Dar es Salaam, Tanzania	Mazoya Nutrition Location: Kitangiri Ilemela, Mwanza Mobile: +255 0782 944 586 / +255 490 502 Email: mazoyanutrition@yahoo.com Tanzania
Chemi and Cotex Industries Limited Plot no 88/89; New bagamoyo road, Mbezi beach P.O.Box 347. Dar es salaam, Tanzania Tel: +255 22 2628014/17; +255 786 843 599 Fax: +255 22 2627637 Website: www.chemicotex-plasticmetals.com Tanzania	Arkay Plastics Ltd Lilongwe-1 Physical Address Bwalo la njobvu next to capital dry cleaner opposite Brother Enterprise Cell: (+265) 0 211 951 343 E-mail: lilongwe1@arkaymw.com Malawi
Cimpogest Plastics Industry Location: Nampula Phone: +258 2652 0689 Fax: +258 2652 0687 Mozambique	Arkay Plastics Mozambique Ltd Address : Avenue Indústrias City: Maputo Phone: +258 2175 0697 Fax: +258 2175 0698 Mozambique
International Trading Co. ITC 4 Mohamed Madi St, of Husain Kamal St Dokki Giza 12411 Tahrir st Tel: +20 201001160086 Egypt	Al Ameen Co. For Plastic 63 El Makrezi St, Manshiet El Bakry EL Ameen Tower, Heliopolis Cairo Telephone: +20 2 24508845 / 24553704 Fax: +20 2 44695462 Website: www.elameen.com Egypt
Prestige Company Ltd. 87 Al Montazah St., El Fath Mosque Heliopolis, Cairo Tel: +20 226 32 53 38 Egypt	Al Nours for Import & Export Sandouq Eldaam - El Seuof Alexandria 11451 Tel: +20 12 72 63 51 04 Fax: +20 33 31 34 03 Egypt
PLASTIC PAPER IMPORTERS	
Kabonero Grain Millers Co Ltd Address : P.O. Box 4775, Uganda	Alves Santos & Sons Ltd Address 1581 Avenue Eduardo Mondlane City Maputo Phone +258 2131 2059 Fax +258 2131 2059 Mozambique
A to Z Textile Mills P.O. Box 945, Unga Limited- Industrial Area, Arusha, Phone: + 255-788808534 Fax: + 255-732978993 Email: info@azpfl.com Website: http://www.azpfl.com Tanzania	Kannamaz Marketing & Promotion Agents P.O Box 16516 Dar es Salaam, Tanzania
Al Salam Plastic 4, Beshay Abd El Malak St., off Rokay El Maaref St., 10th floor, flat 29, Geziret Badran Shoubra Cairo Telephone: 25797128 Telefax: 24583043 Egypt	Abo El Nomros for Plastic Plot 47, Unit 7, 4th Ind. Zone, Badr El Din Complex, Giza Telephone: +20 2 38335414 Telefax: +20 2 38335414 Website: www.abuelnomrosplastic.com Egypt

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<p>Al Madina Al Monawara Factory for Plastic - Mansour Plast Jehan St. Ext., El Gamaa District, El Mansoura El Dakahleya Telephone: +20 5 2254970 Telefax: +20 5 2356195 Website: www.mansourplast.com Egypt</p>	<p>Al Fath Plast 9, Al Torully St. from the Ring Bridge Al Salam, Cairo Telephone: 22812602 Telefax: 22793200 Website: www.alfathplast.com Egypt</p>
<p>Al Badawy for Plastic Merfaq El Otobeis St.Near to Tanta Oils & Soap Co.El Mahalla El Kobra, El Gharbeya Telephone: +20 40 2221841 Fax: +20 40 2225655 Egypt</p>	
<p>SISAL AND TWINE IMPORTING COMPANIES</p>	
<p>Graintech Zambia Limited Address: Plot 2400, Felopater House, Kabelenga Road, Fairview 10101 Lusaka, Zambia</p>	<p>Mustefa Hassen Abrha Location: House Number 1407 Addis Ababa Mobile: 1206393 Phone: 2767733 Fax: 2767000 Ethiopia</p>
<p>Ethiopia Fiber Products Factory Phone: +251 11 4340187/4342434 Fax: +251 11 4340338 Business Type: State Owned Location: Addis Ababa Ethiopia</p>	<p>Hirut Teferdegn G/Mariam Location: House Number, 206 Addis Ababa Mobile +251 91 1205448 Ethiopia</p>
<p>METL Group of Companies Golden Jubilee Towers, Ohio Street, 20th Floor Ohio Street, Dar es salaam P O BOX 20660, Dar es Salaam, Tanzania Tel: +255 22 2122830 Website: http://www.metl.net Tanzania</p>	
<p>STEEL DRUM IMPORTING COMPANIES</p>	
<p>JBL Global Networks Ltd Location: Ground Floor - Mpelembe House. Broadway Road, Ndola Phone: +260 95 514 6868 / +260 97 714 6868 Tel/Fax: +260 212 611433 Zambia</p>	

POULTRY AND MEAT IMPORTERS	
UGANDA	
Afro Terry Industries Taha Habib; Phone + 256 752 733052 Plot 66, vinco arcade room Beef and lamb	Tannex ltd Phone +256 758140142, + 256 773916791 Beef chicken and goat
Bifra Investments Ltd Mr. Biryomumaisho Francis; Phone +256-772423836, +256-754423836 Po box 2118, kampala Rabbit	Nakumatt Uganda Phone +256 414 668818, +256 414 256089/91; Email nakumattuganda@nakumatt.net Beef
Café Javas Uganda Phone +256 393 202296, +256 392-177284, +256 393 202355, Meat	Mufa Distributers ltd Phone +255-759-008364 Beef, lamb and goat
TANZANIA	
Happy Sausages ltd Phone +255 737 217 301, +255 732 979 976; Email info@happysausages.co.tz Chicken, beef and pork	Al Kafil company ltd Email pantulusir@gmail.com Poultry
Jabe Investment Company Davis Kambi ; Phone +255-65268-7800 Beef , pork, lamb and chicken	Agro Ranch ltd Phone +255 (22) 26664671
Briha Trading Email brian@brihatrading.com Phone +255 7 58-58-58-58 chicken beef and pork 17 kijitonjama, dareesalam Meat	FMW Trading ltd Phone + 255 715 702 121, +255 784 702 121 Meat
SAUDI ARABIA	
Nashar Fresh Meat Co Phone +966-(2)6377793 Meat	Al Yahya Food Est. Phone + 966-1-2647565; Email alyahyafood2002@hotmail.com
Vita Food Products Company Phone +966 3 8471559; Email info@vitafood.com.sa , vita@ogertel.com Meat (and Sea food)	Sunbulah Group Phone +966-12-6143938, Email info@sunbulahgroup.com Beef, lamb and chicken
Manfoor Trading Est. Phone +966-1-4390477, +966-1-4594432; Email mawfoor@mawfoor.com	AlSafi Dairy Phone +966 11 243 9101; Email info-alsafidairy@alfaisaliah.com Beef and milk

PANAFCON Ltd.

<p>Khalifa Abdulrahman Algossabi Cold Stores Phone +966 2 6370227</p>	<p>Arabian Est. For Trade & Shipping Food & Commodity Division Phone +966-2-6440983; Email actjeddah@actshipping.com Beef</p>
<p>Yousif H Al Shihab Trading Est. Anil Chopra Phone +966-3-8346871, +966-3-8390010 , +966-503889043; Email alshahab@icc.net.sa</p>	<p>Khalid Al Harbi Trading Est. Phone +966-1-4586252; Email assafmeat@yahoo.co.uk</p>
<p>National United Supermarkets Co ltd Phone +966 1 4956768, +966 1 4916964, +966 1 4933294</p>	<p>Abbar & Zainy Cold Stores Phone +966-2-6369368 /6371315/ 6473563; Email azcsjed@azcs.net</p>
<p>UNITED ARAB EMIRATES</p>	
<p>Abbeyfield Foods Phone +971 4 4504288 ,+971 4 4504288; Fortune executive tower, sheikh Zayed rd Email sales@abbeyfieldfoods.com</p>	<p>Ahmed Al Ali Trading Phone +9714 2672864, +9714 2672862; Email aaatrad@emirates.net.ae Frozen sea food</p>
<p>RWANDA</p>	
<p>Mugisha Farms ltd Phone +250 728302552 Email mugishafarms@gmail.com Kabuga, Rwanda Poultry</p>	

TEXTILES AND GARMENTS	
<p>1) Burlington world wide Inc. 804 Green valley Rd suite 300 Greensboro, NC 27408 U.S.A TEL:+1336-379-2855 Email: sales@burlington.com Web page: www.burlington.com Adult wear and outdoor garments</p>	<p>6) Cymatic international Inc. 8200 Cahill Austin +1 512 657 3997 +1 509 351 5902 Email: cymaticsales@gmail.com Web page: www.cymaticfashion.com Brand new kids outfits stylish shorts and pants</p>
<p>2) City threads Ltd 95 97 Tanner street Barking IG 11 8 PT Mobile: 07828717627 UK Email: www.citythread.com Brand new kids outfits</p>	<p>7) Hanna Boutique UK 20 Rock wood Gardens Chingford Hanna.co.uk@gmail.com www.hannaboutique.com 07943577970 UK</p>
<p>3) Swift garments 891 High road Chadwell Health Ramford RM 64 HR Email: www.swiftgarments.com UK Daywear, PE wear, Badges</p>	<p>8) Hawthorn International International house London ECIA2BN 442036333846 UK</p>
<p>4) Rogali (new and used) clothing 1710 industrial or Edinburgh TX 785442 +956 2221076 ventas@ropansanuevrojali.com www.usednewclothingrogali.com (New and Used) clothing</p>	<p>9) Eye Catch Trading clothing and fashion Apparel Surplus and stock lots Surplus men's wear Contact: Isaac Frennd 718-755-0500 1274-4959 st-suit # 316 Brooklyn New York USA</p>
<p>5) Jadis Global Trading Inc. 343 Cypress Drive Santa Rosa Beach FL 324559 +850 714 7522 Email: jim@jadisglobal.com www.JADISGLOBAL.com clothing and fashions</p>	<p>10) Oasis Promotional Beverly Hills, California 8730 Wilshire Bird, suite 210 90210 USA Tel: 1 855 525 2642 kreative@oasispromotional.com www.oasispromotional.com knitted garments, woven garments, home furnishing product 442072845007 www.dewhirst.com; menswear@dewhirst.com womenswear@dewhirst.com; childrenswear@dewhirst.com sportswear@dewhirst.com UK</p>

PANAFCON Ltd.

<p>11) Chrisma Designs Ltd BOX 1532 Kampala Kafeera zone RD Mulago +256-772505565 +256-414531815 www.chrisma.com Uganda (Gowns, clinical and laboratorywear, traditional women's cloths called gomesis)</p>	<p>12) Utexrwa SA Textiles Box 430 Gisozi 250 514 176 250 582 546 www.utexrwa.com Rwanda Finished garments and accessories</p>
<p>13) Kafue textiles Zambia Plot 1052 president Ave, Kafue Estate Box 360131 Kafue 260 21 131 1348 260 21 131 1514 Zambia</p>	<p>14) Joban Group Southern range nyanza Ltd Utexrwa SA, Rwanda info@joban.com www.jobangroup.com Garments and accessories.</p>
<p>15) Tribal Textiles Box 120 mfuwe 260 216 245137 260 216 245162 sales@tribaltextiles.co.zm www.tribaltextiles.co.zm</p>	<p>16) Mihaki Fabrics Plot No 1620/1622 lubowa estate (off Entebbe Rd) Uganda Kampala +256 713 443524 www.owourgroupp.com finished garments and textile</p>
<p>17) COTEBU P.O. BOX BP 2890 BUJUMBURA +257 22 23 51 20 +257 22 23 17 50 +257 22 23 21 55 cotebu@cbinf.com</p>	<p>18) Opal Int Co Ltd No 14/15 Hlaing, Thayar Township Yargon, Myanmar 95-1-2444644 Opal@opal.net.com www.opalgarment.com</p>
<p>19) Nyanza Textiles Box 1025 Jinja 256 43123181 256 43123151 Ram@nyfil.co.ug www.nytil.com t-shirts, bed sheets, uniform</p>	<p>20) Harodite Industries 66 South st Taunton MA 02780 +1508-824-6961 www.harodite.com U.S.A Men's wear and women's wear inter linings</p>
<p>21) Dewhirst 106 110 Kentish Town RD London New 19PX</p>	

Annex 8: Minutes of Workshop on Draft Report

MARKET AND VALUE CHAIN (VC) SURVEY FOR THE KENYA PORTION OF THE NORTHERN ECONOMIC CORRIDOR

COMMUNICATION TO THE CLIENT ON THE WORKSHOP ON THE 3 VCs, Sarova Panafric Hotel, Nairobi, 11th December, 2015

INTRODUCTION

This document is a Third Communication to the Client to serve the purpose of sharing the proceedings and reflections on the Workshop held on 11th December 2015. Separately, this week; it is intended to send a “Thank You” letter to all the participants to inform them of the main recommendations from the Workshop and next steps in the Study. This Communication, briefly:

- (a) Describes the proceedings at the Workshop and therein **summarizes** the main points raised and discussed in the plenary and breakout group sessions,
- (b) Gives a brief update on next steps.

PROCEEDINGS OF THE WORKSHOP

1.1. Basis of the Workshop

The Workshop was held at the Fairview Hotel, Nairobi, and was attended by various participants. Programme and attendance list is attached as **Annex 1**. The Workshop was based both on “*Report 1: The draft report on the short list of the product VCs and Criteria for Choice of 3VCs*” earlier shared with the Client, and preliminary findings from the Field Survey.

1.2. Introductory Remarks

The Workshop was chaired by Mr. Kenneth Atieno, a member of the Panafcon Team. Welcome and introductory remarks were made by Mr. Richard Okello, Panafcon, Dr. Steve Mogere, representing JICA, Eng. Gejo, representing the JICA Study Team and Mr. John Kimani representing the Ministry of Transport and Infrastructure.

Mr. Okello informed the participants of the purpose of the Study with regard to it being a study to feed into the preparation of the Master Plan for the Northern Economic Corridor (NEC). He also gave a briefing on the past two workshops on this study and its importance to the stakeholders in attendance.

Dr. Mogere emphasized the requirement for consultations and evidence base in the preparation of the Master Plan and pointed out that the corridor is a hub of multi modal types of transportation. He also encouraged those in attendance to engage other stakeholders in the study findings to ensure that the final report would be sufficiently developed from their input.

Eng. Gejo emphasized the central nature of NEC and the fact that the Ministry in collaboration with JICA has commissioned several studies to support the evidence base for planning. He emphasised that that more growth drivers will be selected from the study’s Value Chains for the final report and the findings would be shared in 2016.

Mr. Kimani emphasized the importance of the findings as well as the input from the stakeholders to the development of the country’s infrastructure.

PRESENTATIONS AND DISCUSSIONS

Mr. Ong'olo and Mr. Atieno jointly presented the study findings on the 3 VCs. After the presentation there was lively and useful discussions as summarized in the following questions/comments and responses from the Panafcon Team:

- **Question 1:** There is a need to clarify the use of the word 'incentive' in the presentation because the way it was used in the study needs to be explained. Could another word be used to replace it?
- **Response 1:** The word 'incentive' in this instance was from the manufacturer's perspective e.g. if a manufacturer is approached by the government and asked what should be done such as fixing bad roads or subsidizing the cost of machinery which will be beneficial to improve their productivity. Point was taken and another word will be used to replace 'incentives'.
- **Question 2:** The apparel sector is a driving force in the Exports Processing Zones industry and AGOA has driven the program forward. Kenya currently leads in exporting apparels to the USA followed by Madagascar and Lesotho. 90% of the apparel sector relies on imported fabric and Kenya needs to look at bottom production as a solution to this in order to boost its potential in the export sector. AGOA was renewed in June 2015 till September 30th 2025 and as the report is being beefed up, there are documents from the ministry and the AGOA strategy that could help in the logistics and transport element of the master plan to achieve the AGOA benefits within the next 10years.
- **Response 2:** Within these 10 years you have mentioned, there is potential to manufacture cheap cotton textiles and apparels locally and there is need to use this information to tap into production of high quality products for the export market because there is a growing market that wants to know the traceability issues in production. The 10 years should be learning and development period by ensuring Kenya has the capacity to reduce costs by producing a lot of high quality cotton considering the government now encourages irrigation and this would produce high quality cotton for the textile market.
- **Question3:** I would like clarification on the need to increase input in relation to labour. Has this been highlighted- labour payments and salaries and how they can be incorporated into the study?
- **Response 3:** The study involved asking the manufacturers to indicate the percentage cost of labour as no manufacturer would willingly disclose how much they pay their workers. From the secondary data in the study, it has been taken into account that companies take the labour market in Kenya for granted because they think it is cheap. The unit cost of labour is closing in Kenya in relation to what workers are being paid in Kenya compared to other markets.

SUGGESTIONS ON IMPROVING THE 3 VCs

During the Workshop, there were three breakout groups which were mandated to examine and recommend additions/deletions on the findings and preliminary recommendations on the 3 VCs. From the group discussions, the following suggestions were made:

Meat and Meat Products

- a) National and County governments need to improve infrastructure; transport, electricity and water to facilitate improved production by manufacturers.
- b) Public sector, private sector and farmers should work together to improve slaughter houses, holding grounds and sources of fodder for the meat and meat product value chain.
- c) Government veterinary services should be improved to provide quality health services to livestock farmers.
- d) Government agencies should specialize in standardization and quality assurance in the meat and meat products value chain.

1. Textiles and Apparel

- a) The government needs to review currently existing policies on the textile industry and regulate them.
- b) The private sector and government need to establish training facilities to address issues in operation and maintenance of machinery, marketing, automation and lobbying in the textile and apparel value chain.
- c) Government needs to develop infrastructure in order to facilitate improved production of quality textiles and apparels and reduce reliance on imports and the cost of production.

2. Packaging Materials

- a) There is need to promote the use of recycled raw material inputs to reduce this component of the costs of production.
- b) Alternative sources of energy should be promoted to reduce costs of electricity.
- c) Manufacturers should be assisted with soft loans to finance upgrading of equipment and processes.
- d) Companies need to be catalysed to improve the quality of their products, particularly those for exports.
- e) New investors need to be encouraged to set up to manufacture a wider range of packaging products, e.g. cans for beverages, and glass containers.
- f) Infrastructure needs to be improved for firms in Industrial Area of Nairobi, e.g. motivating them to relocate to Special Economic Zones (SEZs).
- g) GOK and companies need to set up a R&D to finance innovations in packaging products.

3. Additional Suggestions by Eng. Gejo

In a follow-up side meeting with Eng. Gejo after the Workshop, the following very useful suggestions were made to be included in the report:

- a) Include a more comprehensive VC Map for packaging products.
- b) For all 3 VCs, in the breakdown of the cost structure apart from percentage shares give an indication of the actual cost of production.
- c) For the meat and meat products VC, provide a bit more details on actions needed to motivate and promote exports.

- d) For the meat and meat products VC, give a more comprehensive differentiation of products that are produced.
- e) Where possible, indicate which specific roads need to be upgrade to help manufacturers to reduce cost of transport.

NEXT STEPS CONCLUSION

Observations on the Workshop

Though attendance was lower than previous ones due to December timing, it is noted that the Workshop was attended by a good mixture of very relevant stakeholders who gave useful insights and comments for improvement. The scope and purpose of the study will be once again reemphasized in the proposed ‘Thank You’ letter.

The comments received at the Workshop and others will be used to compile the draft complete report which will be submitted as planned in the Work Schedule.

Annex 1
Programme and Attendance List
1. Programme

**PROJECT FOR FORMULATION OF MASTER PLAN ON
LOGISTICS IN NORTHERN ECONOMIC CORRIDOR - MARKET
AND VALUE CHAIN SURVEY**

WORKSHOP ON DRAFT REPORT

Sarova Panafric Hotel, Nairobi

Friday 11th December 2015

PROGRAMME

- | | | |
|-----------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0845 – 0900hrs | - | Registration/Refreshment |
| 0900 – 0915hrs | - | Introductions |
| 0915 – 0945hrs | - | Opening Remarks <ol style="list-style-type: none">1. Panafcon Representative2. JICA Kenya Representative3. Min of Transport & Infrastructure Representative |
| 0945 – 1100hrs | - | Presentation of the Draft Report <ul style="list-style-type: none">• Findings and Main Recommendations |
| 1100 – 1200hrs | - | 3 Value Chain Breakout Sessions |
| 1200 – 1245hrs | - | Presentations from Breakout Groups |
| 1245hrs | - | Wrap-up and Way Forward |
| 1300hrs | - | Lunch is served |

Attendance List

No	Name	Organisation	Contacts
1.	Richard Okello	Panafcon Limited	
2	David Ong'olo	Panafcon Limited	
3	Racheal M. N. Nganwa	NCTTCA	
4	Kenneth Atieno	Panafcon Limited	
5	Geoffrey Kimani	Kenya Investment Authority	
6	Irene Muchoki	Panafcon Limited	
7	Cynthia Akinyi	Panafcon Limited	
8	Elsie Ng'endo	Panafcon Limited	
9	Jared Otieno	JICA Study Team	
10	Francis Rotich	EPZ Authority	
11	Dr. Stephen Mogere	JICA Nairobi Office	
12	Fatuma Wanjiru	Panafcon Limited	
13	Peter Kedoki	Narok Slaughter House	
14	Joseph Odhiambo	Panafcon Ltd	
15	Brian Mutie	Ministry of Devolution	
16	Charles W. Ndambuki	National Treasury PPP Unit	
17	Kenji Yokota	JICA Nairobi Office	
18	Daniel Muthanji	Muguku Farms	
19	Eng. Tetsunari Gejo	JICA Study Team	
20	Michael Gaitho	Kenya National Chamber of commerce and industry	
21	Andrew Kosgey	Kenya Pipeline Company	
22	Anderson Mwenda	Ministry of Transport and Infrastructure	
23	Rachel Baye	Ruaka Farm	
24	Daniel Gathira	Kenya Ports Authority	



Data 4: Market and Value Chain Survey (Uganda)

1. Iron and Steel
2. Meat, Hides and Skins
3. Maize and Rice
4. Petroleum Oil
5. Coffee
6. Dairy
7. Palm Oil and Sesame Seed

**REPORT ON VALUE CHAIN ANALYSIS OF
IRON AND STEEL
UGANDA**

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SUBMITTED TO:

**NIPPON KOEI CO. LTD
JICA Project Office
Ministry of Works and Transport
Central Mechanical Workshop
Old Port Bell Road, Kampala**

SEPTEMBER 2015

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1 INTRODUCTION

1.1 THE VALUE CHAIN FOR IRON AND STEEL

The value chain for iron and steel encompasses all products of iron and steel from the iron ores, steel alloys and scrap to intermediary and final iron and steel products in various forms including flat rolled, angle, shapes and sections, bars and rods, and wire products. For this context, iron and steel shall refer to all products that are covered under category 72 as under the HS coding system. At the 4-digit level, these are approximately 29 products traded internationally.

Iron and Steel value addition started way back in the sixties with Uganda Baati - then called Tororo Steel Works Ltd (1964). By the early seventies, there were a number of Iron and Steel companies which were under The Uganda Steel Corporation Act. These included: E.A. Steel Products Limited, Kalamu Limited, Miltires Limited, Steel Manufacturers of East Africa Limited, The Iron Deposit Project in Kigezi, The Magnetite Project in Tororo, Tororo Works Limited, Uganda Hoes Limited, Uganda Metal Industries Limited in Jinja and Uganda Metal Products and Enamelling Company Limited. Due to the turmoil in the 1970s, all these companies collapsed. Reactivation of the iron and steel industry began in the late 1980s and has so far taken close to thirty years.

Iron and steel is one of the export commodities with high potential for contributing to economic development of the areas along the Northern Economic Corridor due to its high growth rate, potential to lead Uganda's development, accessibility to regional markets and positive impact on transport systems. According to lead steel producers in Uganda, steel industries have enormous impacts on the economy due to their long value chains and recycling advantages. Indeed, through its multiplier effects, steel is the very basis upon which industrialization the world over stands.

1.2 OBJECTIVES OF THE VALUE CHAIN ANALYSIS

This value chain analysis on Uganda's iron and steel industry was conducted to identify critical measures for improvement of logistics infrastructure for iron and steel as a vitally traded commodity along the Northern Economic Corridor. The specific objectives were:

- a) Estimate the size of export markets for Uganda's iron and steel products, identify any gaps in meeting export market demands and suggest measures that should be taken to close those gaps.
- b) Map out the processes and stakeholders in the value chain in order to identify key actors and geographical nodes that provide entry points for developing the chain.
- c) Study the critical factors to higher value addition and development of the chain, and what should be done to address those factors.
- d) Identify critical issues regarding logistics infrastructure for the development of iron and steel exports along the Northern Economic Corridor.

2 VALUE CHAIN STRUCTURE AND CHARACTERISTICS FOR IRON AND STEEL INDUSTRY

2.1 VALUE CHAIN MAP FOR IRON AND STEEL INDUSTRY

The development of the iron and steel value chain in Uganda has taken an up-down approach (secondary level) as opposed to the down-up approach (primary industry level). The upward approach starts with mining up to the final finished product level. This is what is very common in Europe, USA, Japan, China etc. For Uganda, development begun at the end of the value chain. Finished products were imported for final use as in construction of various infrastructural projects such as roads, railways, school etc. This development obviously excluded the traditional iron development stages.

With time, some level of backward integration has started and this is seen in several of our factories which include, Roofings Rolling Mills, Tembo, MMI, Steel Corporation among others. The current developments in the sector begun in the early 80's with the reownership of some of these establishments as well as establishment of some local firm such as Sembule Steel Mills among others. This is a process which has been ongoing for the last 30 years. From the direct importation of finished products, Uganda Iron and Steel sector has moved into backward integration where initial value addition was done. The initial value addition was in cutting and forming of iron sheets. Over time, the traders have upgraded to some level of value addition and this is seen in the manufacture of nails, roofing sheets, barbed wire, bars among others. The backward integration has now reached the billet level as well as the rolling stage. There is also some level of activity at the lower end in mining in Muko. So far, the companies involved in mining are Steel Rolling Mills Ltd based in Jinja and BM Technical based in Mbarara. Given the level of backward integration going on, other player such as Roofings Rolling Mills Ltd is also showing interest.

The average size in terms of investment ranges from USD 50,000 to the biggest (Roofings Group) worth about USD 240 Million. Similarly production technologies are varied, ranging

from old to modern equipment. Figure 1 below shows a typical iron and steel value chain. Arrows indicate the main value addition activities being undertaken in Uganda.

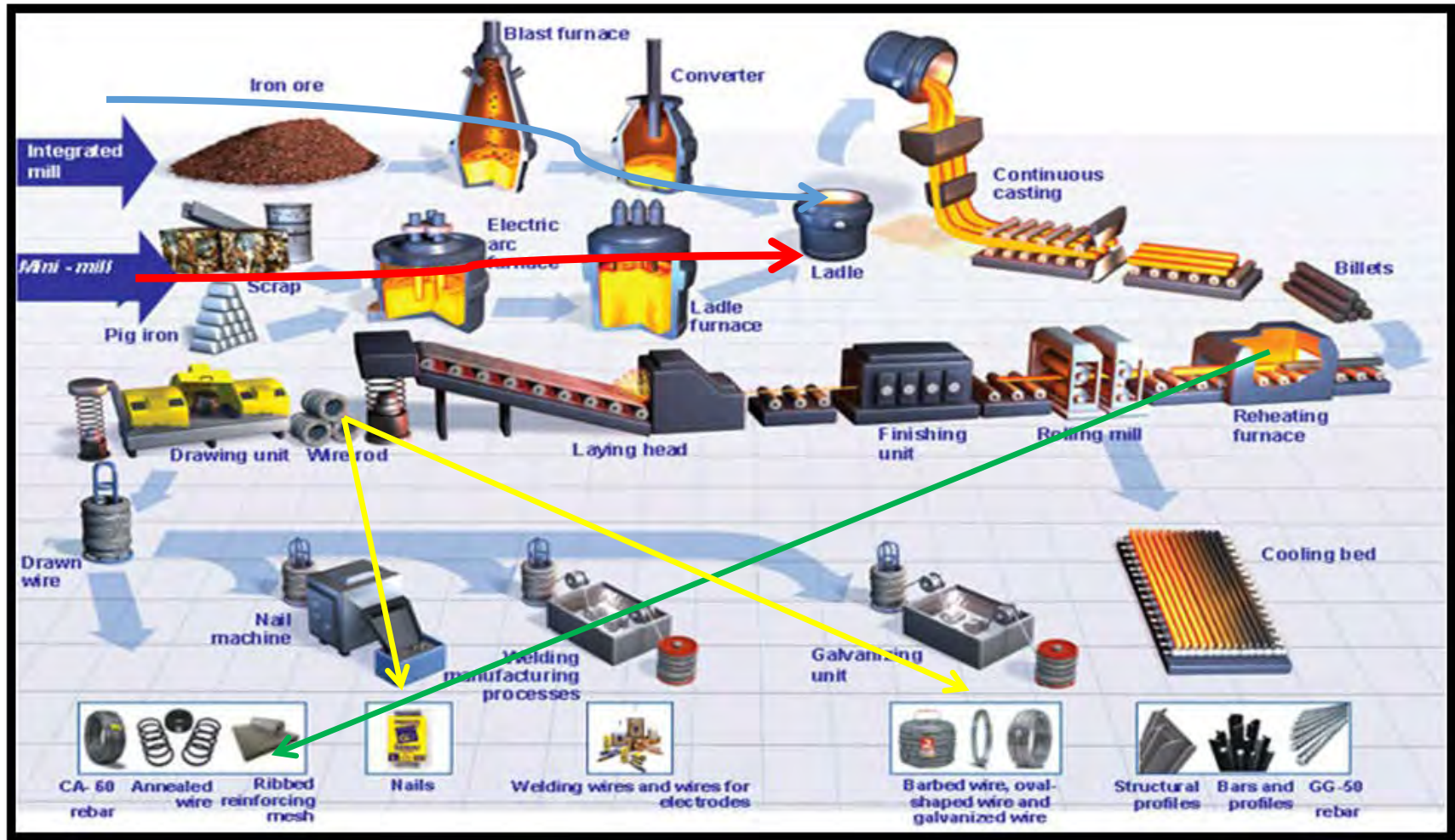


Figure 1: Iron and Steel value Chain

2.2 SUPPLY OF RAW MATERIALS

In Uganda, the major sources of raw materials for the industry include iron and steel scrap and imported steel inputs including billets, blooms and beams among others. It is estimated that scrap constitutes over 70% of the steel manufacturing raw materials and it's mainly obtained from obsolete construction materials, automobile equipment and packaging materials with in the region (Senfuka et al). The steel inputs are mainly imported from China, Russia, Taiwan, South Africa and Japan.

Iron and Steel imports come in different forms ranging from 100% raw material, intermediate materials and finished products. However, it should be noted that at each of these levels, the product imported is used along the value chain and as such, it is raw material. These imports are as shown in the table below, against exports. Comparing the import and export statistics of iron and steel, we can see a trade deficit on Uganda which is persistently above USD 150 Million for the last four years.

Table 1: Value of Uganda's Iron and Steel Exports from 2009 to 2013

Year	2010	2011	2012	2013	2014
Iron & Steel Exports (USD '000')	56,982	54,184	78,209	83,302	94,321
Iron & Steel Imports (USD '000)	223,414	264,142	242,009	251,910	251,054

Source: UN Comtrade Statistics, 2014

The major raw materials in steel production are scrap, iron ores, coal/coke and limestone, however there is no coal that has been discovered in Uganda. Over 250 million tons of iron ore of fair quality has been discovered during the Sustainable Management of Mineral Resources Project (SMMRP) in 2011 more than what was previously discovered during colonial mappings. These iron ores are into categories including Haematite in the South Western region of Uganda especially in Kabale, Mbarara, Kisoro and Kanungu districts and Magnetite in South Eastern part

of Uganda especially in Sukulu and Bukusu in Tororo district. Uganda also has limestone in the Eastern part of the country especially in Tororo (Baguma. Z, 2015).

The Government has done survey and established the various locations and quantities across the country with the best deposits sitting in Muko which is about 90% iron. "Currently, Uganda has over 200 million tons reserves of hematite iron ore in south-western Uganda and 60 million tons of magnetite iron ore in the south eastern part of the country and still have huge potential for exploration," according to Francis Natukunda, a senior geologist at Uganda's Department of Geological Survey and Mines (Natukunda, 2014).

Before 2004, there was no extraction of iron ore in Uganda because no mining licenses were issued. In 2005 to 2011, there was exploitation of iron ore from 209 tons to 2,134 tons respectively. The iron ore was exported to China, however this was banned in 2012 following President's directive to the Ministry Of Energy and Mineral Development not to allow any more iron ore exports. This was intended to secure adequate raw materials for domestic steel industry and to enhance local steel producers attain their production capacity. This was also due to the tremendous growth in demand for steel especially in metal fabrication and construction industry which is highly attributed by population increase and improvement in incomes.

2.3 PRODUCTION, PROCESSING AND MANUFACTURING

The recycled scrap is produced into steel inputs by using induction furnaces or electric arc furnaces to produce liquid steel which is casted into steel inputs for further processing. Most of the processing and manufacturing factories in the Uganda's steel industry are involved in small scale production (mini-mills) and few in large scale steelmaking (integrated mills). Mini-mills are involved in steel rolling using semi-finished casting products such as slabs, blooms, rods, strips, beams, billets, flat and long products to produce iron sheets, mild steel plates, hollow sections and wire products among others. Whereas integrated mills are involved in scrap recycling to produce semi-finished products that are used as raw materials by mini-mills. The integrated mills like Roofings Group are also involved in the production of finished steel products as the mini-mills. The integrated steel mills are also upgrading their operation structures

and machinery to start producing steel from the basic raw materials (Iron ore, coal and limestone). Most of the producers in the steelmaking industry are also involved in manufacturing of the finished steel products.

Major processing and manufacturing companies in the industry include; Roofings Group, Uganda Baati, Steel and Tube Ltd, Steel Rolling Mills Uganda limited and Tembo steel Mills Uganda Limited. They use semi-finished steel products to produce the final products that are consumed in various sectors especially building and construction. These products include;

- i. Hollow sections (Round, Square and Rectangular structural tubes)
- ii. Mild steel plates (louvers, chequered plates and extended)
- iii. Galvanized and pre-painted iron sheets
- iv. Wire products (wire nails, ceiling nails, round bars, BRC & welded mesh, and binding wires)
- v. Galvanized wire products (barbed wire, chain links, razor wire and plain wire)
- vi. Trading items (hot rolled angles, reinforcement steel, mild steel flats and square bars)

1.1 MARKET SEGMENTS/MAJOR BUYERS

Considering the product profile in the 2014 export statistics, it is evident that most of the products exported are used in the construction and fabrication industry directly or indirectly. Bars and rods which accounted for up to US\$ 34 Million of export earnings are used for structural reinforcement in the construction industry. Angle, shapes and sections are primarily used for fabrication of secondary products that still end up in the construction works such as frames, doors and windows among others, Therefore Uganda's trade in these products is largely shaped by the performance of the domestic and regional construction industry. Besides construction industry, the fabrication industry has also extended on creation of industrial machinery or components. Steel sections and flat-rolled products are being used in fabrication of heavy industry components such as boilers and agro-machinery. However this is a limited size segment whose growth cannot be easily projected.

The buyers for steel products range from large scale to small scale consumers including; Government agencies and ministries (schools, hospitals, markets, power plants, railway lines among others), NGO's, and large private companies (Hotels, shopping malls, recreation centers, business offices among others), farmers and households.

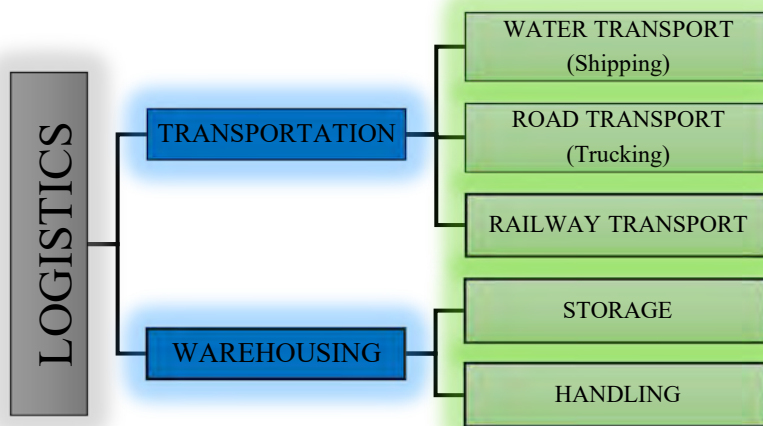
2.4 DISTRIBUTION AND EXPORT OF STEEL PRODUCTS

In the industry, optimization of the last mile to the end user is key. The physical characteristics of the products especially size and weight, make logistical costs significantly high for these products. As such manufacturer involvement and investment in setting up of effective distribution channels is inevitable. To facilitate export trade in steel products, iron and steel manufacturers have setup warehouses and depots in major towns and urban centers throughout the country and especially key border towns to facilitate cheaper and faster delivery to end-user market. For instance Arua for S. Sudan, Kasese for DRC and Busia for Kenya. Manufacturers such as Steel and Tube Industries and Roofing group have also opened up subsidiary business entities in the export markets, focusing on distribution and movement of products in those markets.

Where this has not been possible, manufacturers have attempted to establish and encourage distribution links with building material distributors and dealers (Hardware trading companies) to have presence in the market. Traders in Uganda and importing markets focus on distribution of the less bulky products such as iron sheets, wire nails and fencing products that have a higher domestic consumption rate and manageable with the kind of logistic means that are affordable to them. Steel and iron products form a big proportion of their sales in the market. Hardware trading companies are also involved in transportation and warehousing logistics to facilitate the flow and storage of their products in the market. Some of the dominant hardware trading companies include: Seroma Ltd, Hardware World, Viva hardware and Cheap General hardware among others.

2.5 LOGISTICS INVOLVED IN STEEL INDUSTRY

The major logistics in steelmaking are involved in management of the flow and storage of raw materials, semi-finished steel products (Inputs), and distribution of the finished steel products.



The transportation logistics facilitate the flow of the raw materials and semi-finished steel products from the foreign markets into the country. The billets, blooms and other manufacturing inputs are shipped from China, Russia, Japan, and South Africa to the East African coast where they are either trucked or transported by railway to the Uganda's boarder of Malaba. The choice of either using the railway or trucking depends on the nature of the materials transported and the urgency of the materials. At the manufacturing level, the transport logistics are categorized into internal and external transport logistics. The manufacturing and processing companies source-out other forwarding and logistics agencies to manage their external transportation logistics and then these companies entirely manage the movement of their inputs and the distribution of their steel products to the market. The distribution companies (Hardware, wholesalers and retailers) provide transport facilities to bulky buyers but the transportation costs are borne by the buyer in form of increased product prices.

Warehousing logistics are fundamental in the steel and iron industry as they facilitate the storage of raw materials and steel inputs before they are processed and put in manufacturing. These warehouses are equipped with machinery like cranes and folk lifters that facilitate the handling of the materials in the stores by loading and off-loading.

For better management of logistics especially in distribution of the steel products, various manufacturing companies like Uganda Baati, Steel and Tube Ltd and Roofings group and the distribution agencies like Hardware World and Seroma Ltd, have opened several depots, outlets and branches across the country and the region to reduce transportation costs and increase accessibility of their products in the markets. For example Roofings opened up a branch in Rwanda and it's looking forward to establish various manufacturing plants across the region.

2.6 KEY VALUE CHAIN ACTORS AND GEOGRAPHICAL NODS

- a) According to information available with Uganda Manufacturers Association, there are 32 major players involved in iron and steel products in Uganda (See list in Annex 1). The oldest is Uganda Baati; the largest is Roofings Group while Steel Rolling Mills and B.M technical Services have pioneered in processing iron ore.

- b) Construction industry is one of the leading consumer of steel products in the World. The regional market for steel and iron products is dominated by the demand for products for building and construction and this is largely due to increasing growth in construction sector that comprises of infrastructural development like roads, bridges, power plants and dams among others, increasing demand for improved housing facilities, hotels, recreation and leisure centers among others. The other fundamental aspect of demand for steel products is metal fabrication that involves transforming the finished steel products into secondary products that suits consumer specifications. With the construction of dams such as the Ayago and Karuma, a lot of steel will be needed which in most cases is going to be imported. If Uganda had already began mining its iron ore and set up the steel industry a lot of foreign exchange would be saved. Also, the effort to increase on the power generation and transmission in the country through construction and rehabilitation of power plants and dams in Uganda is also a potential source of market for steel industry. Moreover, investment in infrastructures by the government such as roads and bridges, hospitals, schools, universities and other institutions, modern markets, water and sewage treatment plants among others also need a lot of steel for structural and concrete reinforcement.

- c) Feasibility studies to process Uganda's iron ore using methane gas from oil fields and imported coal to final steel products are in progress. In 2013, the President made a proposal to import coal from Mozambique to fire-up iron ore furnaces after Kenya and Tanzania put a trade embargo on exportation of their coal.
- d) Agricultural sector has been the pillar of Uganda's economy for decades and as the country make initiatives to improve on the agricultural productivity and the quality of agricultural output through agricultural mechanization like construction of the irrigation schemes and encouraging value addition through agro-processing especially for crops with export potential such as sugar cane, tea and coffee among others. The implementation of these initiatives will require investment in and use of steel machinery.
- e) Uganda has planned to start manufacturing vehicles in 2018 under Kiira Motor Cooperation (KMC). This industry will require use of strong machinery made from steel during the construction of the manufacturing complex at Kakira and during the manufacturing of the vehicles.
- f) Uganda started a project of reviving the railway system by constructing a US \$ 3.2 billion standard gauge railway that will connect East African countries in the Northern economic corridor. The railway line will join Kampala through Malaba to Nimule in South Sudan. This multi-billion shilling project provide a potential market for steel during and after construction.
- g) The recent discovery of oil in the Western Uganda facilitated investment in oil extraction machinery, oil refineries and investment in pipelines that will enable transportation of gas and petroleum products. All such investments require consumption of steel.

3 END MARKET SIZE AND ANALYSIS

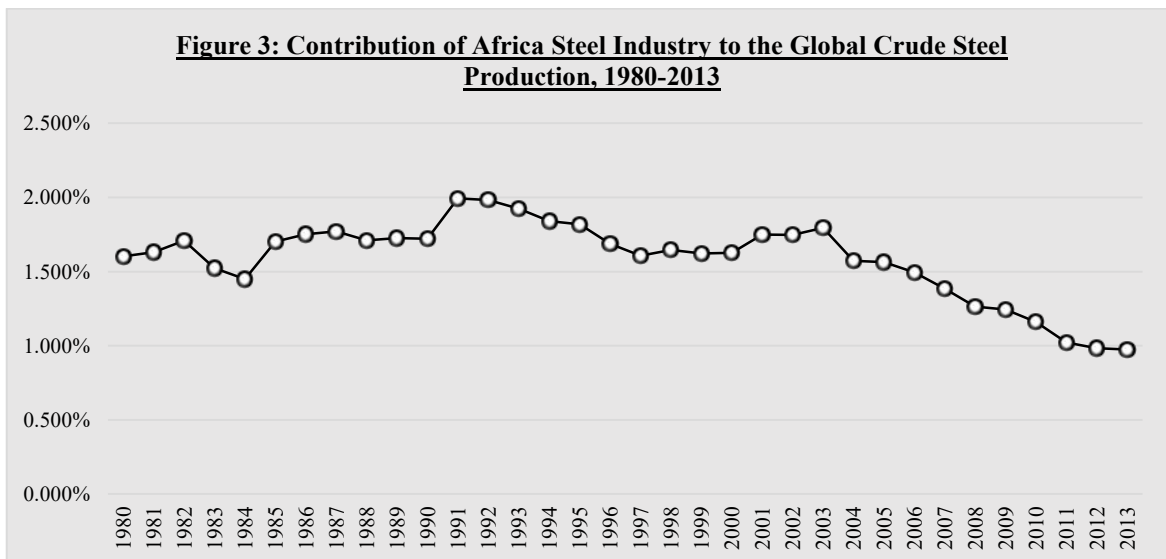
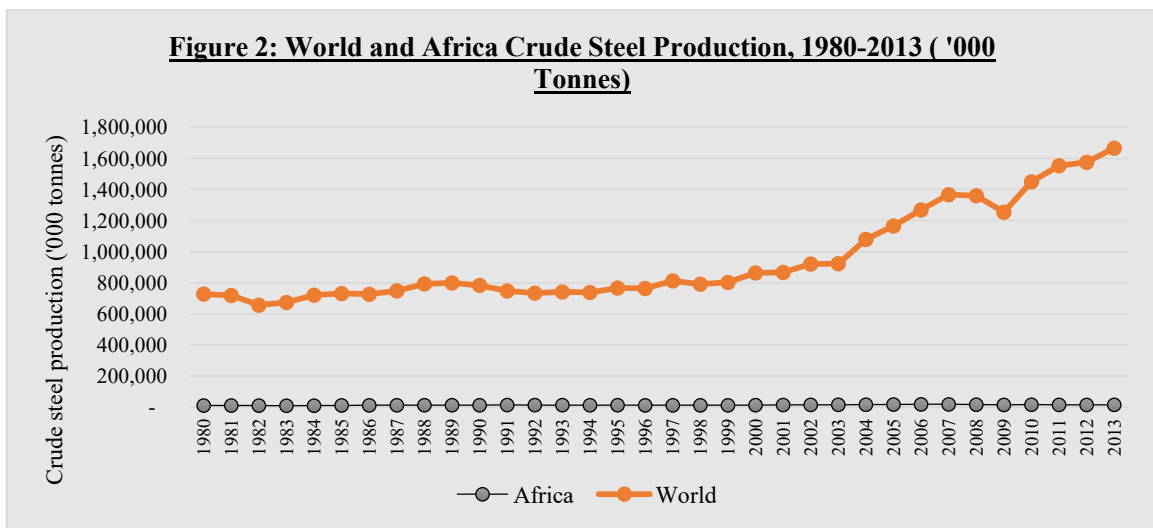
3.1 OVERVIEW OF THE GLOBAL IRON AND STEEL INDUSTRY

During the 19th Century, US iron and steel production grew at an annual average rate of 7% and from 1875 to 1920 steel production increased from 380,000 tons to 60 million tons. This was widely facilitated by availability of iron ore of fair quality, coal and manpower among other factors that made demand inexhaustible, including continuous rapid expansion of urban infrastructures, office buildings, factories, railroads, bridges, the use of steel in automobiles and household appliances. US steel became the United States and the entire World leader in steel production for decades and this was greatly boosted with the use of Bessemer process and Siemens-Martin process of steel production. These technological advancements enabled production of steel in large quantities cheaply and applied low manpower.

Steel industry in China was insignificant unlike other economies like USA, Russia and Germany in the development of the country, at the beginning of the 21st century the industry was using Soviet poor technologies of backyard steel furnaces run by inexperienced peasants. Chinese steel was small and most of the industrial infrastructures were destroyed during World wars. China experienced rapid economic industrialization. China steel industry increased its output and by 1996 China was producing over 101 million tons of crude steel, since then China became the World's biggest producer and exporter of crude steel and in 2013 it produced about 822 million tons of steel which is more than 50% of the World steel produced. This has been fueled by rapid modernization of its economy, strong domestic demand, construction, infrastructure and manufacturing industries especially automotive industry, electronics and construction materials.

The steel industry of Japan is considered to be the center of heavy industrialization and rapid economic transformation especially during the post-World II period. The manufacturing industry of Japan especially the automotive, shipbuilding and consumer electronics industries are closely linked to the iron and steel industry. Despite that Japan has limited mineral deposits and poor quality of iron ore, it has emerged the second World largest producer and exporter of crude steel producing and exporting over 110.2 million tons and 42.5 million tons of crude steel respectively

in 2013. The industry entirely depends on the importation of the two major components of steel including iron ore and coal. Over the years, Japan has been a net exporter of ferrous scrap with exports estimated at 7.35 million tons. Most of Japan's steel mills are located along the coast so most of the steel shipments begin with coastal vessels and then transported by trucks from distribution bases to the warehouses, processing works, dealers and other customers of steel products. China, Japan and Ukraine are net exporters of steel while United States and Africa are net Importers of steel. However India, Germany, Turkey and Italy among other economies are potential international markets for steel because their steel imports are greater than their exports.



Source: Crude Steel Production, 1980-2013. World Steel Association.

Africa’s steel industry is dominated by two economies i.e. South Africa and Egypt. Further, Africa’s contribution to the World’s steel industry increased from 1.6% in 1980 to about 2% in 1991 and has since then been in a downward trend as shown in the line graph above. By 2013 total Africa’s crude steel production was about 16 million tons with 6.7 million and 7.2 million tons from Egypt and South Africa respectively. This was a paltry contribution of about 0.975%.

3.2 REGIONAL MARKET SIZE

Out of the 29 product lines, Uganda trades in up to 25 – most of which are finished and end-user products such as steel sections, bars, rods and flat rolled products. The countries which have been importing iron and steel from Uganda are as listed below and their total imports from both Uganda and other parts of the world are as shown in the table 2 below and depicted in Figure 4.

Table 2: Countries Importing Iron and Steel from Uganda (Total Imports in Tons)

	Burundi	CAR	DRC	Rwanda	Sudan	Tanzania	Total
2012	2,937	4,576	108,323	88,851	455,559	483,225	1,143,471
2013	3,502	2,185	171,714	87,588	453,373	670,072	1,388,434
2014	1,694	1,341	178,702	100,432	326,507	567,281	1,175,957

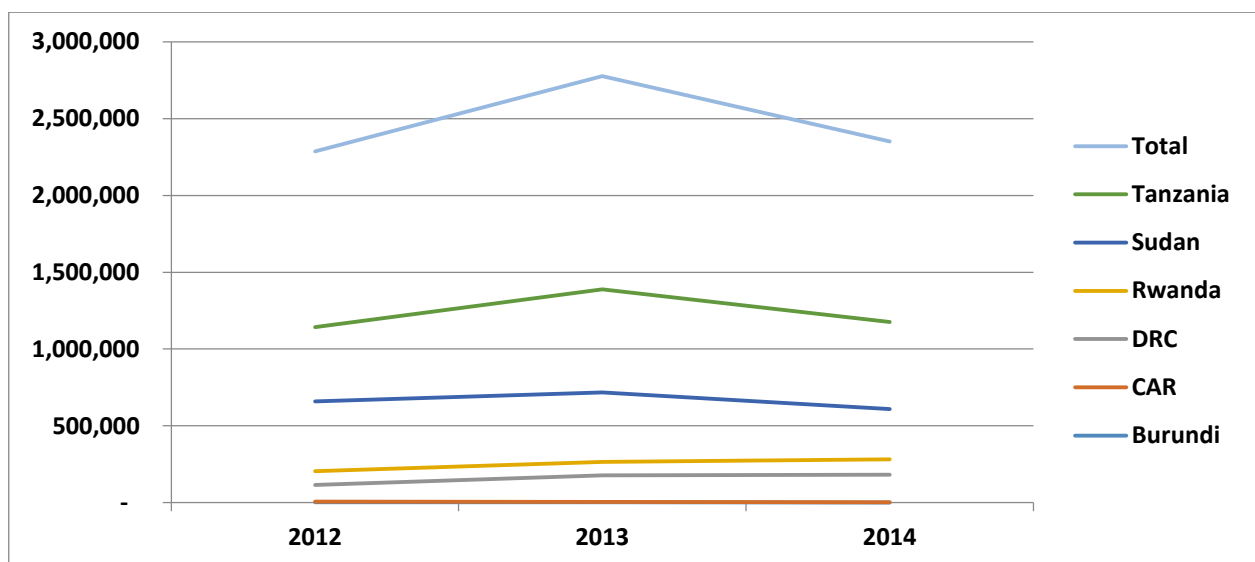


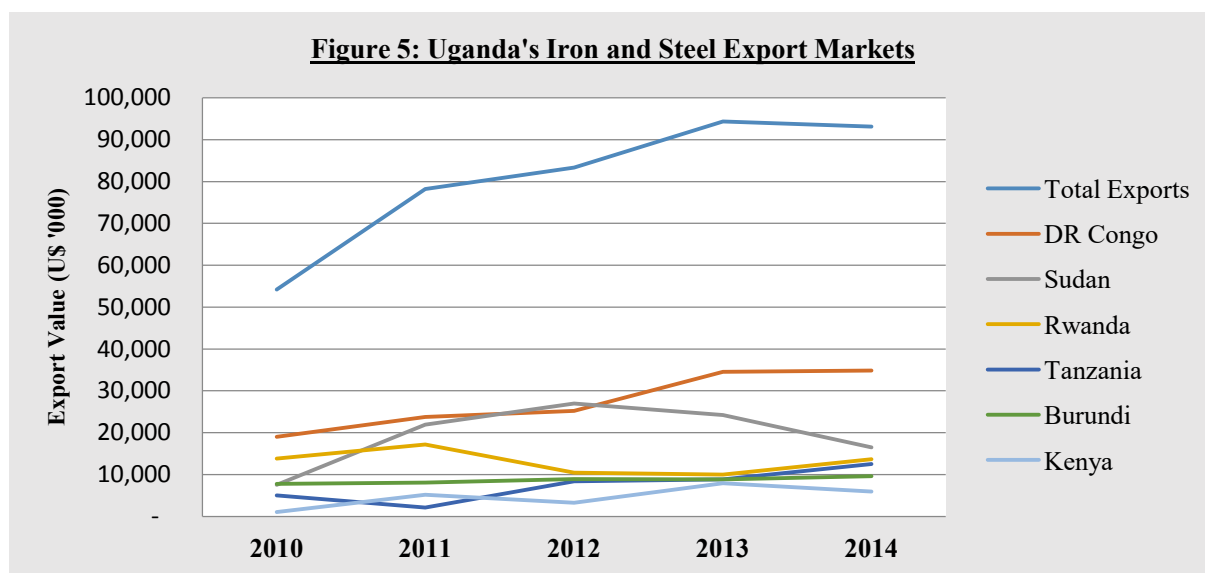
Figure 4: Trends of Export Market Imports (Tons)

The exports by Uganda to the current export markets as compared to the total imports of Iron and Steel of these markets is only about 7%. This is as shown in table 3 below. This gives the potential the country has in terms of the export markets regionally.

Table 3: Share of Uganda’s exports to its importing market in tons.

Year	Export to Market	Total Imports	% of Exports
2,012	63,690	1,079,781	5.90
2,013	75,833	1,312,601	5.78
2,014	79,773	1,096,184	7.28

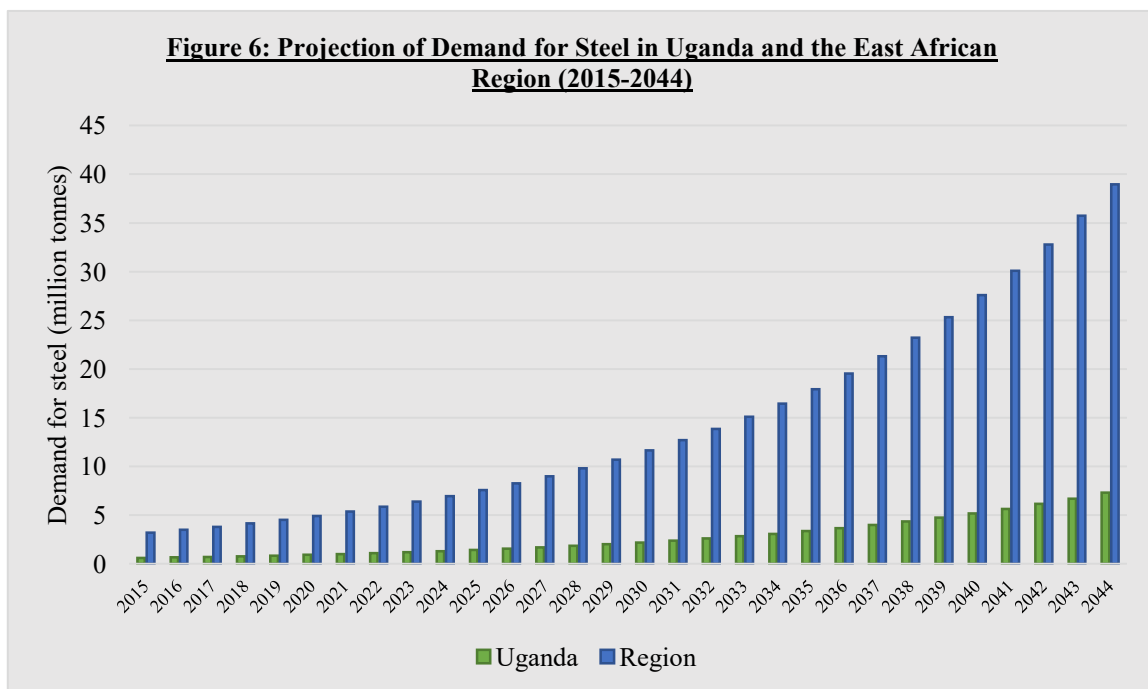
In terms of value of exports to these EAC partner states, DR Congo and S. Sudan, these markets have individually exhibited growth trends of between 5 and 47 per cent over the last 5 years, except Rwanda which is slowly shrinking at -5 per cent. Out of the 29 product lines, Uganda trades in up to 25 – most of which are finished and end-user products such as steel sections, bars, rods and flat rolled products. The figure below shows growth in value of Uganda’s iron and steel exports to the regional markets.



The regional demand for steel products is estimated at 1.8 million tons for Kenya, 900,000 tons for Tanzania, 600,000 tons for Uganda, 200,000 tons for Rwanda and 100,000 tons for Burundi.

This demand is expected to grow at an average rate of 9 percent per annum in the next decades. The local demand for steel products is also influenced by the aggregate demand for construction industry in the East African region due to Uganda's strategic location in the region. Uganda's strategic geographical position gives it access to a population of over 500 million people including COMESA and SADC and the economic growth and demand for construction materials is more likely to generate demand for steel products from the domestic industry. It should be noted that the decline in CAR, Sudan and Burundi is a result of the insecurity while the decline in Tanzania is as a result of Iron ore developments. To get the trends of exports in the next ten, twenty and thirty years, there is need to extrapolate this data while putting into consideration the Tanzanian developments because their importation will be declining.

With the local and regional demand estimated at 0.60 million and 3.2 million tons respectively in 2015 and anticipated to grow at an annual rate of 9.0 percent. The figure below shows the growth projections of demand for steel in Uganda and the region. The demand is expected to be 7.3 million and 38.95 million tons for Uganda and region by 2044.



3.3 MARKET COMPETITION

In the EAC region, Uganda is the leading exporter of iron and steel products. In COMESA, it is third to Egypt and Zimbabwe each with export capacity of US\$ 621 Million and US\$ 232 Million respectively according 2014 export data. In our predominant markets, Kenya is the biggest potential threat – in view of proximity to market. However Kenya’s steel exports are growing at a much slower rate of 2 per cent per annum with steel exports value of US\$ 64 Million in 2014. Export pricing of iron/steel products within the EAC region is also influenced by rules of origin and duty remission schemes. But, this influences competitiveness at a company-to-company level. EAC member states have become increasingly sensitive on application of preferential incentives to these products due to heavy reliance on imported raw materials.

For Egypt and Zimbabwe in relation to South Sudan and DRC where we enjoy the same preferences as defined under COMESA FTA, it is quite apparent that distance and thus logistical costs will remain a major prohibitive factor, thus enabling Uganda to maintain its comparative advantage in the export markets including the neighboring COMESA markets. Status quo shall be maintained even with signing of the tripartite. Probably, this advantage will be diminished by smooth transit over the North-South and Central corridors as targeted by several government and donor efforts. However, this highly unlikely to be in the near future.

4 CRITICAL FACTORS AFFECTING THE DEVELOPMENT OF IRON AND STEEL INDUSTRY

Like any potential industry that is in its infant stages of growth especially in an underdeveloped economy, the development of iron and steel industry in Uganda is associated with several challenges:

- i. The backward approach for Uganda has been as a result of the limitations which are affecting the main stream sector development. Despite availability of iron ore deposits in South Western and South Eastern Uganda, Coal which is the other important component in the production of steel is not yet discovered in Uganda and yet other alternatives are more expensive. However, with the discovery of over a billion metric tons (1 Billion Metric tons) of recoverable coal deposits in the Mui coal basin situated about 200 kilometers southeast of Nairobi in Kenya (Xinhua, 2014), Uganda now stands a higher chance of starting steel factories. Already 400 million tons (Four Hundred Million tons) have been confirmed as reserves (Ministry of Energy and Petroleum, Kenya, 2015). The location of this discovery is not far-removed from the standard gauge railway, thus allowing for easy transportation of coal to Uganda. The establishment of regional trading blocs is also another factor making major contribution for this development in that there are projects that are now being considered at the regional level.
- ii. Iron and Steel investments are massive and as such require a very well planned and laid structure to support the investment ranging from Finance, Energy, Manpower, Security, Transport etc. To-date, the cost of financing and energy tariffs for Uganda are the highest within East Africa region. High costs of operation have contributed to closure of some indigenous companies, like Sembule Steel Mills Ltd during the mid-1990s. High investment and operational costs make Uganda less competitive with well-established international steel manufacturers especially from China, Japan, Russia, Egypt as well as South Africa and Kenya in the region.
- iii. High dependence on scrap as raw material for producing steel inputs is also a challenge that is affecting the development of steel industry. This is because scrap has become scarce and relatively expensive which affects the final price of the steel product. Additionally, the

quality of the final products produced from scrap is relatively low compared to the ones produced from the principal raw materials (iron ore, coal and limestone). However the discovery of iron ore in Uganda will help to improve on the quality of steel produced and facilitating the development of the steel industry.

iv. Under-developed infrastructures especially road port facilities and warehousing facilities.

5 RECOMMENDATIONS AND MEASURES TO ADDRESS CHALLENGES IN THE INDUSTRY

The measures to address the challenges affecting the steel and iron industry and the interventions that will facilitate the development of the industry will largely depend on the efforts of the government and the investing companies.

- i. A standard 3 million ton Integrated steel plant requires 5 million tons of ore per annum. If the ore is mined at 5 million per annum, the mines can support one plant for about 40 years. Since iron ore exports are banned (for domestic use only), a steel plant dedicated to the nation can take care of Uganda's steel requirements for 40 years. A Steel plant of the size 3 million tons requires an investment of 3 billion USD. The supporting mines may require another 2 billion USD (No need of long haul railway lines, only from mine to mill). Out of 5 billion USD required, 3 billion USD will be loans from International banks, 2 billion USD is share capital. If the Uganda government takes 50% (assuming it doesn't have money, it can issue bonds) or use the PPP approach. The other technical partner can bring in 1 billion USD.(Topf, 2014). Even if the GoU may not be able to build such an industry in PPP format it can sanction a number of smaller steel plants which could run at individual level. Although these are less costly to construct, they might face cut-throat competition from each other as currently witnessed in Uganda. This could lessen the socio-economic impact of the region and many would end up collapsing with disastrous political and economic effects to government since it would be the loan guarantor.

- ii. There is a need for reliable and sustainable sources of finance with fairly economical interest rates to facilitate investment in the industry. These finances will enable investment in high-tech machinery and equipment since the industry is capital intensive. The finances can also be used to establish various manufacturing plants and depots across the country and the region to enable the distribution of the steel products in the market. This therefore calls for us to have a reliable source of finance. This must be long term low cost finances hence the need to revamp Uganda Development Corporation (UDC) and capitalizing Uganda Development Bank (UDB) to the support the industry.

- iii. **Transport.** Iron and steel investments are heavy investments. This is further seen in the nature of the inputs which if not logistically handled well will lead to high costs hence non competitiveness. This therefore calls for a very efficient and effective transport mode. In this case, railway, water and the roads need to be logically planned to support the sector.
- iv. **Taxation (CET).** Comprehensive review of the Common External Tariff CET with special focus on Iron and Steel. Area of emphasis is the creation of more than three bands to support and attract investments in value addition. Currently, the EAC region is operating on three bands and these are; 0% for raw materials, 10% for intermediate products and 25% for finished products.
- v. **Public procurement.** Government is the biggest consumer and therefore, it has to support the Buy Uganda Build Uganda (BUBU) policy as well as improve further the Public Procurement and Disposal Act (PPDA). With the upcoming construction of Ayago, Isimba and other dams, investment in iron and steel will reduce our trade deficit thereby saving on foreign exchange and creating jobs for the youth (reduce youth unemployment currently at 64%) (UBOS, 2013) and sparking other sector related growth because there will be more specialized education and skills training in iron and steel fabrication (from miners with little formal education to welders to specialized steel engineers). For local industries to tap into this growing public infrastructure demand, Government should finalize and enact the draft policy for the steel industry, and formulate concrete programs for its implementation.
- vi. The reviving of the East African railway system that will connect countries in the Northern economic corridor. This will join Kenya to Uganda in Kampala through Malaba to Nimule in South Sudan and other parts in Rwanda, Tanzania, DRC and Burundi. This will ease the movement of raw materials and finished steel products in the region. This will also reduce on the transportation costs of the bulky steel raw materials and finished products.
- vii. Having quality standards and ensuring compliance is very important in making this sector competitive. Quality standards is something which cannot be compromised especially when targeting export markets where Uganda products compete with global brands. There is need

to strengthened the capacity of UNBS and quality assurance process along the whole value chain.

viii. **Human resource.** This sector requires committed and skilled manpower. This therefore calls for total reorientation of the mind set and commitment of the manpower. This will further call for a comprehensive manpower survey to enable planning and determine the direction the country is to take. The manpower planning should be cross cutting in that investment should be done at both vocational and university level with a hands on orientation/ practicability.

ANNEXES

Annex 1 (a): Value of Uganda's exports

	Uganda's exports (Unit: US Dollar thousand)		
	Value in 2012	Value in 2013	Value in 2014
Burundi	8,921	8,818	9,605
DRC	25,230	34,567	34,829
India	-	-	42
Rwanda	10,437	9,946	13,677
South Africa	8	-	2
Sudan	26,983	24,218	16,515
Tanzania	8,385	8,869	12,525
Total	79,964	86,418	87,195

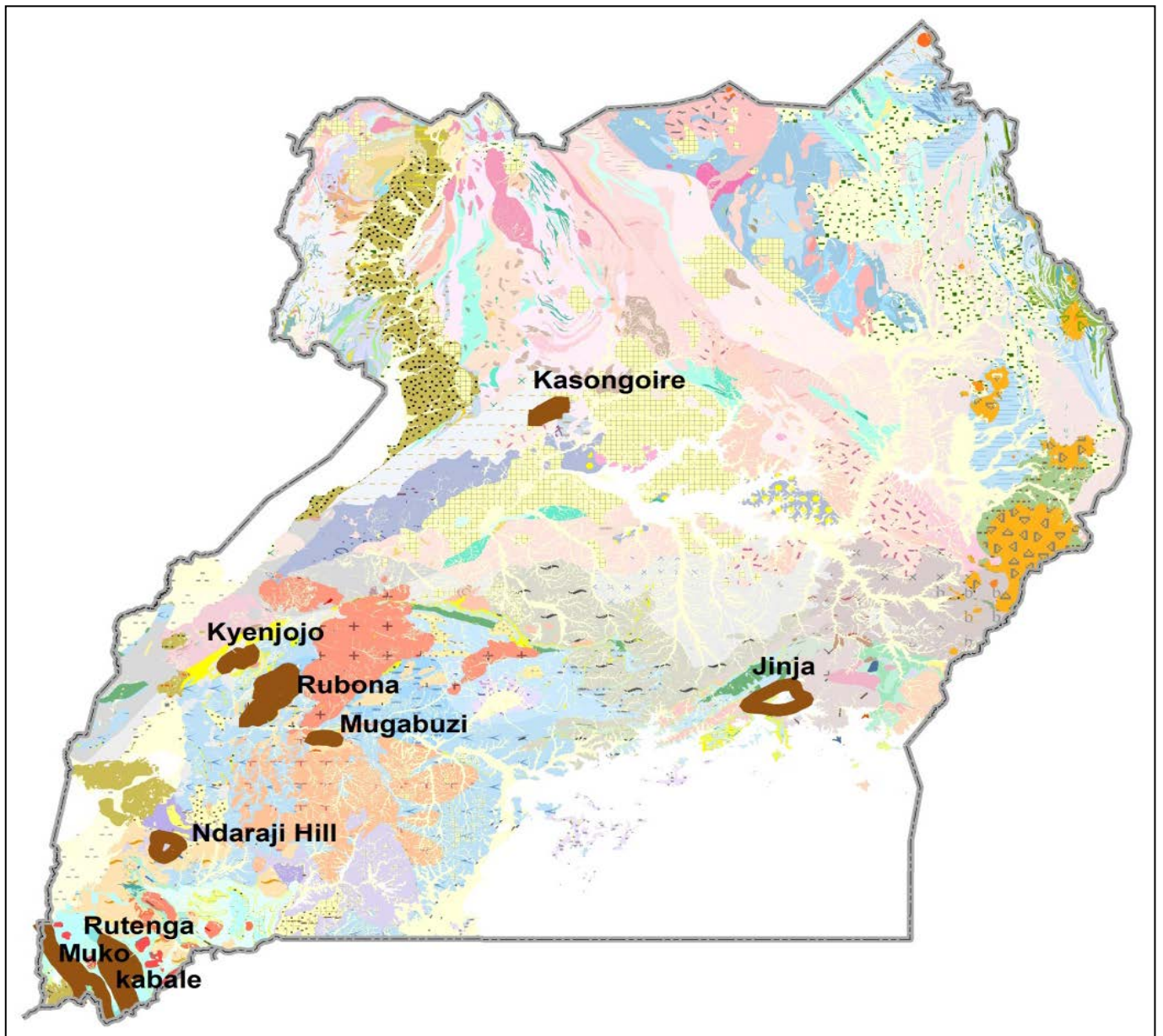
Sources: ITC calculations based on Uganda Bureau of Statistics

Annex 1 (b): Volume of Uganda's Exports in Metric Tons

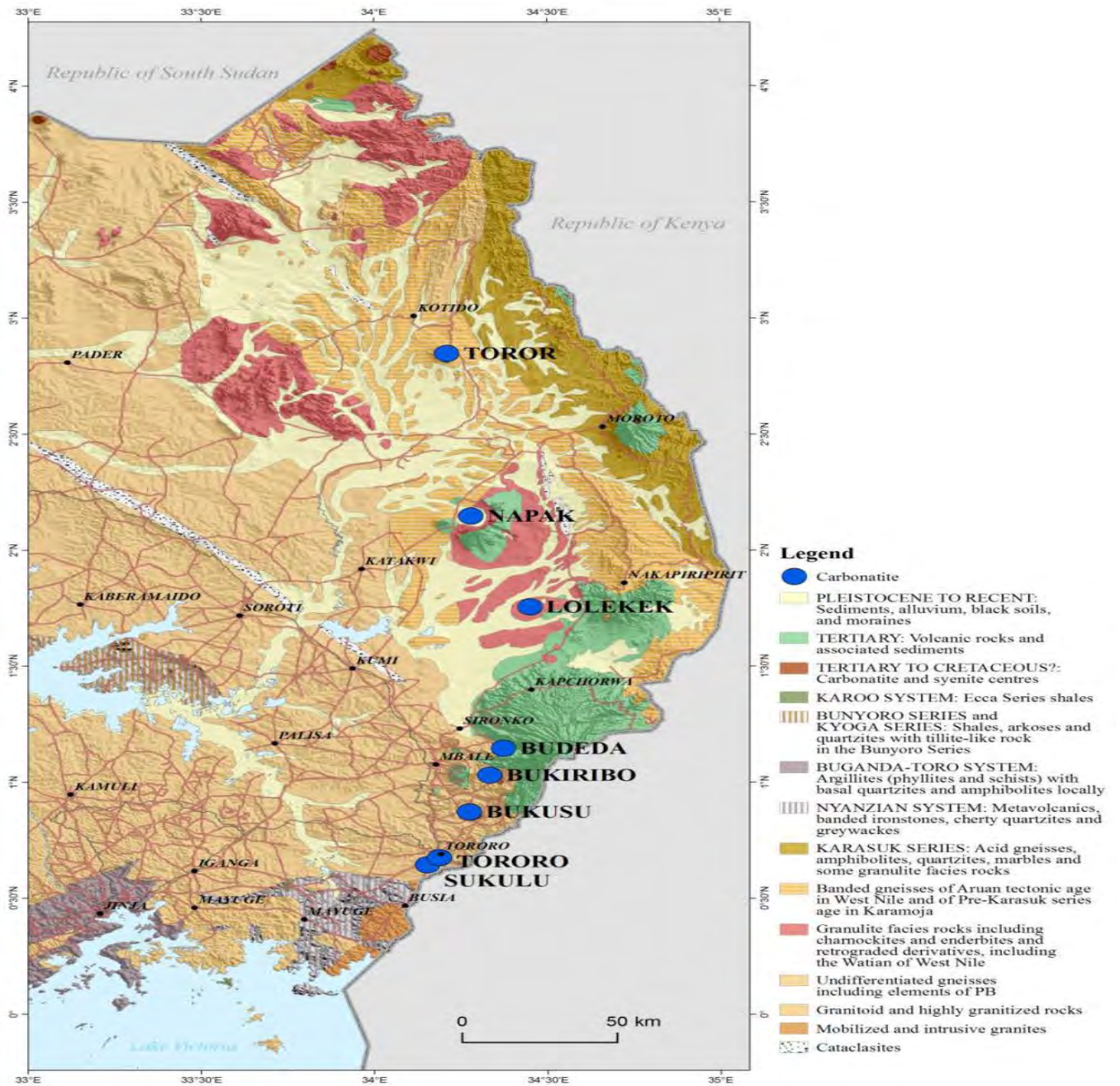
	Exported quantity in 2012	Exported quantity in 2013	Exported quantity in 2014
Burundi	60	0	0
CAR	0	0	0
DRC	21627	32039	33118
Rwanda	9925	10044	16400
Sudan	25944	26412	19006
Tanzania	6134	7338	11249
Total	63690	75833	79773

Sources: ITC calculations based on Uganda Bureau of Statistics

5.1 Annex 2 (a): Geographical Distribution of Iron Ore Deposits in Southwestern Uganda



5.2 Annex 2 (b): Geographical Distribution of Iron Ore Deposits in Southeastern Uganda



Annex 3: List of Key Iron & Steel Companies in Uganda

No.	COMPANY	LOCATION
1	Alam Group of Companies	Plot 86/90, 5th street, industrial area
2	BM Steel Ltd	Plot 9-16, Jetha Ismail Rd. Kakoba, Mbarara
3	BM Technical Services Ltd	Plot 9-76, Jetha Ismail Road, Kakoba
4	East African Roofing Systems Ltd	Plot 55-87, Movit Road Zana
5	Jay Somnath Industries (U) Ltd	Plot 130/138, Block 12, 7th stree Industrial area, Kampala
6	Kyabazinga Industries Ltd	Plot 50 Mutiibwa Road, Jinja
7	Mabaati Roofing Systems Ltd	Plot 15, Wilson street
8	Mesha Steel Limited	Busega
9	MM Integrated Steel Mills (U) Ltd	Plot 10-12, Kibira road industrial area, Kampala, Plot 47-76, sukari sugar, home road, Jinja
10	Modern Steel International Ltd	Plot 4 Kyaggwe Road, Njeru
11	Nile Steel & Plastics Limited	Nangwa - Mukono Industrial Area (Opp. Riley Industries)
12	Pepa Industries Ltd	Viva house Ndeeba - Kampala, opposite the petrol station
13	Pramukh Steel Ltd	Plot 2 - 20, Kyaggwe road, Njeru, Jinja
14	Premier Engineering Works Ltd	Premier Complex, Ntinda Industrial Area, Plot 12, Jinja Road
15	Roof Guard Ltd	Plot 40/41, Sir Apollo Kagawa road
16	Roofclad Ltd	Plot 86/90, 5th Street, Industrial Area
17	Roofings Limited	Plot 126 Lubowa Estate
18	Roofings Rolling Mills	Namanve
19	Royale Manufacturers Ltd	Plot 638, Balintuma road, Mengo
20	Semjac Steel Mills Ltd	Nalukolongo Industrial Area
21	Shin Core Industry (U) Ltd	Entebe road, plot 300, Lweza kajjansi, Opp. Saracen offices
22	Steel and Tube Industries Ltd	Deals House, Plot 38-40 Mukabya Road, Jinja Road. Nakawa Industrial Area
23	Steel Rolling Mills Ltd	Plot M-78, Tororo Rd. Masese, Plot 86/90, 5th Street Industrial Area

No.	COMPANY	LOCATION
24	Tembo Steels (U) Ltd	Plot 67, block 24, Kigulu Kasolo village Iganga district (Iganga Factory), Plot 93, Kyaggwe, block 174 Najumba Mutuba VII Lugazi, Mukono district (Lugazi Factory)
25	Tian Tang Group Company (U) Ltd	Plot 30, 17, 16, 26, 27, Block 185, Kyaggwe, Mukono/Plot 15, Impala Avenue, Kololo Kampala
26	Tororo Cement Limited	Plot 8/10, Entebbe Road, 3rd Floor Metropole House
27	Uganda Baati Limited	Plot 14/28, Kibira Road, Industrial Area
28	Virat Alloys Ltd	Plot 1 Sembule Road, Nalukolongo
29	Vishwa Metals Ltd	Masese Industrial zone next to Bidco, Jinja
30	Weldex Uganda Limited	Plot M424, Ntinda Industrial Area
31	Yogi Steels Ltd	Malindi Kalunga road
32	Bavima Steel	

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**REPORT ON VALUE CHAIN ANALYSIS OF
MEAT, HIDES AND SKINS
UGANDA**

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SEPTEMBER 2015

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EXECUTIVE SUMMARY

The Meat, hides and skins value chain is the full range of activities required to bring these products through the different phases of production, processing and delivery whether locally or exported. The study focussed on meat, hides and skins on cattle (including calves), goats and sheep only.

The per capita consumption for all meat in Uganda is only 12.1kg far from the FAO and WHO recommended 50kg showing the huge consumption gap that exists locally. The current growth rate of livestock of about 3% p.a cannot sustain even the local demand along given the current population growth of about 3.2% and the level of consumption. Export trade in beef is still very limited and with no stable trend. Current export is to the UN Mission in Juba DR Congo under the Relief market worth a meager US \$172,000 in 2014. Exports to highly developed markets may be unfeasible for the foreseeable future due to quality issues but potential exists for export to neighbouring countries. Uganda's Leather or Hides and skins are by far the highest export earner from the livestock industry and the only products from Ugandan livestock which have been able to break into the world-wide export market. Major buyers of Uganda's hides and skins included Switzerland, China, Italy, United Arab Emirates, India and Kenya in that order. In 2014 Uganda exported US\$ 73.756 Million worth of hides and skins to 16 destinations worldwide. Despite having a huge potential to produce enough quantities to meet local demand, Uganda still imports over 90 per cent of its leather products.

The supply chain of meat and meat products shows that it is highly hinged on abattoirs or slaughter houses. The performance of this chain will highly depend on how the slaughter houses drive the market. Livestock farmers are primary input suppliers. To boost the supply of livestock there is need for commercial farming such as breeding cattle within 2 to 3 years as opposed to the current practice of selling either sick or obsolete animals. The chain for hides and skins shows many inter-players. The governing actors in the chain are the tanning industries who set standards of quality of their inputs. There are 9 tanning industries with only 2 processing a small proportion of their hides and skins to finished leather.

Many unlicensed middlemen operating in unregulated markets are a hindrance to the viability of the meat, hides and skins supply chain that should be addressed by government. Heavy investment requirement in areas like specialized vehicles, slaughter houses and machinery requires that government provides investment financing to local operators. Information asymmetry in the meat, hides and skins calls for a comprehensive Livestock Market Information System to collect, analyze, store and disseminate prices and provide market analysis and trends along the chain.

Since costs depend on quality and weight, to generally improve competitiveness, there is need to promote commercial livestock farming, operationalise the disease free zones and effect the 21-days inspection requirement by the EU countries to open doors for meat export to EU block. A combined strategy for meat, hides and skins should target private lead approach in establishment of a Leather Industrial park either in Bugiri or Namanve for finishing lines supported by improvement in existing slaughter houses in the countryside to reduce distance for moving live cattle.

1.1 INTRODUCTION

1.1 DEFINITION OF THE VALUE CHAIN

The meat sector profile of the Uganda Investment authority shows that “meat” implies the flesh of both livestock and poultry. The “hides” and “skins” as defined by the Hide and Skin Trade Act of 1951 makes a distinction between raw (referred to as green) hides and skins from dried hides and skins. In this study, by hides and skins we mean both raw or “green” and dried. Although, meat, hides and skins can be obtained from many animal types, this study focuses on the meat, hides and skins of cattle (including calves), goats and sheep only.

The Meat, hides and skins value chain can be understood as the full range of activities required to bring these products through the different phases of production, processing and delivery whether locally or exported. The chain actors who actually transact the product as it moves through the value chain include input suppliers (e.g. farmers of livestock), butchers, traders, processors, transporters, and the buyers. The buyers may be within Uganda or another country (through export). The National Meat Policy of 2003 promotes the development of markets, marketing infrastructure, market information so that meat and meat products meet domestic demands and export markets. On the other hand, the Hide and Skin Trade Act of 1951 provides for any person, whether he or she is a citizen of Uganda or not, to be issued with an exporters-buyers license for the purposes of purchasing the hides and skins. In addition, the Hides and Skins (Export Duty) Act of 1962 states that “No hide, skin or game hide shall be exported from Uganda except by rail from Kampala and Mbale railway stations or through” an appointed hides and skins exporting centre”. Given the long period of limited functionality of the railway transport system, appointed (or licensed) hides and skins exporters have been the major actors in the export of hide and skins.

1.2 DEVELOPMENT SIGNIFICANCE OF MEAT, HIDES AND SKINS

Beef is the most important source of meat for human consumption and there has been increasing national demand for beef as a result of population growth, change in tastes as well as economic

growth. Many studies have identified the beef sector as the most vibrant meat sector in Uganda, with the highest per capita consumption, among all meats and with the highest potential for local and regional growth in demand. However, according to FAO study of 2010 entitled “Analysis of Incentives and Disincentives for Beef in Uganda”, the per capita consumption for all meat was only 12.1 kg far from the FAO and WHO recommended 50 kg. This consumption is very low and the huge consumption gap implies that a lot is to be done to satisfy the domestic demand in addition to the export market. Inadequate disease control and the absence of the relevant quality and processing infrastructure are some of the limiting factors to expansion of beef exports. Recognizing constraining factors in the meat sector, government developed the 2003 meat policy with a mission to satisfy the national meat requirements, contribute to food security and increase farmers’ incomes. This has been in addition to other enabling food Legislations: The existing food acts, related legislation, and statutory instruments, such as: The Public Health (Meat Rules), 1964; and The Meat Inspection Code of Uganda, 1973. However, these have not met their objectives since local meat consumption is still far below FAO and WHO recommendations. A lot more than just having policies must be done to meet the meat requirements.

Uganda’s leather sector profile shows that Hides and skins are by far the highest export earner from the livestock industry and are the only products from Ugandan livestock which have been able to break into the world-wide export market. Uganda’s production of hides and skins is dominated by scattered slaughters country wide ranging from household slaughters for festivities to commercial slaughters by individual butchers and, slaughter houses and abattoirs. The collection rate for hides and skins is still low since some hides and skins from some individual slaughters may be discarded. Hides and skins are no longer exported in raw form. Mr. Nixialong of Skyfat tanneries, one of the few tanning industries in Uganda noted that processing of hides and skins is generally to the point of wet blue and then exported. The challenging factors are outdated technologies and limited technical skills. This underlines the need for more value addition in the hides and skins sector.

Worldwide changes in agricultural marketing systems and production technologies are opening up opportunities for some small scale farmers in developing countries. Several economic blocks are cognizant of the potential of the livestock sector especially leather in fostering economic

development. The COMESA regional block established the Leather and Leather Products Institute COMESA/LLPI which is a Chartered, autonomous institution of COMESA, established in 1990 headquartered in Addis Ababa, Ethiopia with a mission to promote and develop the regional leather sector through research and development, investment, capacity building, international cooperation and trade for enhanced productivity. The 2014 COMESA/LLPI annual report shows a number of activities in the leather sector within the region which also includes countries within the Northern Economic Corridor, including:

- the USAID Kenya Semi-Arid Livestock Enhancement Support (K-SALES) – In connection with Establishing Collaborative Activities to create a more inclusive, competitive and efficient Livestock Sector in Kenya’s Semi-arid Regions by Building the Technical and Business Capacity of Value Chain Actors.
- Makerere University Business School, Kampala – Regarding the formalized linkages and collaborative activities between the two Institution to promote and sustain the value adding activities along the leather value chain in the COMESA Region in general and Uganda in particular, with focus on SMEs.
- Ege University, Turkey – to establish the guidelines for collaboration between the Department of Leather Engineering, Faculty of Engineering, Ege University and COMESA/LLPI in the development of the leather industry in the COMESA Region.

The demand for meat, hides and skins is evidently there but with inadequate supply. Strategies to increase supply definitely means increasing livestock production as well as standards and infrastructure. The current growth rate of livestock of about 3% per annum as shown in the 2014 UBOS statistical abstract cannot sustain the local demand (with population growth of about 3.2 and current consumption of meat at 12.1 kg) as well as meat export requirements. Increasing productivity will require private lead approach since livestock production is mainly by individual farmers.

1.3 OBJECTIVES OF THE VALUE CHAIN ANALYSIS

The Main objectives of the Meat, hides and skins value chain analysis include:

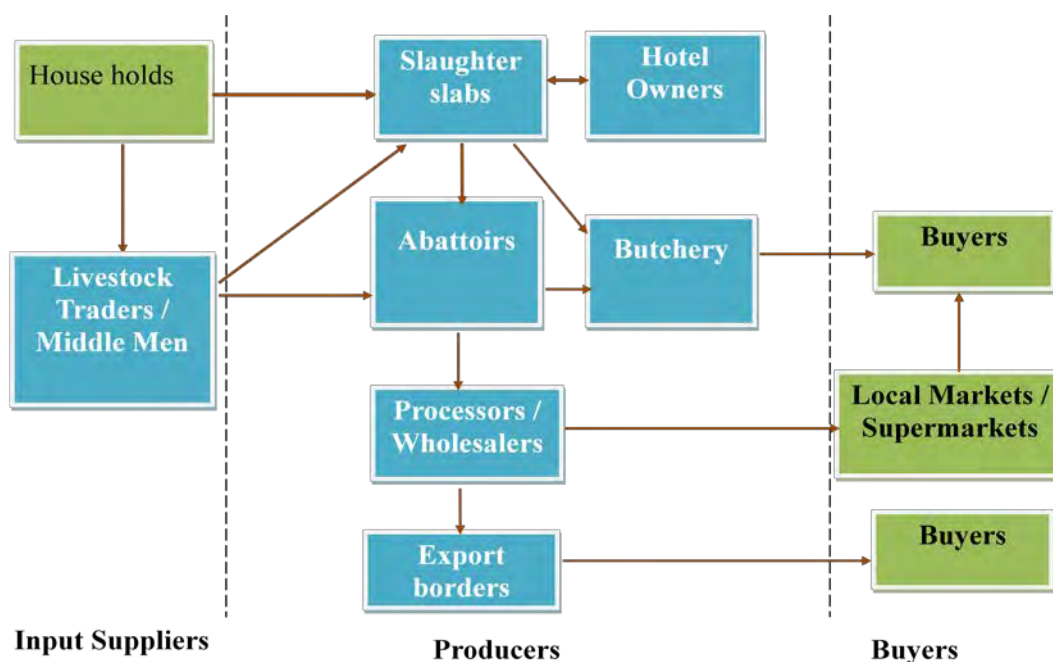
- 1) Mapping out the processes and stakeholders involved in the supply chain, processing, logistics, distribution and other related industries for meat , hides and skins with special attention on the current mode of transportation as well as the routes from the production areas to the final market.
- 2) Provide information on geographical distribution of the process and stakeholders as well as the volume of economic activities (value and quantity) for Meat, hides and skins.
- 3) Identify the critical factors for the development of the Meat, hides and Skins and promote the higher value addition in Uganda, including;
 - Value-addition per process
 - Dominant coordinator/governing actor of the chain
 - The gaps between the final market requirement and currently available commodities in Uganda
 - Mode of transportation, cost factors borne by the nature of the logistics (collection, transportation and distribution of the goods)

2 VALUE CHAIN STRUCTURE AND CHARACTERISTICS

2.1 SUPPLY CHAIN

The FAO study 2012 describes the supply chain (for meat, hides and skins) to start from the farm gate when the farmer decides to sell an animal. Dr. Gerald Nizeyimana, the deputy chief executive of Uganda meat producers cooperative union (UMPCU) which is one of the big suppliers of meat to processors, identifies the key actors in the beef supply chain to include farmers, livestock markets, traders (middle men), transporters, butchers, abattoirs, and processors (who are also exporters). Middlemen collect animals at farm gate or livestock markets and move them by truck to bigger town but especially to Kampala. The chain is quite similar within the corridor countries and the neighborhood. The United States Agency for International Development (USAID) undertook a study on the Meat value chain in Ethiopia in 2013 with a theme “Expanding Livestock Markets for the *Small-holder Producers*”. The study detailed constituents involving various actors that include producers, collectors, (and in some places, numerous) middlemen, and individual traders and exporters. Tracing the movement of meat and meat products therefore begins from the farmers of animals through the slaughter houses up to the buyers as illustrated below:

Figure 1: The Meat Supply Chain



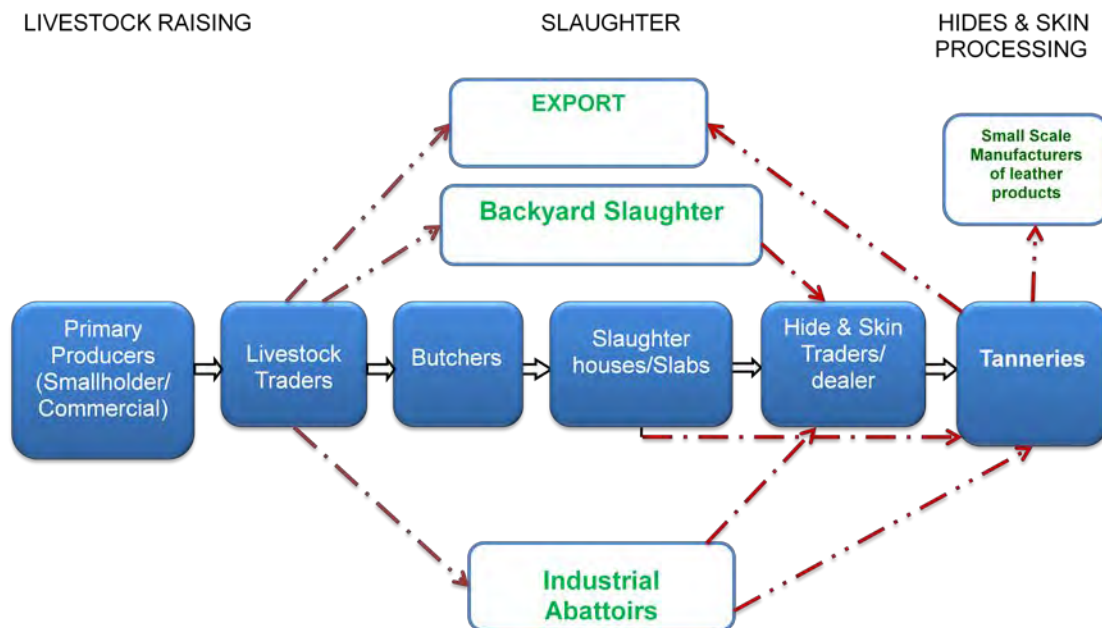
Source: Construction based on FAO Beef and live cattle marketing chain in Uganda and Stakeholder interviews

Figure 1 above shows that the supply of meat is highly hinged on abattoirs or slaughter houses underlining the need for establishment of modern abattoirs that supports the export market as well. The performance of the chain will highly depend on how the abattoirs drive the market. Market price and standards must be set by abattoirs. Government can target abattoirs and streamline its licensing and governance by identifying and promoting lead operators. The chain from farmers to abattoirs calls for bulky transportation requiring specialized cargo trucks for moving livestock. After slaughter chain also requires specialized refrigerated vans for transporting meat and meat products. All these can be promoted and monitored through the drivers of the chain – the abattoirs/slaughter houses. Livestock farmers are primary input suppliers. They are key actors as well given that the land policy in the country puts much land in hands of private household. To boost the supply of livestock may require building capacity of farmers for commercial farming for instance to breed and sell cattle within 2 to 3 years as opposed to the current practice of selling either sick or obsolete animals. Also, there is need to operationalise the disease free zones established by government for quality animal products. Farmers need to be organized in cooperatives for unified bargaining, improved breeding and collective marketing.

The Ugandan abattoirs try to sell as much of the by-products as they can – hides, skins, blood, intestines, organs, horns, etc. – in order to make enough money to break even. The main suppliers of hides are individual households, rural slaughter slabs, urban slaughter houses and a few modern slaughter houses such as Nsooba in Kampala. According to Mr. Mutesasira Wilberforce who is the spokesman of City Abattoirs (one of the leading slaughter houses in the country), there are many middle men in the supply chain of hides and skins before they reach the tanneries. This he adds is because traders collect them in small quantities over a wide geographic area. Mr. Mwebe Emmanuel, the national coordinator of Uganda Leather and Allied Industries Association (ULAIA), says that although the National policy for veterinary services provides for central government to license all dealers in livestock products including hides and skins, its enforcement is still lacking. This is why there are so many dealers of hides and skins most of

whom are not licensed. Skyfat tanneries input flow shows that this is true since they receive raw hides and skins from all sorts of dealers ranging from those whose supply as few as one piece to large traders supplying in trucks.

Figure 2: Hides and Skins Supply chain



Source: Adopted from the Uganda Leather and Allied Industries Association.

The chain shows existence of many inter-players between the producers of raw hides and skins and the final buyers who are the makers of leather products. Many players along the supply chain mean many middlemen each acting independently. Given the scattered production, it may be ideal to establish bulking centers near major slaughter houses with adequate warehousing to improve collection of hides and skins. However, the best hides and skins can only come from healthy animals which are slaughtered and processed by operators properly trained in slaughtering and dressing techniques. Mr. Mwebe of ULAIA identifies factors that compromise quality of hides and skins categorized in three major defects; pre-slaughter at farm and transport of livestock, peri-slaughter (during skinning due to lack of skills and equipment causing the biggest loss among the three) and post-slaughter (at preservation and transport of hides and skins). Hides and skins must be preserved well to protect them during storage and transport until they are converted into leather. Appropriate preservation, storage and transportation are

paramount. This can be achieved through collaboration between abattoirs/slaughter houses and the buyers in the chain. The governing actors in the chain are the tanning industries who set standards of quality of their inputs which can meet their supply. A private-public partnership with tanneries with a trickledown effect through the chain up to the producers can be adopted.

2.2 VERTICAL AND LATERAL VALUE ADDITION PROCESSES AND PROSPECTS

The Ugandan local market for processed meat has been dominated by a number of small scale meat processing establishments producing meat products. The modern meat processing industry is still underdeveloped with few companies. Dr. Gerald of UMPCU identified the major input to meat processing as fresh meat from the abattoirs. The validation workshop by stakeholders identified the only existing modern meat processing as Fresh Cuts, the rest mainly trading in imported processed meat. According to Fresh cuts limited, Meat from abattoirs undergoes leaning as the first stage which is separating flesh from bones. The leaned meat is used to produce a wide range of meat products that include prime cuts and retail cuts plastic packed which are fresh meat packaged without further value addition. Additional processing of meat with extra inputs yield products like cold cuts (ready to eat), sausages (hot dogs, boiled sausages), ham and minced meat. Modern processors and dealers in processed meat have specialized vans for transportation of meat from. The need to adhere to quality standards is the reason why processors strictly buy meat from specific slaughter houses. Slaughter houses follow some quality standards approved and monitored by veterinary officers which are not the case with individual slaughters. The variety of meat products serve both the local (mainly supermarkets) and export markets without differentiated production.

A FAO study¹ conducted in 2012, which analyzed the Incentives and Disincentives for Beef in Uganda, found that only two companies then dominated the market for packaged retail cuts and processed beef. The study further established that one of the two processing companies also engaged in processed meat for exports to the UN troops in DRC and Sudan on a contractual basis.

¹ FAO 2012, Monitoring African Food and Agricultural Policies, Analysis of the Incentives and Disincentives for Beef in Uganda

The quantity exported on contractual basis accounted for 50 per cent of the total quantity of meat processed by the company.



Figure 3: Outdoor drying of hides and Skins

Processing of hides and skins starts with tanning which transforms hides and skins to a material for leather. However, the entire value addition process starts right from production when preservation is required for proper storage. USAID in its study “Agricultural Growth Project - Livestock Market Development” identified four distinct stages of tanning, commonly divided into: Pickling, Tanning, Re-Tanning and Finishing. The products corresponding to these stages include: pickled pelt, wet-blue leather, crust leather and finished leather. Currently, there are 9 tanning industries in the country 7 medium size and 2 small size industries and of these 2 tanneries process only a small proportion of their hides and skins to finished leather the rest only up to wet blue stage-according to records by ULAIA.

Until 2010, global production of hides and skins was expected to continue growing at a slow rate. In Uganda though, this can be projected to grow at not more than the growth rate of livestock estimated at about 3%. Production of hides and skins and pre-tanning processing are widespread, but the tanning process is much less widespread concentrating along the north corridor route. Most of the hides and skins produced in Uganda are exported in raw or semi-processed form. The tanneries in the country are observed to operate below their installed capacities. The processing technology also still low with limited technical skills of workers.

Transportation of hides and skins by dealers to the tanneries are at two levels. At the lower level, smaller collectors who are scattered all over the country generally transport hides and skins in small quantities by bicycles. The middle traders (big dealers) have some form of bulking accumulating volumes before transporting in trucks to the tanneries. According to Skyfat tanneries, no contracts are undertaken by traders at any level allowing both small and big dealers access to the tanneries. This is not good for the market since it distorts market operations. ULAIA contends that the abolition of hides and skins improvement officers at the district levels

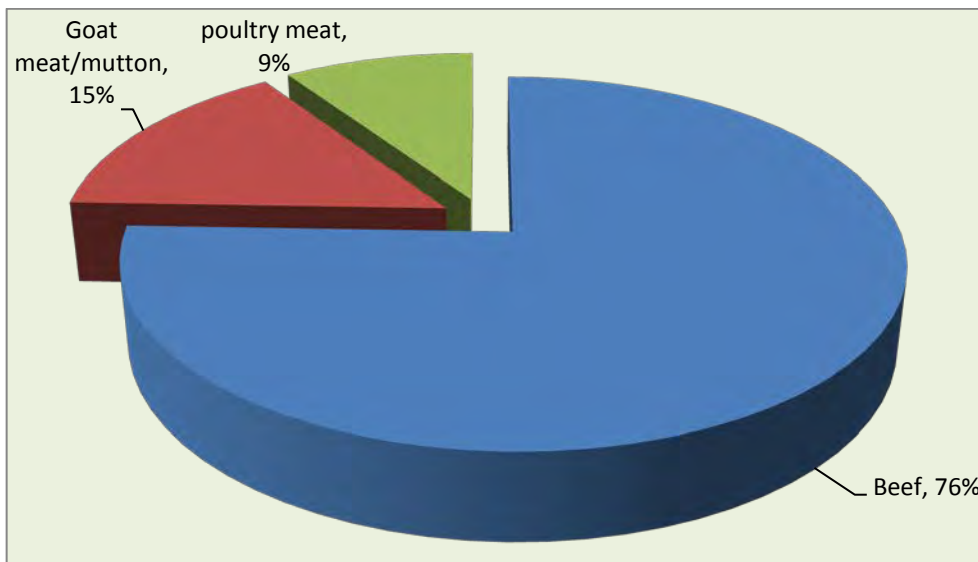
have compounded the problem since currently there is no one to ensure that only licensed dealers are in operation. The use of cooperatives and companies to deal in hides and skins as provided by the act revised in 1972 would ensure collective responsibility and bargaining by dealers in an effort to formalize the chain.

2.3 GEOGRAPHICAL DISTRIBUTION OF PRODUCTION, VALUE ADDITION AND MARKETING

The main input in the production of meat, hides and skins is the live animals that include cattle and goats, with the biggest proportion being cattle. As livestock rearing increases, the production of meat, hides and skins is equally expected to increase since demand for meat increases as a result of population growth.

A comprehensive analysis of the meat sector by the Uganda Investment Authority last conducted in 2008 showed that beef production constituted 76% of total meat production in the country as shown in the chart below.

Figure 4: Chart showing meat production in Uganda, 2007.



The country is still lacking in modernizing abattoir operations to meet export standards with only one industrial abattoir recently established in Bombo - the Uganda Food Security Company Limited. A quick review of meat production by City Abattoir reveals that the proportion of beef and goat meat/mutton has changed. On a daily basis, the abattoir slaughters 250 cattle (averaging 140 kg) down from about 300 a year ago and about 100 goats/sheep (averaging 14kg). This

According to Dr. Gerald Nizeyimana, Live animals are moved mainly by trekking from the farms to the nearest cattle markets where traders buy and transport on trucks to major urban centers for slaughter. The biggest proportion of live cattle is transported to Kampala for slaughter implying that the greatest movement is from cattle corridor districts to Kampala. Mr. Wilberforce Mutesasira of City abattoir noted that the cattle they slaughter mainly come from the districts of Mbarara, Kyankwanzi, Kiboga, and the surrounding and mainly local breed. Although city abattoir is one of the biggest slaughter houses in Kampala, there are six additional slaughter houses within Kampala metropolitan alone including Nsooba, Kisita, Wankulukuku, Kagoma, Gayaza and Kajansi. However, other big metropolitan urban centers like Arua, Gulu, Jinja, Mbarara and Mbale have sizable slaughter houses with other traditional districts having small size slaughter houses countrywide. There is also a newly established industrial abattoir in Bombo although non-operational yet. These all receive sizable inflow of cattle for slaughter from the cattle corridors. According to city abattoirs about 85% of buyers of their meat are butcheries and only 15% go to meat processors and other buyers like hotels and institutions. Meat transport to the butcheries is mainly by motor bicycles and small cars.

Meat processors and others dealers in processed meat like My Choice, Mr. Iga have specialized refrigerated vans for carrying meat. Slaughter houses currently are not exporting any meat. Meat value addition is primarily undertaken by meat processors with only one (Fresh cuts) located in Kampala with notable operation. By 2012, about 7 small scale meat processing plants were operational producing between 300 to 700 Kgs of meat products per day².

Hides and skins are an end product of animal production. Although sometimes they are discarded, they are raw materials for various types of businesses – such as collecting, processing and distributing –undertaken by farmers, merchants, butchers, entrepreneurs, and traders both in rural and urban communities. The production of hides and skins are as scattered as the animal slaughters. However, much production is centered in the major urban centers where the greater number of slaughters takes place. However, hides and skins processing is only concentrating along the north corridor route. Of the 9 tanneries in the country, 1 is located in Busia, 5 in Jinja, 1 in Lugazi (Buikwe district) and 2 in Masaka – Uganda Leather and Allied Industries

² Agriterra 2012

Association records. A lot of the production in the countryside is used in raw form for making basic items mainly handcraft and traditional instruments such as drums and marts. On the other hand productions at urban centers mainly find their way to the tanneries through trucks for processing for export. According Mr. Mutesasira of city abattoirs, the middle men dominate the supply chain between slaughter houses and the tanneries. The middlemen purchase fresh hides and skins and supply them in the same form to the tanneries using mainly pick-up trucks and due to limited preservation skills most times losses arise resulting from change in grade due to quality change.

To take full advantage of the scattered production of hides and skins in the countryside, the different players in the chain need to understand local circumstances including sources and supplies. A coordinated approach from the lowest level would be ideal to ensure flow of hides and skins from every level of production to the next up to the highest level of value addition available within the country before export. Government should also enforce the use of licensed cooperatives and companies to deal in hides and skins. This will require establishment of bulking centers and skills training of the producers on skinning and preservation. In addition, proper transport infrastructure including appropriate cargo trucks is required between different major regional urban centers connecting to the north corridor route where the tanneries are taking center but especially connecting to Kampala and Jinja and to the port of Mombasa (the major export route). The long term solution according to ULAIA however, is that as the EAC federation progresses, there is need to establish a few modern but huge tanneries within EAC that completes the leather tanning process which should be supplied by numerous small and medium tanneries. This shall reduce export of wet blue leather and increase industrial development and production of leather products for local consumption and for export. For this to be achieve, stakeholders during the validation meeting suggested an establishment of a Leather Industrial park either in Bugiri or Namanve for finishing lines which should be supported by improvement in existing slaughter houses in the countryside to reduce distance for moving live cattle. They also suggested the need to improve connecting routes to the NCR where most tanneries are located and to integrate transporters into the chain for better understanding and enforcement of standards. This will also require investment in appropriate transport and storage facilities.

2.4 TRADE VOLUMES FLOWING THROUGH DIFFERENT CHANNELS

A: Meat

The ministry of Agriculture, Animal Industry and Fisheries (MAAIF) estimated overall meat production in Uganda at nearly 200,000 MT in 2013 increasing by almost 15,000 MT in a five year period. This is supplemented with goat meat/mutton which was estimated to be about 37,000 MT in the same year as shown in table below.

Table 1: Meat production in metric tons, 2008 – 2013

Year	Beef	Goat/Mutton
2009	175,049	32,640
2010	180,300	33,619
2011	185,709	34,627
2012	191,280	35,666
2013	197,019	36,736

Source: UBOS, Statistics Abstract 2014

A study by Agriterra sponsored by Embassy of the Kingdom of the Netherlands in Uganda entitled “Identification of livestock investment opportunities in Uganda” characterizes the main markets of meat as ‘mainstream’ and ‘premium’ segments. At the retail level, the mainstream market is to the greatest extent serviced by the wide network of roadside and market stall butcheries. The study estimated between 5,000 and 7,000 of these butcheries in number accounting for 75-80 percent of all beef sales in the country. The premium market on the other hand was estimated to account for about 16 percent of the total meat market (in Kampala) served by a growing network of modern butcheries and supermarket butcher stands. The demand and consumption level of beef in Kampala was estimated at about 15,500 tons annually (7% of national meat consumption). (Agriterra, 2012) Uganda’s population is growing at 3.4%. To meet local animal protein needs alone, livestock productivity has to increase by over 4.3% a year, from 3% today. The national per capita consumption of meat is only 6 kg, below the 50 kg recommended by the Food and Agriculture Organization and World Health Organization.

The Agritererra study also provided highlights on the export market for meat showing how it is limited to regional markets. Export opportunities of live animals and meat products are limited because of the prevalence of diseases, lack of an export standard abattoir and the high demand of the national market. This is evident as currently there is quarantine on cattle movement and slaughter in some parts of the country like Ngoma as noted by City Abattoirs. The validation meeting of stakeholders noted that the export market potential is great but issues of quality are the major setback. The meeting further noted that Veterinary officers especially from EU importing countries want to first inspect the meat before they are exported – 21-days inspection period which has not been implemented by government.

Table 2: Formal imports and export of beef (2005-2011), US Dollars

Year	Exports		Imports		Net trade
	Tons	USD	Tons	USD	USD
2005	288.95	733,851	0.99	8,394	725,457
2006	124.32	323,101	0.60	820	322,281
2007	66.52	92,763	8.75	47,908	44,855
2008	50.07	50,004	4.91	9,112	40,892
2009	17.03	52,577	2.79	4,549	48,028
2010	240.46	818,778	3.64	12,727	806,051
2011	34.20	148,881	1.17	6,667	142,214

Source: UBOS (2012)

The table above shows that Export trade in beef is still very limited and with no stable trend. Exports to highly developed markets may be unfeasible for the foreseeable future but potential exists for export to neighboring countries. Value addition to fresh beef may yield immediate results since establishment of processing firms may require huge capital investment. However, as noted by city abattoir, government needs to identify foreign investors for partnership with local investors to establish modern and full-scale processing companies that will produce meat products meeting international standards.

B: Hides and Skins

The world production of bovine hides showed a contraction during the economic difficulties in 2008, notwithstanding the increase in global meat output recorded in that year. (FAO 2009) Most of the reduction took place in developing countries, where output of hides was estimated to have

fallen to about 3.7 million tons in 2008. According to the FAO outlook, Eastern African demand remained relatively strong, especially for sheep and goat hides and skins. In some of the main producer countries such as Uganda and Kenya, Governments had continued pursuing policies aimed at promoting value addition and product development, both through incentives to investment and taxes aimed at discouraging exports of raw hides. In Uganda, the export duty on raw products was raised in 2008 to US\$ 0.40 per kg, or 40 percent.

COMESA annual report 2014 showed that imports of leather and leather products from the COMESA region alone by Uganda grew from US\$ 7,656,000 to US\$ 10,675,000 between 2011 and 2013. On the other hand European Union trade in goods sheet with EAC countries in 2014 showed that raw hides and skins were among the top five imports by the EU from EAC amounting to Euros 67 million growing from 17 million in 2010 while imports by EAC countries from the EU of raw hides and skins, and saddler averaged Euros 2 million in the last 5 years. Evidently, Uganda and the corridor countries at large are exporting semi-processed leather while importing finished products of the same commodity. For instance, Skyfat tanneries concurs that they process hides and skins up to wet-blue stage of leather and export to China.

The demand analysis of hides and skins showed that there was enormous potential for hides and skins in the Gulf countries' market block which had a population of over 205 million in 2010 and expected to almost double by mid-2015. Uganda's share of US\$ 1.03 Trillion in this Middle East market stood at only 0.01% in 2013. The demand analysis further showed that UAE, Israel, Turkey and Lebanon were Uganda's top trading partners, accounting for 76, 5, 6 and 2 per cent respectively of her total foreign exchange earnings from that region in 2013. Unfortunately between 2010 and 2014, Uganda's share of this market slowly shrunk – at an average annual rate of -3% - to US\$ 63.77 Million in 2014. Notably, there was a sharper divergence in export growth patterns in 2013 and 2014, each with a more than -40 percent slump in export earnings. Raw or semi-processed hides and skins are difficult to preserve and store which lead to heavy losses. There is need to establish processing companies that complete the value addition chain such as making leather bags, belts, chairs, etc.

2.5 ROUTES FROM THE PRODUCTION AREAS TO THE FINAL MARKET

The beef market is characterized by ‘mainstream’ and ‘premium’ segments. The premium market accounts for about 16 percent of the total meat market (in Kampala), and is served by a growing network of modern butcheries and supermarket butcher stands. The mainstream market is to the greatest extent serviced by the wide network of roadside and market stall butcheries. These are estimated at between 5000-7000 in number and account for 75-80 percent of all beef sales in the country. (Agriterria 2012).

According to the End market analysis, formal export statistics showed that Uganda does not export much of animal meat – meat of bovine animals (cattle) – fresh, chilled or frozen. In 2014, for example, export was mainly to South Sudan. Most of this went to the UN Mission in Juba. There are various reasons for the low exports including; limited domestic cattle stocks – not enough to sustain import volume requirements of potential markets especially in the Middle East; import restrictions on Ugandan beef in various import markets – related to livestock disease management; domestic supply and demand dynamics in the meat industry; plus inadequate processing facilities – sub-standard as per the food safety requirement of many overseas markets. Even these low exports are actually on a downward trend – shrinking at an average rate of -49 per cent per annum – over the last five years.

For hides and skins market, global trends show the move of the manufacturing process for finished leather goods to Eastern Asia, where labor costs are lower. The countries involved are China, Taiwan, India, and, to a lesser extent, Thailand and Indonesia. Shoe manufacturing, for instance, is a labor intensive industry. Like leather finishing, shoe manufacturing has been concentrated in Asia especially China because of the low labor costs. This implies that the main direction of export of hides and skins is Mombasa en-route to China and the other major manufacturers of leather and leather products. Although export data show that a good proportion of the Ugandan hide and skins are also exported to Europe, ULAIA a coordinating body of the supply chain argues that most of these are merely agents but the final destination is mostly India and China. With the foregoing, it can be concluded that the supply route for hides and skins originate from country sides through the north corridor rout especially Masaka-Kampala-Jinja-

(Busia & Malaba)-Mombasa-Asia (Mostly China and India). However, the end market analysis established that the top supplying markets of hides and skins (or leather) include Italy, USA, Brazil and Hong Kong took with 15.4, 10.6, 8.2 and 6.7 percent share of the world market in 2014 respectively.

2.6 Soft and Hard Logistics

Many of the scattered slaughter houses in the country conduct manual collection and handling of meat. Some mechanized meat handling is observed at City abattoirs and a few other slaughter houses around Kampala. There are no storage facilities for meat at the abattoirs/slaughter houses. Abattoirs/slaughter houses produce only meat that is supplied on daily basis. Transportation of meat from the abattoirs/slaughter houses is mainly by motor cycles and unspecialized vans to the butcheries. Modern meat processors and dealers have specialized refrigerated vans that they use to transport their meat from slaughter houses to their factories. The logistical costs in moving meat by the buyers are mainly related to transportation. Meat producers do not use any soft logistics. The processors use computers only for management and marketing procedures. Although processed meat products can stay a little longer, exporters face the challenge of delayed boarder and URA clearance – according to Fresh Cuts which is a meat processor in the country. The logistical requirements for hides and skins are quite similar to that of meat with a difference that a lot more middle men exist between the producers and the final buyers of hides and skins compared to meat. The lower end middle men deal in very few hides and skins and transport them by bicycles to the larger middlemen. The bigger middlemen use mostly pick-up trucks for transportation to the tanneries. The challenge is lack of soft logistics in terms of information flow. A live case scenario; A young man intending to start dealing in hides and skins moved from Rakai to Kampala (ULAIA offices) to get market information and then he is referred to a tannery in Jinja for appropriate guidance. What happens there after is not known but this underlines the great need for soft logistics in terms of market information to reduce hidden costs. The middlemen face a number of challenges but most of all include damages and rotting of hides and skins during transportation before delivery to the tanneries. The tanneries on the other hand use large trucks and containers which are normally hired from companies such as 3-Ways and Spear motors to transport the leather to the port of Mombasa-according to Skyfat tanneries. From Mombasa, the items are shipped to the final export destination-mainly China.

Storing and distributing meat, hides and skins from producers to buyers is greatly lacking. Appropriate transport facilities are limited only at higher levels of value addition. Unified collection and distribution chain can only be achieved with properly identifiable market leaders other than scattered and disjointed operations in place. Stable profitable outlets in connection with improved processing and handling facilities will consequently attract large-scale investment.

Promoting use of refrigeration may be ideal but presents one of the biggest problems since supplies of electricity are often inadequate.

3 VALUE CHAIN ACTORS, THEIR FUNCTIONS AND CHALLENGES FACED

3.1 INPUT SUPPLIERS

To obtain meat, hides and skins, there must be live animals forming the main input in the value chain. The main suppliers of live animals are individual households which are sometimes grouped in associations or cooperatives such as the Uganda Livestock Producers 'Association an association of over 30 livestock farmers 'cooperative societies and the Uganda Meat Producers Cooperative Union an apex of 33 livestock producer cooperatives. These livestock households supply live animals to middlemen through the markets but sometimes through affiliate associations or cooperatives. The butchereries also buy livestock directly from the farmers or markets.

3.2 PRODUCERS³

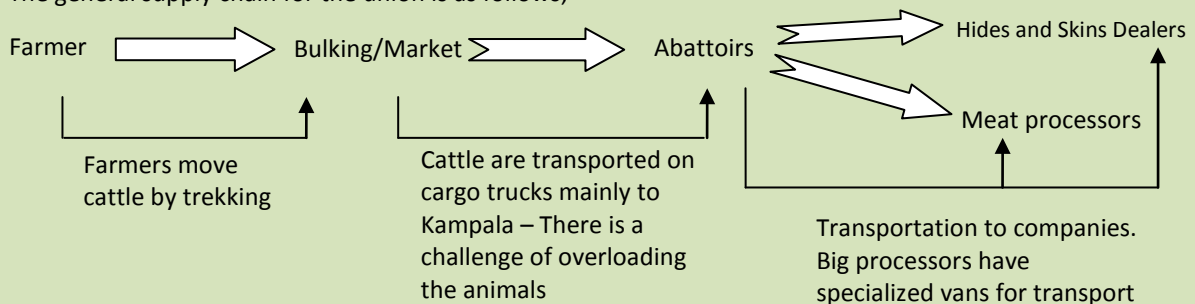
Meat producers are mainly abattoirs but also producer associations, cooperative societies and unions as well as individual producers. There is only one newly established Industrial abattoir located in Bombo which is not yet operational. Kampala has 7 slaughter houses; City abattoirs, Nsooba, Gayaza, Kisita, Wankuluku, Kagoma and Kajansi. Other major town or have slaughter houses country wide. Many supply the meat to butchers but a small proportion to processors.

³Depending on the value chain, we will have case studies on selected key producers or processors

Text Box 1:**A Case of Uganda Meat Producers Cooperative Union**

Uganda Meat Producers Cooperative Union (UMPCU) is an apex organization of 33 primary cooperatives in Uganda having membership all over the country. The primary cooperative societies are composed of farmers that are keeping cattle for beef. UMPCU activities include Promotion of livestock production activities, supporting members in the production process, collective cattle marketing through bulking and sale to buyers, lobbying and advocacy for members. Cattle from members are slaughtered and meat sold to the meat processors in Uganda. Although, membership is all over the country, concentration of the operation is within cattle corridor but especially the stretch from Ntungamo, Ssembabule, Mubende, Kiboga, Masindi, and Nakaseke.

Suppliers to the union are member farmers some of whom are small holders (20-100), medium holders of above 200 and some ranchers. Cattle are collected at one point (bulking center) and the union moves the cattle to Kampala where they are slaughtered and supplied to meat processors and hides and skins dealers. The general supply chain for the union is as follows;



The general costs associated with transporting the animals to the abattoirs include: Truck hire, police fees and fines, casual laborers and cattle handling fees while in transit, local service tax and permit fees.

The Kampala market is estimated to consume approximately 700 cattle each day which is about 10% of total slaughters in the Country. Currently UMPCU controls about 1% of all meat in Kampala supplying to one big processor (supplying Fresh cuts 80 % of its slaughters) and the rest to other small processors. The Union currently does not export any meat but has plans to export meat to the DRC, South Sudan and Middle East in the medium term. The demand for meat in recent years has been low but increasing. The general per capita intake of beef is estimated to average 6 kg/person per annum while for all meat is 10 kg/persons p.a. This is well below the FAO recommendation of 54 kg/person per year. The union identifies the main reason for low intake as scarcity of meat due to low production and productivity which results in high prices. This presents opportunities for development and the union's strategy is to support farmers to improve production through improvement of cattle breeds through artificial insemination and importation of superior beef bulls. In the interim, the union has finalized plans to construct a livestock resource center to ease the bulking in Nakaseke district expected to be completed by December 2015. Thereafter, construction of a modern abattoir and meat processing unit will commence at the same site which is projected to take 2 years to complete.

3.3 TRADERS

Meat traders are butcheries spread all over the country selling fresh meat but including other byproduct like internal organs. Meat processors and dealers also supply to supermarket for upscale buyers. However, many big supermarkets like Shoprite, UCHUMU, Garden City, etc. import most of their meat products from South Africa and Brazil.

Hides and skins are traded by a wide range of dealers but mostly individuals. These buy hides and skins from small collectors scattered country wide. They bulk, preserve and supply to tanneries. The tanneries, currently 9 in number, are the main export traders in the country.

3.4 PROCESSORS

A. *Meat*

There are a great variety of meat products with different taste characteristics as a result of different processing technologies and raw materials. The primary input though is meat itself. Meat processing therefore starts as soon as meat leaves the butchery and in transit. At this point, extra handling and preservative measures must be put in place such as use of refrigerated vans. The general practice in Uganda can be illustrated as shown in the case study below.

Text box 2: The Case of a Modern Meat Processing Plant in Kampala



Using road transport, meat is delivered from the abattoirs to the factory in refrigerated vans. The meat must be fresh, free of treatment vaccine and mostly from local heifers. They avoid meat from areas with high risk of infection like foot and mouth diseases. At the factory, meat is kept in cold rooms. Value addition Process include; Leaning, packing, cooking (to cold cuts ready for eating), creation of new products (like sausages) and professional butchering-professional cuts (T-bone). Bi-products are used for production of dog feeds and also supplied to hotels that make dog feeds.

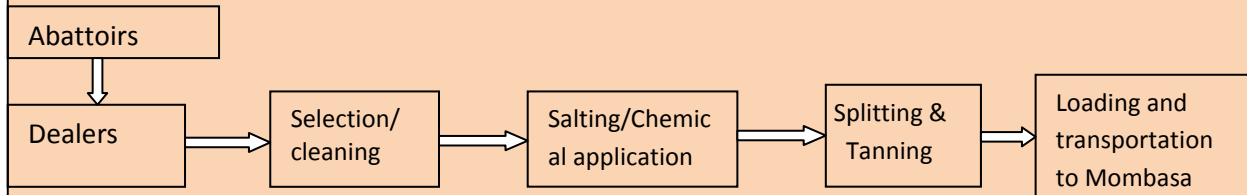
Distribution is majorly by road using trucks both own and hired. High transport costs are experienced due to high fuel prices and delays at boarder and URA clearance. Domestic buyers include Supermarkets, Hotels and Restaurants and dealer outlets. Transportation services are provided to some buyers. Export which is about

B. *Hides and skins*

The main goal of processing hides and skins is to obtain leather. The leather manufacturing process is generally divided into three sub-processes: preparatory stages, tanning and crusting. Apart from two processing companies in Uganda that complete to finished leather, the rest of the companies stop at the tanning to wet blue stage and then export

Text box 3: A case of a tanning plant in Jinja

The case study is a private company engaged in tanning of hides and skins. Its main inputs include cattle hides and goat/sheep skins, salt and chemicals with the main supply centers from Kampala, Jinja and Mbale. The value addition chain is as follows;



The use of machinery is limited to the production process. Hides and skins are obtained from suppliers who deliver them to the tannery. Suppliers range from individuals using bicycles to large scale dealers supplying in trucks with varying number of hides and skins. Observed challenges at the input stage include: damaged hides and skins due to poor skinning and rotten; also sometimes the hides and skins smelly caused by delays and poor storage. The hides and skins are tested for quality through torching/feeling, smelling and colour observation.

Processing is done at the factory up to the level of wet blue skins and hides and stored in drums for preservation. The final products are transported from the factory to the port of Mombasa for export using containers and cargo trucks which are usually hired. The only export destination (100%) for the last 10 years is China. The company does not supply any of its products to the local market. IT usage is limited to office work. Logistical costs are associated with higher of trucks and value added tax.

The company does not satisfy its demand market in China alone. As such, it is on expansionary drive currently constructing more office and production space with plans to increase production.



Tanning is the process that converts the protein of the raw hide or skin into a stable material suitable for a wide variety of end applications. Although a number of different tanning methods and materials exist, the common practice is the use of chemicals, which leaves the leather, once tanned, a pale blue color, and this product is commonly called "wet blue".

3.5 EXPORTERS

Uganda meat export is still very dismal and mainly to neighboring countries especially where there is UN missions such as DRC and South Sudan. According to an on-line meat directory, meat1.com, a number of exporters of meat have been identified; Afro Terry Industries U Limited-Kampala, Bifra Investments Ltd – Kampala, Chakula Safi Limited – Jinja, Fresh cuts

Ltd – Kampala, City Side Investments Ltd – Kampala, Development Du Islamis Avec Les Autres-Kampala and Egyptian Uganda Food Security-Bombo. Most of these deal mainly in imports but with some exports except a few like the Egyptian Uganda Food Security-Bombo which is meant to do manufacturing for export with an industrial abattoir and Fresh cuts ltd that does manufacturing as well.

The major exporters of hides and skins in Uganda are the tanneries exporting mainly semi-processed leather in wet blue form. Mr. Mwebe the coordinator of the ULAIA noted that with the “recent introduction of a high export levy on raw hides and skins, export of raw hides and skins is no longer sustainable and has now gone down from about 95% to almost zero. He adds that now there are foreign interests in leather tanning ventures. Among the 9 tanneries at present, the two tanning hides and skins to finished leather include; Leather Industries of Uganda and LOYA Small Scale Industries ltd both located in Jinja. The other 7 tanneries that process up to wet blue leather and then export are; Elgon Leather and Novelity in Masaka, HOOPOE in Lugazi, SWT Tanneries, Skyfat tanneries and MSA Investment in Jinja and Jambo tanneries in Busia. ULAIA noted that one processing plant in Jinja closed over loss of premises. The absence of leather factories has promoted cheap and synthetic imports.

3.6 SERVICE PROVIDERS WITH A FOCUS ON LOGISTICS

- a) ***Regulators, research, extension and disease control:*** Veterinary Department (Ministry of Animal Industry and Fisheries) for issuance of Export Certificate for Hides and Skins /Veterinary Health Certificate. Department of Livestock and Entomology responsible for the development of policies and regulations on animal diseases control and inspection procedures. Department of Animal Production and Marketing for formation of standards regarding the quality and safety of livestock and livestock products. These control diseases like rinderpest, Foot and mouth, lumpy skin and vector-borne diseases which compromise the quality of meat, hides and skins produced. The others in research and extension include the National Genetic Resources Centre and Data Bank (NAGRC&DB) also known as the Animal Breeding Centre (ABC) Entebbe under National Agricultural Research Organization (NARO), the Universities (especially the Makerere University) and the National Agricultural Advisory and Development Services (NAADS).

- b) **Livestock farmers** as the major suppliers of inputs. Most cattle sales are related to farm households' cash needs. Although livestock is raised in all parts of the country, it is especially along the cattle corridor, usually by smallholder farmers with commercial ranching accounting for only about 2 percent. Increasing the proportion of commercial ranching may not be achievable in the foreseeable future thereby making commercialization of small holder framers the way to go. The validation meeting of stakeholders recommended government effort to encourage and promote sale of cattle within two to three years as opposed to current practice of selling obsolete or sick animals.
- c) **Transporters, Clearing & Forwarding**. As export trade grows, there is rising need for transportation services for goods across seas, ocean or by air from one place to another. The distance the goods cover are usually a factor in freight and clearance costs in addition to, special packaging facilities such as refrigeration, documentation, delivery reports and other terms that both parties may agree upon. In Uganda, a number of companies are engaged in freight and clearance services especially for export good (see annex 1). Although, hides and skins has benefited from a number of these companies like Threeways Shipping Services (Group) Ltd, it has been mainly at the export level transporting through the port of Mombasa to oversees. These companies also offer safe packaging, letters of credit, invoices and other shipping documentation. The services of clearing and forwarding companies include collecting items from the factories and offering other transporting details until the goods reach their warehouse destination. Given the risks involved in export freight and clearance, there is an addition burden of insurance Internal flow has been characterized by small scale and unspecialized transportation. The transport system in developing countries is quite similar. Meat transport on the other hand has been on a limited scale given low volumes of export mainly by flight and like Botswana, and Local Processors usually transport meat to retailers in their own vans⁴.

⁴ ITC (2014), CDE and ITC partnership project on value chains: Beef value chain findings, strategy and proposed interventions

Text box 4: A Lesson from Botswana Transport System

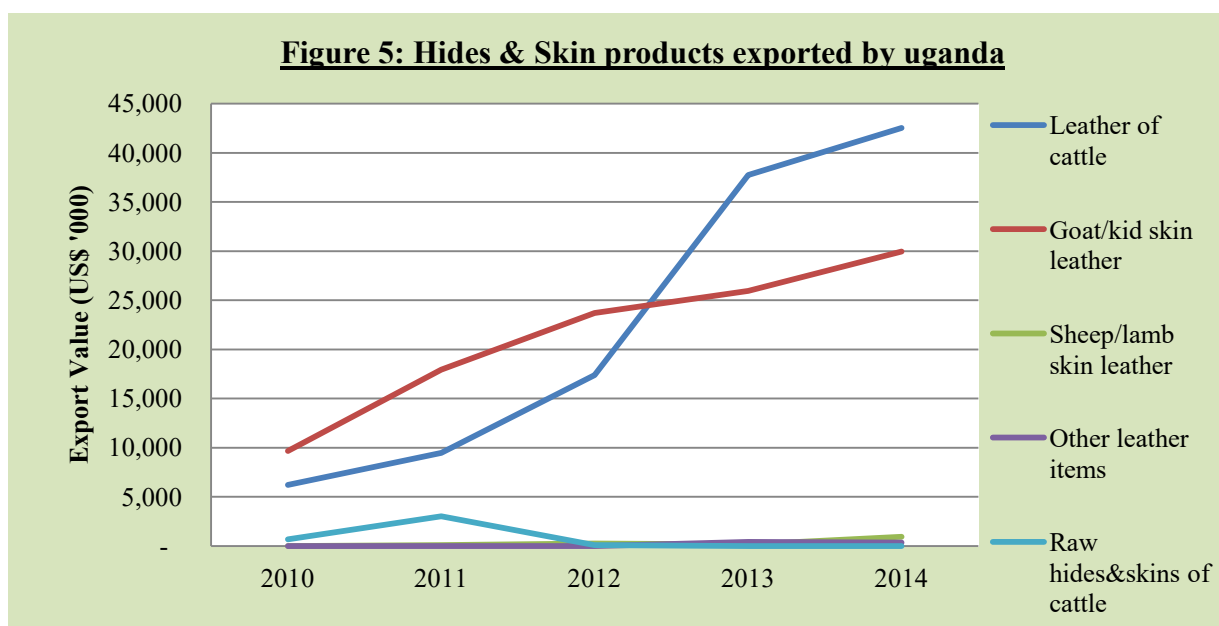
Although the transportation system is for livestock, a good lesson can be learnt for meat, hides and skins. Two main types of transporters are distinguished, namely; Private individuals or companies using smaller non-specialized trucks and trailers; and companies with specialized trucks. EU, as target market, is translated into minimum requirements for transportation standards. Consequently, the cost of transport on specialized trucks is about 75 percent of that on ordinary trucks. This model can encourage investment in specialized transport vans for meat, hides and skins and improve standards of products for export. (FAO, Botswana Agrifood Value Chain Project: Beef Value Chain Study, 2013)

- d) **Warehousing.** Meat, hides and skins require proper storage for export. Currently proper storage such as the use of cold rooms can only be associated with processors. Specialized transporters and forwarding companies have special trucks but usually at high costs. During a FAO Regional Workshop on the use of the Cold Chain to Promote Agricultural and Agro-industry Development in Sub-Saharan Africa conducted in Cameroon in 2012, it was observed that all storage facilities at Entebbe International Airport are operated and developed by private investors with Cold Store Facility No. 3 - 100 tons of general fresh produce (Roka Bonds Ltd) and Cold facility No. 2 - 120 tons of fish (Entebbe Handling Services (ENHAS)) that can be closely associated with meat. No cold storage existed at border crossings and the situation cannot be any different now. The fact that no specialized cold storage exists for meat signals where possible entry point could be. A Development of meat export without cold storage facilities may not be feasible.

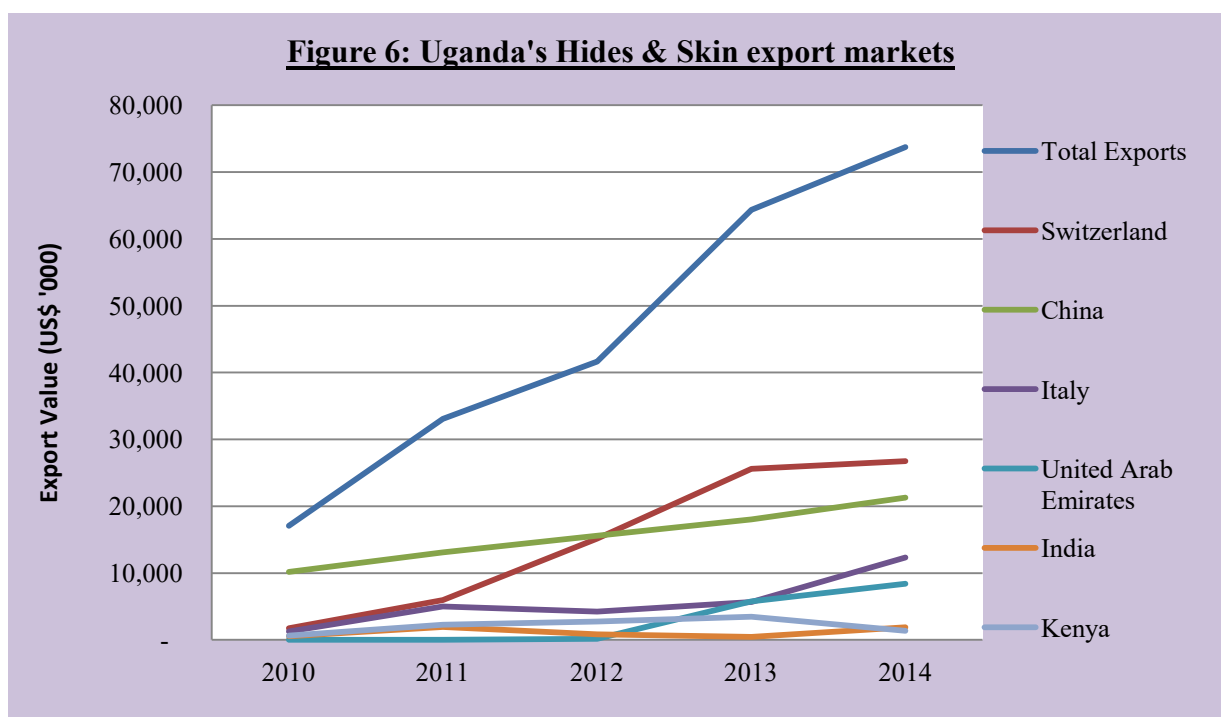
4 END MARKET ANALYSIS

4.1 MARKET OVERVIEW

In 2014, Uganda exported US\$ 73.756 Million worth of hides and skins⁵ to 16 destinations worldwide – Switzerland, China and Italy being the top 3 and accounting for 36.2, 28.9 and 16.7 per cent of the country’s total formal export earnings for that year. This was a 15 per cent growth in earnings compared to 2013 and added to the 5-year growth trend put at an annual average of 48 per cent (2010 – 2014). On a country-to-country basis, Uganda’s earnings from most of the major markets grew by between 4 to 318 per cent in 2014, with the biggest leap being recorded with India. The market and product profile however remained unchanged. Cattle hides accounted for 58 per cent of the earnings against 41 per cent for goat/kid skin leather. Uganda enjoys preferential access to 10 of its 16 markets. Also, the country continues to maintain the export levy on raw hides and skins with the aim of promoting value addition. As such, much of the bulk of hides and skins exported out of Uganda are in semi-processed (wet blue) form. All these markets are accessed by road and sea through Mombasa.



⁵ As defined under chapter 41 of HS coding system



This growth trend was not unique to Uganda. World trade in hides and skin grew by 6 per cent overall in 2014 to a value of US\$ 3.9 Billion. Again, over the 5-year term, this translates to a 7 per cent annum growth. China, Italy and Hong Kong remained the key markets for these products. However, Italy and Hong Kong also stand out as major exporters. The top supplying markets of Italy, USA, Brazil and Hong Kong took up 15.4, 10.6, 8.2 and 6.7 per cent share of the world market in 2014 respectively. At the 4-digit level, there are 11 products (or product lines) traded internationally. Uganda only exports 4 of these.

Regarding meat, formal export statistics show that Uganda does not export much of animal meat – meat of bovine animals (cattle) – fresh, chilled or frozen. In 2014, for example, only 31 tons of frozen meat – valued at US\$ 140,000 – and 14 tons of the fresh or chilled – valued at US\$ 32,000 – was exported, mainly to South Sudan. Most of this went to the UN Mission in Juba. There are various reasons for the low exports including; limited domestic cattle stocks – not enough to sustain import volume requirements of potential markets especially in the Middle East; import restrictions on Ugandan beef in various import markets – related to livestock disease management; domestic supply and demand dynamics in the meat and dairy industry; plus inadequate processing facilities – sub-standard as per the food safety requirement of many

overseas markets. Even these low exports are actually on a downward trend – shrinking at an average rate of -49 per cent per annum – over the last five years.

4.2 MARKET SEGMENTS – HIDES & SKINS

The global leather supply chain can be segmented into three – hides and skins, tanned leather and footwear (including other leather products). The main feed for this supply chain – hides and skins – are a byproduct of the animal meat market chains. That's why the production of hides and skins is relatively inelastic to changes in their prices but hinged more on the factors that drive the meat and dairy markets. Considering the kind of products exported, the segment for Uganda is undoubtedly hides and skins. Uganda's exports are fundamentally inputs into the tanning industry in the export markets. Physical characteristics/quality of the hides and skins are therefore the critical competitiveness factor and thus price determinants. The consumption of these export products also hinges on the consumption of footwear with leather uppers and other leather products and thus directly related to changes in purchasing power of consumers especially in high income countries. Low income countries import proportionally less leather footwear. This trend, to some extent, gives pointers on the geographical segmentation of our export markets – Europe, Asia, Middle East and Africa representing 54, 32, 11 and 2 per cent respectively, as per 2014 export earnings data.

4.3 DISTRIBUTION STRUCTURE

At the helm of the hides and skin supply chain in Uganda are the tanners, who also double as the exporters. The existing export levy on the raw hides and skins has skewed the supply chain, making them the critical actors and decision makers. With this levy, it is relatively unviable to export the raw hides yet tanning is a high-investment business. The primary source of raw materials is the abattoir. Domestic regulations on animal and animal products health and safety have converged livestock processing (slaughter) to these designated facilities countrywide, making them the core collection point for the hides and skin. Tanners therefore have to contend with the dynamics of controlling these sourcing points in order to amass the required volumes. Traders and other consolidators of the raw hides and skins outside the abattoir simply complement the

volumes collected at the former. There on, the hides and skin movement is controlled by these processors – including export.

4.4 COMPETITION

Formal export statistics show that Uganda does not export much of animal meat which worth a meager US \$172,000 in 2014 most of which was sold to UN missions in neighboring countries. The EU finalized the economic partnership agreement with EAC countries in 2014 which may increase import of meat products from EU especially as the tariffs get phased out within 15 years. The end market analysis shows that in 2014 Uganda exported US\$ 73.756 Million worth of hides and skins⁶ to 16 destinations worldwide, a 15 per cent growth in earnings compared to 2013. World trade in hides and skin was also impressive with 6 percent overall in 2014 to a value of US\$ 3.9 Billion.

Uganda faces the same competition in all its export markets. It trades with at least five (5) of the top 20 importing markets. Given the market count of 16 it is evident that exporters have attempted to avoid the high end market and focus on more specialized markets where there is a given level of consistent and room for growth. From the geographical perspective, South Africa, Egypt and Ethiopia are the key competitors for Uganda in all her export markets. These, despite being African nations, are not land-locked giving them a logistical advantage over Uganda – considering that the physical attributes (quality) of the hides and skins produced are relatively the same. However, Ethiopia's current leather policy direction is to move away from raw and semi processed products which will diminish her position as a competitor for Uganda.

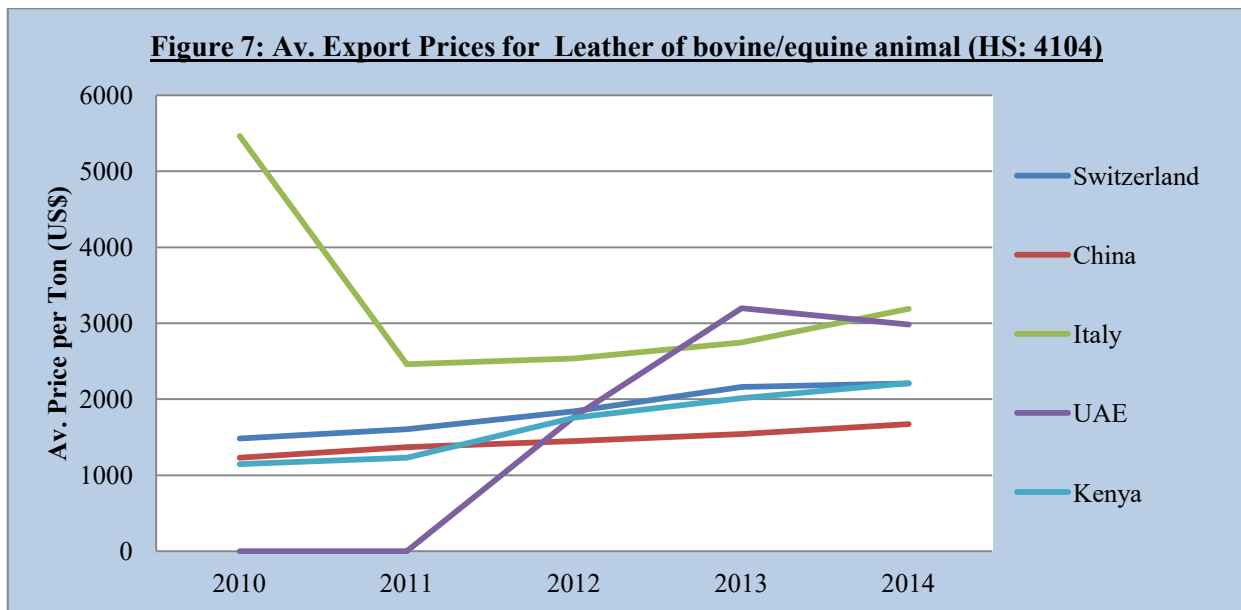
Ugandan hides produce heavy quality leather and are generally of high grades used for shoe uppers with some hides suitable for furniture leather when processed. Its performance is categorized as champion in the Asian market, EU market but a loser in the gulf countries. The underlying RCA for hides and skins are still low less than 1 but quite impressive, the highest of 1 being in UAE and India as of 2013. Other impressive markets include EU (with RCA of 0.89), Kenya (RCA of 0.96) and Rwanda (RCA of 0.67). The International Leather Maker identifies

⁶ As defined under chapter 41 of HS coding system

France as the leading exporter of raw hides and skins leather and finished leather products and is the third largest exporter of finished leather goods in the world. However, the Indian tanning industry is a growth market and has the potential to become more of a global player. A decline has been observed in the Japanese tanning industry output over the past three decades. Environmental control and waste management has been a major challenge for the tanning industries worldwide.

4.5 PRICE TRENDS

To have an appreciation of export price movements in the hides and skins sector, figure 7 below illustrates how the average per ton price has been changing in the top importing markets over the 2010 – 2014 periods. Leather of bovine/equine animals also covers leather in wet-blue form (semi-processed leather), which is the major export of the sector given the export levy on raw hides and skins.



4.6 BUYERS IN KEY EXPORT MARKETS

The end market analysis shows that Uganda does not export much of animal meat but the little is also declining. Most of Uganda's export in 2014 went to the UN Mission in Juba but also UN Missions in DR Congo under the Relief market. Low exports are noted as a result of limited domestic cattle stocks, import restrictions due to livestock disease management, domestic supply and demand dynamics, and inadequate processing facilities. However, potential markets are identified as the Middle East.

On the other hand, world trade in hides and skins has been on the upward trend including Uganda's export. In 2014, according to the end market analysis, the major buyers of Uganda's hides and skins included Switzerland, China, Italy, United Arab Emirates, India and Kenya in that order. However, Italy and Hong Kong are also major exporters. The major buyers of Hides and Skins from Uganda are mainly in the frigid market including KY Resources Ltd, Jiangmen – Hong Kong and Foshan Headway Trading Co. Ltd Foshan in China.

As a combined export strategy for meat, hides and skins, focus on Asia and Middle East countries may yield better dividends. Given that demand already exists, Ugandan producers of meat, hides and skins must meet the export quality requirements. Government should also put more effort to strengthen trade relations with Asia and Middle East countries. Given that demand of these export products, especially hides and skins, hinges on the manufacture of leather products such as footwear, handbags, belts, chairs, etc. and Asia and Middle East are becoming centers of production due to cheap labor, demand is expected to continue to grow.

5 CHALLENGES TO DEVELOPMENT OF LEATHER INDUSTRY

5.1 CRITICAL FACTORS FOR HIGHER VALUE ADDITION

- a) **Small and fragmented Production in less regulated market:** Production is scattered all over the country. There is a big number of middlemen making the entire domestic market very informal. Formal market players operate informally with the middle men which causes exploitation of unsuspecting producers making the chain less attractive. Most of the dealers or middle men are unlicensed with no reporting structure. This makes it difficult even to estimate the number of players at each point of the lower end of the chain. To reduce distance for transporting live cattle there is need to improve slaughter houses in at least the old the original 36 districts and especially those within the corridor districts including original Municipalities (12 of them) of Uganda although some are currently not operational in addition to the 7 in Kampala.
- b) **Poor and inadequate infrastructure:** Transportation and distribution from rural to major urban centers is greatly lacking. Transport of livestock is on cargo trucks characterized by overloading compromising quality of the product. From production, the products are moved in improper transport facilities to processing centers compounding the defects on quality hence reducing the final grade of the product. There also need for tracking system within the chain to enable buyers track movement of their goods.
- c) **High transport and marketing costs:** Transport is primarily by road and it is the single largest component of logistics costs. Input in the production is livestock which means covering long distance on bad roads in the countryside with cattle in cargo trucks. This model of transport leads to defects especially to hides and skins which is a big cost along the chain since it changes the grade of the product. Other costs include official and non-official taxes and fees which compound the logistical costs. The elimination of illegal taxation along trade routes could also contribute to improved market performance. There is need to improve connecting routes to the NCR where most tanneries are located. Integrate transporters into the chain for better understanding and enforcement of standards.
- d) **Inadequate market information:** There is inadequate knowledge and information about both the local and distant markets. The case is different elsewhere such as Ethiopian which has a vibrant Livestock Market Information System that collects, analyzes, stores and disseminates

livestock related information like prices. Lack of information leads to lack of clarity in defining obligations of all stakeholders in the supply chain within legal framework causing insufficient involvement of key stakeholders in decision making to confront changing needs of the value chain. For instance, the last time a comprehensive sector analysis was done in this chain to inform investment decision was in 2008 and to date there has been no update causing scarcity in planning information.

- e) **Poor quality standards:** Meat, hides and skins require very stringent quality and sanitary conditions right from production to the final output which is not yet in place. Like the Botswana model, quality standards can be added as a cost factor in the supply chain to promote standards in production, processing and export.
- f) **Lack of storage facilities:** Meat hides and skins collection and distribution chain requires proper storage at bulking centers in form of cold rooms and warehouses or storage outlets. This is non-existent quite often leading to losses. It is clear that cold storage facilities have been spearheaded by the private sector, for instance at Entebbe airport there are private cold stores for fruits and vegetables, flowers, and fish. Given that these have been highly export items, it is evident that export promotion of meat, hides and skins will automatically attract private investment in appropriate storage facilities. A few companies like Kazi Foods Logistics and cold storage in Kampala which lease and maintain refrigerated cold storage facilities cannot sustain the market and only concentrating in Kampala area making the cost of service high. Slaughtering facilities especially in major towns that supply processors should establish cold storage facilities as requisite for permission to operate. Government should have deliberate effort to promote the use of proper storage facilities to attract investment in the sector. Invest in appropriate transport and storage facilities.

5.2 COSTS BORNE BY THE NATURE OF LOGISTICS

The logistical costs of meat, hides and skins are hugely associated with transportation. Along the routes, addition costs include trade licenses (tax) and other fees both legal and illegal. There are also costs related to defects. This is high especially with hides and skins. Mr. Mwebe of ULAIA confirms that each of the three stage defects cause decline in the grade of hides and skins. A hide purchased as grade one at the lower end of the chain can yield third grade leather at the upper end depending on whether there has been pre-slaughter, peri-slaughter or post slaughter defects which is a huge loss along the supply chain.

Observed access costs from the farm gate to wholesale markets include transportation between the various markets, loading and unloading, lairage and a variety of local fees and taxes and profit margins. Table below extracted from a study on promoting a commercial beef industry in Uganda prepared by Landell Mills LTD for MAAIF in 2011 presents the cost elements involved in each market segment. The data reflects the observed marketing costs and margins for 2010. For 2010, the observed access costs from the farm gate to wholesale were estimated at UGX 122 000 per cattle (or USD 373.4 per ton of processed carcass assuming average carcass weight of 150 kg per cattle). To understand the costs in preceding years, the observed costs can be adjusted using consumer price index (CPI).

Table 4: Observed access costs of live cattle and beef equivalent between the farm gate and wholesale market in Kampala, Uganda (2010)

Market segment	Cost element	Observed access costs-2010		Adjusted Access costs-2014
		Live cattle	Beef	Beef
		USh/Animal	USh/tonne ^a	USh/tonne ^b
Farm gate-primary/ secondary market	Permit	2,000	13,333	18,949
	Loading	5,000	33,333	47,372
	Local tax at the secondary market	5,000	33,333	47,372
	transportation cost	50,000	333,333	473,720
	lairage fee	10,000	66,667	94,744
	other fees and losses	10,000	66,667	94,744
	profit margin	20,000	133,333	189,488
	Subtotal	102,000	680,000	966,389

Secondary-tertiary (wholesale)	Inspection fees	500	3,333	4,737
	Permit costs	1,000	6,667	9,474
	Levy at the tertiary market	5,500	36,667	52,109
	Handling fees (loading, transit)	1,500	10,000	14,212
	Trucking costs	7,250	48,333	68,689
	traffic police (NTB)	1,000	6,667	9,474
	profit margin	3,250	21,667	30,792
	Subtotal	20,000	133,333	189,488
Abattoir to processor	Liarage costs	2,000	13,333	18,949
	Local authority fees	2,000	13,333	18,949
	revenue from offal	-263,000	-1,753,333	-2,491,766
	Processing cost	352,200	2,348,000	3,336,883
	Storage cost (chilling & freezing)	5,000	33,333	47,372
	profit margin	297,800	1,985,333	2,821,475
	Subtotal	396,000	2,640,000	3,751,861
Total access costs from farm gate to the point of competition		518,000	3,453,333	4,907,737
Processor to border	transport to and handling at Entebbe airport	-	263,303	374,196
Total access costs from the point of competition to the border		-	263,303	374,196

^{a.} Cattle are converted to equivalent carcasses weight assuming average weight of 150 kg/animal.

^{b.} 2010 prices have been adjusted using CPI for meat and poultry by re-referencing base to 2010 and obtaining five year (2010-2014) average.

Source: *Observed access costs are compiled from Landell Mills LTD (2011).*

Meat, hides and skins, as products of live animals and their value chain process begins after slaughter of animals (mainly cattle and goats/sheep). Collection and transportation starts from the slaughter houses by either the numerous butcheries or hides and skins dealers scattered all over. The small scale dealers of hides and skins buy from the slaughter points and either sell fresh or dry them before supplying to big dealers. The costs of hides and skins depend on the quality and weight. The inadequacy of roads, weighing stations, and slaughtering and processing facilities raises transaction costs of both meat, and hides and skins, exacerbated by information asymmetries between producers and traders which is a disincentive to the growth of the sector.

5.3 GAPS BETWEEN FINAL MARKET REQUIREMENT AND COMMODITIES SUPPLIED IN UGANDA

A. Beef

The local market for beef can be divided into two major segments. The rural market and part of urban are generally saturated evident by the butcheries that sell meat from one slaughter for a number of days and characterized by perfect competition. Butcheries determine the prices of their fresh meat downwards, especially when there is low demand. This is normally to avoid losses that come with left-over beef. The meat sold in Butcheries is fresh as there are no refrigeration facilities used. The second segment is the upscale-urban areas where buyers purchase freshly cut meat that is cleaned and packed. However, buyers still show a general preference for meat in butcheries possibly because for the same price, they can get a mixture including internal organisms like intestines, kidneys, liver.

The international market for Uganda's export is characterized by frozen and chilled meat. In 2014, for example, only 31 tons of frozen meat – valued at US\$ 140,000 – and 14 tons of the fresh or chilled – valued at US\$ 32,000 – was exported. Imported beef on the other hand includes mainly tinned beef especially from Europe (Denmark and Germany) and South Africa.

Uganda enjoys a comparative competitive advantage as a low cost producer in the region. Southern Sudan is emerging as a major destination for Uganda's meat products. Exports will become viable only when adequate structures and legislations for export required by EU/OIE/Middle Eastern markets have been fully implemented.

B. Hides and skins (Leather)

The global leather supply chain can be segmented into three – hides and skins, tanned leather and footwear (including other leather products). The segment for Uganda is undoubtedly semi tanned leather at the point of wet blue. This is a shift from export of raw hides and skins as a result of huge export levy on raw hides and skins. Uganda's exports are fundamentally inputs into the tanning industry in the export markets to finished leather. Uganda on the other hand imports

mainly finished leather products. It is estimated that Ugandans buy 25 million pairs of shoes every year. Of these, only one million are produced in the country. The rest are imported. However, Uganda has potential to produce 1.4 million cattle hides, 3.1 million goatskins and 0.68 million sheepskins annually although collection rates currently average at 1.2 million hides, 2.4 million goat skins and 0.54 million sheep skins. There is a growing national and international market for hides, skins and leather products. Despite having a huge potential to produce enough quantities to meet local demand, Uganda still imports over 90 per cent of its leather products due to limited technology and exportation of semi-processed leather, which inhibits growth of the sector.

6 RECOMMENDATIONS OF MEASURES TO ADDRESS CHALLENGES

6.1 RECOMMENDATIONS

Industrialization of the hides and skins sector has already began but is slow. There is need to fully process hides and skins to finished leather. Development of industrial tanneries within the EAC should be encouraged and progressively discourage exportation of unfinished leather. For Uganda, the model should be to establish an industrial leather park as proposed by stakeholders either in Namanve or Bugiri particularly for finishing lines of leather processing. This should use input from tanneries processing to wet-blue leather.

Investment in value addition along the chains is heavy including acquisition of specialized vehicles for transportation which may not be affordable to most private operators. Government can provide investment financing to local operators capital funding for the chain at guaranteed affordable interest.

To be competitive today, soft logistics cannot be ignored and a vibrant livestock information system is the only solution to the information gap in the meat, hides and skins to collect, analyze, store and disseminate prices and provide market analysis and trend along the chain. There is also need for soft logistics for tracking commodities in transit along the chain.

Government needs to address the serious problem of so many unlicensed middlemen operating in unregulated markets that cause distortions and a burden on the profitability and viability of the meat, hides and skins supply chain. Government should also operationalize the disease free zones and effect the 21-days inspection requirement by the EU countries to open doors for meat export to EU block.

Given the growing industrialization in Asia, Uganda should explore policy options that address supply constraints to increase the export of leather to China and India. Export of meat is seen to be viable to the neighboring countries especially DR Congo and South Sudan for the start. The

long term option is to improve quality and penetrate the EU market which has exhibited enormous demand for meat.

6.2 Investment opportunity in production, value addition and marketing

Investment opportunities in the meat, hides and skins can be sighted in the following:

- a. Investment in an Industrial leather Park with modern abattoirs and industrial tanneries
- b. Investment in commercial ranching
- c. Investment in butcher equipment, cold rooms and specialized transportation vans (for meat) and trucks (for live animals and hides)
- d. Investment in Improved breeding services
- e. Investment in industries for leather products especially shoes and bags manufacturing
- f. Investment in waste recycling from meat, hides and skins processing.
- g. Investment in Market Information System and tracking systems and devices.

Annex 1: List of Key Actors

Meat Processors

- a. Fresh Cuts Ltd, Lweza, Entebbe Road
- b. My Choice Super Market
- c. Uganda Meat Industries Ltd, 5 Old Portbell Rd, Kampala.
- d. Lubowa Investments Ltd., Seguku, Entebbe Rd.
- e. Meat Process (U) Ltd, Ggaba Rd, Kampala
- f. Imperial Gourmet Products limited:
- g. Quality Cuts Butchery: Also involved in the production of specialised beef products like sausages, bacon, etc.

Hides and Skins Processors

a.	Hoopoe Trading Limited
b.	Skyfat Tannery Company Limited
c.	S.W.T Leather Industries Limited
d.	Novelty Tannery Limited
e.	Skyfat Tannery Company Limited
f.	Elgon Leather Co. (U) Limited
g.	Leather Industries Of Uganda Limit
h.	Jambo Tannery (Uganda) Limited
i.	MSA Investors Limited

Meat Exporters– controlling over 90% export value

a.	African Skies Limited
b.	Fresh Cuts (U) Limited
c.	Bollore Africa Logistics Uganda Limited
d.	Nyoma Trading Company Limited
e.	Rong Chang International (U) Limit
f.	Dan Investment
g.	Fanuel General Trading
h.	Agro Value Limited
i.	Katebe Farm Limited

Leather Exporters – Controlling over 90%

j.	Hoopoe Trading Limited
k.	Skyfat Tannery Company Limited
l.	S.W.T Leather Industries Limited
m.	Novelty Tannery Limited
n.	Skyfat Tannery Company Limited
o.	Elgon Leather Co. (U) Limited
p.	Leather Industries Of Uganda Limit
q.	Jambo Tannery (Uganda) Limited
r.	MSA Investors Limited

Annex 2: List of Persons Interviewed

Dr. Gerald Nizeymana, Uganda Meat Producers Cooperative Union, Kampala

Mr. Mwebe Emmanuel Zoy, National Cordinator Uganda Leather and Allied Industries Associations, Kampala

Mr. Nixialong, Marketing officer at Skyfat tanneries Limited, Jinja

Mr. Mutesasira, Spokes person City Butcheries limited, Kampala

Mr. Michael, Marketing officer Fresh Cuts limited, Kampala

Mr. Mussajjakawa John, Senior Investments Executive, Investment Promotions at Uganda Investment Authority, Kampala

Mr. George Ocaya Onen of Uganda Meat Producers Co-operative Union, Kampala

Mr. Gates Okot Robert of Skyfat Tanneries, Jinja

Mr. Kityo Saul of Uganda Leather and Allied Industries Association, Kampala

Capt. Denis Aubry Saazi of Nsooba Slaughter House, Kampala

Mr. Apollo Kasaga of Uganda Transporters Association, Kampala

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VALUE CHAIN ANALYSIS FOR CEREAL GRAIN IN UGANDA

A Focus on Maize and Rice

Maize and Rice constitute the major cereals for Uganda. This Study focuses on understanding the relationship between networks of input suppliers, producers, traders, processors, distributors as well as Policy makers. It also analyses the major market for the commodities and later highlights the major logistical challenges along the chain that need to be addressed to enhance the marketability of these commodities in Uganda's major markets especially along the northern corridor

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LIST OF ACRONYMS & ABBREVIATIONS

AGOA	Africa Growth Opportunities Act	NGO	Non-Governmental Organization
BDS	Business Development Service	PMA	Plan for the Modernization of Agriculture
COMESA	Common Market for Eastern and Southern Africa	R&D	Research and Development
CSO	Civil Society Organization	SACCO	Savings and Credit Cooperative Society
DANIDA	Danish International Development Agency	SADC	South Africa Development Community
DFTP	Duty Free Tariff Preference	UBOS	Uganda National Bureau of Statistics
DIMAT	Development of Inclusive Markets in Agriculture and Trade	UCA	Uganda Cooperative Alliance
DRC	Democratic Republic of Congo	UEPB	Uganda Export Promotion Board
EAC	East African Community	UGX	Uganda Shillings
EPA	Economic Partnership Agreement	UIA	Uganda Investment Authority
EU	European Union	UNADA	Uganda National Agro-Input Dealers Association
FAO	Food and Agriculture Organization	UNBS	Uganda National Bureau of Standards
FDI	Foreign Direct Investment	UNDP	United Nations Development Programme
FTA	Free Trade Area	UNFFE	Uganda National Farmers Federation
FY	Financial Year	USAID	United States Agency for International Development
GDP	Gross Domestic Product	VCA	Value Chain Analysis
GoU	Government of Uganda	WFP	World Food Programme
IFAD	International Fund for Agricultural Development	WRS	Warehouse Receipt System
IFPRI	International Food Policy Research Institute		
IRRI	International Rice Research Institute		
ITC	International Trade Centre		
JICA	Japan International Cooperation Agency		
KCB	Kenya Commercial Bank		
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries		
MT	Metric Tons		
NAADS	National Agricultural Advisory Services		
NARO	National Agricultural Research Organization		
NERICA	New Rice for Africa		

Executive Summary

The Cereal grains Value chain study was conducted to identify the different products traded along the chain; to identify critical issues regarding logistics for the development of the value chain (VCs) of these commodities ; and to offer insight into how these logistical challenges can be addressed to enhance the marketability of the commodities especially along the Northern Corridor market. The study focuses on maize and rice to demonstrate issues for the entire cereal grains sector

The methodology included a review of existing work on the sector via desk Research; Data collection from selected key stakeholders along the value chain; Chain mapping (actors, functions and relationships) and end market analysis; Analysis of challenges with a focus on logistics and finally validating the findings of the VCA through stakeholders' forum

From the end market analysis, it was established that Uganda's cereal grain is mainly traded into Sudan (North & South), Kenya, DR Congo and Rwanda. Competitors in the region are Pakistan, Thailand, Vitenam, Australia, Germany and Canada mainly for rice and Zambia and other East Africa neighbors for maize. Annual market demand worldwide is growing at 14%. Uganda's market share in the Northern Corridor market in 2014 was 7% and has been growing consistently from 2 % in 2012.

EAC as a whole imports maize worth US\$ 46.9 Million - 112,173 MT. All the EAC partner states, except Uganda have a grain deficit. The region accounts for 1.9 per cent of the world rice imports. For 2014, imports amounted to US\$ 453 Million – 1.039 Million MT. All the EAC countries continue to import rice and have a sustained rice deficit

The major logistical challenges along the VC include poor Transport occasioned by bad road conditions. For example, the cost of transportation from farm to mill amounts to over 25% of the farm gate price of paddy rice. World Bank in 2009 estimated the relative share of transportation cost in the total marketing cost of maize averages at 84 %

The other major challenge is Quality management. Poor harvesting including rudimentary post-harvest handling have had negative impact on the export market. Very low licensable storage capacity is also a major setback. Country storage capacity is only at 30% to total grain production. The licensable storage capacity is about 10 - 15% of total grain production

Spillage is also a challenge causing losses during transportation. Spillage arises out of many factors including state of the roads travelled, type and quality of bagging, loading and off-loading practices. Bad vehicles (trucks) also expose the grain to unregulated heat and moisture that leads to bad physical appearance and coloration to change

To address these challenges, the study proposes investment in dual Carriage Roads – for major national highways and export roads. These should be long Life roads of 50 years life

span under management contracts and possibly should be user pay roads. Feeder roads in key production areas should also be upgraded to bituminous.

The study also highlights that investment in good rail systems reduce costs by more than 30% for cargo haulage. Apart from high gauge improvement plans, investments should as well be made in the development of rail freight terminals

Investments should also be made in storage infrastructure enhancement projects. There is need to encourage and support public-private partnerships (PPPs) efforts in cereal grain storage and investment in the development of well-maintained modern silos to offer a high degree of security against loss and quality maintenance.

Attention should be paid to infrastructure and logistics for weather information forecasting as important logistics to guide good planning.

Encouraging the transfer of developed technologies to processors in the country and offering training and research to enable the effective application of these technologies will also go a long way in promoting value addition along the VCA.

Finally, there is also need to formulate, establish and enact sufficient policies and regulations to sanitize the highly unregulated grain trade. Critical interest should be in areas relating handling of grain after the farm-gate.

1. Introduction

1.1 Definition of Value Chain

The concept of value chain was originally conceived by Michael E Porter (Micheal, 1985). In this work he described a **value chain** as a set of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market. This idea was based on the process view of organizations, the idea of seeing a manufacturing (or service) organization as a system, made up of subsystems each with inputs, transformation processes and outputs. Inputs, transformation processes, and outputs involve the acquisition and consumption of resources - money, labor, materials, equipment, buildings, land, administration and management. How value chain activities are carried out determines costs and affects profits. (Micheal, 1985)

From the trade perspective, still, there is no universal definition for the term value chain. It is often used to refer to a range of chains such as international, regional or national commodity markets and supply chain. One published definition, that can be referred to here, is that of the World Bank that describes a value chain as the full range of value adding activities required to bring a product/service through the different phases of production including procurement of raw materials and other inputs, actors connected along a chain producing, transforming and bringing goods and services to end-consumers through a sequenced set of activities and a strategic network among a number of business organizations. Global (international) value chains (GVCs) are those where such activities (that are required to bring a product from its conception, through its design, its sourced raw materials and intermediate inputs, its marketing, its distribution and its support to the final consumer) must be coordinated across geographies/countries (Global Value Chain, 2015).

1.1.1 Agricultural Value Chains

This document focuses on maize and rice agricultural value chains. Agricultural value chains normally refer to the whole range of goods and services necessary for an agricultural product to move from the farm to the final customer or consumer. At the heart of the agricultural value chain concept is the idea of actors connected along a chain producing and delivering goods to consumers through a sequence of activities. However, this “vertical” chain cannot function in isolation and an important aspect of the value chain approach is that it also considers “horizontal” aspects of the chain, such as input and finance provision, extension support and the general enabling environment. The approach has been found useful, particularly by support providers, in that it has resulted in a consideration of all those factors impacting on the ability of farmers to access markets profitably, leading to a broader range of

chain interventions. It is used both for upgrading existing chains and for donors to identify market opportunities for small farmers. (Agricultural Value Chains, 2015) (Henriksen L.)

1.1.2 Value Chains - Linking Farmers to Markets

A major subset of value chain development work is concerned with ways of linking producers to companies, and hence into the value chains. While there are examples of fully integrated value chains that do not involve smallholders (e.g. Unilever operates tea estates and tea processing facilities in Kenya and then blends and packs the tea in Europe before selling it as Lipton, Brooke Bond or PG Tips brands), the great bulk of agricultural value chains involve sales to companies from independent farmers. Such arrangements frequently involve contract farming in which the farmer undertakes to supply agreed quantities of a crop or livestock product, based on the quality standards and delivery requirements of the purchaser, often at a price that is established in advance. Companies often also agree to support the farmer through input supply, land preparation, extension advice and transporting produce to their premises.

Work to promote market linkages in developing countries is often based on the concept of “inclusive value chains”, which usually places emphasis on identifying possible ways in which small-scale farmers can be incorporated into existing or new value chains or can extract greater value from the chain, either by increasing efficiency or by also carrying out activities further along the chain.

1.1.3 Value Chains-Enabling Environment

As with all agricultural growth, two things appear essential for successful value chain development: creating the right environment for agriculture and investing in rural public goods. An enabling environment implies peace and public order, macro-economic stability, inflation under control, exchange rates based on market fundamentals rather than government allocation of foreign currency, predictable taxation that is reinvested in public goods and property rights. There is a positive correlation of agricultural growth with investment in irrigation, transport infrastructure and other technologies. Governments have a responsibility to provide essential goods and services, infrastructure, such as rural roads, and agricultural research and extension. Value chain development is often constrained by corruption, both at a high level and at the ubiquitous road blocks found in many countries, particularly in Africa. Many measures to improve value chains require collaboration between a wide range of different ministries, and this can be difficult to achieve

1.2 Development significance of Cereal Grains

1.2.1 Maize

Maize (*Zea Mays L*) is one of key food cereals globally. Originally a new world crop, it was introduced in Uganda in 1861 (Sprague, 1987). Up until the 1970s it was grown as a food crop by agricultural households throughout the country. Thereafter, production rose in response to the growing demand from the emerging urban consumers and institutions. Deliberate government promotion and development efforts to-date have propelled this growth in production further and positioned it (maize) as a key source of household income and foreign exchange earner for the country. It should also be noted that maize is a key component of many indigenous communities in the region – EAC and COMESA. As a food, it is a key source of carbohydrates (41%), proteins (32%) and vitamins - including B-6. It is ranked third, in importance, as a food cereal crop (after finger millet and sorghum) according to the Food and Agricultural Organization (FAO). Efforts to boost production are also pegged on the market opportunity that is presented by the chronic maize deficit especially in Kenya and South Sudan. That's why a bigger percentage of Uganda's maize is traded ends up in the export markets, especially in the EAC and COMESA partner states of DR Congo and South Sudan particularly for the latter.

The National Development Plan¹ clearly highlights the importance of maize to the development of Uganda. It is listed as one of the twelve (12) strategic crops (value chains) the government intends to develop – towards boosting food security (due to its durability when dried) and rural household incomes. Today the maize sub-sector is a source of income for about 3 Million agricultural/farm households, 1000+ traders and exporters - according to UBOS statistics. Again, the country has up to 3.95 Million agricultural households, with a population size of 19.3 Million persons (Uganda Census of Agriculture (UCA) 2008/09) that largely depend on maize as both a food and cash crop.

At the macro level, maize is a key foreign exchange earner for Uganda, ranking 24 in the list of products exported by Uganda – according to 2014 formal export statistics – earning the country a total of US\$ 72.37 Million² in that year alone. Uganda's dependence on coffee as the main source of export income has declined over time, from a high of over 95 per cent in

¹ Strategic crops are listed in NDP I. NDP II refers to the same list without amendments

² Source: Bank of Uganda, Formal and informal exports

the 1980s to just 20 per cent by 2006. This gap has been filled by non-traditional exports including maize.

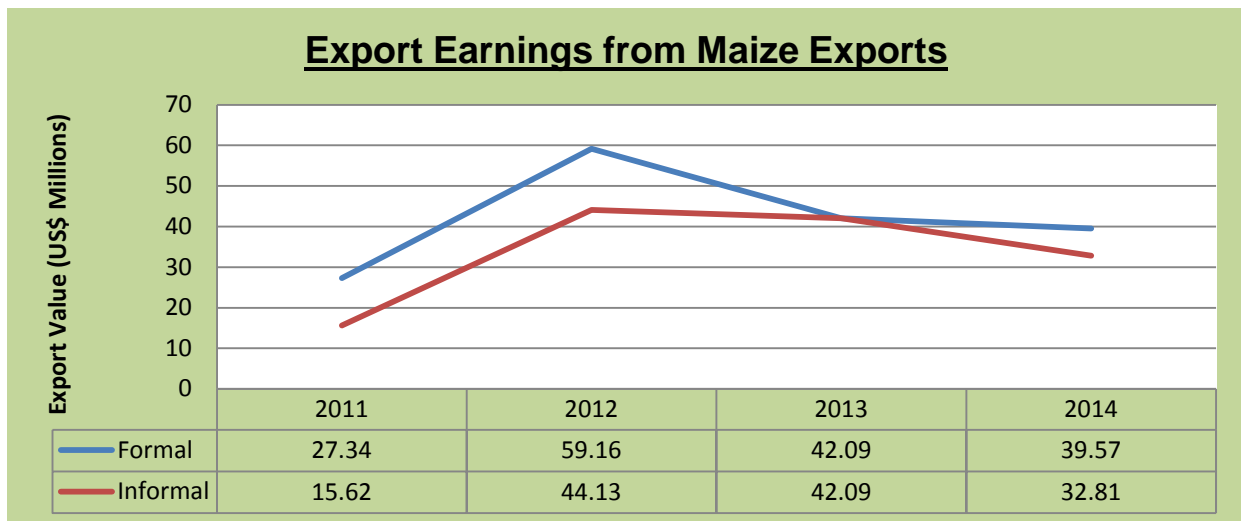


Figure 1: Uganda's export earnings from maize – Source: UBOS

Even in the export markets, maize is primarily used for food and animal feeds production. These two uses, to a larger extent, shape the production, consumption and trade patterns of the grain in Uganda and the region. For instance, the volumes imported by Kenya and Tanzania largely depend on the food deficit in these countries. Kenya, particularly, majorly uses maize imports for price stabilization – with the Kenya Cereal Board at the helm of this. Tanzania, another EAC partner, is also categorized as a food-deficit country with more than 40 percent of its 44 million people living in chronic food-deficit regions, where irregular rainfall causes recurring food shortages. In Burundi, only 28 per cent of the population is food-secure and as many as 50 percent of its people are chronically malnourished. (Mukiibi, 2010)

1.2.2 Rice

Rice was introduced in Uganda by Indian traders as early as 1904 but did not gain popularity until late 1940s. (M., 2012) In the early years these traders imported paddy rice and milled it using traditional stone mill. This made it a high-cost food thus inaccessible to the indigenous communities. After the 1940s, rice cultivation started taking root, with a few farmers sourcing seeds from Tanzania – where the production was more developed. This production picked up in the 1950s. To-date, rice has become both a major food security crop as well as a cash crop in several districts in Uganda today. However, unlike most crops important for food security, rice is mostly consumed in urban areas. Since 2000, the demand for rice in Uganda

has grown at an average rate of about 9.5 percent per year ((FAO), 2012). Unlike maize, rice has benefited a lot from direct protection – CET rates on imported rice – with both the farmers and traders receiving better prices for their produce – better than what they would receive without these protection policies. As a result of these price incentives, domestic production has risen and rice imports declined significantly since the early 2000s. Rice production, for example, grew from as low as 120,000 tons in 2002 to 212,000 tons in 2012 – a surge of approximately 77 per cent. Nonetheless, Uganda is still a net rice importer. Uganda imports rice mainly from Vietnam, Pakistan, Tanzania and Thailand.

Although not listed among the twelve strategic crops in the NDP, the number of programs and the level of interest exhibited by government in developing this value chain is a clear indication that this crop is of strategic importance to the development objectives of the country. For instance the numerous efforts to boost the production of upland rice throughout the country.

At the macro level, apart from the food security, it is a key foreign exchange income earner for the country. Over the 5-year period (2010 – 2014) export values have been growing at an average annual rate of 18 per cent – raking in US\$ 28.688 Million in 2014. Volumes of formal exports of rice hit 57,836 metric ton mark in 2014 with much of that going to DR Congo and South Sudan. So the importance of rice as an export produce cannot be understated given an average annual growth of 6 per cent in demand in our export markets.

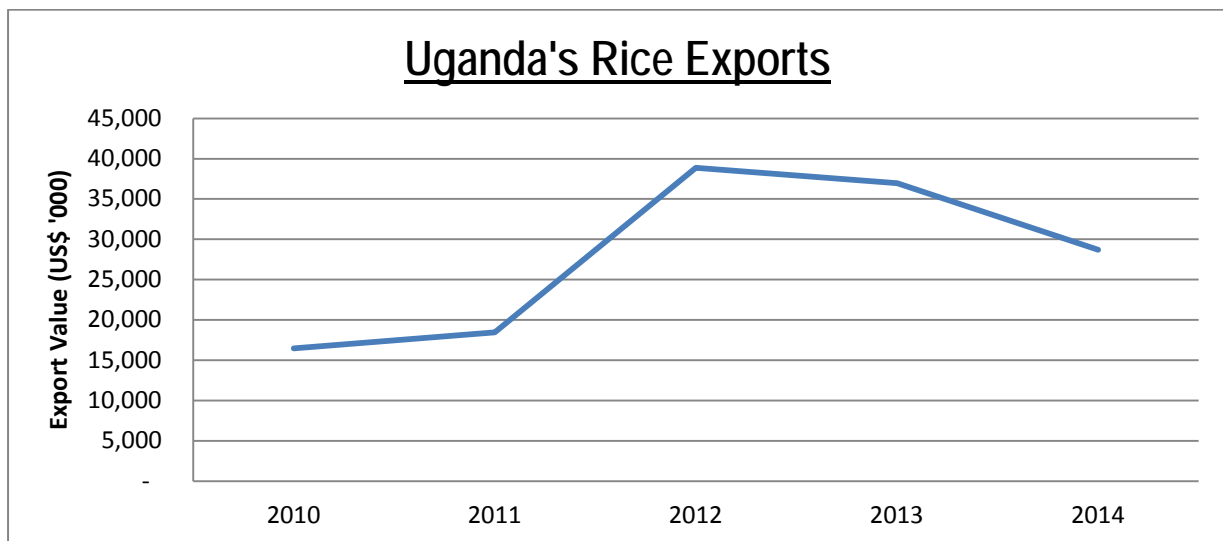


Figure 2: Uganda's rice exports

For rice Uganda also informally imports a significant amount of rice whose estimated value grew by 55.9 per cent in 2013.

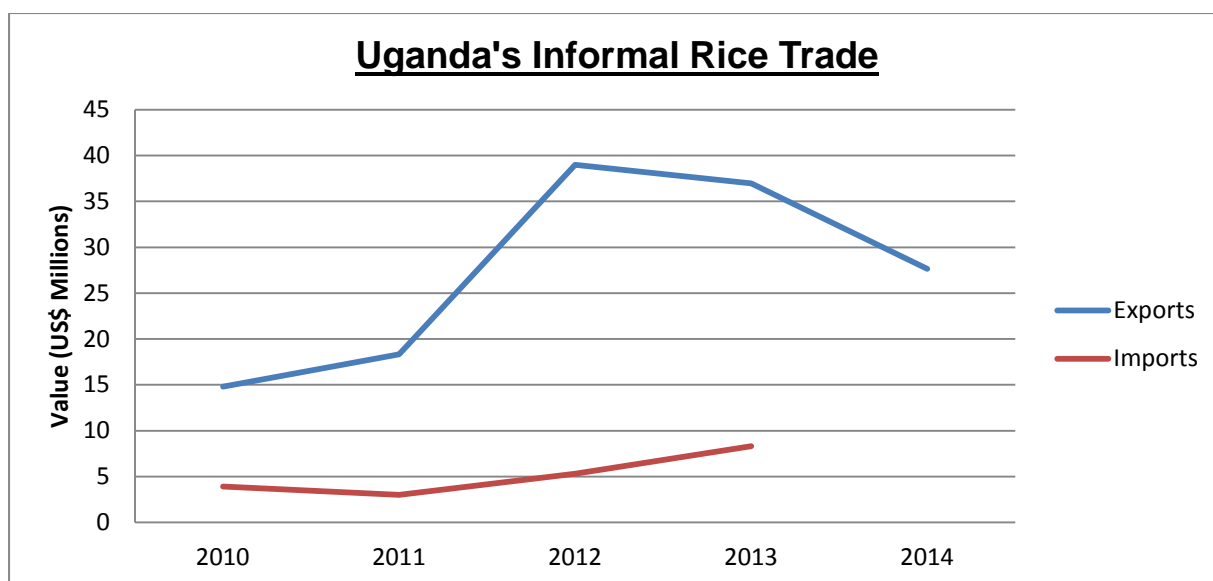


Figure 3: Uganda's informal rice trade

2 Value Chain Analysis – Maize and Rice

2.1 Objectives

In principle, value-chain analysis looks at the full range of activities and services required to bring a product or service from its conception to sale in final markets. For this study, the key objectives are outlined as follows

- To identify the different products traded along the chain
- To identify critical issues regarding logistics for the development of the value chain (VCs) of these commodities
- To offer insights into how these logistical challenges can be addressed

3.2 Maize Value Chain

3.2.1 Value Chain Structure and Characteristics

3.2.1.1 Production

Maize production is dominated by subsistence farmers with small land holdings (less than an acre), and most of these are rural households that grow majorly for food. It's the surplus that is collected by farm-gate traders that forms the bulk of maize grain that's traded. Data from Ministry of Agriculture and Uganda Bureau of Statistics (UBOS) put the contribution of these households at 75 per cent. The rest of the bulk comes from the few commercial farmers and institutional producers, such as prison facilities throughout the country. These farmers hardly use improved inputs, lack adequate post harvest equipment and market/sell their produce on individual basis hence fetching low prices. The commonly grown varieties include;

Longe 4	1,600 – 2,400	100	All areas except highlands
Longe 5 (Nalongo) QPM Maize	1,600 – 2,400	115	All areas except highlands
Salongo (QPM Hybrid)	2,800 – 3,200	120	All areas except highlands
Longe 6H	3,200 - 3,600	120	All areas except highlands
Longe 2H	2,800 – 3,200	125	All areas except highlands and arid areas like Karamoja

Table 1: Maize varieties grown in Uganda

In Uganda, there are two rainy seasons which characterize the production pattern of maize. The first season spans from Mid-February or March to June and the second from Mid-August to December. Therefore the harvest seasons are normally June – July and January – February expect when there are significant changes in weather patterns.

Production statistics

Results from the UCA 2008/09 indicate that the highest Maize production in the country was reported in the district of Iganga with 303,262 tons. The districts with the highest production of Maize in the Central, Eastern, Northern and Western regions were Mubende (171,089 tons), Iganga (303,262 tons), Adjumani (47,264 tonnes) and Kabarole (91,318 tons) respectively. ((UBOS), 2015)

Area	Plantain bananas	Finger millet	Maize	Sorghum	Rice	Sweet potatoes	Irish Potatoes	Cassava
Central	326,082	5,832	189,135	2,261	2,637	98,054	4,798	127,788
Eastern	69,504	86,911	388,762	101,645	36,033	159,948	1,271	342,387
Northern	9,195	105,656	247,780	249,330	25,912	60,573	594	269,886
Western	511,096	51,588	188,583	46,016	10,504	121,681	26,096	131,328
Production(*tonnes)								
Central	1,039,837	13,734	449,859	2,678	2,173	312,402	13,290	409,812
Eastern	342,234	106,838	1,108,554	133,313	128,195	847,140	4,624	1,061,186
Northern	31,626	78,572	305,798	177,088	43,719	292,932	1,311	983,124
Western	2,883,648	77,784	497,745	62,716	16,649	366,295	135,210	440,189

Source: UBOS and MAAIF (Uganda Census of Agriculture)

Figure 4: Crop Area and Production by Region UCA 2008/9 - Extracted from UBOS Statistical Abstract 2014

Gross Margin Analysis

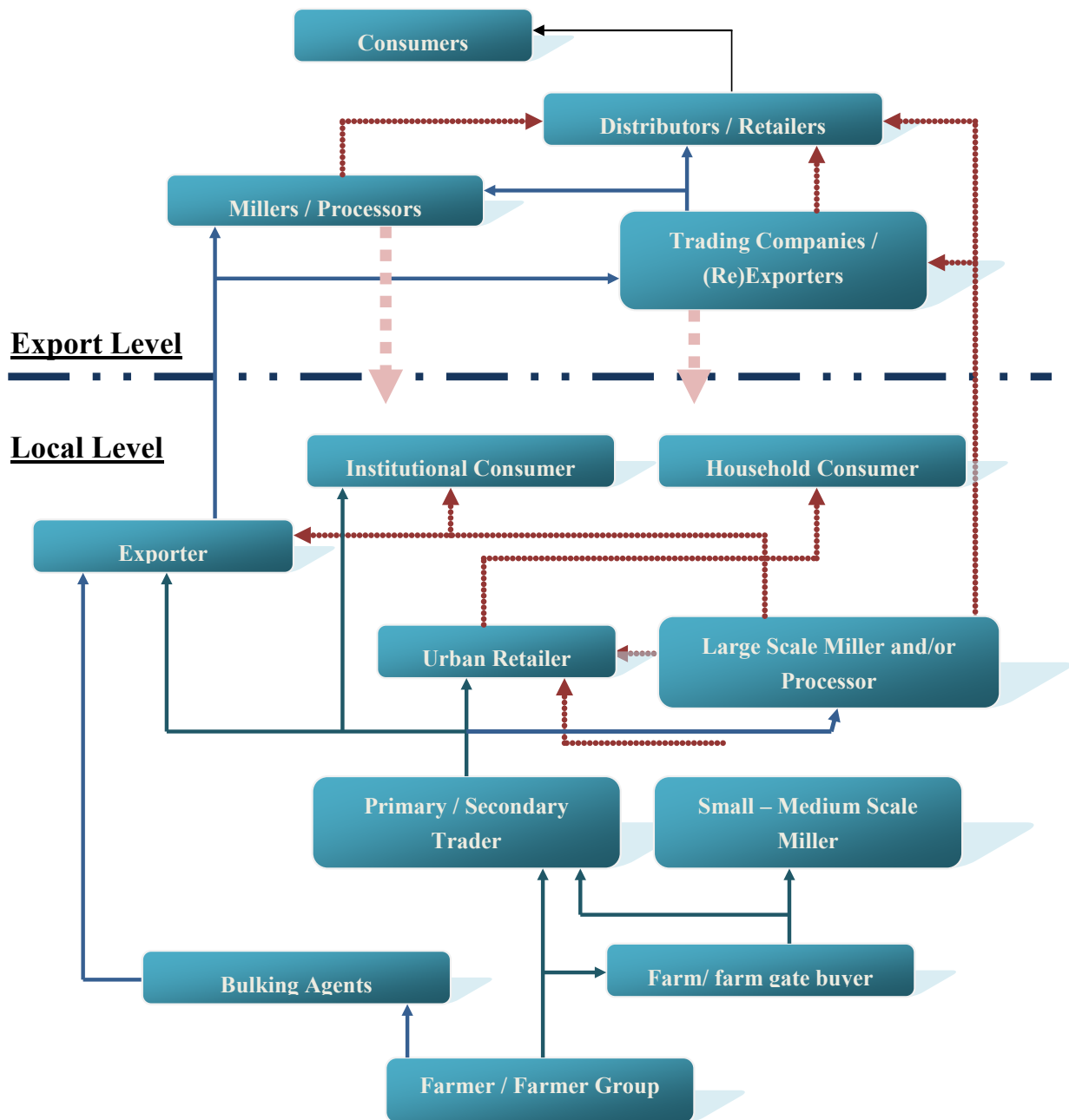
Being a short-term crop, entry and exit of producers (producer turnover) is high and driven by the profitability of the crop. Note that due to absence of price stabilization mechanisms, production is pegged on historic prices. High prices in one season lead to large entry and production in the next which then leads to low prices due to over-supply. To have an understanding of the profitability aspect, reference is made to a gross margin analysis that

was undertaken by Action Hunger Project (Elepu, March 2014). The study compared earnings from maize grown in Amuru and Nwoya districts as below;

Revenues & Costs	Amuru	Nwoya
Revenue:		
Output (kg/acre)	1,400	1,400
Farm gate price (UG. X. / kg.)	800	700
Total Earnings	1,120,000	980,000
Costs (UG. X. per acre):		
Clearing land	24,000	24,000
Ploughing	160,000	160,000
Planting & Seeds	80,000	85,000
Weeding	80,000	80,000
Harvesting	120,000	120,000
Post-harvest handling	90,000	90,000
Bagging	30,000	30,000
Total Costs	584,000	589,000
Gross Margin	536,000	391,000

Table 2: Gross Margin Analysis

3.2.1.2 Supply Chain



3.2.1.3 Processing

Much of the processing in Uganda focuses on conversion of the maize into maize flour. That is why small and medium sized millers are spread throughout the country. The maize flour has a longer shelf life and is the quick alternative to consuming the whole grain. The milling process involved remove of the bran and/or gem and then crushing the grain in flour. The fineness of the flour is determined by the target market. Most of the maize flour consumed in Uganda is what the trade commonly refers to as No. 1 – the finest. However this is not very nutritious since most of the nutrients are carried away with the removal of the bran and gem. Fortified maize flour is now a common product in Uganda today – in a bid to restore the nutritional value. The by-products of the milling process are also highly demanded by the poultry and animal feeds industry. The large-scale millers have attempted to further diversify in breakfast cereal, value-added maize flour porridge and food products and animal feeds. As such processors/millers are key players in the maize value chain.

3.2.1.4 Geographical areas of production, value addition and marketing

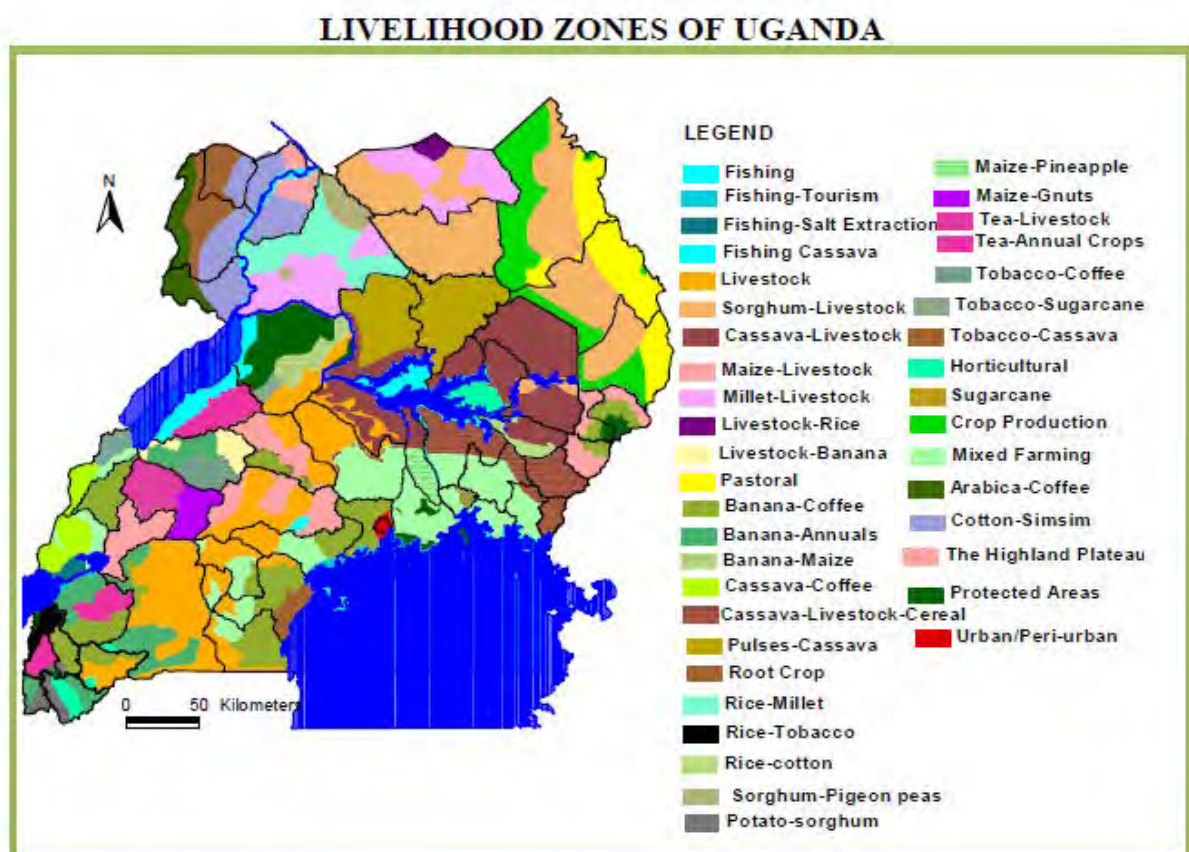


Figure 5: Livelihood Zones of Uganda

3.2.1.5 Trade volumes through different channels

Producer households contribute 75 per cent of the maize traded in Uganda. The rest comes from commercial and institutional producers. UBOS data reveals that producing households have the option of internal consumption, selling or storing their grain for future food and planting material needs. The sold quantities make up the bulk of traded maize, which quantities build up as the grain moves higher in the value chain. UCA 2008/09 indicates that the biggest percentage of maize produced (40.5 per cent) is sold. See table below.

	Production (MT)	% of Production			
		Sold	Consumed	Stored	Other Uses
Maize	2,361,956	40.5	34.3	19.3	3.4

Table 3: Maize Production (MT) and Disposition (UCA 2008/09) – Source: ((UBOS), 2015)

The main trade channels for the commodity include (i) from farmer (farm gate) to agents/traders/village markets in rural areas; (ii) from rural markets to secondary markets in regional towns such as Iganga, Bugiri and Sironko; (iii) from urban markets to major buying centers outside the district and (iv) the export market. Each one of these channels involves a number of key players. Table 4: Volumes of Maize Exported - Formal Exports, gives a breakdown of the volumes of maize exported – through formally - over the last 5 years.

	2010	2011	2012	2013	2014
Volumes (Tons)	151,389	93,610	210,155	143,532	141,789

Table 4: Volumes of Maize Exported - Formal Exports

Figure 4: Uganda's Maize Exports - By Value, shows trends in export earnings over the same period.

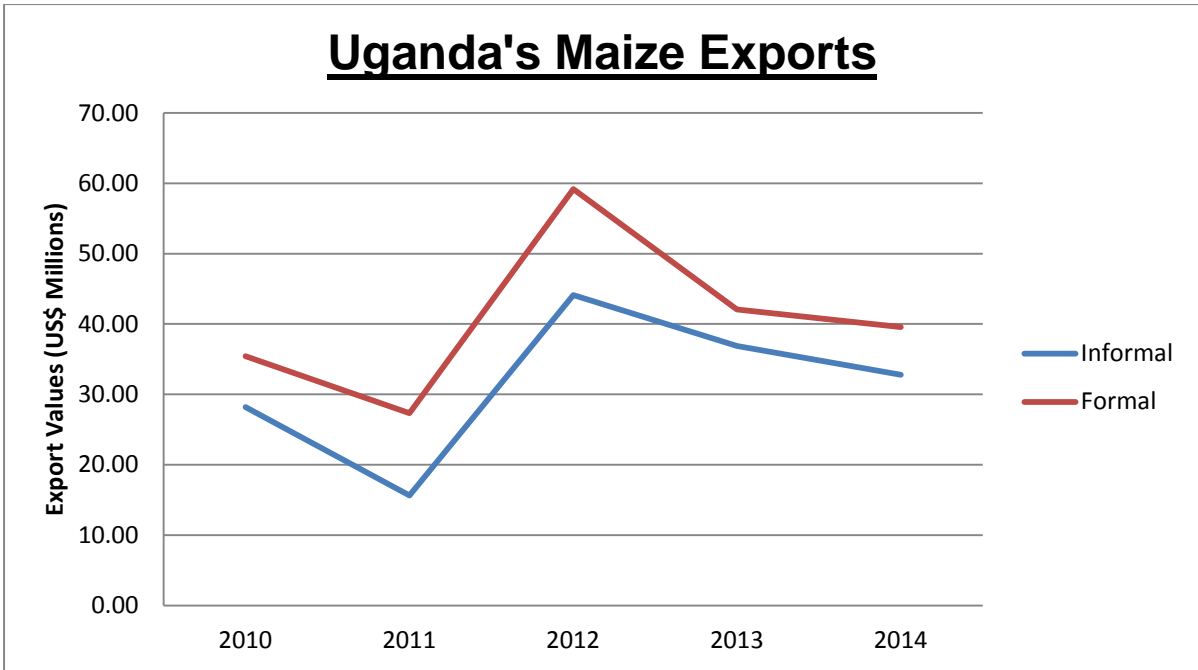


Figure 6: Uganda's Maize Exports - By Value

Significant volumes of the grain are also processed in maize flour, and the by-products feeding into the animal feeds industry. Other than the by-products, maize brand, there is a growing tendency of processing the whole grain into animal and poultry feeds especially when farm-gate prices fall below the expected minimum – which is normally UG. X. 500. Another situation is when demand for maize flour does not propel milled volumes to such a level as to cause low prices of the maize brand.

3.2.1.6 Routes from the production areas to markets

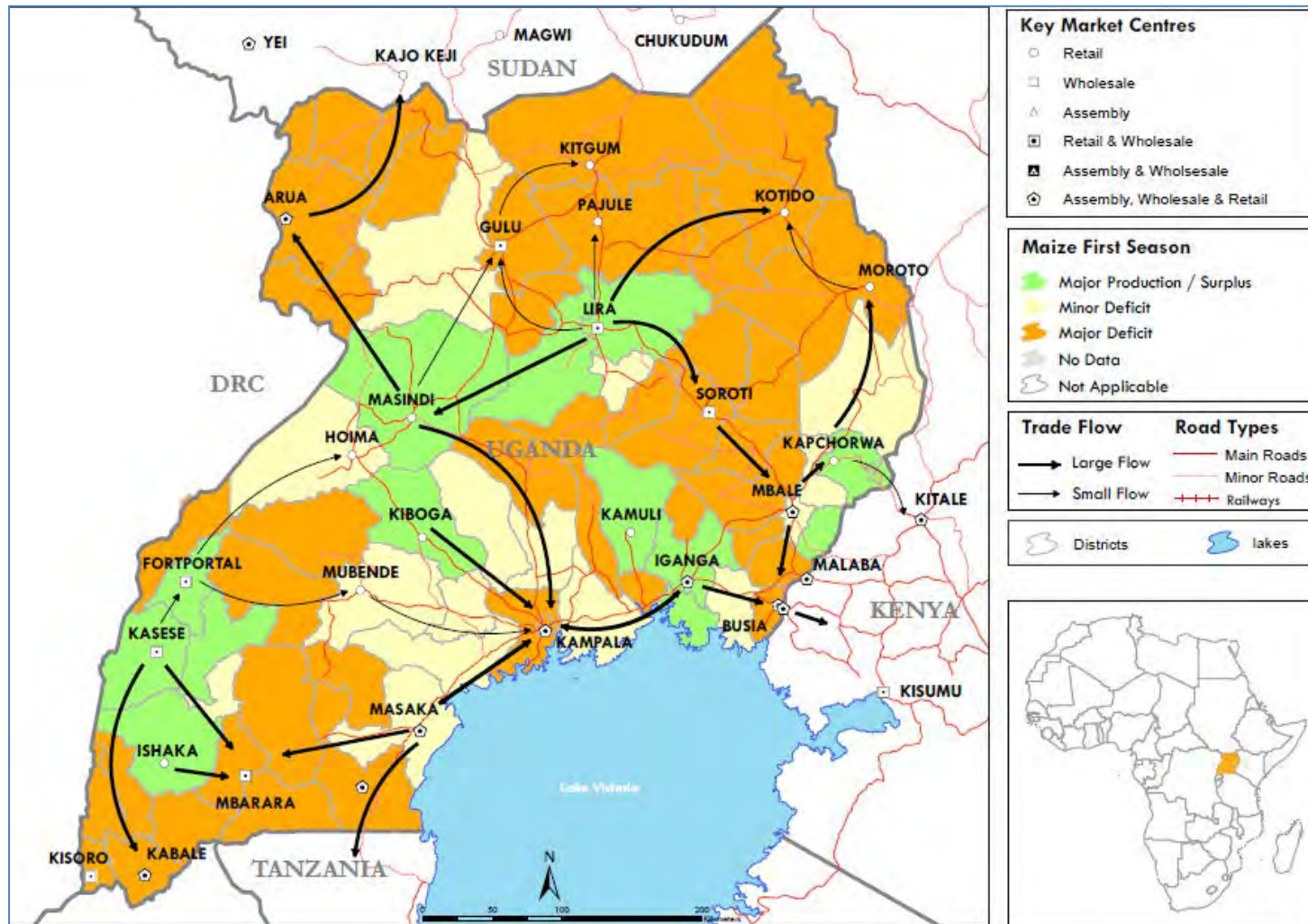


Figure 7: Production and Market Flow Map - Uganda Maize Season 1 – Source: FEWNET (FEWNET, 2011)

3.2.1.7 Soft and Hard Logistics

The logistics referred to relate to collection, handling, warehousing, transportation and distribution- including types, methods and quality.

Maize grain is relatively bulky especially when wet. Transport costs are therefore a key determinant of the prices offered to the farmers by traders. The relative share of transportation cost in the total marketing cost averages 84 per cent according to a World Bank survey in 2009. As shown in the value chain illustration, the maize bag often goes through a number of markets or points before reaching the final consumer. As such there is a lot of physical movement, human loading and offloading along the value chain. For sales, maize is brought from the farm to the primary markets by the traders or farmers. The common mode of transportation is bicycles or carts. With the increasing spread of motor cycles (boda boda), traders especially, are turning away from bicycles so as to cover more distance in shorter times. From the market or bulking centers the mode of transport is trucks. The 10 MT trucks are the commonest although some traders also use 24 and 32 MT trucks. Average distance between primary or rural market pairs is short – less than 50 km. The greater distance is that to the secondary markets in urban centers. These are covered by the larger capacity trucks to cut down on cost per kilo. Due to the relatively low perishability of the product and proximity to the market, maize is transported by trucks to the export markets. It is rare and cost ineffective to use air transport unless the point of consumption is unreachable by road. The cost of air transport is in such case factored into the final price.

3.2.2 Value Chain Actors, Their Functions and Challenges

3.2.2.1 Input suppliers

Input suppliers are mainly private sector entities and traders operating freely in the market. Some are major seed companies like NASECO, FICA seeds, OTIS garden seeds Ltd, Uganda Seeds Ltd, Harvest Farm seeds Ltd, Victoria Seeds Ltd etc. There are however traders distributed all over the country and often acting as agents of these large seed companies. NAADS under Government also distributes seeds to farmers in rural areas.

The main challenge around the input supplies is that there is little quality control with adulterated chemicals and fake seeds on the market. This has negatively affected productivity and quality

3. 2.2.2 Producers

Production of maize is mainly by small holder farmers - rural low-income agricultural households. With the several awareness and support initiatives, in some areas, the producers have come together into farmers groups and cooperatives. Handling of the produce is greatly influenced by how producers decided to operate – in isolation or clusters. Unorganized individual farmers often sell the surplus – less their food and seed requirement – directly at the farm gate to resident/local traders and sometimes wholesalers that do the collecting, from house to house. For organized groups/clusters, the individual farmers bulk up their maize at a central collection point where the collectively sell to a wholesaler or trader that is willing to offer a price that is better than that offered by traders buying at the farm-gate. Where the cluster has access to a store, holding the stock is also an option. Individual farmers may – in rare cases – also choose to take their stocks directly to local millers. Here they can sell the grain to the miller and/or traders, or mill the maize taking the maize mill (posho) home and selling the by-products to animal feed dealers. The latter have introduced significant competition in the buying and trading of maize grain because of the options it presents. The farm-gate price often depends on the richness of the harvest. Over the last two years they have ranged between UG. X. 200 to UG. X 800.

Being a short-term (3 months) crop it is hard to tell the exact number of producers in the country. Many farmers enter and exit maize production as prices rise and fall. It is also important to note that there is a small mass of commercial producers of maize. These include prison facilities in different parts of the country and individuals (indigenous and foreign) with farm sizes of over 20 acres.

3. 2.2.3 Traders

The maize value chain has different types of trader – defined by their scope of operation and capacity. Rural traders/agents are the main buyers at the farm-gate in the sub-counties (administrative units of the districts), although there is an increasing tendency of farmers to go beyond the farm gate in search for better prices. Their key function is to consolidate the small quantities from scattered producer households – often inaccessible – into commercial volumes that would attract the interest of urban traders and processors. These prefer to pick large volumes from a single location to save on time and transport costs. Where the urban trader or processors wishes to deal directly with the farmer, they use collection agents stationed in the target production area – temporarily or permanently. They pay the farmers and consolidate the stocks at storage points established by the trader.

Urban traders are found in major urban centers in or near producing districts. Their main activities include networking with rural agents, serving as a market outlet for farmers and consolidating maize grain before selling it to other traders, processors, exporters and institutional consumers – schools, hospitals etc. The urban traders in addition to bagging undertake some quality control and provide market information to farmers in their area of operation.

3.2.2.4 Processors

The processors, commonly known as millers, are grouped into three categories – small, medium and large scale. Majority of the processors fall in the small scale category – due to the low capacity of their processing equipment – and are scattered in the various rural trading centers in the producing districts. Their milling activities of these processors are need-based and customized to the requirements of customer or market. Processing cost range between UG. X. 50 to UG. X. 200 depending on location. This amount is also influenced by energy cost and competition – number of millers within reach. The medium-scale processors are based in the main town centers – mostly district capitals and urban centers – and offer both contract and trade-based milling services. In both cases, the first activity is to hull the maize to remove the bran and then mill the grain to customer's specification or requirements of the target market. For example the Ugandan market prefers the fine grades – commonly known as No. 1 whereas Kenya prefers the coarse grade – which is obtained by milling the grain with the bran.

Large-scale processors are only found in Kampala. They buy their maize from urban traders and large-scale traders from the western, central and eastern regions. They sell more than three quarters (75 percent) of their maize products to the World Food Program (WFP) for export and distribution to war displaced people in Northern Uganda. The processors carry out activities such as cleaning, de-stoning, drying, fumigating and in some cases milling into flour.

Case Study 1: Value Addition Efforts in the Sector- Maganjo Grain Millers Ltd.

In discussions relating to maize grain and/or maize processing in Uganda, Maganjo is a brand name that often comes up. Maganjo is a brand of Maganjo Grain Millers Ltd. (MGM). Incorporated in 1984, this family-owned business has survived the test of time, often recognized as one of the longest surviving private indigenous enterprises in the industry and the country as a whole. Located in Maganjo – Kawempe, in the out-skirts of Kampala city, this medium-sized food processing company has gradually grown from a 100-kgs per day maize mill, in 1984, to a multi-food and animal feeds processor. Information available on its website illustrates this growth as below;

- In 1984, Maganjo started with the production of maize flour with a daily output of 100kgs per day to 200,000kgs per day as of today.*
- In 1992, we diversified to Soya blended foods and Infant foods to curb the growing malnutrition in Uganda at that time.*
- In 1994, a poultry and animal feeds unit was started to use all residues from the maize and soya departments for example Maize bran, maize jam, maize cobs and soya bran.*
- In 1997 we started a bakery line producing an average of 1,400 loaves per day.*
- In 2004 we started the production of enriched Maize flour (fortified Maize flour) which was a product development in the maize flour products.*

Its product portfolio includes maize flour, baby porridge, instant porridge, soya millet porridge and animal feeds. These are mostly sold in the domestic market. In addition, the company is also extending its supply and distribution networks into the neighboring countries. Currently they are exporting to Rwanda, Kenya, DR Congo and Sudan.

To ensure a steady supply of raw material – grains – the company is also supporting initiatives and activities to enhance productivity and quality control – especially at the farm level during post-harvest. For example, media reports that in September 2011 MGM together with KCB Bank and the USAID-LEAD project collaborated in an initiative to boost maize production in Masindi. Under this initiative, KCB would provide financial support, USAID-LEAD support provision on extension services whilst MGM would buy up whatever the farmers produced. Accordingly, over 500 smallholder farmers signed contracts with Maganjo, which was targeting 1,070 tons of maize in that season. The bank made available up to UG X. 580 Million under this initiative.

3. 2.2.5 Exporters

Maize exported out of Uganda mainly goes to DR Congo, Rwanda and Kenya. The maize is exported both formally and informally. The formal trade is carried out by well-established trading companies that either:

- 1) Merchandise the maize. That is they buy or collect the required bulk from local traders/suppliers, graded and packed to requirement, and for on-forwarding to the importer's warehouse in the foreign country or other point of delivery without further storage.
- 2) Bulk and store the maize grain for anticipated future sales or to meet long term contracts. Such firms have bulk storage facilities such as silos. The latter also have well established quality control systems to ensure longer period of storage and anticipated buyer requirements. These may however also opt for offloading the grain into the local market when it offers the right price incentives.

In the informal segment, the point of exchange is normally the towns on either side of the border. Here trade is conducted by both established trading entities and individual traders – small and big. Small traders are such that buy and break down bulky consignments and packs (100 – 110 kg sacks) into small quantities that can be carried across the border 'ease' – with minimal or no documentation – and sold at markets to individual/household consumers. The bigger traders (and trading companies) are more or less indigenous wholesalers and grain merchants that extend their trade across the border. They operate stores in the border towns and trucks that transport commodities in and out of the import markets. They trade the maize together with other cereals and grains such as rice, beans and peas.

There are also indications that importer or import traders from the neighboring countries have gone as far as venturing away from the border into the neighboring producing areas and source the grain right from the farm gate or rural-based traders/collectors, in a bid to cut costs through elimination of the middlemen. This practice is however being resisted by locals that see this as over-liberalization.

3. 2.2.7 Service providers with a focus on logistics

The key services consumed along the value chain mainly relate to financial services, quality control, storage and transportation. Maize grain acquired from producer households is of varying moisture content level. When bulked, further drying might be required to harmonize this factor. The traders or bulking agent might use the conventional method – sun drying – or opt for commercial dryers, which are available in a few locations.

The storage locations (stores) are also quite often hired. The government through the Ware House Receipt System is supporting establishment of appropriate, long-term and permanent storage points (warehouses) throughout the country. This is being done on a Public-Private partnership basis. The expectation is that even the producers or producer clusters will be able to bulk and hold stocks for longer time, in anticipation of better prices. The Ware House Receipt system will also provide a mechanism for using the held stock as collateral to acquire finances for other immediate needs.

The other services relate to fumigation for pest control. This is offered by agents certified by Ministry of Agriculture – especially where the grain is to be exported.

Lastly, grain is moved by road from one point to another – to the final destination. Therefore quite often the value chain actors require transport services. The nature and capacity of truck used will depend of the distance to be covered and volume of grain to be moved. 10 T, 24 T and 32 T are normally used for in-country movements whereas trailers are used for export.

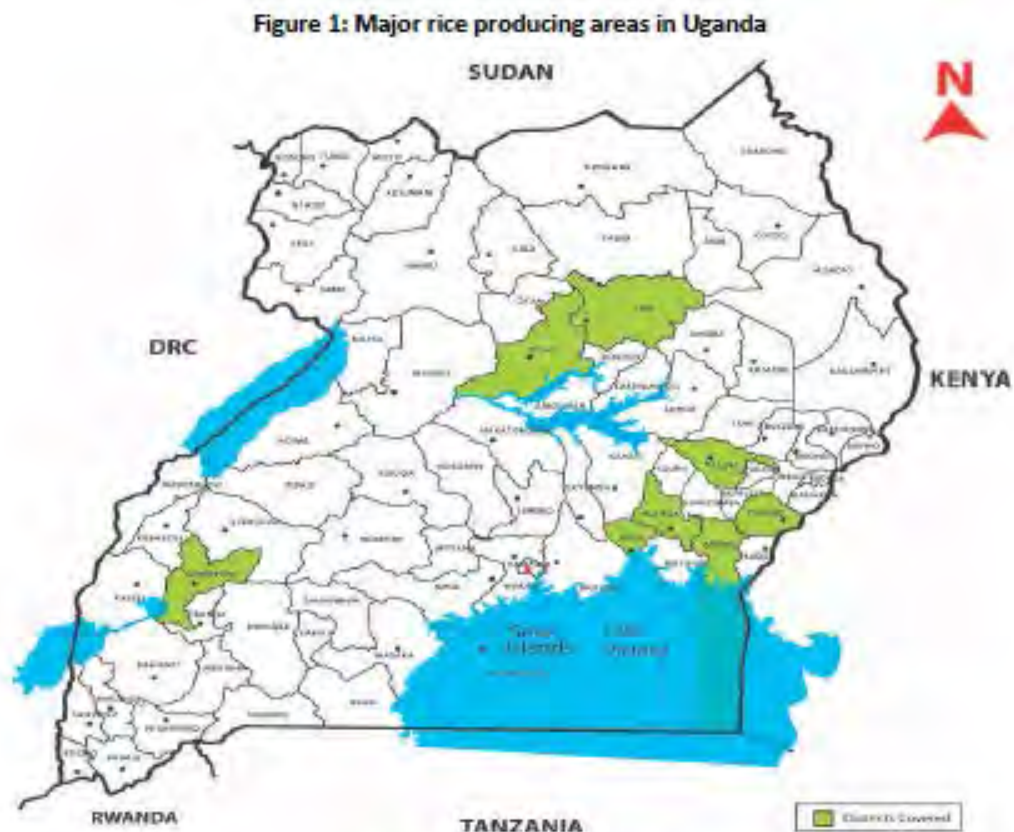
3.3 Rice

3.3.1 Value Chain Structure and Characteristics

3.3.1.1 Production

Rice is mainly grown almost throughout the country but mainly in the Eastern and Western Uganda due to availability of lowlands with high moisture contents throughout the growing season. Major rice growing districts include Apac, Pallisa, Lira, Tororo, Kamwenga, Bugiri, Jinja and Iganga. Other producing districts include Amuru, Gulu Kitgum, and Pader in Eastern and Northern Uganda, and Hoima, Kibaale, Masindi, Kabarole, Rukungiri, and Kanugu in Western Uganda. Figure 3: Crop Area and Production by Region UCA 2008/9 - Extracted from UBOS Statistical Abstract 2014 gives a synopsis of the production capacity by region. Farmers grow different varieties of rice depending on types of soil, that is upland or lowland, general access to seeds and the local habits. The most commonly grown varieties are super, upland (nerica) and sindano. The average national productivity is estimated at 2.5 MT per hectare – productivity varies significantly from one region to another, one district to another. For instance, the average for the northern region is estimated at 1.7 MT per hectare. Rice is - at most - grown in two seasons, March - April and August - September. This puts the harvest in June - July and then November - December.

Once the rice is harvested, it is stored in local storage facilities on the farm. In theory, farmers tend to favor milling before selling, as the processing adds substantial value to the crop. However, this is not necessarily possible since some areas do not have access to milling facilities or have the resources to transport from farm to the miller. Again, as it is with other agricultural products, the need for cash also drives the selling pattern, with severe of the farmers opting to sell the rice as paddy at the farm gate to meet immediate cash need.



Source: FIT Uganda (2012)

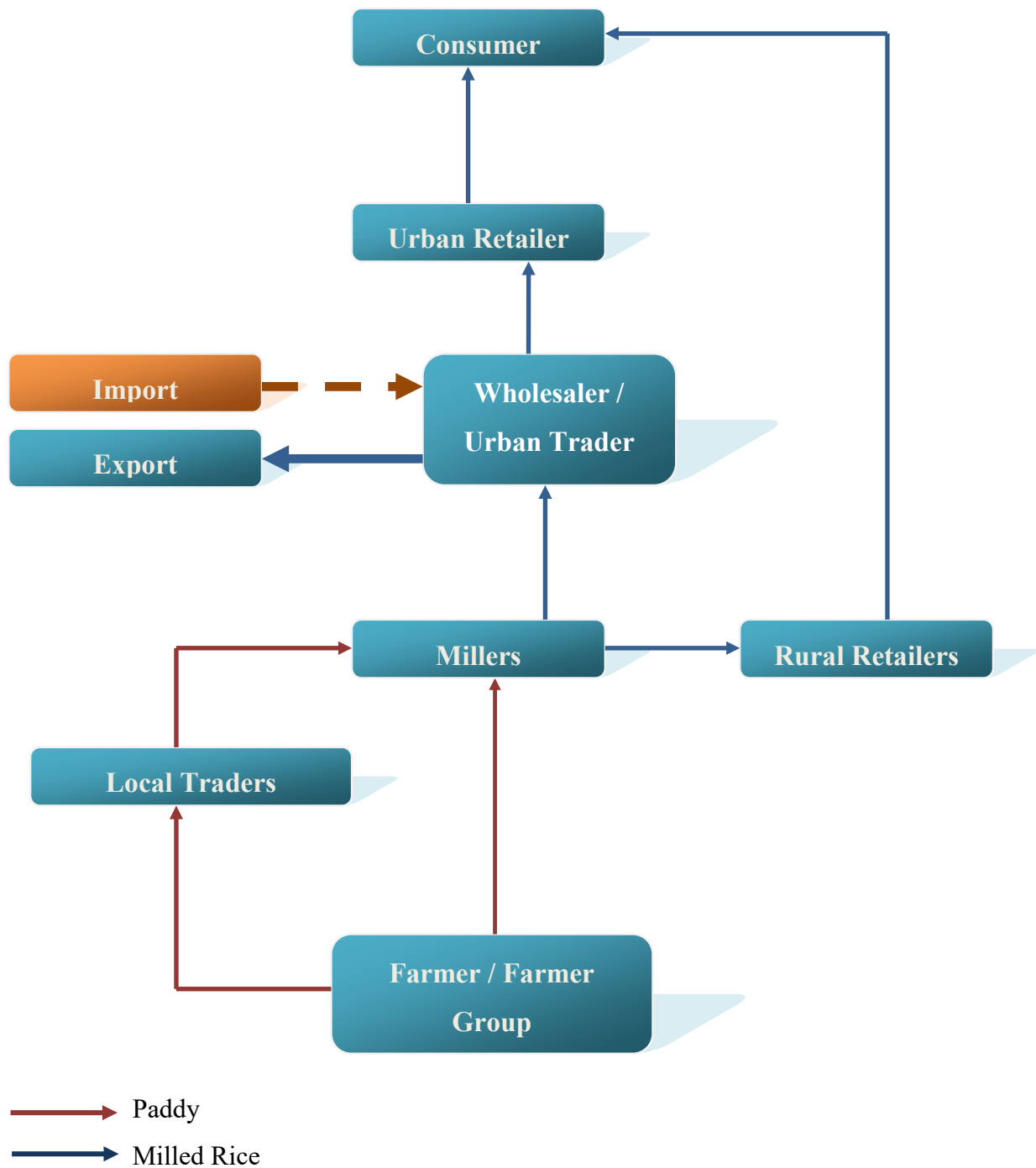
Table 1: Cultivated area, production, demand trends of rice in Uganda (2000-2010)

Year	Acreage (000' ha)	Production (000' tonne)	Demand (000' tonne)	Exports (000' tonne)	Imports (000' tonne)	Net imports (000' tonne)
2000	72	109	171	2.35	77.59	75.24
2001	76	114	133	1.34	33.85	32.51
2002	80	120	169	1.21	64.69	63.48
2003	86	132	165	1.43	72.71	71.28
2004	93	121	168	12.15	83.72	71.57
2005	102	153	184	0.00	4.00	4.00
2006	113	154	200	0.00	15.09	15.09
2007	119	162		0.12	24.74	24.62
2008	128	191		0.03	25.43	25.40
2009	138	206		0.16	38.29	38.13
2010	140	218		0.00	33.32	33.32

Note: Units are per tonne of milled rice

Source: PMA (2009), MAAIF (2011).

3.3.1.2 Supply Chain



3.3.1.3 Processing

Harvested rice grains are enclosed in glumes that are in close contact with the grain. Prior to consumption as grain, or further processing into flour, snack foods and beverages, the glumes are removed by hulling. There are generally two methods of doing this - dry and wet processing. Dry processing involves drying the grain to an optimal moisture level 12 – 14 per cent. This enables easy removal of the husk/bran with minimum breakage and gives good quality shelled rice. Rice bran is rich in oil so hulling also extends shelf life of grains by eliminating the source of rancidity. Hulling is then followed by polishing. This is the most common method used in Uganda. The alternative is wet processing or parboiling where the rice is pre-cooked in water prior to milling – that is steaming and drying the rice before hulling.

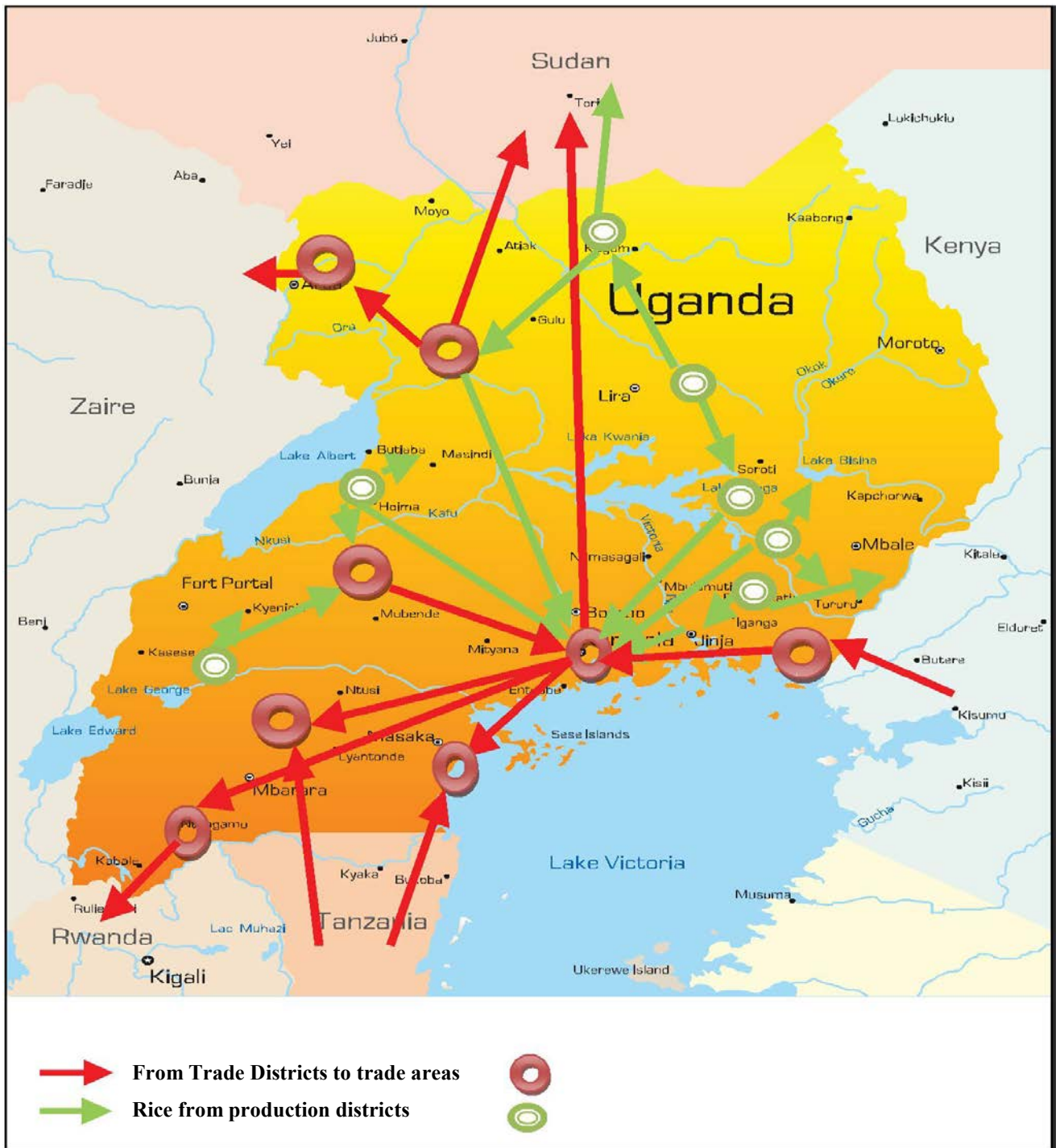
3.3.1.4 Geographical areas of production, value addition and marketing

Refer to Figure 3: Livelihood Zones of Uganda

3.3.1.5 Trade volumes flowing through different channels

UCA 2008/09 data indicates the 22.4 per cent of the rice produced in Uganda is consumed by the producing households and the balance – 77.6 per cent – sold off for other cash requirement. A gross margin analysis carried out in Northern Uganda (Elepu, March 2014) indicates that the average household earns between UG. X. 170,235 to 288,090 per acre per season.

.3.1.6 Routes from the production areas markets



Source: Adapted from DMAT Study on Rice Value chain I Uganda

3.3.2 Value Chain Actors, Their Functions and Challenges

3.3.2.1 Input suppliers

According to DIMAT (2012), the main inputs procured by farmers from input suppliers include: seed, chemicals (herbicides, pesticides and fertilizers), agricultural implements and machines. Other inputs that are important at the processing stage of the value chain are milling machines and packing materials. The Study further indicates that the rice seed sector consists of both formal and informal suppliers. The formal seed supply accounts for about 8% of the seed, while the informal sector accounts for 92% of total seed supply (Seed sector country profile, 2008). 2012). Seed companies work with input stockists who are not specialized and stock various varieties of rice seed among other seeds. There are also private sector input suppliers organized under the umbrella organization, Uganda National Agro-Input Dealers Association (UNADA). UNADA has a total of 2,200 members spread across the country. NGO service providers are particularly common in northern and eastern Uganda.

3.3.2.2 Producers

About 80 percent of rice farmers in Uganda are small scale farmers with acreage of less than two hectares using simple technologies like use of rudimentary tools, little or no fertilizer use, poor quality seed, with little or no irrigation and poor water management practices among others About 5 percent rice farmers are large scale with land under cultivation over six ha. Among the large scale farmers are rice schemes with acreage of over 1,000 hectares such as the Kibimba Rice Scheme

3.3.2.3 Traders

The local traders play the same role as in the maize value chain; they link rice millers with farmers. They go around the inaccessible areas and collect the rice directly from farm gates and stores. The paddy rice which is collected is then bulked up and transported straight to the millers.

3.3.2.4 Processors / Millers

Millers are often located in urban centers and a few rural towns in the key producing areas – proximity to source. They operate in marketing centers where farmers, millers and traders meet to buy and sell rice. A couple of millers with financial capacity also go as far as providing additional support services to farmers such as information and guidance on farming practices, extend loans – although on quite stiff terms, transportation from the paddy/farm to the mill.

When the rice is milled, it is either sold to the wholesaler or directly to rural retailers in the markets and trading centers

3.3.2.5 Exporters

Once the rice is milled, it is then sold to regional importers from South Sudan and Kenya or to wholesalers from urban centers such as Gulu, Lira, and Kampala. The milled rice is then sold on city markets by retailers.

3.3.2.7 Service providers with a focus on logistics

Like in maize except for large scale producers and milers, the key logistical services consumed along the value chain mainly relate to storage and transportation. The storage locations (stores) are often hired ad are costly. The government through the Ware House Receipt System is supporting establishment of appropriate, long-term and permanent storage points (warehouses) throughout the country mainly for maize but it will cover all such grains including rice.

The expectation is that the producers or producer clusters will be able to bulk and hold stocks for longer time, in anticipation of better prices. The Ware House Receipt system will also provide a mechanism for using the held stock as collateral to acquire finances for other immediate needs.

With respect to transport, rice is moved by road from one point to another – to the final destination. The nature and capacity of truck used will depend of the distance to be covered and volume of rice grain to be moved. 10 T, 24 T and 32 T are normally used for in-country movements whereas trailers are used for export. DIMAT Study (2012) points out that transport costs are high (11%) of the total value and many times are not reliable especially in the production areas.

4. End Market Analysis for Cereal Grains

This chapter estimates the global market size for cereal grains, particularly maize and rice and highlights other market dynamics including competition, quality requirements, price developments, available of trade preferences etc. These are important market entry and access considerations for these commodities to target export markets.

4.1 Estimation of the Market size

World trade in maize in 2014 was valued at US\$ 39.2 Billion for approximately 138.7 Million MT³. Top importing markets were Japan, South Korea, Mexico and Egypt – supplied by, amongst others, USA, Brazil, Argentina and Ukraine the top supplier of maize grain worldwide. All the top 10 importers had a maize deficit of more than US\$ 1 Billion in that year alone. Statistics also reveal that this trade has been growing at an average rate of 8 per cent (in value and volume) over the 5-year term – propelled by growing demand and supply in the major importing and exporting markets, except Japan and USA respectively.

The same source put the value of world rice trade at US\$ 24.5 Billion, as at 2014. That is, approximately 40 Million tons traded world over in that year alone. This trade value and volume has been growing at an average of 6 and 16 per cent per annum over the last 5 years. Saudi Arabia, Iran, China and Benin stand out as the largest importers each with a deficit of approximately US\$ 1 Million. India, Thailand, Pakistan, USA and Vietnam are the main supplying markets although India is the only supplier that has exhibited growth over the 5 year period. Australia, Paraguay and Singapore have exhibited sharp growth trends of over 30 per cent over this period signaling increased competitiveness.

4.2. Uganda's Performance in the Cereal Grains Market

.For the year ending December 2014, formal exports of grains ranked in US\$ 121 Million for Uganda, a surge of 30 per cent compared to 2013 earnings. This is a growth trend that has been persistent for the last 5 years – averaging 8 per cent per annum. For much of this 5-year period, the country's key export destinations for these products – grains - have remained the same – Sudan (North and South), Kenya, DR Congo and Rwanda. Individually, they contributed 53, 19, 15 and 7 per cent of the US\$ 121 Million revenues – these revenues growing in 2014 even with the instabilities in South Sudan. However, 2013 and 2014, the market portfolio expanded to include Pakistan, India, Turkey and UAE.

³ Source - according to COMTRADE statistics

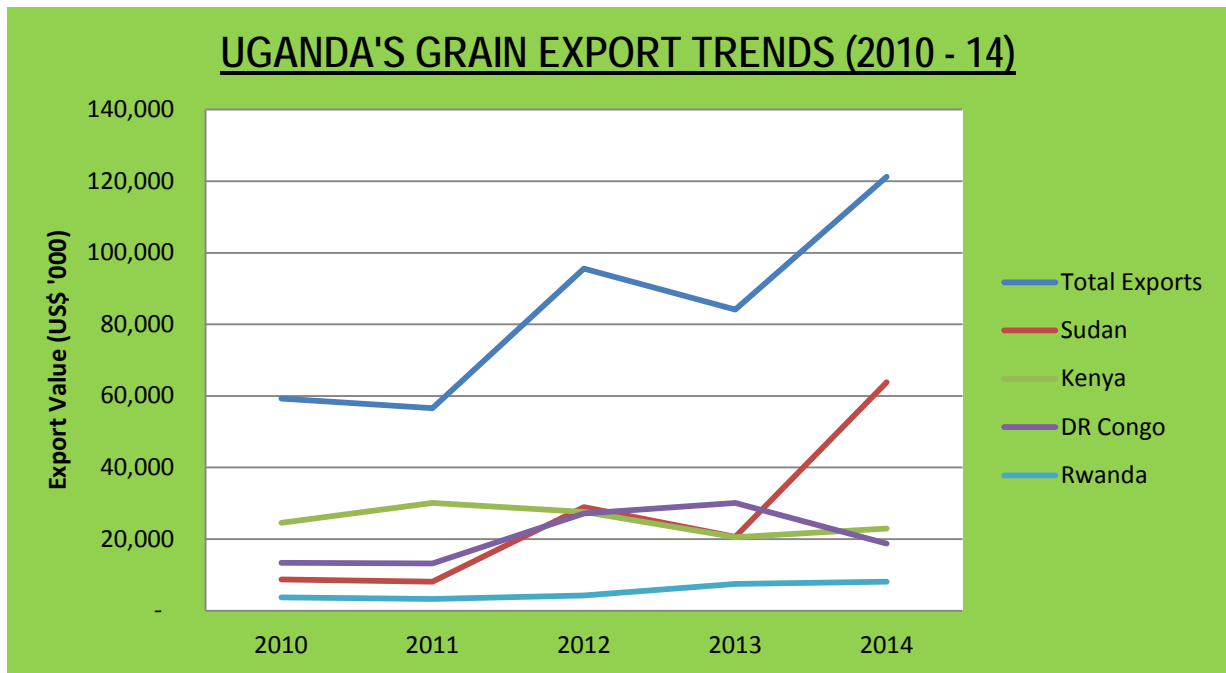


Figure 8: Uganda's grain export markets

From the product perspective, the volumes exported and the earnings from export of each of the aforementioned grains have grown consistently over the 5-year period – even with isolated divergences such as the -23 per cent slump for rice earnings in 2014.

Basing on the change in average export price per ton for most of the cereals – which did not vary significantly in 2014 – it could be argued that demand and competition have remained relatively stable in all these markets.

4.3 Market Segments & Distribution Structures

First and foremost, it is important to note that grains – generally – are staples in most of the households in the EAC region. Since these constitute much of the top 5 markets that consume more than 85% of the grain exported (formal and informal), the primary end-user markets segment are the households (direct household consumption). These households buy and consume most of the grain in whole form, with the exception of rice, millet and maize which can also be milled. This consumer requirement has given rise to the milled products industry, whose by-products serve as inputs into the animal feeds industry – another key driving factor in the trade of grains – especially maize.

Cereal grains in Uganda are, to a larger percentage, produced by small-holder rural households/farmers with limited commercial production. As such, this production is highly uncoordinated and inconsistent – largely based on historical prices. Establishments such as prison facilities are also key producing entities especially of maize – owing to the access to

large chunks of land and relatively cheap labor. For the small-holder stock, aggregation takes places at the village level, done by rural-based traders, buying at the farm-gate and in turn selling to the urban traders. In producing areas near the borders this trader mass also includes importing traders from the neighboring countries – seeking to shorten the supply chain. Stores operated by the rural traders are often located in town centers where they are easily accessible by trucks. Little to no quality control is done at this point with focus on volumes and minimal costs. This makes these collection points a major source of contamination of the grain.

Grain, to export markets, is majorly processed and/or distributed by cross-border traders, medium-to-large scale trading (consolidators) and grain processing⁴–) companies. In Uganda some of the latter include Aponye (Uganda) Ltd. and Olam (Uganda) and Tilda for rice. World Food Program is also another big player – and the biggest internal buyer of especially maize and beans. Grains are also extensively traded by the mass of cross-border traders operating in the different border towns such as Busia, Bunagana and Arua.

Once the grain, gets into the importing country, the distribution channel is rather direct - from importer to wholesaler to retailer to consumer. The importers and wholesalers also supply to the milling houses. Maize (the main cereal) is traded in 100kg bags despite the EAC limitation of 60 kgs – due to human loading and offloading. Maize, Rice and Millet milled products are also taking root in the region. Maize flour, for example is trading in large quantities into South Sudan. Rice flour on the other hand is finding market in Rwanda. Pre-packed single or mixed cereal porridge products, cereal-based baby foods and fortified milled meal products are also popular in the domestic market and many of the neighboring countries. Other than the milled products and animal feeds industry, a marginal percentage of the grain also goes into other industry such as beer production (maize grits.)

Rice is primarily used as a food product within the region. It is a staple for many families or communities although in some rural areas its considered as a luxury food item and therefore consumed occasionally. The primary market segment is therefore the household consumers. These purchase their small quantities from retail shops within their localities, which retail shop source from the urban traders – thus linking up with the main distribution chain. Another key segment is the institutional consumers – such as schools and hospitals. These source in bulk directly from the urban traders or from the producing areas.

⁴ Primary processing involves cleaning, sorting and bagging

4.4 Competition

Uganda's grain is mainly traded into Sudan (North & South), Kenya, DR Congo and Rwanda. In these markets Uganda faces competition from a variety of competitors. In Sudan, these products are majorly supplied by Australia, Germany and Canada. Uganda's market share, as at 2014, was 7 per cent growing from 2 and 4 per cent in 2013 and 2012 respectively. With respect to rice, Uganda's main competitors are Pakistan, Thailand and India – see Figure 4: Uganda's competition.

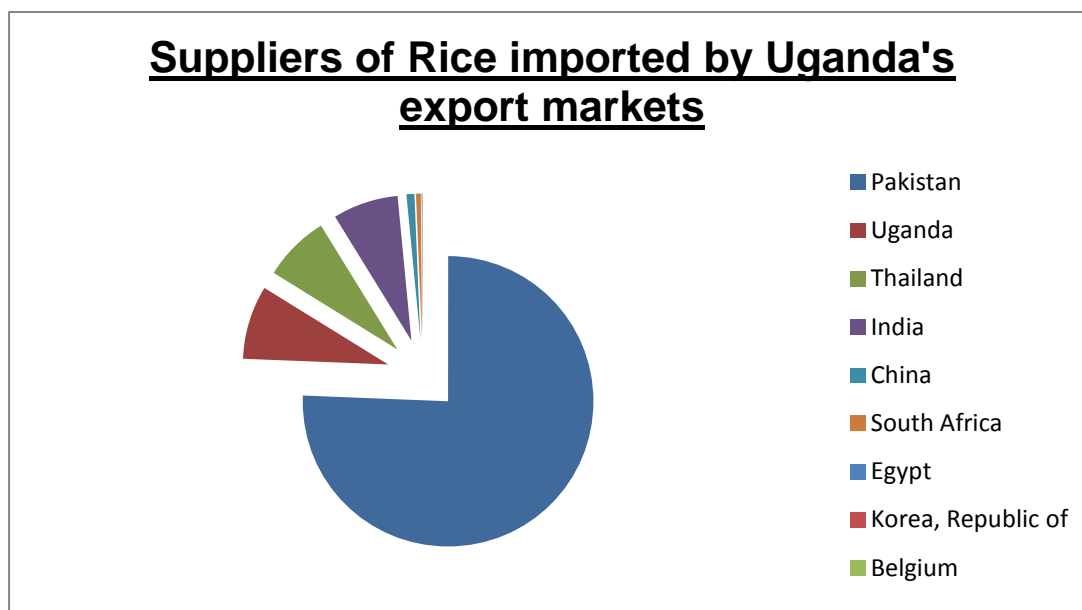


Figure 4: Uganda's Competitors in the Corridor Countries Rice Market

Pakistan alone controls over 70 per cent of this market – a segment size it has maintained over the last 5 years.

In Kenya, the cereal grains and products are also supplied by Pakistan, Russia, Ukraine and Australia. As at 2014, Uganda's share of this US\$ 517 Million was 3% falling from 4 per cent in 2013. For DR Congo, the other supplying markets include Germany and Russia. Uganda is the third largest supplier. As at 2014, Uganda controlled 18 per cent of this market shrinking from 21 and 22 per cent for 2013 and 2012 respectively. These three markets – Sudan, Kenya and DR Congo – accounted for 53, 19 and 15 per cent respectively of the country's export earnings – in 2014. These export earnings, over the 5-year term, have persistently grown – lest for the -60 per cent slump for DR Congo in 2014 alone. Against the top three or four suppliers in each market, Uganda's proximity-to-market factor has not had that much impact on her competitiveness. The effectiveness and low cost of marine transport has made this market accessible to these big suppliers, out competing Uganda even with her proximity to the market. Growing costs of production and logistics plus inconsistent production have limited her capacity to grow the market share. Import volumes and prices in

each of these markets are also influenced by domestic production – especially for maize. Quality is, in supply-constrained situations, secondary because quite often traders procure and export/import under-grades. On the flipside, Uganda’s natural production factors have given her an advantage over her immediate neighbors – which quite often has grain deficit especially maize for Kenya. Also, with the signing of the tripartite (EAC, COMESA & SADC) it is expected that Uganda will face more fierce competition from South African producing nations with better production infrastructure.

Globally, the value of cereal grain trade has remained relatively unchanged in 2014 when compared against the 2013. Statistics put the value of this trade at US\$ 134 Billion in 2014, down by -0.23 percent. The mixed performance at the country-to-country level, in the top 10 importing markets, is reflective of this situation. Japan, Saudi Arabia and Iran, for example, had -23, -32 and -1 per cent slumps in import values vis-à-vis growth for China, Egypt and Italy of 13, 42 and 10 per cent respectively. Similarly from the export perspective, five (5) of the top 10 supplying markets witnessed slump in export earnings of between -9 and -53 percent – with Brazil being the worst hit. This slump was countered by growth of between 3 and 31 percent in the other five – with Russia have the highest gains. It is as such reasonable to conclude that it was a year of stiff competition, with market shares shifting significantly between the top players. USA, Canada and India remain the key suppliers whereas Japan, China and Egypt the key importers of this product.

4.5 Quality Standards

Kenya, Rwanda and Burundi being members to the EAC apply the relevant harmonized regional standards on cereals and grains. To-date, these exist for maize and rice. The standard for beans is still work in progress. The standard specification and testing methods prescribed in these are built around the international standards such as with International Standards Organization (ISO) and the Codex Alimentations Commission (CODES) - which operates a committee to formulate standards for cereals, pulses and legume. These standards mostly focus on aspects that relate to general sanitation and safety of these products as a food (aflatoxins, foreign (organic and inorganic) material content, general cleanliness and physical characteristics of the grain) and shelf-life or durability of the grain (moisture content, packaging and handling) – given the fact that this grain has to be trucked or shipped long distances to the market. For instance the 13.5% maximum moisture content with maize has become a standard even when trading with COMESA member states. Conformity and compliance to standards in the food industry is increasingly becoming non-negotiable, unless the given importing market does not have sufficient infrastructure to enforce the standard such as with South Sudan and DR Congo. However, even then, the consumers or traders will demand for adherence to the fundamental quality parameters such as moisture content and

foreign material content which can be verified with low-cost methods. These standards requirement are subsequently being passed down the value/supply chain considering the financial risk they present to the exporter. For example maize value chain related studies have revealed that in major urban grain trading markets or centers, consolidators undercut prices or volumes by between 2 – 10 percent for suppliers that do not exhibit sufficient evidence of compliance to standards or where the grain is visibly non-compliant. Since the Q and S mark have not yet been widely adopted for grain in Uganda, importers heavily depend on the phytosanitary certification as evidence of quality and safety of the products. For Kenya, importers (or exporters) have to compulsorily obtain an additional phytosanitary certificate from Kenya Plant Health Inspection Services – although this is viewed as a barrier under the EAC Common Market trade agreement since its outside the stipulations of the EAC laws. Below is an illustration of the EAC maize grain standard.

Characteristic	Maximum Limits			Method of testing
	Grade 1	Grade 2	Grade 3	
Foreign matter, % m/m	0.5	1	1.5	ISO 605
Inorganic material, % m/m	0.25	0.5	0.75	
Broken kernels, % m/m	2	4	6	
Pest damaged grain, % m/m	1	3	5	
Rotten and diseased grain, % m/m	2	4	5	
Discolored grain, % m/m	0.5	1	1.5	
Moisture, % m/m	13.5			ISO 711/712
Immature/shriveled grains, % m/m	1	2	3	ISO 605
Filth, % m/m	0.1			
Total defective grains, % m/m	3.2	7.0	10.2	ISO 605
Total aflatoxin (AFB ₁ +AFB ₂ +AFG ₁ +AFG ₂)	10			ISO 16050
Aflatoxin B1, ppb	5			
Fumonisin, ppm	2			AOAC 2001.04

Table 5: EAC Standard on Maize

The guiding standard for rice in EAC is EAS 764:2011 – Rough (paddy) rice specification and EAS 765:2011 – Brown rice specification. As with other standard these were most especially developed to facilitate domestic, regional and international trade especially prevent technical barriers to trade by establishing a common trading language for buyers and sellers. They draw significantly from other international standards such as CODEX, UNECE and ISO

Key in this standard is that it sets out a quality grading system for brown rice – as per the table below;

Characteristics	Maximum limits			Test Method
	Grade 1	Grade 2	Grade 3	
Broken, %, max	2	5	7	ISO 605
Heat damaged rice, %, max	1.5	1.5	2.0	
Damaged rice, %, max	1.0	2	4.0	
Chalky ^a %, max.	2	4	6	
Red or red streaked, %, max.	1,0	4	12	
immature grains, %, max	2	6	12	
Other contrasting varieties, % max	1	2	5	
Organic matters, %, max	0.1	0.5	1	
Inorganic matters, %, max	0.1	0.1	0.1	
Live weevils/kg, max	Nil	Nil	Nil	
Filth, %, max	0.1	0.1	0.1	
Paddy grains, %, max.	1	2	2.5	
Moisture contents, %, max	13	13	13	
Total Aflatoxin (AFB1+AFB2+AFG1 +AFG2)), ppb	10			ISO 16050
Aflatoxin B1 only, ppb	5			
Fumonisin ppm	2			

Table 6: Grading /Quality specification for brown rice

4.6 Packaging

The existing grain related standards leave packaging specification to the discretion of the importing country. Therefore requirements for our export markets differ significantly. However these requirements are premised on the same fundamentals – such as security, safety, quality preservation and waste legislation. They are also guided by other international regulations such as by the International Labor Organization (ILO). For example, there is a package weight limitation where human loading and off-loading is involved – such as with this sector. With the absence of consistent and effective enforcement of the standards and related policies across the EAC and COMESA region – packaging in the cereals and grain sector has been set by trader practices. For instance, it's common to find 110 kg bags of maize especially at the borders, with the 10 kg meant to compensate for weight losses due to anticipated drying during transit. Trade with DR Congo and South Sudan is in 100 kg packs where the limit for maize to Kenya is 80 Kgs. Therefore, continuous awareness and strengthening of standards enforcement are likely to cause a shift in the coming years. In addition, increasing competition, changes in and availability of improved packaging technology are encouraging practices such as branding and product differentiation, which are also causing to shifts in packaging and labeling. The false economies that were in the past assumed or associated with poor packaging in the industry are slowly being wiped out. Trade without borders – in the face of regionalization – is also putting pressure on all value chain actors to ensure better packaging. Poise

4.7 Export Price Trends

Considering that there have not been any major shifts in key production factors, regional tax regimes and crude oil (fuel) costs, this analysis uses the average price per ton of the majorly export grains to illustrate movements in the general export market price trends.

Using formal export statistics from UBOS and the COMTRADE database, indications are that maize prices in Rwanda have been on a declining trend for the past 3 years, unlike Kenya where the reverse is true. Wholesale price data accessed through RATIN confirms the trend depicted in figure 2, averaging between US\$ 361 to US\$ 406 in that period. The wholesale prices were especially higher in 2014, reaching an average of US\$ 605 and US\$ 422 in Nakuru and Kisumu respectively in that year.

Rice has followed the maize trend although in a more regular pattern with export prices falling from about US\$ 550 to US\$ 450 per ton. Wholesale price data confirms this trend – with the average wholesale prices from surveyed markets of Kigali, Kicukiro, Ruhengeri and Kimironko moving from US\$ 1,250 to US \$ 1,073 to US\$ 983 in 2012, 2013 and 2014 respectively.

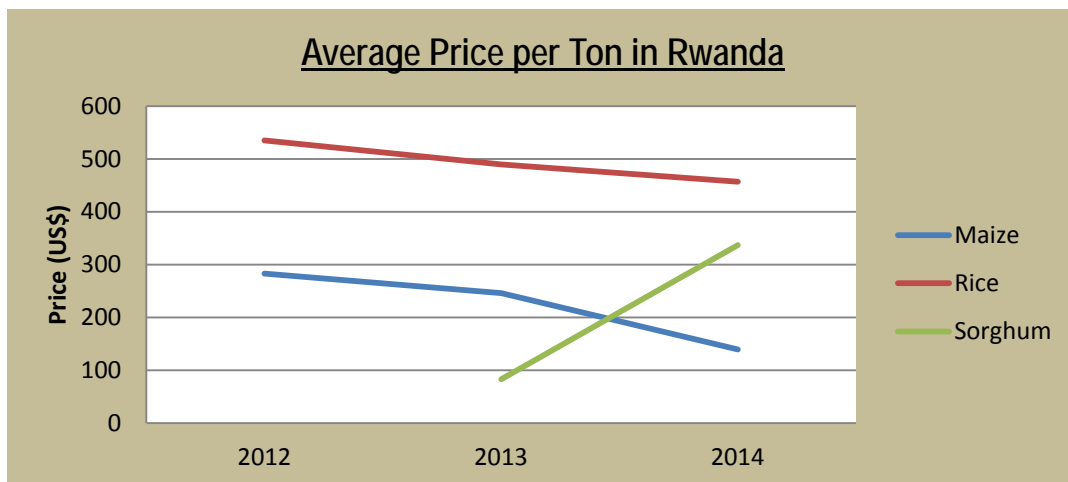


Figure 9: Price movement for Uganda's grains in Rwanda

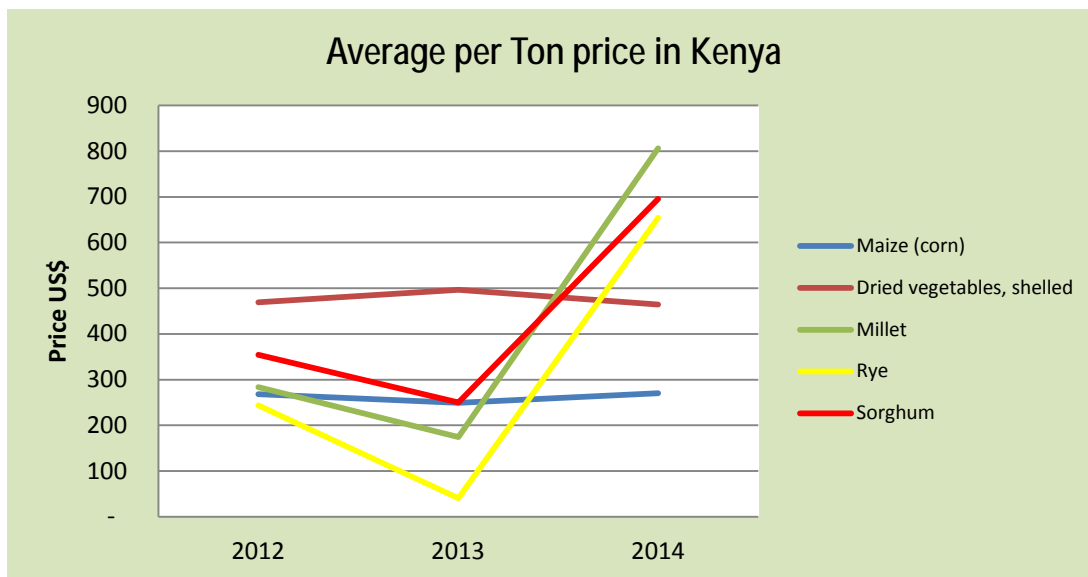


Figure 10: Price movement for Uganda's cereals exported to Kenya

For rice, prices have varied depending on the type, generally trending down between 2013 and 2014 as illustrated by the figure below

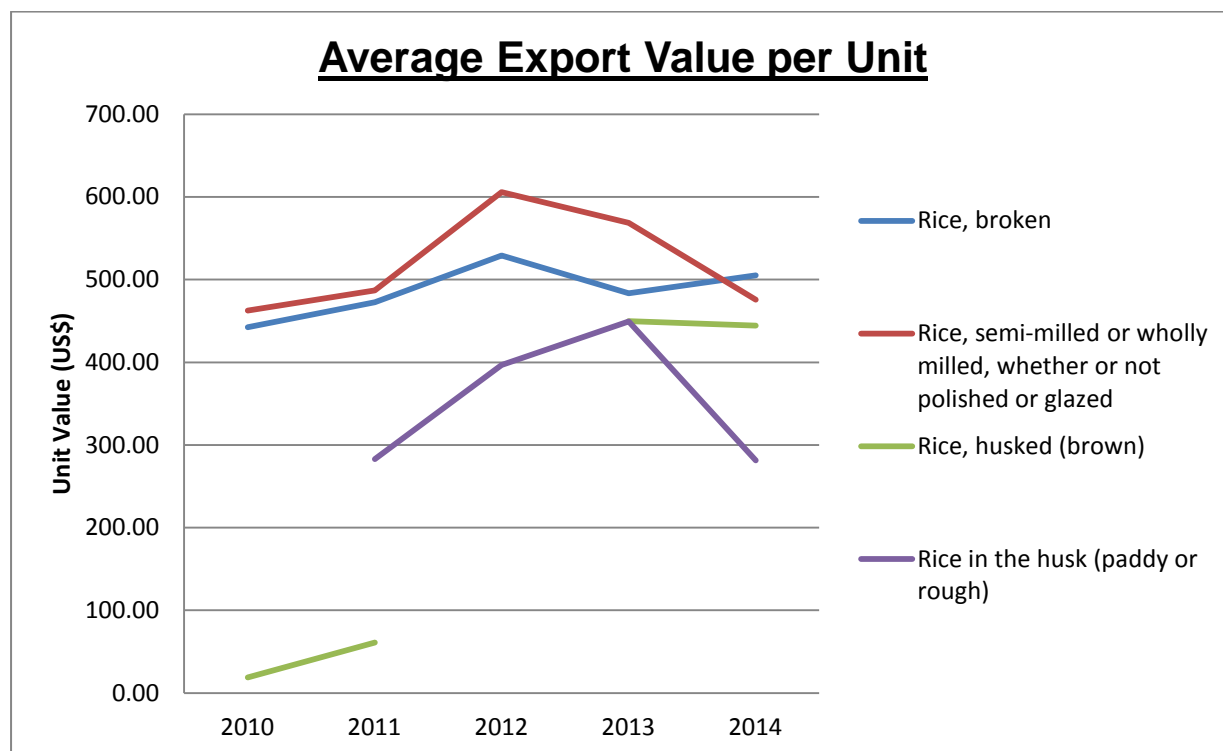


Figure 11: Export Value Trends in Uganda's rice export markets

Price statistics from RATIN – a regional network monitoring trade in cereals and grains – indicate that the average wholesale price in Rwanda for 2013 ranged between US\$ 976 to US\$ 991 in Kigali, Kimironko and Ruhengeri whereas in 2014 it went up to US\$ 1,074. In 2014, the wholesale prices for rice ranged between US\$ 697 in Makueni to US\$ 1,656 in Mombasa and US\$ 1,877 in Eldoret.

4.8 Buyers

As stated earlier, the major buyer of maize and beans grain is World Food Program with stations in Uganda, Congo and South Sudan. Other major buying entities buying for both domestic consumption and export – is Aponye Uganda Ltd and Export Trading Group (ETG) Uganda.

On the international scene, the key players are the global agro-produce supply chain companies including;

STE. Export Trading Co. Benin SARL (Export Trading Group) – an international grain trading and distribution company operating in Africa, India, China and East Asia; this is the mother company of ETG mentioned above

Cargill – a privately-owned agricultural trading firm and processing firm headquartered in the US. It plays a major role in world markets for grain and oilseeds processing and trading – with a volume of over 50 million tons of cereals and oilseeds/oils traded annually. Not visible in our export markets but a more influential player in terms of supply if you look at supplying competitors in the market.

4.9 Market Access Conditions

Market Access normally indicates and emphasizes the nature of the trading environment. It focuses on the trade policy environment along with its trade regulatory regimes in different markets. Existence of various access preference offers and agreements and their level of commodity coverage can give us an indication of how a given commodity will be traded in the market. Cereal grains have access preference in almost all major markets as highlighted below

Agreement (Multilateral/Bilateral/Regional)	Market Access indications
<i>Multilateral</i>	
World Trade Organization	<ul style="list-style-type: none"> • Increased market access for Ugandan producers • Transparent and uniform rules which help attract more trade and investment in these commodities • Dispute resolution mechanism that can protect Ugandan trade interests.
<i>Regional</i>	
East African Community Common Market (Main Northern Corridor Market)	<ul style="list-style-type: none"> • Tariff Free Trading region (0 Tariff on Uganda produced Products trading in the region) • Common External Tariffs that allow for competitiveness in the region
COMESA Free Trade Area (FTA) (Main South Corridor Market)	<ul style="list-style-type: none"> • Reduced tariff rates on Ugandan Commodities (Ranging from 5% to 25% tariff reduction) • Uganda's largest trade partners are all COMESA members (Kenya, DRC, Rwanda, Sudan)

Agreement (Multilateral/Bilateral/Regional)	Market Access indications
	<ul style="list-style-type: none"> • COMESA has on average provided a market for 57% of the value of Uganda’s exports annually
Tripartite FTA (EAC, COMESA, SADC) <i>(Both Northern Corridor and South Corridor Market)</i>	<ul style="list-style-type: none"> • Anticipates a single economic space as a free trade area • Anticipates a common external tariff • . Successful conclusion of a TFTA would also undo challenges of “spaghetti bowl” or multiple memberships in trade arrangements that complicates application of Rules of Origin
<i>Preferential Schemes</i>	
EPAs (Covers the EU Market)	<ul style="list-style-type: none"> • Tariff Free market entry for Uganda’s commodities except arms • Covers East Africa as a whole and thus provides opportunities for EAC as single market source and single investment destination
US-EAC Trade and Investment Partnership	<ul style="list-style-type: none"> • Offers similar benefits as EPA • Focuses on new business opportunities to Ugandan firms by reducing trade barriers, improving the business environment, encouraging open investment regimes • Seeks to enhance two-way trade between US and EAC.
Africa Growth and Opportunity Act (AGOA)	<ul style="list-style-type: none"> • Provides Ugandan goods duty-free access to the US market. • Offers Opportunities to diversify exports enter new markets, • Supports leveraging Technical Assistance to improve product quality, etc.
<i>Bilateral Agreements/ Preferences in South East Asia</i>	
2008 India Duty Free Tariff Preference (DFTP) scheme for LDCs	<ul style="list-style-type: none"> • Offers duty-free access to LDC exports on 85 percent of Indian tariff lines • Focuses on increasing and diversifying exports from Ethiopia, Kenya, Rwanda, Uganda, and the United Republic of Tanzania to India • Also supports facilitating investment and transfer of Indian knowledge, expertise and technology to East Africa
210 Duty Free Treatment for Least Developed Countries- China	<ul style="list-style-type: none"> • Duty free and preferential market access for about 4,788 product lines

5 Gaps between the final market requirement and commodity supply

All of Uganda's key grain export markets have had grain deficit for the past decade. The growing demand vis-à-vis low import supply in these countries has actually prompted, for example Kenyan traders, to move and establish grain buffers in Uganda to have some control on grain supply. Traders interviewed have indicated that three (3) of the five (5) major grain buffers are Kenyan-owned.

5.1 Maize Gaps

Maize is a key food cereal crop world over with multiple alternative uses. Regionally, the EAC as a whole imported maize worth US\$ 46.9 Million - 112,173 MT. Kenya remains the top importer accounting for 63 per cent of the imported volumes in 2014. All the EAC partner states, except Uganda had a grain deficit in that year. Uganda is the major supplier of maize imported by Kenya although the imports have been declining by -5 per cent over the 5 year period. This is not unique to Uganda as Kenya's import from all her markets have been falling at much faster rate than Uganda. These include Zambia, South Africa and Argentina.

5.2 Rice Gaps

The EAC region accounts for 1.9 per cent of the world rice imports. For 2014, these imports amounted to US\$ 453 Million – 1.039 Million MT. All the EAC countries continue to import rice and have sustained rice deficit. For 2014 Kenya was the largest importer. Imports by each of the countries ranged 9,000 to 700,000 MT. All the EAC countries have exhibited a general growth in demand over the 5-year period except for Burundi. On the flipside, statistics show that of all the EAC states Uganda exports (or re-exports) the largest amount of rice – 57,836 MT in 2014 value at US\$ 28 Million. That's approximately 34 per cent of the total rice – by volume – imported. However most of this goes to DR Congo, Sudan and Rwanda. In Rwanda, imports from Uganda continue to grow – at an average annual rate of 57 per cent over the last 5 year. For DR Congo again Uganda rice remains the top supplier and imports have been growing at a rate of 18 per cent per annum over the same period. This is a clear indication that Uganda is still competitive in these export markets against other supplying markets such as South Africa and Pakistan for DR Congo. These markets mostly consume the whole grain.

6 Identification of Challenges with focus on logistics

The challenges in Uganda's grain sub-sectors relate mostly to productivity and the structure of grain trading system.

Productivity in terms of; a) output per land unit, which is reducing coupled with the reluctance of the main producing domain (small holder farmers) to adapt better farming practices due to their capacity and economies; b) amount of arable land that's put to agro-production - the existing land tenure system is unfavorable to agro-development due to high rate of fragmentation and the fact that the few individuals with large chunks of land – viable for commercial production – are not putting it to use. Only 45 per cent of arable land is currently under use and much of it for subsistence farming. The other critical factor relating to this is post-harvest loss, most of it happening at the lower (producer) end of the value chain.

The trading systems are relatively unstructured and unregulated. Much of Uganda's grain, year-to-year, is unaccounted for, as reflected by the export and consumption figures vis-à-vis production data or estimates. Grain loss is however low on the upper-end of the value chain. The level of informal trade in the grain sub-sector is also high, significantly impacting on supply patterns, price structures and grain standard in the country.

6.1 Critical factors for the development of the commodity and higher value addition

Maize is mainly traded as a whole grain, with value addition – at most – going only as far as milling the grain into flour – which is consumed as maize flour (in some cases fortified) or mixed with millet, soya and other flours for nutritional enhancement. Although the grain can be used for production of bio fuels and other industrial uses, this is limited, in Uganda or the EAC region as a whole. Value chain development efforts are currently focused on increasing the volume and value of grain that gets to the market – local or export alongside on-farm productivity.

For the grains in question (maize and rice) trade in Uganda has been limited by a number of factors. Most critical of all (and this summarizes all issues) is post-harvest or grain losses that occur at the different stages of the value chain. Note that cereal and grain production is significant to the incomes of many low-income producer households. Therefore reducing food (grain) losses is critical to sustaining the real incomes and thus productivity of these households (Regmi, 2013) and at a higher level the development of the country – since these households support a significant percentage of the population. These losses are both

quantitative – decreased weight or volume, and qualitative – such as reduced nutrient value and unwanted changes in tastes, color and texture of food. For Uganda – or low income countries generally, these losses mostly occur in the early and middle stage of the value chains and less at the consumer level. (Bank, April 2011) Premature harvesting, poor storage, poor infrastructure, lack of processing facilities and inadequate market facilities are the key reasons for these losses. In respect to logistics;

6.1.1 Poor road conditions (infrastructure)

This contribute to physical post-harvest losses, as they increase the shocks to which grain kernels are subjected during transport hence grain breakage or physical damage. This is especially an issue in rural areas where distance from key trading towns such as in Mubende and Kasese districts are long, and the road network is poor. This impact is amplified by the loading and stacking practices with trucks that move the grain between collection points. Poor rural infrastructure also makes some locations inaccessible to traders, service and support providers. This majorly impacts the cost of getting grain to the market and thus real income to the producer. In bad weather or rainy conditions, farmers have to move their stock to an accessible point, movements of the local traders / collecting agents are restricted and urban traders have to cover more mileage to collect the fragmented grain collections. All this negatively impacts the farm gate prices offered to farmers.

6.1.2 The nature of vehicles

Trucks typically used in transporting grain expose the grain to unregulated heat and moisture that, to the extreme, causes physical appearance and coloration to change due to over-drying or development of moulds. Color of maize is very critical in quality and hence price determination in the market. For instance the market has higher appreciation for what is referred to as ‘Busia White’ hence higher prices. Once the grain is discolored it’s classified as ‘Millers’ or ‘Chicken’ grade hence lower cost. The moisture, if unchecked, may also lead to introduction of aflatoxins and rot whilst in transit which, at the worst, may lead to total destruction or discarding of the grain in the market due to non-conformity. Another illustration of the issue relates to rice. Favorable travel temperature for rice ranges between 5 – 25° C. Optimal temperature for the development of molds is between 20°C and 30°C. Travel temperatures of less than 25°C increases metabolic processes and thus self-heating and agglomeration (sticking together). Considering the way rice is transported across Uganda, there is no consideration for all these factors. The above also relates to the mechanical state of the trucks that are quite often used in the transportation of grain. This exposes the grain to the risk of longer than anticipated haulage time resulting from truck breakdown or need for repairs and services. This is even a bigger risk with exports.

Impact of cost of transport on the wholesale, retail and/or export market price of the grain. In a study undertaken in Uganda, Tanzania, and Kenya by the World Bank in 2008, it was found that transport costs make up about 76 percent of total maize marketing costs. Rice marketing is also characterized by high transportation costs. For example the cost of transportation from farm to mill amounts to over 25 per cent of the farm gate price of paddy rice. Related to this is the cost of hired labor for loading and unloading trucks. It is estimated at 11.7 per cent of total marketing costs, ranging per ton from US\$3.4 in Uganda to US\$13.3 in Kenya. (Regmi, 2013) The study highlights that these costs are quite high because a maize bag often goes through a number of markets before reaching the final consumer in large cities and thus requires loading and unloading at each intermediate stop. Cost of transportation also largely hinged on fuel prices and the state of infrastructure in the areas to be transited.

6.1.3 Spillage

This has also been identified as a critical factor causing losses during transportation. Spillage arises out of many factors including state of the roads travelled, type and quality of bagging, loading and off-loading practices, damage to packaging borne from export/trade processes and procedures such as inspections which involve sampling of bags with rudimentary methods such as the sampling spear and human damage. However improve packaging and transportation practices have reduced this to less than 5 per cent in general, according to traders interviewed.

Structure of the grain trade – grain trade in Uganda is largely informal, unregulated and unstructured. Sector associations such as the Grain Council of Uganda have indicated that much of Uganda’s grain remains unaccounted for – year to year. Computations based on UCA, for example, reveal that up to 500,000 metric tons of maize was unaccounted for in 2008/09. The phenomenon of informal cross border trade is not new or unique to grain. However, considering that grains constitutes a large percentage of staples within the region, the market in any of the neighboring countries is rather guaranteed and therefore a favorable tradable for traders/communities along the border. The Joint Cross Border Trade Monitoring Committee⁵ reports that Uganda is the source of 72 per cent of the 3 Million Metric⁶ tons of staple foods traded informally. The key challenge for this is with the pricing structure for grains – especially maize – largely hinges on the demand of the foreign traders, who now go as far as the farm gate or rural collection points in a bid to cut costs and control volume. Their buying practices have also hampered the adoption of grain standards amongst the producer

⁵ Made up of private sector and donor agencies such as USAID

⁶ For 2012

communities. Since they do not offer incentives for quality, farmers do not appreciate the need to comply. It is also the opinion of the local trader community that this non-compliance is deliberately sustained by foreign traders in a bid to ensure low farm gate prices. On getting to the destination market, these traders undertake quality control – sorting, cleaning and grading – and reap the full price benefits, which do not trickle back to the country of origin. Interviewed practitioners have indicated that the low quality results into low in price premiums of about 10 – 15 per cent, loss of trade opportunities since Uganda is viewed as an unreliable supplier and reduced the potential for further or high-level investment in storage and value addition due to the high level of unpredictability of the supply environment.

6.1.4 Very low licensable storage capacity

- Overall total grain storage capacity in the country is about 30% to total grain production; of this, the licensable storage capacity is about 10 - 15% of total grain production, constraining the potential volume of trade that can be arranged through structured and more secure transactions;

Case Study 2: Grain Trade transport and its effect on Price - Oriental Business Links

Grain virtually travels the same path from farm to wholesale market. The grain is transported by the farmers or rural traders using rather rudimentary means – such as carts, bicycles and motor cycles – to the rural collection / buying centers. In some instances is carried by humans although this is for small volumes and only when the farm is completely inaccessible by the trader such as during rainy season when the roads and paths are impassible. The village collection in high producing areas is also done by 3 – 5 ton trucks. The cost of transport to the collection point is always factored into the farm-gate price hence the reason for these prices differing with the distance from the nearest rural trading center. For instance farm-gate prices in Luweero – for season 2 2014 were UG X. 400 – 500 whereas those in Nakaseke were UG X. 350 – 450.

From the rural collection points to the urban centers this grain is moved by trucks, normally 10 to 12 ton capacity. For the export market, the grain is normally transported by trucks, as above, but also by trailers which can load up to 28 tons. The traders added that under normal conditions it should take 2 days for a truck to move from Kampala to Nairobi. Border clearance time is rather fast – about 1- 2 hours maximum. Because there is no export and import duty levied between Uganda and Kenya, customs authorities are mostly concerned with export documentation which is easy to process – the cross-border traders indicated. Experience is quite similar in Bunagana and Katuna for DR Congo and Rwanda, respectively.

With the abundance of trucks, the hire rates are largely based on the competitiveness factors. However, the critical hire cost driver is fuel. Roads from many of the rural centers have progressively improved – although still marram. Roads between major towns are tarmac (all-weather roads) and therefore easier to transverse.

Illustrated, the cost of moving 10 tons of maize from Masindi to Kampala is UG X. 600,000 which translates to UG X. 60 per kilo whilst that of moving from the same quantity from Jinja to Busia. The 10T truck (6-axle truck commonly referred to as ‘fighter’) is preferred over the 12T truck option (10-axle) because of the overall transport cost per ton and the axle-limits set by UNRA making the latter more expensive. The cost of moving ten (10) tons (fighter) from Kampala to Kigali is estimated at UG X. 1,200,000 equivalent to US\$ 370⁷ and translates to US \$ 0.036 per kilo. Transporting maize from Kampala to Nairobi is normally by trailers making a return trip to Nairobi through or from Kampala. Their carrying capacity – considering the UNRA axle load limitations – is approximately 28 tons. These transporters charge between US\$ 2,500 to US\$ 3,000 and this translates to US\$ 0.107 excluding levies and any other costs such as loading and off-loading.

Cost Item	Acholi Region (UG. X. / kg.)	Lango (UG. X. / kg.)
<i>Bagging / sacks</i>	2.0	2.0
<i>Loading</i>	10.2	10.2
<i>Transport to Urban Centre</i>	30.6	30.6
<i>Taxes – Municipal Fees</i>	20.4	20.4
<i>Trader’s Margin</i>	184.3	184.3
<i>Drying</i>	3.4	3.4
<i>Milling</i>	105.1	105.1
<i>Transport to Kampala</i>	58.0	49.0
<i>Wholesale Margin</i>	74.0	74.0
Total Cost	413.7	404.7

Table 7: Estimated market access cost of rice between farm gate and wholesale market – Source: ((FAO), 2012)

The information is complemented by Baususu International, a general agricultural produce exporter to the region and EU

6.1.5 The Quality Challenge

Although the challenges focused on relate to logistics, the issue of quality needs to be highlighted as we conclude. Uganda’s grain is largely presumed to be sub-standard, owing to the low level of conformity with and compliance to the grain standard. The EAC maize grain standard remains largely un-adopted in Uganda, due to low awareness and appreciation

⁷ Obtained through a market survey conducted in Kampala in July 2015. Exchange rate US\$/UG X. 3,500

amongst the key value chain actors – producers and traders. Poor harvesting, rudimentary post-harvest handling and inadequate storage at the household not only cause losses but negatively impacts on the quality of grain that reaches the market. For example, most of the maize from Uganda imported into Kenya is considered to be animal feed grade – though they may quite often end up using it for human food. Kenya also still requires Ugandan maize to undergo an extra PhytoSanitary check by KEPHIS, in addition to the PhytoSanitary certificate issued by Ministry of Agriculture.

6.1.6 Value addition Limitations

As earlier observed under the processing level of the value chain, low capacity of the current processing equipment (*made from scrap metal*), poor technologies applied and limited research continue to be major limitations towards value addition. The milling activities of the processors are need-based and are scattered in the various rural trading centers in the producing districts. There are no incentives here neither on the part of the processors nor on the consumers to encourage vertical progression towards high value products such as fortified foods, breakfast cereal etc.

The problem seems to stem from low knowledge bases, low adoption rates of technology and fear of market based risks as processors have tended to focus on current consumption patterns, largely around maize flour and bread in the case of maize.

6.1.7 Poor weather Forecasts and their effect on Logistics

Several value chain actors especially traders and institutional consumers such as World Food Program have pointed to poor weather forecasting mechanisms as having adversely affected production, post-harvest handling, transportation and marketing difficulties for cereal Grains.

Effects have been highlighted on reduced volumes due to flooding. Effects have also been highlighted on quality – yellowing and rotting. Prices have also been affected. Traders in particular highlighted failure to meet demand deadlines. While weather situations may be far beyond the scope of transport logistics improvement plan, value chain actors believe minimal interventions towards improving meteorological equipment and technologies will be useful to improve the trade aspects of the Value chain.

7 Proposals for Overcoming Logistical challenges

7.1 Continuous road infrastructure development

The most critical logistical factor is the poor transport infrastructure in the major cereal grain producing areas. This deters even distribution of the grain between the deficit and surplus areas so as to create a relatively even domestic market. As much as roads between major rural centers are increasingly being tarmac, there is need to extend this work to the rural roads. This will cut the costs of the traders – relating to collecting the farm stocks – and this will cause better real income to the producer. This will also enable the domestic market to grow as the inaccessible deficit areas become reachable. It will also reduce spillage and other grain loss occasioned by delays in transportation, truck breakdown, and poor means of transport. With the increasing tarmac on the main highways, attention will turn to more regular maintenance of the rural marram roads.

7.2 Development of Alternative Transport Systems

Road transport is heavily pegged on volatile fuel prices therefore remains relatively costly. This makes the costs of doing business (grain business) high. That is why it's relevant to have cost-effective alternatives, which for the case of Uganda is rail transport. Grain trade in the 1970s and 1980s depended a lot on rail infrastructure due its bulk and relative durability. It's therefore valid to expect reduction in the direct logistical costs. Another benefit is the ability to move more volumes at a time – breaking the volume barrier set by the truck capacity and the UNRA axle-limit policies. This makes the per-unit cost lower. Work could start with reactivating the existing ravage lines and then extend the network gradually. Rail establishment will also benefit regional trade in regards to long haulage costs.

7.3 Creation of structured grain storage system and infrastructure

Due to the current challenges in the country's infrastructural development and the limited capacity and/or capability of rural producer households to handle grain efficiently, there is need to create an elaborate grain handling system in the country. A 2007 World Bank study estimated that \$4 billion in post-harvest losses is experienced in sub-Saharan Africa and this is equivalent to the annual calorific requirements of 48 million people. It is important to support public-private partnerships (PPPs) in cereal grain storage. It's also vital to invest in the development of well-maintained modern silos to offer a high degree of security against loss and quality maintenance

Models could range from Public ownership, private operation; joint ownership of asset with private operation etc. In Uganda some private sector actors are setting up processing and

storage facilities in the urban and peri-urban areas. Export Trading Company and Aponye Uganda Ltd are doing this already.

Where road networks are developed, there is need for government to invest in lower level storage infrastructure such as cribs or village level stores. The distribution systems could then be structured such as to link farm-level storages (such as cribs) to the village/sub-county level storages and then later to the mass storages of private sector or government. That way, volumes build with improving road availability and conditions. The World Food Program has good small scale examples here that could be replicated. They for example offer small silos to farmers. They are in form of plastic tanks and are voucher based. WFP has rolled out this and currently finances over 40,000 farmers country wide. The Silos are of between 1000 – 2000 liter capacity and water tight. Training is offered to farmers on how to handle the silos

7.4 Policy and Regulations

There is also need to formulate, establish and enact sufficient policies and regulations to sanitize this highly unregulated trade. Critical interest should be in areas relating handling of grain after the farm-gate. Traders have been identified as the key source of grain adulteration due to their bulking and logistical practices. The policies and regulation should also make the grain trade more transparent, clearly streamlining the role of each actor. This should especially check the activities of foreign grain traders in the country and informal trade sector. Only 20 to 30 per cent of the grain trade is recorded. The rest is presumed exported informally or lost along the value chain. To develop the grain trade further government will require accurate data, control points and structured trading. This will also encourage investment in the sectors. Currently, foreign investors – in value-addition – look at Uganda's grain supply as inconsistent and unsustainable thus not suitable for the targeted investment.

7.5 Information Systems Infrastructure

Attention should be paid to infrastructure and logistics for weather information forecasting. It was observed that bad weather forecasting affects collection and trade in many ways. Vehicles get stuck in bad roads and cereals get spoilt when weather information forecasts are not accurate. It is therefore important that interventions are made focusing on better metrology equipment and data generation as important logistics to guide good planning.

7.6 Value addition factors

Critical factors for value addition relate mainly to the transfer of developed technologies to processors in the country and offering training and research to enable the effective application of these technologies. These technologies could focus on improving value addition activities at farmer level as well as large scale processors. For example support could

be extended towards designing rubber Sheller for de-hulling at household level. Programs can also be designed to support the multiplication and distribution of such de-hulling machines to many rural farmers.

More technological support can also be extended towards post-harvest processing units of cereals. High quality de-stoners, graders and mills are critically important in cereal growing areas especially in key trading centers highlighted in the production and trading maps earlier on presented.

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**REPORT ON
VALUE CHAIN ANALYSIS OF
UGANDA PETROLEUM OILS**

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Old Port Bell Road, Kampala**

SEPTEMBER 2015

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GLOSSARY

1. API American Petroleum Institute
2. BOPD Barrels of oil per day
3. BPD Barrels per day
4. BTVET Business, Technical and Vocational Education and Training
5. CNOOC China National Offshore Oil Corporation
6. E&P Exploration and Production
7. EAC East African Community
8. ECGD Export Credit Guarantee Department
9. GVC Global Value Chain
10. KFDA Kingfisher Development Area
11. Mb/d Million Barrels per day
12. MEMD Ministry of Energy and Mineral Development
13. MoWT Ministry of Works and Transport
14. OECD Organization of Economic Cooperation and Development
15. OECD Organization for Economic Cooperation and Development
16. PEPD Petroleum Exploration and Production Department
17. R&D Research and Development
18. WOID World Input-Output Database

EXECUTIVE SUMMARY

Uganda discovered commercial petroleum resources in its Albertine graben in 2006. The country so far has an estimated 6.5 billion barrels of oil resources of which 1.4 billion barrels can be recoverable. Uganda government policy is to add value to its petroleum resources through refining in order to attain maximum benefit for its people.

Although Uganda is currently a net importer of crude and refined petroleum products, this situation is likely to change by the year 2022. Government plans to establish a 60,000 barrels of oil per day refinery in Hoima. Uganda is in final negotiations with the best preferred bidder RT Global on establishment of the refinery in the country. The refinery will first meet the products demands of Uganda currently at 27,000 barrels of petroleum products per day before expanding to meet the demand in Rwanda, Eastern Democratic Republic of Congo, South Sudan and Burundi. Depending on whether more resources are found in Uganda, this refinery will be expanded to meet the demand from Eastern Kenya and Northern Tanzania.

There are three International Oil companies operating in the country namely; Tullow Uganda Operations Pty Ltd, Total E&P B.V Ltd and China National Offshore Oil Corporation Uganda Ltd that have expressed interest in developing 17 of the 21 petroleum discoveries made in the country however major hurdles ranging from logistical, infrastructural and manpower seem to stand in the way of Uganda exploiting fully her petroleum resources.

The existing road and railway infrastructure cannot support the development of the sector. Although government earmarked five roads as critical to the development of the oil and gas sector, only one has been completed, the Hoima-Kaiso Tonya road. The remaining roads are still at preliminary stages of development. In addition there are other important roads such as Malaba to Kampala, Kampala to Hoima which have not been widened to the level that can support oil and gas operations especially transportation of wide cargo. Construction of all earmarked roads needs a total of US \$194m.

1 INTRODUCTION

In 2006, Uganda moved from being a frontier basin for petroleum to being a province with proven commercial petroleum resources. The country has so far an estimated 6.5 billion barrels of Stank Oil initially in place; 1.4 billion of which is estimated to be recoverable. The first contribution to the evaluation of the country's hydrocarbon potential was by E. J Wayland, a Government geologist, who documented numerous hydrocarbon occurrences in the Albertine Graben in the 1920's.

Since then, oil exploration activities continued until 1938, when the first deep well, Waki-1B well was drilled by the African-European Investment Company. Oil exploration activities were halted during the Second World War and not much was done throughout the post-independence era since Uganda during that time was characterized by political uncertainty which does not favor petroleum investment. Consistent efforts started in the early 1980s with the acquisition of aeromagnetic data across the entire Albertine Graben and the subsequent follow up of ground geophysical and geological work in the late 1980's and 1990's. Seismic data was first acquired in the Graben during 1998 and several surveys have been undertaken to date. A total of 120 wells have been drilled from 2002 to date and more are planned during the Development Phase to enable the production of oil.

Uganda has six sedimentary basins namely the Albertine Graben, Hoima Basin, Lake Kyoga Basin, Lake Wamala Basin, Kadam-Moroto Basin and Lake Victoria Basin), the Albertine Graben is so far the most prospective area for petroleum in Uganda. It forms the northern most part of the western arm of the East African Rift Valley System, 500 km long, averaging 45 km wide and 23,000 sq km in Uganda. It runs along Uganda's western border with the Democratic Republic of Congo, a distance of 1,300 Km from the nearest coast.

Uganda's national vision 2040 recognizes petroleum as one of the key fundamentals for the future alongside infrastructure, science, information technology, tourism, peace and security among others. To be specific, the oil industry has benefits including; increased foreign exchange, Foreign Direct Investment (as of 2014, investments in the sector were US \$ 2.8billion), technology transfer, local and national participation, Gross Domestic Product Growth, direct jobs, indirect work and enterprise development all of which will certainly lead to net wealth gain for the country. Dr. Clarke (2014) estimates that for every US\$10 capital investment in the exploration phase, it results into \$90 revenue flow and this has a wealth effect of 50 times plus multiple indirect economic

benefits. It is therefore anticipated that petroleum revenues will substantially contribute to the financing of vision 2040.

Uganda's National Oil and Gas Policy indicates that petroleum resources will be utilized to contribute to early eradication of poverty as well as creating lasting value to society. The Oil and Gas Revenue Management Policy states that government will continue to focus on infrastructure investments such as transport, energy and ICT as the key growth drivers. The policy notes that these investments will require substantial resources for which oil and gas revenues will contribute to their financing. It must be noted that wherever the oil and gas industry sets root, it acts as a stimulant to other businesses often enabling them to grow and expand into new business frontiers. The oil industry has great and positive ripple effects in the local community if they are well prepared to tap into the business opportunities that come with the industry.

This value chain study on the petroleum was done as part of a broader multi-commodity study to inform the design of a master plan on logistics for the Northern Economic Corridor (NEC).

1.1 OBJECTIVES OF THE PETROLEUM VALUE CHAIN ANALYSIS

- a. Estimate the size of export markets for petroleum oils produced in Uganda, identify any gaps in meeting export market demands and suggest measures that should be taken to close those gaps.
- b. Map out the processes and stakeholders in the value chain in order to identify key actors and geographical nodes that provide entry points for developing the chain.
- c. Study the critical factors to higher value addition and development of the chain, and what should be done to address those factors.
- d. Identify critical issues regarding logistics infrastructure for the development of petroleum oils along the Northern Economic Corridor.

2 PETROLEUM VALUE CHAIN STRUCTURE AND CHARACTERISTICS

Oil and gas are important fossil fuels formed from the decomposition and pressurization of algae, plankton and other organisms. This process forms hydrocarbons, which are compounds consisting entirely of hydrogen and carbon that are powerful combustible fuels. The petroleum industry involves a range of different activities and processes which are necessary to turn the petroleum into end products that can be utilized by industrial and individual customers. The different processes are greatly interlinked. There are situations where one company operates all the processes while in another instance one company operates one process in different regions and countries. For instance Total S.A is a global oil company which has integrated itself in all the segments of the petroleum value chain. It undertakes works in the upstream segment, has refineries and also downstream installations such as petrol stations even in Uganda.

The petroleum industry can be segmented alongside three phases namely, the Upstream, Midstream and Downstream phase. The value chain analysis, as popularized by Porter (1985), investigates the sequence of consecutive activities which are required to bring a product or service from conception and procurement, through the different phases of production and distribution, to the final customer.

2.1 THE UPSTREAM SEGMENT

Upstream segment is characterized by mapping out potential areas for oil exploration, licensing, exploration, development, production and decommissioning. During this period there are a number of supporting services in the Exploration and Production process that are needed which include; seismic surveys, well drilling, equipment supply or engineering projects as well as maintenance services. This exploration work commenced since the 1920s but consistent efforts were during the 1980's to the current date. Government personnel have been very instrumental in mapping the possible areas with petroleum potential (petroleum prospects) which upon acquisition of more data such as seismic and drilling turned into oil discoveries. Several companies have been licensed to undertake petroleum exploration in Uganda but currently there are only three licensed companies. These are Tullow Uganda Operations Pty Ltd, Total E&P B.V Ltd and China National Offshore Oil Corporation Uganda Ltd. These three companies are Joint Venture Partners in Exploration Area 1 and 1A situated in Nwoya, Exploration Area 2 (situated in Buliisa and Hoima) and the Kingfisher Development Area (KFDA) in Hoima. There is only one production license issued over

the KFDA which is operated by CNOOC Uganda Ltd. This company is undertaking all the necessary preparation to develop the field to produce oil to feed the refinery as well as for export.

2.2 THE MIDSTREAM SEGMENT

Midstream segment involves transportation, refining and gas processing which basically means adding value to the petroleum resources and turning them into usable products by both industry and private individuals/final customers. In Uganda this segment is yet to start after government successfully undertaking a feasibility study for the establishment of a refinery in the country. The study confirmed that a refinery in Uganda was profitable with post tax rate of return of over 30% and a payback period of less than 4 years at 60,000 bopd. The study recommended a modular development of the refinery to be scaled up to match the growing regional petroleum products demand. Government is finalizing negotiations with RT Global Resources on establishing a refinery and a petroleum products pipeline to the Buloba terminal near Kampala. The refinery will be constructed in a phased manner starting with 30,000 barrels of oil per day to be upgraded to 60,000 bopd in two years' time.

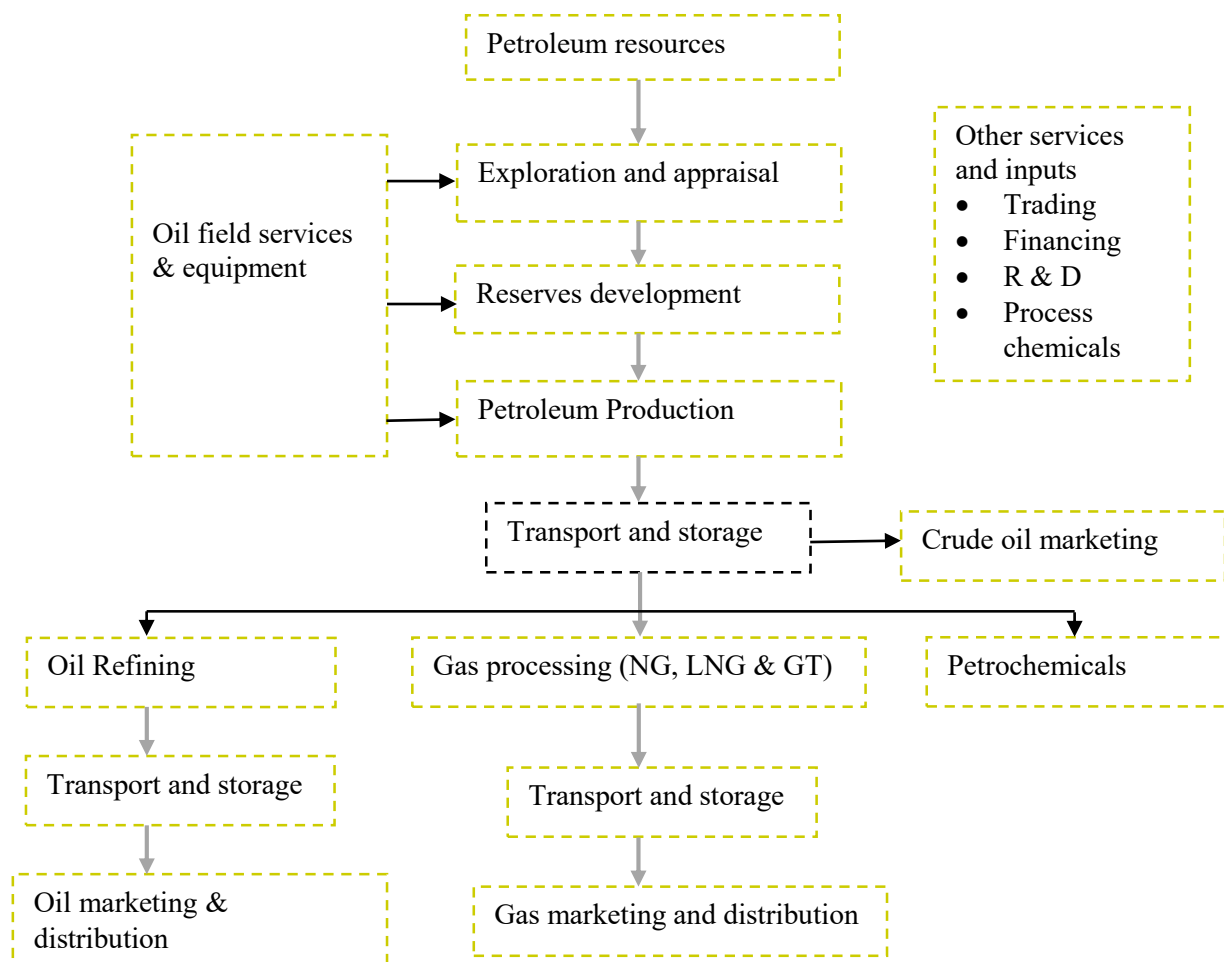
This segment also involves the bulk transportation of petroleum products to a distribution terminal. It is important to note that this phase offers a lot of opportunities to the nationals of a given country as they participate in goods and service provision and also the phase offers a lot of raw material for the petrochemical industries that come as a result of the refinery. These certainly have potential to lead to the growth of an export industry in the plastics, solvents, detergents and adhesives resulting from aromatics while olefins will be used as the basis for polymers and oligomers used in the manufacture of plastics, resins, fibers, elastomers, lubricants and gels. These products can be used to supply the local Ugandan market as well as the regional market hence an opportunity for export.

2.3 THE DOWNSTREAM SEGMENT

Downstream deals with marketing, distribution and sale of petroleum products. This part of the industry is quite old in the country and there are currently so many petroleum products dealers including Vivo Energy, Total, Hass, Petro Uganda and City Oil Ltd among others. There are over 900 petroleum products outlets. Uganda currently is a net importer of its petroleum products but as government policy directs, this will soon change once the refinery comes on board.

Value chain in the oil and gas sector basically means the time from when petroleum resources are discovered up to the time they are used by industry or private users. The different processes that Uganda petroleum is likely to go through until it reaches its final user can be summarized in the diagram below:

Figure 1: Planned Structure of Uganda’s Petroleum Oil Value Chain



2.4 GEOGRAPHICAL DISTRIBUTION OF PETROLEUM RESOURCES

Oil resources in Uganda have been discovered in the Albertine Graben which lies in the western part of the country. The Albertine Graben is approximately 500 km long, averaging 45 km wide and 23,000 sq km in Uganda. It borders with the Democratic Republic of Congo. In Uganda it stretches from Ishasha in Kanungu district and terminates at Nimule, on Uganda’s border with South Sudan. A map showing the areas where petroleum resources have been discovered is attached in Annex 1.

2.5 VALUE ADDITION PROCESSES

The petroleum value chain basically starts with identification of the suitable areas for petroleum exploration. Following successful exploration, oil discoveries are then appraised, developed and produced. This is what is referred to as the lateral value addition process. Following production of petroleum, a country can choose to export it in its crude form after separating it from impurities such as sand, water and gas through a stabilization process or further still, this stabilized crude can be refined so that the country can get petroleum products and therefore more value from its resources.

In the case of Uganda a 60,000 bopd refinery is going to be established in Kabaale in Hoima district in Western Uganda close to where the petroleum resources have been discovered. There are also plans for exporting crude oil from Uganda, South Sudan and Northern Kenya through an export pipeline. M/s. Toyota Tsusho was hired by the Governments of Kenya, Rwanda and Uganda to undertake a feasibility study and preliminary engineering design for the Hoima-Lokichar-Lamu Crude Oil Pipeline Project. On 10th August, 2015 a joint Communique from the Presidents of Kenya and Uganda stated that the Hoima-Lokichar-Lamu route had been agreed upon subject to the Government of Kenya guaranteeing the following:

- Security on the Kenya side of the pipeline
- Financing of the Project
- Transit fees/Tariffs in any case not higher than would be payable on an alternative route
- Implementation of the Project without further delay.

It is proposed that a multipurpose petroleum products pipeline will be constructed with a terminal at Buloba and thereafter a pipeline to Rwanda through Western Uganda. However there is a proposed mini terminal in Mbarara to serve the petroleum needs of the districts in Western Uganda to avoid too much trucking to Buloba. The two other possible routes being evaluated are; from Hoima through Eldoret and then to Mombasa estimated to be about 1300km as well as the southern route to Dar-es-Salaam estimated to be about 1950km. Mr. Ernest Rubondo, the Director of Petroleum in the Ministry of Energy and Mineral Development says the Southern route is being evaluated as an alternate to the one agreed upon by the Heads of state. This he says is to establish figures upon which to compare the tariffs that would be offered by Kenya to ensure that the least cost and safer route is chosen to commercialize Uganda's oil resources.

Figure 2: Proposed Route for the Petroleum Products Pipeline



Source: PEPD-MEMD

2.6 KEY ACTORS AND THEIR ROLES

As mentioned earlier in this report, the petroleum sector has several value chain actors each with their different roles as highlighted below.

- a. **The Ministry of Energy and Mineral Development**, is largely responsible for effectively undertaking policy development, monitoring and evaluation in the sector. Specific functions are to; undertake licensing, promote the country's petroleum potential to investors, data acquisition, initiating, developing and implementing oil and gas policy, submitting draft legislation to parliament as well as issuing petroleum regulations. The ministry is also charged with approving Field Development Plans and disseminating information related to oil and gas activities among others.
- b. **The Petroleum Authority of Uganda (PAU)**; once it is established will be in charge of regulating the different players in the sector. Specifically it is mandated to monitor and regulate petroleum operations, monitoring expenditure on licenses, assessing plans for field development, assessing tail-end production and abandonment, ascertaining cost oil due to licensees among others.

- c. **The National Oil Company of Uganda;** this will be largely responsible for handling the state commercial interests in the sector, marketing the country's share of oil and gas received in kind among others.

- d. **Oil Companies:** there are three companies licensed to explore oil, namely: Tullow Uganda Operations Pty Ltd, Total E&P B.V Ltd and China National Offshore Oil Corporation Uganda Ltd (CNOOC). These three companies are Joint Venture Partners in Exploration Area 1 and 1A situated in Nwoya, Exploration Area 2 (situated in Buliisa and Hoima) and the Kingfisher Development Area (KFDA) in Hoima. Licensed companies are expected to drill over 700 production wells in Uganda during the development phase. There is only one production license issued over the KFDA which is operated by CNOOC Uganda Ltd. This is the company undertaking preparation to develop the field to produce oil to feed the refinery as well as for export. Exploration stage includes seismic data acquisition, geophysical and geological operations, while production operations are preceded by field development activities that include drilling production wells, constructing central processing facilities, feeder pipelines, storage and engineering and eventually production.

2.7 HARD AND SOFT LOGISTICS

2.7.1 Tax Regime

Uganda has put in place a favorable tax regime to favor investors in the oil and gas industry. For instance Uganda's Parliament amended the Value Added Tax (VAT) Act to allow international Oil Companies to register for VAT which enables them to obtain relief from VAT payable on goods and services supplied to them during exploration and development phases. The government also has reduced the withholding tax from 15% to 10% that the oil companies pay. These soft logistics serve to reduce the burden from the oil companies in this highly-capital intensive sector.

2.7.2 Road Transport

The main method of transporting petroleum products in Uganda is by road tankers. These pick the products from Eldoret to the different storage facilities owned by different fuel dealers in the country. Transportation by road adds to traffic congestion; and the potential

for accidents and associated safety, security and environmental risks do not favor this transportation option as a long-term solution for the transportation of petroleum products.

The Ministry of Works and Transport together with that of Energy and Mineral Development have identified critical roads that must be established in order to quickly aid oil production. These include Upgrading Hoima-Butiaba-Wanseko (\$100M): work is in progress; Karugutu-Ntoroko (\$42M), upgrading Kabwoya-Buhuka (\$41M) as well as upgrading Buliisa-Paraa (\$20M). Financing for these roads is expected to be got from Export Credit facilities such as the Export Credit Guarantee Department (ECGD) of the United Kingdom since they are more feasible and can be realised within 3 months. The required funds from ECGD amounts to GBP 145 million. At the time of writing this report, the Minister of Finance Planning and Economic Development had presented a request for loan approval from the Ugandan Parliament. However it is important that this financing is obtained as quickly as possible, since they have a great impact on delivery of first oil.

2.7.3 Railway

Uganda also lacks a modern rail system that can be utilized for petroleum exportation. Although there are plans to revive railway transportation in Uganda it may only be useful as far as transportation of materials to be used in the exploration and production activities rather than export of crude or petroleum products. The Ministry of Works and Transport has increased the capacity of Tororo-Packwach line to 1,000,000 tonnes per year although it is envisaged that peak demand during oil activities might reach 250,000 tonnes per year. However, MoWT and the Uganda Railway Corporation need to procure trans-shipment facilities at Packwach (to road and inland water). A total of USD 224m is needed for railway transportation.

2.7.4 Airport Development

As part of the refinery development, Uganda plans to construct an international airport in Hoima to ease transportation of bulky and sensitive units needed for the refinery. The construction of this airport is being taken forward by the Civil Aviation Authority of Uganda in conjunction with the International Civil Aviation Organization. The estimated cost of providing an international airport with a 3000m runway is USD 210 Million, including design. Construction of this airport is scheduled to start in financial year 2015/16 and the

first phase should be completed by December 2016, providing runway, associated taxiways and apron, 1st phase of terminal building, control tower and a cargo centre.

2.7.5 Storage Facilities

In terms of storage, there is a government-owned petroleum terminal in Jinja, which was built to serve as a strategic storage facility. It is operated by the private sector as a commercial petroleum tank terminal. It has capacity to store 30 million liters of petroleum products. In addition to this, there are several planned storage facilities planned in the country. These are:

- a 480,000 barrels crude oil storage capacity and at the same time a products capacity of 780,000 barrels at the refinery site in Hoima.
- The terminal at Buloba is proposed to have a capacity of 1,920,000 barrels
- The Mbarara storage unit will have capacity of 190,000 barrels of petroleum products.

These storage facilities are based on the assumption that at peak production Uganda will produce 200,000 barrels of crude oil. However these will be insufficient if more resources are found and the production profile increases.

3 CRITICAL FACTORS FOR PROMOTING HIGHER VALUE ADDITION

3.1 SINGLE PRODUCTION LICENSE

Uganda's Petroleum industry is relatively a new industry with most of the initiatives undertaken being to ensure optimum production and maximizing benefits to the country. The development of the industry is in initial stages with so far one production license issued over the Kingfisher Development Area (KFDA) to China National Offshore Oil Corporation (CNOOC). Other operators; Tullow Oil Uganda and Total E&P have submitted field development plans for production licenses to be issued and therefore have not moved a step ahead in terms of putting in place the necessary infrastructure to facilitate production. Whereas the industry looks set on a transitional course from exploration to development in preparation for production, a number of factors remain critical for the development phase to be successfully undertaken.

3.2 INFRASTRUCTURE

Value addition to Uganda's crude oil resources is a critical factor as rightly recognized in the country's National Oil and Gas Policy. The policy calls for adding value to crude resources through refining. In this respect, an in-country Greenfield refinery is planned to be developed at Kabaale, Buseruka in Hoima District. However, the development of the refinery requires other infrastructure (such as an airport) to support the refinery especially during construction stage because of the relatively big units that cannot be transported by road and necessitate that an airport be developed before construction commences. As at the time of this report, government was just initiating the process of developing a master plan for the airport.

Oil and gas operations in Uganda are in remote areas with no power supply and other facilities such as accommodation as well as basic social infrastructure. The absence of these facilities makes the cost of operation expensive which negatively impact on the operators by increasing operation costs. This increase in operation costs is subsequently carried forward by operators as recoverable cost which in turn impacts on the government take at production. Therefore development of the necessary basic infrastructure is of critical importance as the country prepares for the next phase of the petroleum value chain.

Uganda is landlocked with all oil operations being onshore. This poses serious logistical challenges as the country has to import all required equipment through Kenya which has a port at Mombasa. This puts Uganda at a disadvantage as some of the heavy equipment may not be easily transported

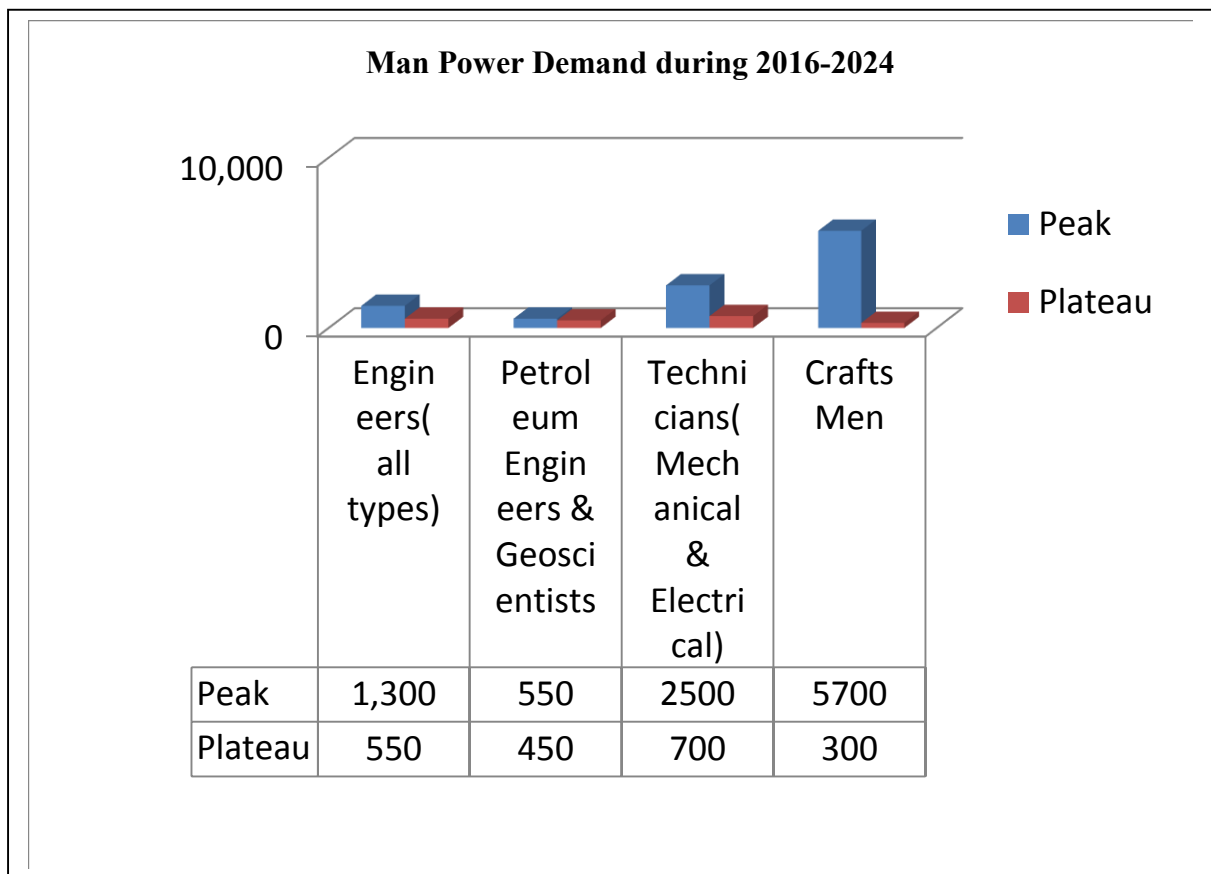
by road to areas of operations without causing inconveniences to other road users from the coast to the areas of operation. Additionally, the existing road infrastructure in both Kenya and Uganda isn't designed to carry huge loads and therefore they are narrow and cannot accommodate some of the equipment on the basis of their carrying capacity. This will continue to limit access to some markets, limiting Uganda's petroleum oil to her traditional export destinations with limited in take capacity. Therefore efforts to widen the roads will cure this infrastructural problem.

3.3 NATURE OF CRUDE OIL

Among the hurdles that must be faced and addressed is the fact that Uganda's crude oil is waxy and therefore requires to be heated at specific intervals. This is a challenge as the crude needs to be kept in flowing form in order to transport it easily from the fields through feeder pipelines and to the Indian Ocean coast in Mombasa through an export pipeline. Therefore, there is need for heating technology to enable the crude to be transported.

3.4 SKILLS GAPS

The petroleum value chain will depend critically upon competence and competitiveness in the performance of specific tasks, and ultimately upon the education and skills of the workforce and its entrepreneurs (OECD, 2013). Participation and upgrading within value chains requires investment in innovation and knowledge-based capital, such as research and development (R&D), intellectual property, software, and data, as well as economic competencies such as organizational know-how and branding. It is projected that Uganda will require 1,300 engineers at peak and 550 at plateau. The number of required manpower increases drastically for mechanical and electrical technicians and craftsmen at peak. Below is an illustration of the projected requirement for manpower by the industry.



Therefore, from the industry projections, the estimated required number of manpower does not seem to be available on the local market which may necessitate importation of some manpower in order to sustain the requirements. In recognition of this challenge, different training institutions both government and private have introduced petroleum geoscience courses at bachelor and masters level. Uganda Petroleum Institute in Kigumba provides the much needed technical training though to a small number of people. Government of Uganda through the Ministry of Education Science, Technology and Sports has developed a Business, Technical and Vocational Education and Training (BTVET) Strategic Plan dubbed skilling Uganda. Whereas these measures in no way help providing an immediate solution, it is a sure way for providing sustainable long term solutions. However, time is of great essence and the implementation of the strategic plan could take many years yet the development of the resource cannot wait.

3.5 ENVIRONMENTAL FACTORS

Oil and gas found in Uganda are in an ecologically sensitive area. This poses a challenge of the need to balance between the development of the oil industry and protecting the environment. Some activities in Exploration Area 1 and 1A are in Murchison Falls National Park where there is a

budding tourism industry which is one of Uganda's biggest major foreign exchange earner. Measures must be undertaken to ensure the co-existence of both industries without such measures being too costly as to make the petroleum production a very expensive and non-economical venture.

3.6 GEOPOLITICS AND SECURITY

The petroleum industry is an expensive venture that most developing countries choose to approach with neighbors. This is the same development model that Uganda has adopted for oil and gas. The challenge is that each country has its priorities and the process of aligning such with regional pursuits is bureaucratic, thus affecting timelines and discouraging investments. The export crude pipeline will have to cross countries making it more reliant on the geopolitics of the region, for instance, crude from Uganda must either go through Kenya or Tanzania. The development of this crude export pipeline must therefore pay attention to a number of aspects including legal, commercial and political and security considerations. Examples of such international crude export pipelines exist and in such instances each country develops the segment within its territory. Then each country operates, manages and maintains its own segment so that its specific issues can be adequately addressed. However, it should be noted that there are also international pipeline companies that construct and operate international pipelines. Therefore the three countries will decide on which mode to use after a feasibility study is conducted.

There is also a challenge of security of installations. Uganda and Kenya have been attacked and remain targets for terrorist groups particularly the Al-Shabaab from Somalia. This group poses a threat to oil and gas installations in the two countries owing to the fact that they can blow pipelines as well as oilfields or the refinery. Additionally, Uganda still faces threats from the Allied Democratic Front (ADF) operating in the eastern Democratic Republic of Congo. The presence of such a rebel group remains a security concern to the industry. The challenge was recently tested by the civil war in Southern Sudan that cut off the successful trade relations between the two countries. This underscores the importance of regional security as the country moves towards the production stage.

4 END MARKET ANALYSIS

4.1 GLOBAL MARKET OVERVIEW

The oil and gas industry is a driving force for development of technology, business and industry throughout the world. Oil dominated the world energy mix after the Second World War, with the Organization for Economic Cooperation and Development (OECD) accounting for 60–70 per cent of world oil consumption. Total and per capita energy consumption was much lower in the developing countries throughout this period, although this trend is now beginning to change.

International Energy Agency forecasts that global trade in crude petroleum oils will drop to 32.4 Million barrels a day by 2018, down 0.9 Million Barrels per day from 2012. But at the same time, rising trade in refined products will more than offset falling crude trade. Statistics put the value of trade in refined petroleum oils at US\$ 906 Billion as at 2014 and growing at an annual average of 7 per cent over the last 5 years. Trade in crude oils on the other hand is currently valued at US\$ 1.517 Trillion and growing at a slower rate of 4 per cent per annum over the last 5 years. Crude oil quantities traded have, on a year-to-year, basis been falling at -1 per cent per annum on average vis-à-vis a growth of similar magnitude (1 per cent) in volumes of refined petroleum oils traded worldwide. Therefore the forecast is largely accurate.

The OPEC 2014-2040 outlook states that globally, oil demand is expected to increase by just over 21 million barrels per day (mb/d) during the period 2013–2040, reaching 111.1 mb/d by 2040. In this, developing countries alone will account for growth of 28 mb/d. During the same period, demand in the OECD will fall by over 7 mb/d. However, although their aggregate demand is expected to have surpassed that of the OECD in the second half of 2014, per capita oil use will remain much lower in developing countries than in the OECD.

Currently, oil accounts for around 40 per cent of the world energy mix. This is because it is easily accessible, has many uses, it is sufficient, easy to transport as well as its low cost. Due to technology advancement, oil has been made a cleaner, safer and more efficient fuel. Oil is needed to facilitate several industries especially manufacturing, energy and transportation.

4.2 REGIONAL MARKET TRENDS

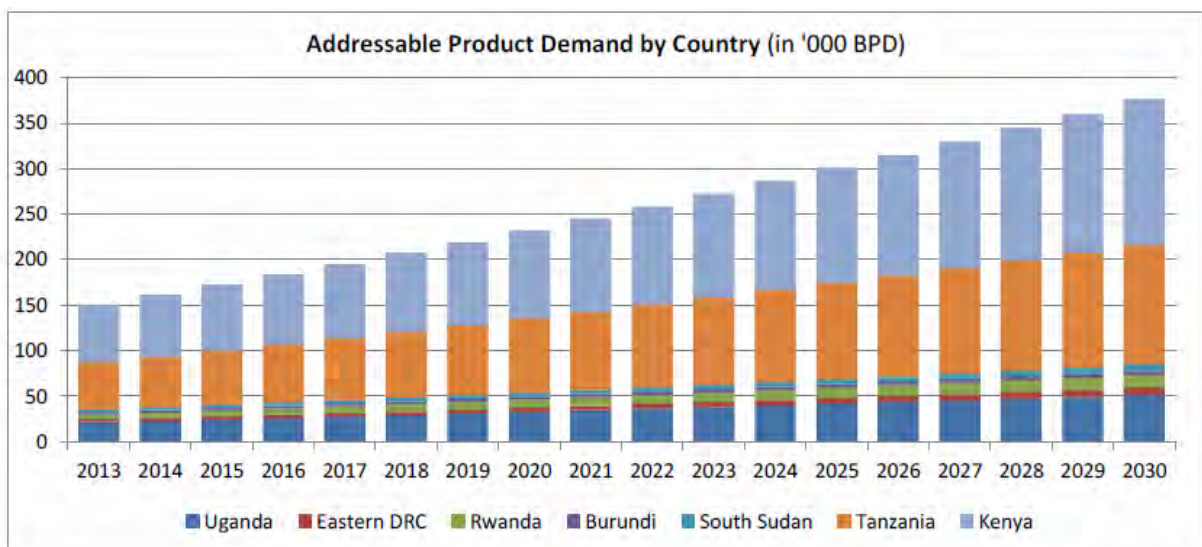
Regionally, the East African Community is a new frontier area for oil exploration. Kenya has found oil in its Turkana region while Tanzania has found gas resources in its Songo Songo province and Mnazi Bay. Rwanda and Burundi are also undertaking serious exploration activities with Rwanda searching for petroleum resources in its Lake Kivu basin while Burundi is prospecting for oil resources in the Lake Tanganyika Basin as well as the plain of Ruzizi. It is estimated that the region has about 140 billion barrels of oil resources waiting to be explored and produced.

Uganda is a net importer of refined petroleum products, re-exporting about 11% (by value) to the Democratic Republic of Congo, Sudan and Rwanda. The national target is that petroleum production will satisfy in-country consumption demands first, while the surplus will be exported, both crude and refined petroleum oil. It is anticipated that imports will drop with some of the petroleum demands covered by internal production and refining. Also a transit point for direct imports into these countries amidst downfall in oil prices creating uncertainty on the future of Uganda industry growth, Uganda oil and gas market is experiencing major changes in new project development, consumption patterns and market scenario amidst rapidly shifting global dynamics. Prices of the various fuel products differ from one region to another – with price volatility depending on factors unique to the region and influenced by global market situation. Accordingly, oil and gas companies in the country are altering their strategies to cope with the changes in global markets.

Uganda's petroleum products consumption is about 27,000 bbl/day while the regional consumption is about 200,000 bbl/day with a growth rate of 6–7% p.a. It is estimated that at full scale production, Uganda will produce about 200,000 barrels of oil per day with the refinery taking on 60,000 barrels while the export crude pipeline taking the remainder. The planned storage capacities under consideration are: a 480,000 barrels crude oil storage capacity and at the same time a products capacity of 780,000 barrels. The terminal at Buloba is proposed to have a capacity of 1,920,000 barrels while the Mbarara storage unit will have capacity of 190,000 barrels.

Uganda's major export market potential for petroleum products are the neighboring countries. Much like Uganda, all these are net importers of either crude petroleum and/or the refined products. There is only one refinery in the region i.e. Kenya Petroleum Refineries in Mombasa which is no longer functional– which implies high dependence on imported fuels. Uganda's refinery will primarily serve the petroleum product markets in Uganda and its immediate neighbors to the west.

It is envisaged that additional outlets will be available within larger markets of Kenya and Tanzania and this will depend on the up scaling of the refinery as more resources are discovered. Although it is quite difficult to state in specific and exact terms what the production of oil and gas in Uganda means for the quantities of petroleum that will be exported, market economics suggests that this will, in part, depend on external demand, including whether or not those countries will have their petroleum production or not. It will also depend on what petroleum products beyond oils will be in the value chain and how such petroleum products support other product and service industries, such as plastics and agriculture.



Source: PEPD-MEMD

Whereas Uganda has established itself as a transit route to neighboring countries, the market requirements of these countries continues to rise with others also engaging in the re-export of petroleum products for example Rwanda has established significant trades heading towards the Eastern part of Democratic Republic of Congo, neighboring Burundi and some back into Uganda and Tanzania. Jet fuel, fuel oil and lubricants comprise the bulk of these re-exports. According to official statistics by the National Bank of Rwanda, petroleum re-exports have risen from 43 million kilograms in 2012 to 50 million kilograms in 2014.

On the overall, in 2014, Uganda imported refined petroleum oils worth US\$ 1.392 Billion, a surge of 9 per cent when compared against the country’s total expenditure on the same products in 2013. Asia – particularly India, South Korea and China – and the Middle East – particularly UAE, Bahrain and Saudi Arabia – were the country’s major supplying markets. India, UAE and Bahrain – in particular – supplied 56.7, 12.8 and 7 per cent of these products – by value – respectively. Up until 2022, Uganda will fundamentally remain a net importer of petroleum oils (crude and refined).

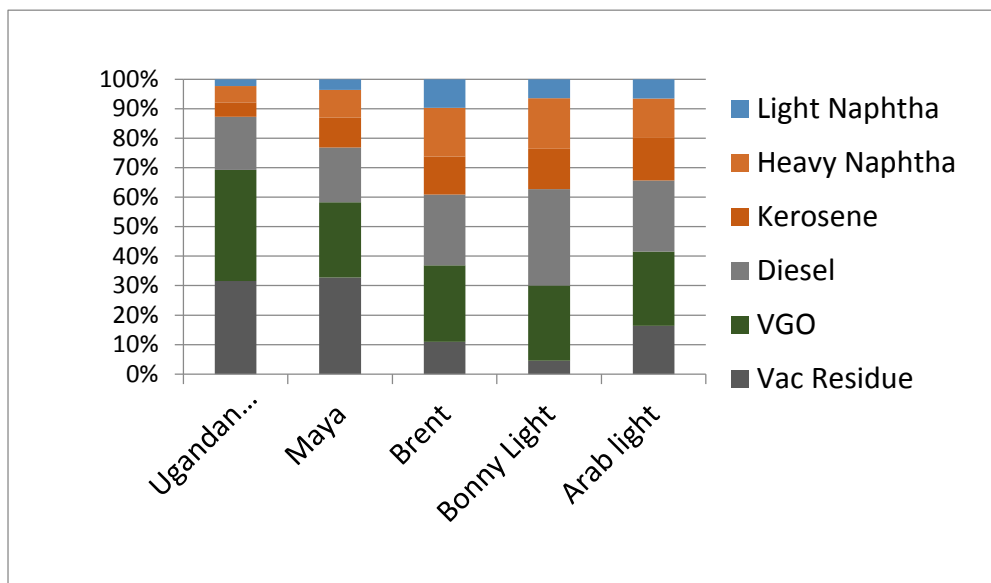
As of 2013, Uganda's consumption rate was at 27,000bpd which means that even with refinery operating in Uganda for the first phase of 30,000bopd, the products cannot meet the market requirements. The implication is that the market is bigger than the supplied products. Additionally, Uganda has significant storage challenges that largely impinge on the country's ability to have substantial products reserves making the country itself supply insecure. There is only a 30million litres storage facility in Jinja which is insufficient. Therefore, the gap between the final market requirement and commodities supplied in Uganda remains a fundamental issue as it poses serious challenges on the supply side of the chain. This speaks volumes on the existing capacity gaps as manifested in the failure to seize available opportunities by satisfying the readily assured demand for products.

4.3 GAPS IN MEETING MARKET REQUIREMENTS

Uganda faces a number of challenges that limit her ability to meet her petroleum products export market demands, including issues of accessibility to the sea, finances, nature of crude and security. The impacts of these challenges range from the country having unrealistic timelines, environmental and social impacts to delayed production.

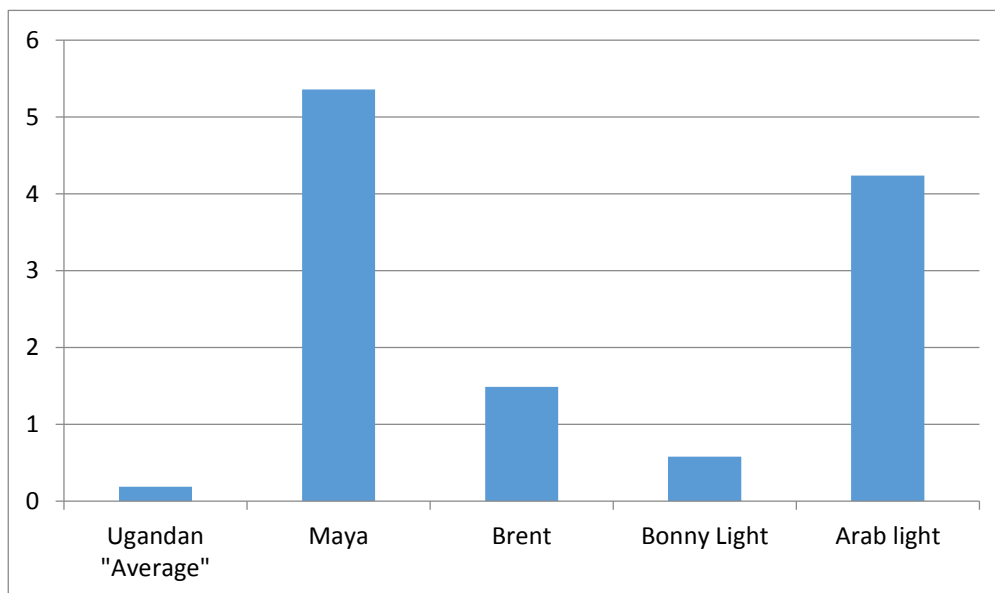
To note also, there still exist gaps between the final market requirement and commodities supplied in Uganda. Uganda has not yet started producing and exporting crude petroleum oils - as evidenced by 2014 export statistics. However, it re-exports refined petroleum oils to her neighbors including DR Congo, S. Sudan, Rwanda and the Central Africa Republic. It is also a transit point for direct imports into these countries. For DR Congo and CAR the supply routes through Uganda target the eastern parts of those countries which are far away from the sea ports on the west end/coast. Therefore this catchment area composes the market of petroleum exports from Uganda though not produced in Uganda. However, the amount of transit-products to the regional market is far less than what the market requires.

Whereas products refined in Uganda will serve to ensure security of supplies by meeting that local and regional demand, the country's crude oil is expected to be exported to the global market where it will be subjected to competition. Uganda's crude once refined is able to generate a number of products and competes favorably with selected global majors as indicated in the graph below;



Source: Refinery Feasibility Study

However, of critical importance will be value addition to achieve a considerable level of competitiveness through improved quality. The oil quality is medium - light and sweet which means it has low sulphur. The Sulphur content in Uganda's crude is 0.1 – 0.2% and API gravity 20 – 33⁰ which makes it competitive to refiners. Below is a comparison of Uganda's crude with other majors in terms of Sulphur content.



Source: Ministry of Energy and Mineral Development

5 RECOMMENDATIONS FOR PROMOTING UGANDA’S PETROLEUM PRODUCTS ALONG NORTHERN ECONOMIC CORRIDOR

5.1 MEETING REFINED AND CRUDE OIL MARKET DEMANDS

According to Vision 2040, the revenue from oil and gas will be used to kick start major infrastructure development projects to enhance the country’s competitiveness. In 2014, Uganda (re)exported fuels worth US\$ 149 Million – 2,622 tons, a trend that has been steadily growing over the past 5 years at an average rate of 18 per cent (by value) per annum. Much of these exports were light petroleum oils and preparations including petrol and diesel. With the expected production, the export of petroleum products will steadily increase but this will require the industry to be managed on a business model in a competitive manner.

Quality improvement will be achieved through having and enforcing standards along the value chain. The Uganda National Bureau of Standards is currently in the process of developing standards for oil and gas. It will be important to compare Uganda standards with those oil majors to gauge the level of contribution to the competitiveness of her petroleum resources.

In order to improve competitiveness, the country will also need to ensure adequate production volumes to meet the likely to expand regional market for petroleum products. This means among other considerations using the right technology and choosing the right private sector partners to take part in the resource development process.

5.2 KEY ACTORS AND GEOGRAPHICAL NODS PROVIDING ENTRY POINTS FOR DEVELOPMENT OF THE CHAIN

Government is a key actor here in providing a conducive investment climate to attract much needed capital in the petroleum sector.

Private sector: Licensed exploration and production companies are at the forefront of development efforts in the petroleum value chain. These and other private sector entities should identify the key infrastructure needs as highlighted in this report and take on these opportunities in order to provide a timely service to the industry. Key opportunities are in the development of roads, railway, airport, bridges, heated pipelines, storage facilities all to facilitate the development of the oil industry.

5.3 PROMOTING HIGHER VALUE ADDITION AND INTER-INDUSTRY LINKAGES

Skills development; There is an urgent need to embark on skills development to enable the country produce the much needed technicians who will provide the needed labor to the industry. Government should therefore expedite the implementation of the skilling Uganda strategic plan and attract investors in vocational education to offer the much needed training of Uganda's labor force.

Secure low cost credit: To address the challenge of finances, government should reach out to lending institutions to get the much needed funding to develop the road infrastructure. As is the case for the refinery, Government should consider getting a private investor for the pipeline project and develop it under a public private partnership.

Heating technology: Given the waxy nature of Uganda's crude oil, there is need for heating technology that keeps the crude in flowing form at least cost. However, this is most likely to render the petroleum products from Uganda less competitive because of the cost of transportation and therefore Government should commission a thorough study to bring to the surface the implications of a heated pipeline and to appraise any other possible means and their attendant costs.

Security cooperation agreements: There should be security cooperation agreements between the Governments of Uganda, Kenya and that of the DRC to provide security for oil and gas fields and installations. It should be borne in mind that security in the industry especially in the midstream segment is a costly venture with implications reaching beyond political boundaries, especially in this volatile and largely porous region.

Advanced technology in sensitive areas: In order to address the challenges of operating in an ecologically sensitive area, there is need to employ advanced technology that has little footprint in the areas of operation. In addition there is need for inter-governmental agency cooperation to ensure effective monitoring of oil and gas operations especially in protected areas and to enforce compliance. Studies should also be undertaken to ensure availability of relevant data.

Infrastructure development: Government should extend facilities such as power supply which is a necessary ingredient required for the effective development and production of the crude resources. Government should undertake to extend power supply to areas of operation in order to

ensure smooth and efficient exploitation of the resource. Government could also consider the option of attracting more investors in the energy sector to provide the necessary energy requirements for operations in order to minimize putting a strain on the already insufficient power on the national grid.

5.4 IMPROVING LOGISTICS

Development of a good road network in the Albertine Graben: The road network to and within the areas of operation should be developed to all weather standard because they play an important role in linking production to the market hence providing that much needed synergy between supply and demand centers that would enhance trade and commerce not only in petroleum products but also in other areas with the existing of the oil resource being the catalyst in this regard.

Development of a bridge across the Victoria Nile at Paraa: Currently exploration areas In EA1 and EA2 are separated by the Victoria Nile between Nwoya and Buliisa. This has made it very expensive as trucks from Paraa are must first go through Karuma, Masindi and back to Buliisa a distance of more than 200km. a bridge at the Paraa ferry crossing would solve this long distance since the river is even less than a kilometer at this particular point. This bridge would also serve to open up the areas of Buliisa and connect them to northern Uganda.

Development of an airport: There is need for urgent preliminary works on the establishment of an airport preferably in phases so that the first phase to accommodate specifically heavy cargo aircraft is put in place and, eventually, passenger aircraft intended to support the construction and operation of the oil Refinery and fields.

5.5 UPSTREAM INVESTMENT OPPORTUNITIES

- i. Construction of heated crude oil pipelines to refinery
- ii. Construction of a heated export pipeline to the Indian Coast
- iii. Waste management facilities
- iv. Skills Development
- v. Service provision in road, railway, bridge and airport construction
- vi. Development and maintenance of storage facilities for crude and petroleum products

ANNEX 2: LIST OF STAKEHOLDERS CONSULTED

NAME	ORGANISATION	POSITION	EMAIL	TELEPHONE
Munduru Genevieve	Total	Planning		
Tony. O. Otoa	Total Exp	Public Affairs Leader		
Benjamin Ariho	Ministry Of Energy	Refinery Mechanical Engineer		
Okema James Henry	Ministry Of Energy	Civil Engineer Pipelines		
Dr, Joshua Mutambi	Ministry of Trade	Ag. Commissioner Internal Trade		
James Oyirwott	Total Uganda	Transport Officer		
Eng. Vicent Ockemo	UNBS	Manager Quality Assurance		
Ivan Amaniga Ruhanga	Africa Endowment	Petroleum Consultant		
Isaac Balam	UNRA	PE		
Mabwejano George	Vivo Energy	Operations Manager		
Ageta Emmanuel	UNBS	Standards Officer		
Kimulda Alice	Ministry Of Lands	Government Valuer		
John Kavuma	Federation of Uganda Exporters	President		
Ssewanyana Eric	Ministry Of Finance	Economist		
Apollo Kashamku	Ministry Of Works	Senior Transport Economist		
Emmanuel Mugarura,	Uganda Association Of Oil And Gas Service	Chief Executive Officer		
Ernest Rubondo	Ministry of Energy and Mineral Development	Director Of Petroleum Directorate		

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COFFEE VALUE CHAIN ANALYSIS IN UGANDA



BY

MANAGEMENT INNOVATIONS LTD

Final Draft

December 2015

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1 INTRODUCTION

1.1 *The Ugandan coffee sector*

Coffee is a major crop in Uganda's economy. It provides the largest share of the total export revenue for the country. Coffee production in Uganda has been mostly characterized by high fluctuation and overall stagnation since the 1960s due to different factors such as price fluctuation, reduced soil fertility, pests and diseases, and mismanagement and climate variability. The highest production level was recorded in 1996 with close to 288,000 tons compared to 94,000 tons in 1961 and 186,000 tons in 2012.

The total area of land under coffee has increased modestly from more than 245,000 hectares in 1961 to 310,000 hectares in 2012. Various studies document that farmers already perceive increasing weather uncertainty and changes as the major constraint to production. Being a major activity in the national economy, it employs a huge number of actors/people from production to market and to a less extent distribution and consumption.

1.2 *The Northern Corridor*

The Northern Corridor connects the Port of Mombasa to markets in Kenya, Uganda, Rwanda, Burundi as well as South Sudan, the Democratic Republic of the Congo (DRC) and Ethiopia. The trunk road network of the Northern Corridor is quite extensive, and stretches from Mombasa to Bujumbura via Malaba along 1,970 Km while the section that goes to Goma is 1,846kms. The railway network of the Northern Corridor, the Kenya-Uganda Railways, which is run by Rift Valley Railways (RVR) on a concession basis, consists of 1,956 Km of narrow gauge (1,000 mm) rail that extends from the port of Mombasa to Nairobi, and further to Malaba, and Kampala, with a line also extending from Tororo to Gulu. There is a railway right of way along the Northern Corridor for the section from Kampala to Kasese close to the DRC border although there is no rail track remaining and is not currently operational. The railway network has several spurs, the most important being the line to Kisumu on Lake Victoria and the one to Magadi Soda Northeast of Nairobi, while other existing minor spurs are closed to traffic. In 2013, the Northern Corridor railway network carried about 1.2 million tons of goods, amounting to 5.4% of all the goods imported through the Mombasa port.

1.3 *Objectives of the value chain analysis*

The main objective is to identify critical issues regarding soft and hard logistics infrastructure for the development of coffee value chain along the Northern Economic Corridor. Specifically to:

- a) Analyze the players and processes involved in coffee, value chain from production through processing to the final market.
- b) Estimate the size and potential of export markets for coffee produced in Uganda.
- c) Assess possible options for developing coffee value chain as export commodity with high potential for contributing to economic growth of the areas along the Northern Economic Corridor.
- d) Identify critical issues and measures regarding logistics for the development of the coffee value chain.

1.4 How the report is organized

This report is organized in the following sections:

- Section 2: Detailed coffee value chain and analysis
- Section 3: Estimation of the coffee export market size
- Section 4: End market analysis
- Section 5: Analysis of hard and soft logistics
- Section 6: Conclusions and recommendations

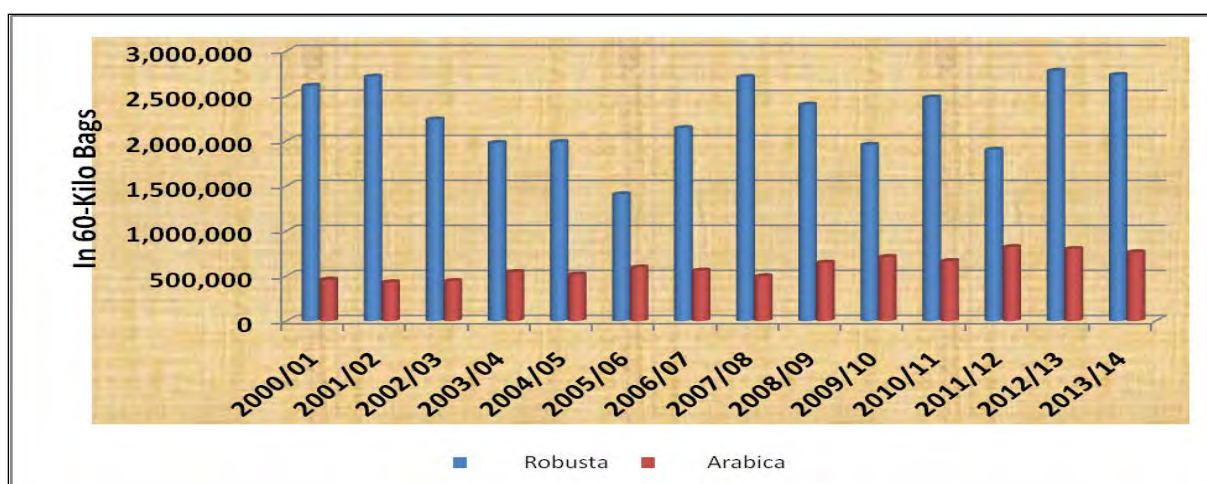
2 DETAILED VALUE CHAIN SURVEY AND ANALYSIS

2.1 Coffee Production

Coffee continues to be a strong commodity in the economy of Uganda. It contributed about 18% of the export earnings between 2000 and 2014, despite the vigorous efforts by Government to diversify the economy. The coffee sub-sector is almost entirely dependent on about 800,000 smallholder farmers, 90 percent of whose average farm size ranges from less than 0.5 to 2.5 hectares (UCDA, 2012). The coffee industry employs over 2.5 million families through coffee related activities.

Two types of coffee are grown in Uganda i.e. Arabica and Robusta coffee. Robusta coffee is the major type produced in Uganda (about 80%). *Robusta* Coffee is grown in the low altitude areas of Central, Eastern, Western and South Eastern Uganda up to 1,200 meters above sea level while Arabica coffee is grown in the highland areas. Uganda produced, on average, 2.4% of total world production during the period 2008-2013 (International Coffee Organization (ICO), 2013). During 2009, marketed production totaled 195,871 m/tones, an equivalent of 3.3 million 60-Kilogram bags of coffee (MAAIF, 2010). This consists of 153,822 tones of Robusta coffee and 42,050 tones of Arabica. Overall, there was a decline of 14.3 percent in the quantity of coffee procured in 2010 as compared to 2009 due to a big decline (20.5%) in the production of Robusta Coffee which is more grown than Arabica. In 2013, the total acreage under coffee was estimated at 191,652 Ha, an increase from 182,875 ha in 2010. The projected figure for 2014 is 198,585 ha. Although there was an increase in acreages, coffee production in the last three years exhibited a negative trend largely due to effects of climate change with prolonged droughts at the critical time of bean development.

Figure 1: Uganda's Coffee Production Trend by Type (Robusta and Arabica)



2.2 *Processing*

The ripe coffee fruits (cherries) go through a number of operations aimed at extracting the beans from their covering of pulp, mucilage, parchment and film to improve their appearance. The resulting clean coffee, Fair Average Quality (FAQ), can then be roasted and ground to obtain the coffee powder for human consumption. There are two main techniques used to obtain the clean coffee. Wet processing is done for the choice Arabica coffees produced at high altitudes. The coffees so produced are generally described as 'mild' whereas dry processing produces coffee for mainly the Robusta described as 'hard'. The resulting clean dry coffee beans are in both cases referred to as FAQ. The FAQ is then sorted according to size using perforated sieves and by specific gravity (UCDA, 2012).

Over 95 % of the total annual coffee production is exported as green beans. After coffee harvest, farmers usually sun-dry the red cherry on the farm and sell their coffee as Kiboko (dry cherry). Most coffee sales are made at the farm-gate to small traders who tour the countryside on bicycles or motorcycles. These small-scale traders act as aggregators either for bigger independent traders or for exporters and their agents (Hill, 2010). In the past, coffee mill owners used to buy the Kiboko, hull it and sell the rough hulled green bean (FAQ" or Fair Average Quality). This practice has now ceased to exist due to low profit margins and high price volatility. Instead, most mills provide hulling services to Kiboko traders or producers at a fixed fee. After milling, the Kiboko traders occasionally sell directly to exporters but more often they sell at the mill to "FAQ" traders, who then sell to the exporters' district depots or to the exporters' yards in Kampala.

Secondary processing, also known as export grading, transforms the clean coffee (FAQ) into the various coffee grades that meet the international standards. The process involves cleaning the FAQ, drying the coffee if wet, followed by size grading using perforated screens of the desired size. The sorted beans are then gravimetrically sorted to have uniform specific density before bagging off and loaded into containers for transportation to the ports.

2.3 *Coffee Marketing*

Once a sufficient quantity of green bean has been bought at the exporter district buying centre, the export coffee is then transported by truck to Kampala. The rough-hulled coffee then undergoes export processing which involves cleaning, sorting, grading, and drying. In the majority of cases, where exporters do not have their own export transport, freight companies are contracted to send the export green bean by truck or ferry/rail to Mombasa and then by sea to export destinations. Most coffee is exported in 60kg bags, which are stuffed into 20 ft or occasionally 40 ft containers.

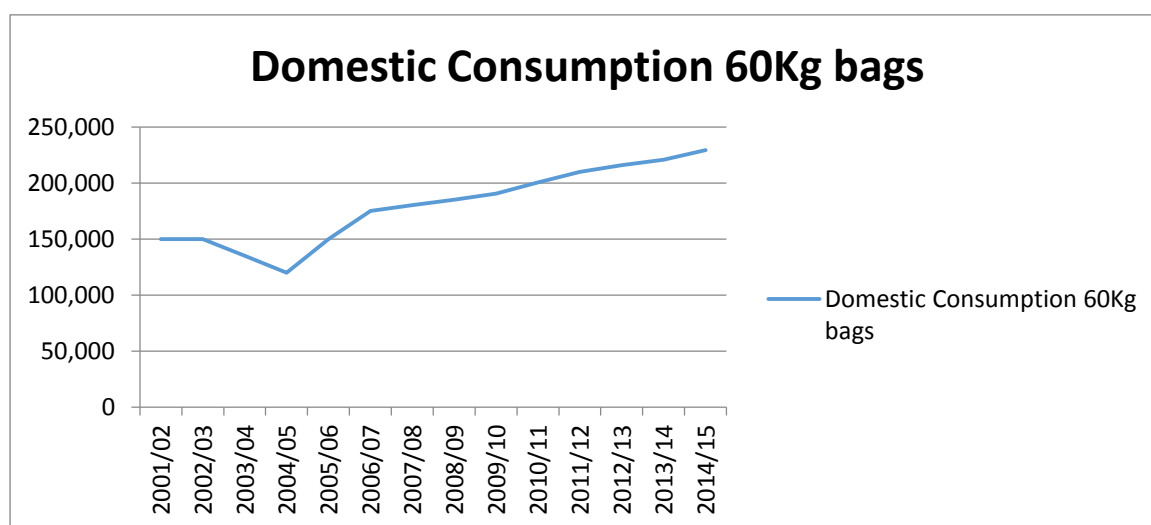
Between 2005 and 2013, producer prices of coffee in Uganda followed export price trends very closely; producers received 64% of export price in 2005 and as high as 88% of the export price for FAQ beans in 2013. This suggests that exporters in Uganda receive small margin of profit, given transportation and processing costs. It has also been noted that changes in the international Robusta coffee price are in general passed from exporters to traders and producers. Price increases in the international coffee price were passed on to domestic traders, but not fully to coffee farmers (Fafchamps and Hill, 2008). However, with this exception, the price received by coffee farmers was found to track the international coffee price. Fafchamps and Hill (2007) also analyzed price transmission mechanisms in Uganda. They found that a rise in the international price is readily reflected in export and wholesale prices, down to the first processing stage, but that growers receive a smaller share of the international price when it rises. In other words, when the international price rises, all domestic prices follow except for the price paid to producers, which rises by less than the proportional amount of international price increase.

2.4 Coffee Consumption

Most of the coffee produces in Uganda, a small percentage is consumed domestically. About 8% is locally consumed where as about 92% is exported as green beans. Domestic consumption of the commodity is thus making coffee to be an essentially export crop. Despite efforts by UCDA to promote domestic consumption the increase is still very low but it is taking a positive direction standing at just 216,000 60-kg bags in 2014. Consumption is influenced by several factors including the absence of a culture of drinking coffee and common public myths and misconceptions about the health aspects of coffee consumption. The challenges are to positively change attitude and behavior towards coffee consumption, and increase access to coffee and coffee brands.

The Domestic Coffee Consumption Strategy 2010-2015 by Government of Uganda UCDA seeks to increase domestic coffee consumption through sensitizing the public and medical professionals on the benefits of drinking coffee; increasing numbers and capacity of coffee roasters; training in good roasting and brewing practices; development of appropriate roasting standards; development of a quality mark; and producing a generic brand for Uganda coffee. The per capita coffee consumption is currently at 0.36Kg and projected by government to reach 0.5Kg and 1.5Kg in the next 5 and 20 years respectively.

Figure 2: Trends in Coffee Domestic consumption



Source: UCDA database, 2015

2.5 Structure of Coffee Value Chain

The total number of coffee producers is estimated to be about 1.5 million farmers with an average acreage of about 1.5 acres. Most of the coffee is traded at farm gate where the local buyers buy at a lower price then sell it to the second and third tier traders (middlemen). The marketing price is dictated by the buyers and the farmers are price takers. The big buyers and or exporters have a chain of traders and representatives in all regions of coffee production and facilitate them on commission basis. They provide the cash money and agree on when and the quantities to deliver for a specific time period. This sometimes creates unhealthy competition among the buyers resulting into buying poor quality coffee because the major objective is achieving highest quantity of coffee. Quality is compromised as some of them get involved in unprofessional trading practices like adulterating coffee with stones and other foreign matters, processing poorly dried coffee among others which affect the quality of the coffee.

The frontline traders are very mobile with their bicycles, motor cycles, small and big trucks without any domicile, so they are very hard to regulate and monitor yet they are a key step in the value chain. Majority of the coffee is sold by individual farmer, except in some few areas where cooperative or producer marketing associations sell on behalf of the members. They are able to bargain for a slightly higher income because of the big coffee quantities. The cooperatives tend to bypass some tiers of middle men and sell to the exporters. The international roasting companies are also structured in a way

that they have offices in Kampala and extending to major coffee growing areas and some have established their own plantations to complement their needed volumes.

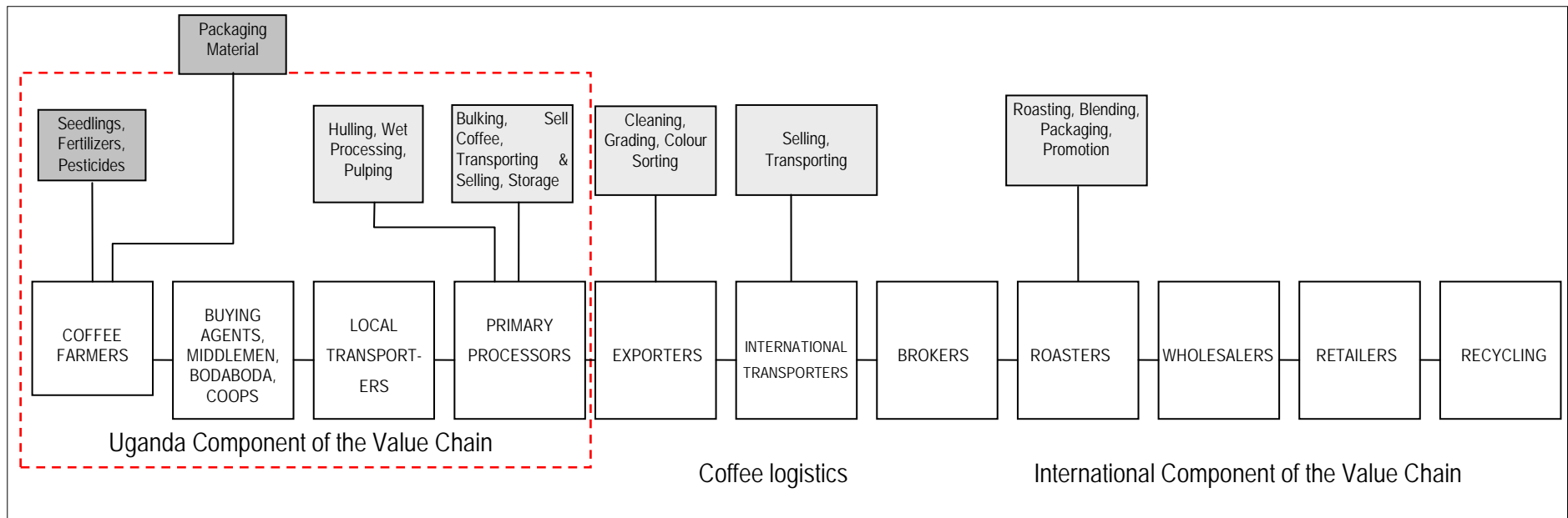


Figure 3: Global Coffee Value Chain Structure

Based on the illustration of the structure of the coffee value chain above, the major players in the value chain constitute:

- a. Farmers; They are smallholder private sector players producing coffee and passing it on to the next stages of value chain intermediaries in several forms and channels. They are over 500,000 farmers each producing at an average of 1.5 acres. About 65% of them sale at farm gate to smaller traders. Some of the farmers are under a cooperatives or groups who produce, collectively bulk, hull and sell the coffee beans to big buyers. A few of them grade their coffee and are now exporting including to specialty markets thereby getting the best price possible because they by- pass the middle men.
- b. Intermediary agents; These take-on many forms as buying agents, middlemen and or farmer organizations that link coffee from the farmers to onward players in the chain for value addition.
- c. Primary processors: they add value through either wet or dry extraction of the beans from pulp, mucilage, parchment and film for Arabica and Robusta coffee, respectively.
- d. Secondary processors: they clean the FAQ, dry (for coffee with moisture content over 13 %) and size grade into the various coffee grades for export market. They usually do a dual role as processors and also as exporters.
- e. Importers/Traders: purchase and store coffee from variety of sources. They provide marketing information and sometimes, financing to roasters and exporters. They take on most of the price risks involved in the coffee trade.
- f. Roasters: they roast, grind and package the final product for the final consumer. Their product is sold in form of roasted beans or roast and ground form to the local market or exported. This mostly takes place in consumer and or final value addition countries.
- g. Retailers: they sell manufactured coffee (roast, ground and instant forms) through shops/supermarkets, coffee shops, fast food outlets, restaurants and other outlets. This mostly takes place at the at the final value addition and consumer countries.
- h. Consumers who drink coffee; these constitute the major outlets of coffee through which coffee is consumed locally.

2.6 The Routes How Coffee and its Products Move Geographically

About 90% of the coffee beans come from the all growing regions of Uganda to Kampala through a network of traders and farmer groups. Kampala is the national hub for coffee where it is finally, cleaned, de-stoned and graded and finally exported. Some coffee comes from as far as Rwanda and eastern Congo and also exported from Kampala. The coffee takes two major directions; i.e. Kampala to Sudan accounts for about 15% whereas Kampala to Mombasa for final export accounts for 85% of the total coffee exported. In all directions, road transport is the major means of transport up to the port in the case of Kampala to Mombasa- the main route of Uganda's exports.

Figure 4: The Routes how Coffee and its Products Move Geographically



2.7 Segmentation of Target Markets for Ugandan Coffee in the EU

The export market of Uganda is quite diverse with a total of 16 importing countries. European Union is the largest market for Uganda coffee export accounting for over 70% of total exports followed by Sudan importing over 10% of Ugandan coffee and USA with 3% of Uganda coffee exports (UCDA, 2013). 8 out of the 12 larger importers of Ugandan coffee trade on European markets. However, EU buyers are importing Ugandan coffees mostly for value addition processes, such as blending and roasting with other origins, or for usage in the soluble coffee industry. In this sense, the requirements for sustainable sources for these coffees are increasing and this represents a good opportunity for Ugandan producers and exporters of certified coffees. The major end markets for Uganda coffee exports in the EU market are Germany, Italy and Spain. The soluble coffee industry in Germany is very relevant for Ugandan Robustas, while there is a traditional preference in the consumption of Robustas in Italy and Spain as well as other southern European markets. When coffee is exported three main customers exist and follow under the following categories: Consumer / Reseller, Mainly Reseller and Importer / Consumers.

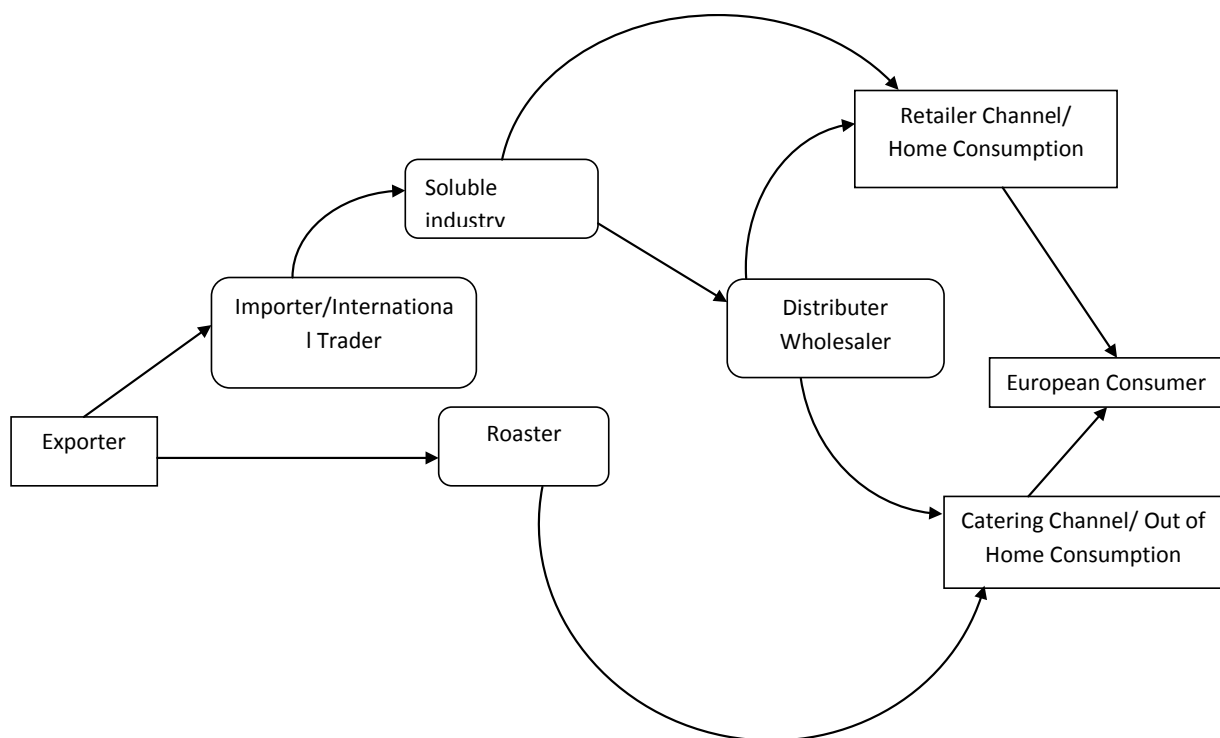


Figure 5: Trading Channels in the Coffee Industry in Europe

Consumers in Europe are increasingly diversified and well-informed about coffee. In general the characteristics regarding consumer preferences of regular coffee are as follows:

Northern Europe:

- Arabica is predominant over Robusta
- Culture of roasting light to conserve high quality
- Highly demanding and stable markets
- Social/environmental certification may be demanded

Southern Europe:

- Higher percentage of Robusta in blends
- Culture of roasting dark is predominant
- Espresso is the main beverage
- Growing interest in environmental and social certificates

Western Europe:

- Arabica as well Robusta are consumed
- Share of Robusta is 39%-40%
- Dark and light roast depending on the coffee
- Highly competitive markets
- Soluble industry is concentrated
- Important consuming markets and re-exporters

2.8 Key Players the Coffee VC

There are many stakeholders involved in the coffee value chain. They involve the farmers who are in large numbers about 500,000. Some of the farmers sell individually whereas others sell as cooperatives societies. Other stakeholders are a tier of traders from farm gate to exporters and those involved in logistics.

The export market is controlled by 29 national and multi-national companies with ten companies controlling about 85% of the export market. The leading company (Ugacof (U), Ltd) controlled 15% of the coffee export in 2013 (UCDA, 2013). The top ten importing companies held a market share of 73.4% in 2013.

Table 1: Key Individual Exporter Market Share based on past 5 year performance¹

	Exporter	% Market Share
1	Ugacof (U) Ltd	16.98
2	Kyagalanyi Coffee Ltd	10.71
3	Olam (U) Ltd	6.71
4	Export Trading Company	6.51
5	Kawacom (U) Ltd	6.22
6	Ibero (U) Ltd	5.99
7	Ideal Commodities	4.97
8	Kampala Domestic Store	4.54
9	BESMARK Coffee Co. Ltd	4.26
10	Great Lakes Ltd	3.79
11	LD Commodities	3.21
12	Savannah Commodities	2.61
13	Commodity Solutions	2.42
14	Armajaro (U) Ltd.	2.38
15	Coffee World Ltd.	2.14
16	Kamba Petroleum	1.98
17	Job Coffee Ltd.	1.97
18	Risala (U) Ltd	1.85
19	Nakana Coffee Factory	1.79
20	Ishaka Commodities	1.74
21	Mbale Importers & Exporters	1.42
22	Lakeland Holdings Ltd.	0.81
23	Kaweri Coffee Plantation	0.75
24	KARAZ Coffee Factory	0.65
25	Ankole Coffee Producers	0.61
26	Wabulungu Multipurpose	0.54

¹ UCDA Data Bank and Analysis by Africa Coffee Academy

27	Ankole Coffee Processors	0.53
28	Bakwanye Trading Co.	0.42
29	Banyankole Kweterana	0.32
30	Gumutindo Cooperative	0.29
31	Kibinge Coffee Farmers Coop.	0.24
32	Nile Highland Arabica	0.12
33	GERIOUS Ltd.	0.12
34	Bukonzo Joint Coop. Union	0.11
35	Evercom Coffee	0.07
36	Sena Indo (U) Ltd.	0.07
37	Ronald Bwambale Enterprise	0.05
38	Fairlop Global Co. Ltd.	0.03
39	Shiba World Investment	0.02
40	Bugisu Farmers AA Coffee	0.02
41	Zigoti Coffee Works	0.02
42	Budadiri Arabica Factory	0.01
43	Crown Coffee	0.01

Table 2: List of some of the logistics and distribution actors in Uganda

1	Zama Group Transport & Logistics	Plot 1994, Bombo Road Kawempe, P.O.Box 33627, Kampala Uganda, Kampala
2	Uganda Transporters Cooperative	P.O Box. 299 Kampala, Kampala
2	Cipro Freight	3rd Floor, Colline House, Opposite Sheraton Gardens,, Kampala
3	TsikenuRabboni Limited	P.O Box. 299 Kampala, Kampala
4	Broswest Logistics Limited	Plot 2220, Port bell Road, 1st Floor Aqua Complex, Kampala
5	Demafreight Ltd	P.O.Box 28209 Bukoto Ntinda-Kampala Uganda,

		Kampala
6	Blue Pearls Company Limited	Akamwesi Building 1st Floor Shop Office 17, Port Bell Road, Nakawa - Kampala(U), Kampala
7	Globe Trekk (U) Ltd	P.O.Box 25458, Plot 879 Fufa House, Albert Cook Road, Mengo - Kampala., Kampala
8	Drazo Logistics Ltd	Corporate Heights, Bukoto St - Kamokya., Kampala
9	Inchcape Shipping Services	Plot 1/2 Enterprise Close Nakawa Premier Building Opposite Shumuk Aluminium, 34234, Uganda, Kampala
10	Maersk Uganda	P.O.Box 28687, Kampala
11	Atlas Cargo System Ltd	Plot 1 Kireka/Sabuni Road-Mbuya(Bugolobi). P.O.Box 7765 Kampala, Kampala
12	Interfreight Uganda Ltd	Plot 284, Nakawa Industrial Area, P.O. Box 4555, Uganda, Kampala
13	Kenfreight (U) Ltd	1906 Jinja Road Bweyogerere, P.O. Box 7492, Uganda, Kampala
14	Ak Transporters	P.O.Box 2671, Kampala
15	Three ways Shipping Services (Bro Group)	Plot 87 Jinja Road, P.O. Box 12028, Uganda, Kampala
16	Unifreight Cargo Services	Plot 65/70 Yusuf Lule Road, 1st Floor Suite 8, P.O. Box 12160, Uganda, Kampala
17	Atlas Cargo Systems	P.O.Box 7765, Kampala
18	Sofitra	P.O.Box 4769, Kampala
19	Spenold Cargo	P.O.Box 21935, Kampala
20	Kampala Maritime Frieght Services Ltd	Plot 52 Kampala Road, P.O.Box 22677, Kampala
21	Divine Freighters	P.O.Box 7523, Kampala

2.9 Analysis of value-addition per process

In Uganda Value addition on coffee majorly involves primary and secondary processing. The key activities are hulling, sorting, de-stoning and grading of coffee. About 8% of the Uganda' coffee is roasted

domestically. The major players in this value addition activity are still few and operating at a low capacity given the low but growing domestic consumption of coffee in Uganda.

Table 3: Summary of Registered Post Harvest Value Addition industry players for the last 5 years

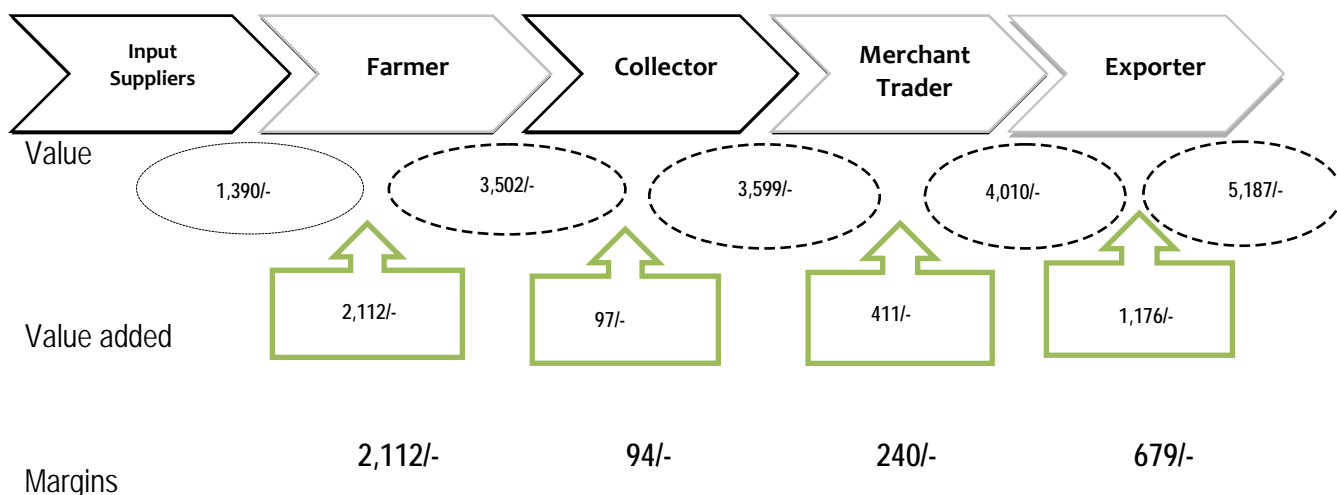
Player	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Exporters	30	39	42	40	42	41
Export Grading Plant	19	19	19	32	30	32
Primary processors	271	301	300	327	308	395
Roasters	4	7	8	8	14	14
Total	324	366	369	407	394	482

Source: UCDA 2014

Along the coffee value chain, as more value is added, the higher the margin obtained. Unfortunately for Uganda, the processed coffees that create more value are at the end market in importing countries. The positive aspect is that, the potential for establishing the roasting and packaging equipments is a relatively virgin area to explore given the coffee consumption growing trend both in Uganda and in the East African region in general.

Gross value added by the individual actors along the coffee chain

Figure 6: The table below shows the gross value added per actor along the coffee value chain.



Source: EPRC, 2014

More value is gained at the highest end of the market and correspondingly reducing towards the farmer who gets the least value despite the effort and time invested in growing coffee and making it available to the other actors.

2.10 Cost-breakdown in the production, processing and marketing:

Table 4: Robusta Coffee Supply Value Chain Costs in US\$²

No.	Type of coffee and cost details	Quantity	US\$
A.	Old Robusta coffee		
1	Maintenance cost: (weeding, pruning, desuckering, manure application, harvesting etc)	120 man-days	\$0.20
2	Input cost (herbicide, Fertilizer, mulch)		\$0.08
3	Equipment costs: (Depreciation)		\$0.08
4	Harvesting	20 bags	\$0.08
5	Drying	20 man-days	\$0.03
	Sub-total		\$0.48
6	Contingency costs (10%)		\$0.05
	Yield/ha/year (Low-medium)	kg	
	Cost of producing 1kg of green		\$0.53
	Average farm gate price /kg		\$1.31
	Grower's margin for old Robusta coffee/kg of green		\$0.78
	Gross income/ha/year		\$879.78
	Net income/ha/year		\$521.80
B.	Clonal Robusta Coffee		
1	Maintenance cost:	320 man-days	\$0.13
2	Input cost		\$0.04
3	Equipment costs:		\$0.03
4	Harvesting	80 bags	\$0.08

²Africa Coffee Academy Analysis of UCDA Field Data

5	Drying	60 man-days	\$0.02
	Sub-total		\$0.30
6	Contingency cost (10%)		\$0.03
	Yield/ha/year	5,000 kg	
	Cost of producing 1 kilo of green coffee		\$0.33
	Average farm gate price/kg		\$1.31
	Grower's margin for Clonal coffee/kg		\$0.98
	Gross income/ha/year		\$3,665.73
	Net income/ha/year		\$2,733.15
C	Estimates of Costs and Margin for Traders		US\$
	Commission to local collectors per kilo of dry cherries		\$0.02
	Cost of gunny bags per kilo		\$0.01
	Transport costs of dry cherries to the huller/kg		\$0.00
	Handling cost for dry cherries/kg		\$0.00
	Milling charge per kilo of FAQ		\$0.05
	Handling costs per kilo of FAQ		\$0.00
	Transport cost per kilo of FAQ to FAQ trader		\$0.00
	Transport costs per kilo of FAQ to Export buyer		\$0.01
	Total Trader Cost		\$0.09
	Total cost per kg of FAQ		\$1.40
	Price of FAQ per Kg		\$1.50
	Trader's margin/kilo of FAQ		\$0.10
D	Robusta Export Costs and Margins Estimates - US\$/Kilo		US\$
	Storage costs		\$0.00
	Commission		\$0.01
	Loading and offloading		\$0.00
	Cost of gunny bags		\$0.01
	Transport costs		\$0.01
	Sub-total (I)		\$0.03

	Salaries & wages		\$0.00
	Maintenance cost		\$0.01
	Electricity/Water cost		\$0.08
	Fumigation costs		\$0.01
	Bagging/marketing costs		\$0.01
	Office/rental costs		\$0.00
	Warehouse costs		\$0.00
	Insurance costs		\$0.00
	Transport costs		\$0.01
	Processing losses at (1%)		\$0.01
	Subtotal (II)		\$0.12
	Sub-total (III) = (I + II)		\$0.14
	Financial cost at 10%		\$0.01
	Total Export processing costs		\$0.16
	Total Exporter costs including coffee		\$1.66
	Export Price/Kg		\$1.94
	Exporter Gross Margin		\$0.28
	Less 1 % CESS		\$0.02
	Exporter Net Margin		\$0.26

Source: UCDA Field Data; Analysis by Africa Coffee Academy, 2011

Table 5: Arabica Coffee Supply Value Chain Costs in US\$³

Type of coffee and cost details	Quantity	US\$
Maintenance cost	20 man-days	\$0.322
Equipment (Depreciation costs)		\$0.117
Input cost (herbicides, fungicides/pesticides and fertilizers)	2 litre-herbs, 4 litre. Pest, 10 litres fungicide, 2 bags fertilizer	\$0.176

³Robert Waggwa Nsibirwa; 2011: NUCAFE Coffee Market Study Report

Harvesting	16 bags-parch	\$0.066
Pulping and Fermentation	80 man-days	\$0.117
Drying	20 man-days	\$0.029
Sub-total		\$0.816
Contingency (10%)		\$0.082
Yield/ha/year Kg	768	
Total cost/kg of green		\$0.897
Average farm gate price/kg of green		\$1.947
Arabica coffee grower's margin/kg of green		\$1.051
Gross income/ha/year		\$1,495.551
Net income/ha/year		\$806.831
Arabica Export Costs and Margins US\$/Kg		US\$
A. Collection costs		
Storage costs		\$0.006
Commission		\$0.011
Loading and offloading		\$0.001
Cost of gunny bags		\$0.012
Transport costs		\$0.009
Sub-total (I)		\$0.039
Salaries & wages		\$0.009
Depreciation cost		\$0.006
Electricity		\$0.034
Communication		\$0.006
Fumigation costs		\$0.006
Bagging/marketing costs		\$0.017
Processing losses		\$0.011
Office/rental costs		\$0.001
Warehouse costs		\$0.006
Insurance costs		\$0.006
Transport costs		\$0.006

Factory operational costs		\$0.009
Subtotal (II)		\$0.116
Subtotal (III) = (I + II)		\$0.156
Financial cost at (10%)		\$0.016
Total		\$0.171
B: Price of parchment/kg		\$1.558
Clean equivalent at 80% outturn		\$1.947
Export processing costs		\$0.171
Total Exporter costs		\$2.119
Export price US\$/kg		\$2.430
Gross Margin to Exporter		\$0.311
Less (1%) CESS		\$0.024
Net margin		\$0.287

An analysis carried out by the Africa coffee academy to ascertain the cost and revenue break down of along the coffee value chain is in agreement with the NUCAFE value analysis model. Both indicate that the farmer, trader and the exporter get a small share of the market price. The biggest share about 70% is shared by the roasters, wholesalers and the networks of distribution. The farmers get a slightly higher margin compared to the traders in both Robusta and Arabica. In both cases however, margins are higher in Arabica than in Robusta. This is because; the final product for latter is higher than the former at the world market.

3 ESTIMATION OF EXPORT MARKET SIZE

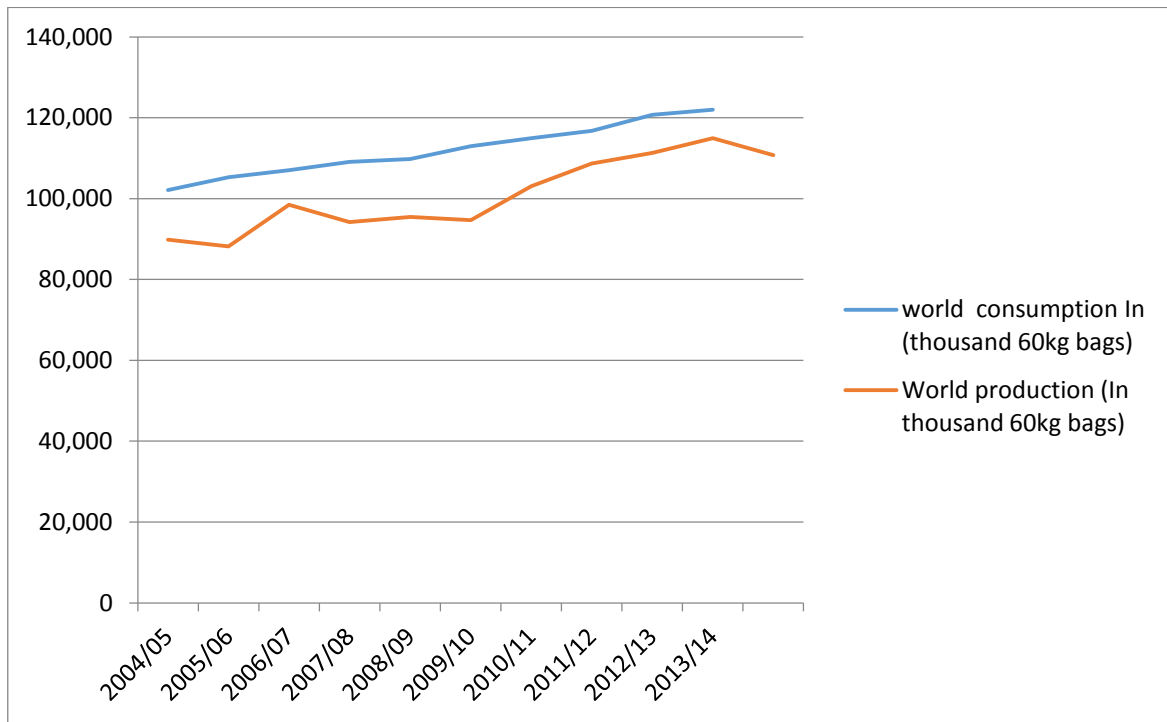
3.1 *Size of the Market by Value and Volume*

The world coffee market is by end of 2014 was estimated to be about 9 million tons with total value estimated 17.5 Trillion dollars. Uganda that in 2014 exported about 211,515 tones estimated at 409 million dollars. Therefore Uganda got about 2.3% of the total world market. This percentage is quite low given the quality of the Ugandan coffee and its production potential that exists. Given the increasing demand for coffee, Uganda needs to position itself to increase both the quantity and quality harvest more from the rich world market.

Currently Uganda is ranked 10th amongst the leading coffee exporters (ICO, 2016), having exported 3,455 million 60Kg bags, with the highest increase in quantity exported of 23% in 2015 from 2014 among other coffee exporters. There is an ambitious effort by the Uganda government through its coffee strategy and the presidential directive under the prime minister's office aimed at increasing coffee production from 4- 20 million 60 Kg bags by 2040. This plan if realized, is likely to come up with logistical challenges of storage and handling and transportation issues both domestically and along the northern corridor. The capacity to manage quality issues both in stores and transportation will therefore depend on how organized as a country and since measures to ensure that the targets are realized were also considered.

From the figure below, it is evident that global consumption is currently higher than production and the deficit is being met with stocks that are also tight normally. As consumption grows, there is likely deficit of coffee supply, once stocks run down. This presents a real opportunity for the coffee producing countries.

Figure 7: Demand and Supply Chart for Coffee 2004-2015⁴

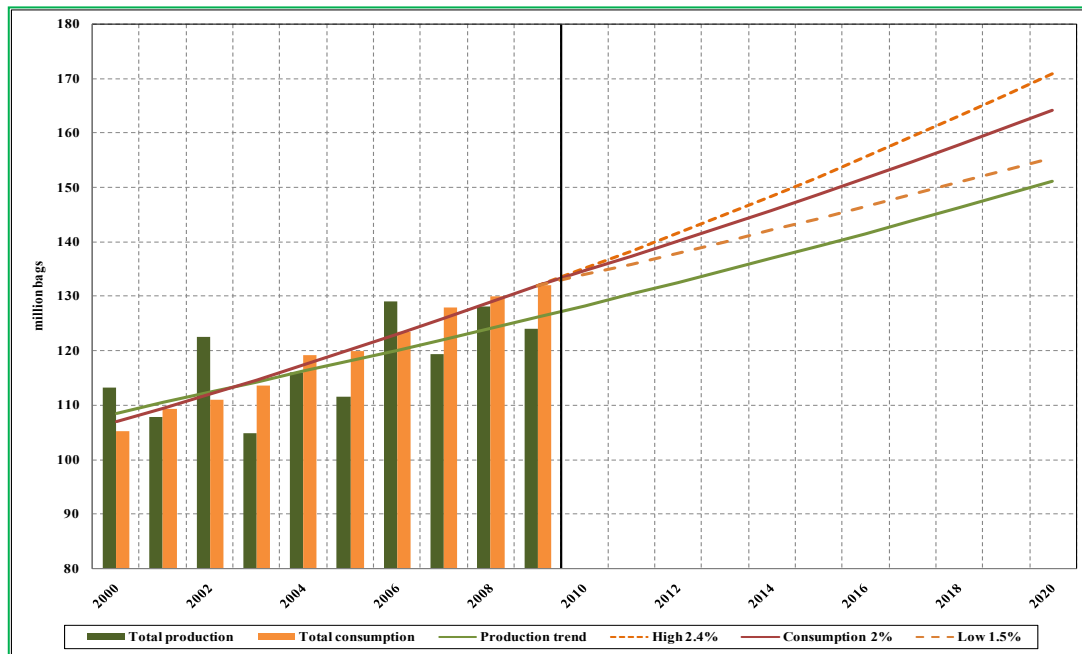


Based on the current annual growth in global coffee consumption at 2.3%⁵ and marked growth in demand for specialty coffee in niche markets, the opportunity of increasing production is feasible.

⁴International coffee organization 2015

⁵International Coffee Organization and Africa Coffee Academy analysis

Figure 8: Coffee Production vs. Consumption Trend and Projections 2000-2020

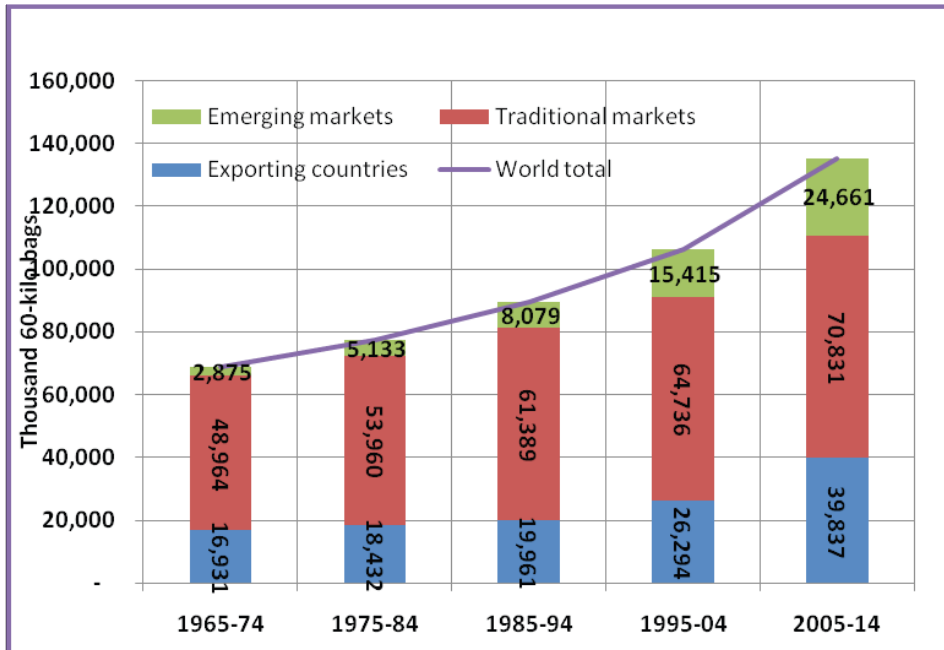


Source: International Coffee Organization, 2010

With the increasing demand for coffee world wide, both traditional and new emerging markets are growing. New emerging markets include new coffee consumers including specialty coffee consumers in the traditional markets. Where as the traditional markets are increasing at a rate of about 2.4%, that of specialty coffee is growing at a rate of over 10% in some countries in Europe. The market in Europe, where both gourmet and large retailers have sold specialty and premium coffees for years, is fairly established. In the United States, however, the specialty and premium market is growing at rates estimated as high as 14% annually. Clearly, the nature of coffee consumption is changing dramatically in key nations⁶.According to the above estimates available, demand for coffee in the international market will grow at a healthy pace due to growing demand in non-traditional markets.

⁶Robert WaggwaNsibirwa; 2011: NUCAFE Coffee Market Study Report

Figure 9: Global Coffee Demand up to 2014 by Type of Market



Source: ICO, 2015

3.2 Major Export Markets Quantity and Values

Table 6: Uganda's Coffee export Market values for the five years 2010-2014

Importers	Exported value in 2010	Exported value in 2011	Exported value in 2012	Exported value in 2013	Exported value in 2014
World	267,409	459,147	370,686	424,457	409,046
Italy	23,551	35,635	31,284	37,329	72,195
Sudan (North + South)	46,920	61,657	67,329	62,746	59,983
Belgium	16,467	33,585	13,633	23,309	54,818
Germany	59,182	74,897	57,198	52,017	46,657
Spain	20,071	34,004	22,438	21,028	25,133
Switzerland	42,666	90,263	88,963	112,569	20,457
India	7,111	12,825	10,937	7,568	15,858
United States of America	9,209	17,619	15,302	20,052	14,814
Singapore	4,258	23,856	16,894	14,598	14,557
Morocco	530	1,700	875	6,365	7,746
Poland	5,833	7,442	4,519	5,075	7,683
France	1,868	4,130	5,812	5,138	6,931
Portugal	2,256	7,074	2,709	4,239	6,655
Korea, Republic of	54	234	-	1,004	5,676
Romania	1,038	1,789	1,231	1,972	5,185
Ecuador	-	38	1,885	2,584	4,829
Netherlands	4,864	4,254	3,585	4,316	4,101
Israel	1,797	2,559	619	1,916	3,478
Russian Federation	1,373	4,932	2,637	2,318	3,358
South Africa	1,219	1,993	1,177	858	3,320
Sweden	1,566	1,757	1,260	2,852	3,238
United Kingdom	4,973	6,497	7,509	13,113	2,891
United Arab Emirates	34	265	805	391	2,455
Korea, Democratic People's Republic of	62	-	48	1,092	2,316
Denmark	1,071	2,469	1,198	1,815	2,212

Japan	394	1,464	953	2,011	2,040
China	1,049	1,528	610	1,072	1,846
Greece	328	789	487	1,131	1,526
Slovenia	1,592	2,919	1,699	1,756	1,203
Australia	418	1,090	942	485	1,102
Kenya	1,926	1,019	1,071	977	1,081
Croatia	-	38	-	-	775
Algeria	-	2,639	-	103	437
Cabo Verde	-	-	-	267	305
Taipei, Chinese	-	109	393	223	287
Estonia	-	189	91	495	247
New Zealand	181	216	195	211	242
Mexico	-	48	252	-	241
Ukraine	29	-	44	59	168
Eritrea	152	279	-	-	166
Dominican Republic	-	-	-	-	134
Egypt	210	2,767	423	-	117
Canada	370	392	252	265	109
Finland	715	840	174	38	86
Macedonia, The Former Yugoslav Republic of	-	-	-	43	72
Latvia	56	-	47	-	71
Armenia	-	-	-	-	69
Viet Nam	286	1,695	830	-	69
Hong Kong, China	-	51	41	-	39
Dominica	-	53	-	-	37
Malaysia	-	-	49	43	33

Congo, Democratic Republic of the	-	40	13	3	-
Libya, State of	30	-	-	-	-
Norfolk Island	-	-	-	21	-
Sierra Leone	-	-	90	40	-
Swaziland	-	-	249	-	-
Austria	117	-	-	-	-
Bulgaria	382	478	93	-	-
Burundi	-	-	-	-	-
Belarus	-	-	-	63	-
Sri Lanka	-	-	45	-	-
Czech Republic	-	-	89	70	-
Ethiopia	-	-	34	-	-
Georgia	31	275	24	119	-
Indonesia	-	-	37	-	-
Iran, Islamic Republic of	-	6	-	-	-
Ireland	738	38	-	-	-
Jordan	-	-	195	54	-
Lebanon	-	36	45	55	-
Mauritania	-	-	-	39	-
Nepal	-	-	-	101	-
Niger	34	-	-	-	-
Norway	-	126	40	-	-

Papua Guinea	New	-	40	-	-	-
Paraguay		-	-	44	-	-
Rwanda		1	-	-	-	-
Saudi Arabia		179	841	140	41	-
Senegal		-	-	47	-	-
Slovakia		37	-	-	-	-
Zimbabwe		26	-	-	-	-
Syrian Republic	Arab	-	1,164	134	208	-
Tunisia		-	6,487	970	8,201	-
Turkey		-	18	-	-	-
Samoa		154	-	-	-	-

Source: International Trade Centre 2015

4 END-MARKET ANALYSIS

4.1 Identification of the Final Market of Coffee

Based on coffee exports 2014, Uganda's main target markets are divided into three categories, as shown in the below⁷. Each kind of market needs distinct attention, as detailed in the section following the table:

Table 7: Uganda's Coffee Exports 2014

	WORLD	Exported value 2014 (USD thousand)	Share in Uganda's exports (%)	Exported quantity 2014	Unit value (USD/unit)	Exported growth in value between 2010-2014 (% p.a.)	Exported growth in quantity between 2010-2014 (% p.a.)	Exported growth in value between 2013-2014 (% p.a.)	Tariff (estimated) faced by Uganda (%)
	World	409,046	100	211,515	1,934	8	9	(4)	
1	Italy	72,195	18	37,214	1,940	26	31	93	-
2	Sudan (North + South)	59,983	15	31,035	1,933	5	5	(4)	5
3	Belgium	54,818	13	27,712	1,978	23	30	135	-
4	Germany	46,657	11	24,697	1,889	(8)	(4)	(10)	-
5	Spain	25,133	6	13,578	1,851	-	5	20	-
6	Switzerland	20,457	5	10,637	1,923	(12)	(17)	(82)	-
7	India	15,858	4	8,435	1,880	11	13	110	100
8	United								

⁷Uganda National Coffee Export Strategy 2011

	States of America	14,814	4	7,262	2,040	11	10	(26)	-
9	Singapore	14,557	4	7,488	1,944	22	20	-	-
10	Morocco	7,746	2	4,029	1,923	95	79	22	-
11	Poland	7,683	2	4,165	1,845	2	4	51	-
12	France	6,931	2	3,469	1,998	33	40	35	-
13	Portugal	6,655	2	3,452	1,928	18	24	57	-
14	Korea, Republic of	5,676	1	2,848	1,993	193	194	465	-

Source: ITC Trade Map 2014

Consumer/Reseller,
 Mainly reseller,
 Importing/Consumer

Overall, there has been a positive growth in the Exported growth in value between 2010 and 2014 among the major coffee export destinations. Among the major markets, there are characterized into three (3) major categories:

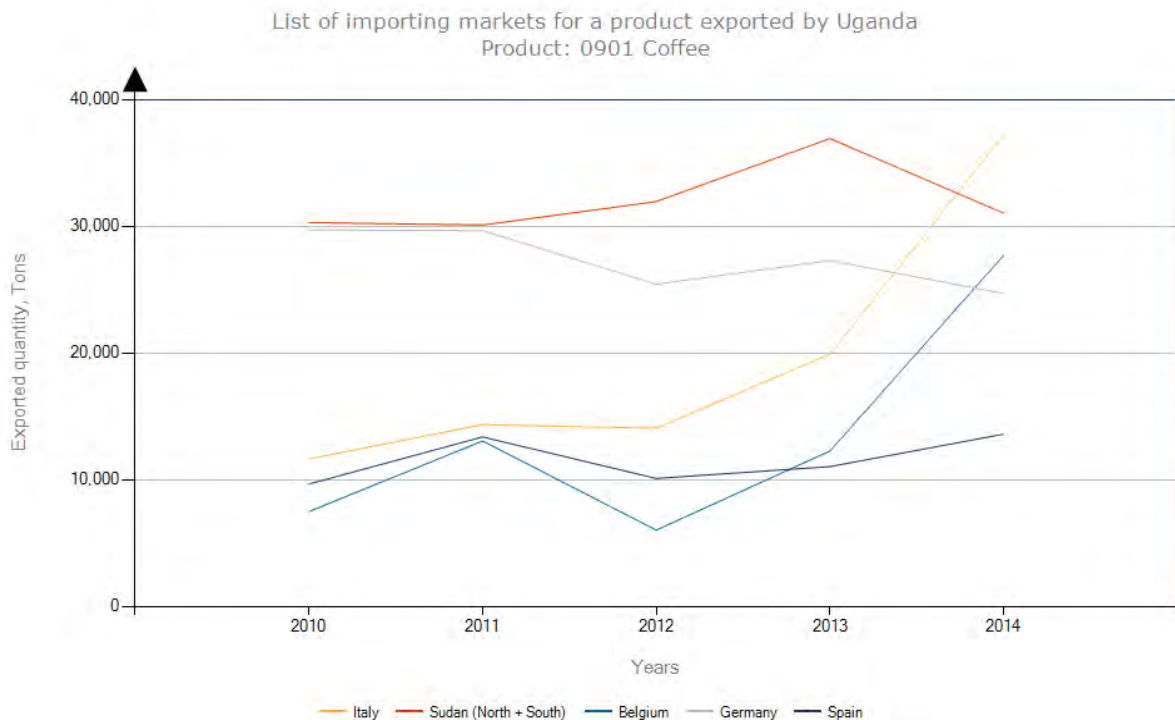
Consumer/Reseller: These are importing countries that have important national markets for the coffee they buy and are, at the same time very active reselling Ugandan coffee (among others) to other markets after they have added value (quality control, packaging, distribution marketing, etc.). Opportunities therefore exist for Uganda to study their actions and explore these markets with export-ready coffees.

Mainly Reseller: Here, importers keep a marginal amount for their own market and mainly resell Ugandan coffee (among others) to other markets after they have added value (quality control, packaging, distribution marketing, etc.). As Uganda progresses in improving its coffee value chain performance, it will be able to substitute these importers, retain the value added and the substantial earnings that they make. It is important to note that there is the new market of South Sudan while there is the threat of fewer imports from Sudan if relations with its southern neighbor are strained. Therefore, peace in South Sudan is of strategic importance for Uganda. Sudan imports Ugandan coffee to re-export it to markets in the Arab world.

Importer/Consumers: These are importing countries that have important national markets and keep the majority of the coffee they import for themselves. It is therefore important to know the consumer preferences in these countries so as to make adaptations in the value chain to better suit the requests of these markets. For instance India, the coffee sector should voice its concern about the high tariff imposed by that country and the possibility to make a trade agreement to diminish that tariff. These markets have shown a fantastic growth in the last five years (except the UK)⁸.

From the figure below, the quantities of four out of the five major importers of Uganda’s coffee are on a steady increase. It is only Germany’s imports are on the decrease over the years, this is because of Vietnam and Ethiopian’s increased output and aggressive market penetration strategies. This has negatively impacted on the Germany’s market share of Uganda’s imports to 2.2% buying more of Uganda’s competitors. There is a need therefore to strengthen the current markets as well as aggressively market our coffee in the markets that seem to be on the decrease.

Figure 10: Trends in the market of major Uganda’s coffee buyers



⁸National Coffee Export Strategy 2011

4.2 Geographical Markets

In the case of the US market we can see two good developments: an increase in the value of exports and a diversification in the kind of products. Between 2006 and 2010, average US imports of coffee not roasted or decaffeinated grew by 8% while those from Uganda grew by 29%, meaning that Uganda took a share of that market from other suppliers. Given that US consumption of coffee is projected to remain steady albeit the threat of a further recession, Uganda can consider increasing its exports by 10% per year. On top, further value would be created if more certified coffee is destined to this market. Thus between US\$1 and US\$1.5 million dollars extra can be considered depending on the mix of coffees (with or without value addition) and the amount of certified coffees in the mix, per year.

Table 8: North America market 2014: US & Canada, values and growth in thousands of US\$

Importers	Trade Indicators					
	Exported value 2014 (USD thousand)	Share in Uganda's exports (%)	Exported quantity 2014 (Ton)	Unit value (USD/unit)	Exported growth in value between 2010-2014 (% p.a.)	Exported growth in quantity between 2010-2014 (% p.a.)
World	409,046	100	211,515	1,934	8	9
United States of America	14,814	4	7,262	2,040	11	10
Canada	109	-	58	1,879	(25)	(17)

European market

70% of Ugandan coffee exports currently go to Europe. Eight out of the 12 main importers of Ugandan coffee are European countries. These eight countries bought US\$183 million worth of Ugandan coffee in 2010 in a mix of consumer and reseller behaviour. Whereas the European market is attractive, it is up to Ugandans to give the added value to their coffee themselves and thereby substitute, at least partially, the value-addition being done by Europeans. Their weighted average growth is of 19.76%. This means that there could be potential export sales from \$36.1 to \$39.7 million US\$ per year, depending on the mix of coffees (with or without value addition) and the amount of certified coffees in the mix.

Table 9: Quantity and Value growth of Uganda's Coffee Export Destinations 2014

Importers	Trade Indicators						Tariff (estimated) faced by Uganda (%)
	Exported value 2014 (USD thousand)	Share in Uganda's exports (%)	Exported quantity 2014 (Tons)	Unit value (USD/unit)	Exported growth in value between 2010-2014 (% p.a.)	Exported growth in quantity between 2010-2014 (% p.a.)	
World	409,046	100	211,515	1,934	8	9	
Italy	72,195	18	37,214	1,940	26	31	-
Belgium	54,818	13	27,712	1,978	23	30	-
Germany	46,657	11	24,697	1,889	(8)	(4)	-
Spain	25,133	6	13,578	1,851	-	5	-
Switzerland	20,457	5	10,637	1,923	(12)	(17)	-
Poland	7,683	2	4,165	1,845	2	4	-
France	6,931	2	3,469	1,998	33	40	-
Portugal	6,655	2	3,452	1,928	18	24	-
Romania	5,185	1	2,581	2,009	39	43	-
Netherlands	4,101	1	2,084	1,968	(3)	-	-
Israel	3,478	1	1,776	1,958	11	18	-
Russian Federation	3,358	1	1,609	2,087	11	6	-
Sweden	3,238	1	1,697	1,908	21	27	-
United Kingdom	2,891	1	1,476	1,959	(4)	3	-
Denmark	2,212	1	921	2,402	12	10	-
Greece	1,526	0	778	1,961	41	51	-
Slovenia	1,203	0	634	1,897	(10)	(10)	-

Table 10: Uganda's market share in the main export destinations (European Market)

	Switzerland	Germany	Italy	Spain
1 st Global Supplier	Brazil (23.9%)	Brazil (29.6%)	Brazil (35.2%)	Vietnam (24.1%)
2 nd Global Supplier	Columbia(13.7)	Vietnam (10.8%)	Vietnam (12.0%)	Brazil (22.1%)
3 rd Global Supplier	Spain (6.6%)	Peru (7.5%)	India (9.4%)	Germany (12.1%)
1 st African Supplier	Ethiopia (3.7%)	Ethiopia (4.3%)	Uganda (3.8%)	Uganda (4.7%)
2 nd African Supplier	Kenya (2.3%)	Uganda (2.2%)	Ethiopia (2.4%)	Cote D' Ivoire (0.4%)
3 rd African Supplier	Uganda (0.2%)	Kenya (1.2%)	Tanzania (1.2%)	Togo (0.4%)

Among the 4 largest European markets, Uganda accounts for less market share. For example, in Switzerland, Uganda accounts for only 0.2 % of the total imports. Brazil accounts for the highest in almost all of the markets. The new entrant- Vietnam has made it very fast and is the second dominating the market. Uganda's competitors in the market are Ethiopia, Kenya, Cote d'Ivoire and Togo both internationally and regionally. A serious lesson needs to be learnt from Vietnam- the newest entrant on how it made it to these major markets.

Table 11: Asian Market

Importers	Trade Indicators						Tariff (estimated) faced by Uganda (%)
	Exported value 2014 (USD thousand)	Share in Uganda's exports (%)	Exported quantity 2014 (Tons)	Unit value (USD/unit)	Exported growth in value between 2010-2014 (% p.a.)	Exported growth in quantity between 2010-2014 (% p.a.)	
World	409,046	100	211,515	1,934	8	9	
India	15,858	4	8,435	1,880	11	13	100
Singapore	14,557	4	7,488	1,944	22	20	-
Korea, Republic of	5,676	1	2,848	1,993	193	194	-
United Arab Emirates	2,455	1	1,327	1,850	145	136	-
Korea, Democratic People's	2,316	1	1,318	1,757	315	141	

Republic of							
Japan	2,040	1	1,073	1,901	43	44	-
China	1,846	1	909	2,031	8	16	-

In the case of the Asian markets, there are two markets with a higher potential these are India and China characterized by high populations and an increasingly larger middle class. The other very significant and leading one at the moment is Singapore. Uganda needs to consolidate this market. Uganda should try to negotiate to lower the tariff imposed by India, currently around 100%, through high-level negotiations. With lower tariffs and a marketing effort, Uganda can triple its exports to that market, creating an extra \$22 to \$25 million in export sales, depending on the level of value-addition, during the next five years. In the case of China, Uganda has been making special efforts to access a bigger share of this market.

China and India currently imposes a 9.7% and 100% import duty respectively on coffee imported from Uganda, which could be lowered. Uganda can multiply its exports to that market five times, creating an extra \$4 to \$5 million in export sales, depending on the level of value-addition, during the next five years and intergovernmental bilateral engagements.

Table 12: The African market

Importers	Trade Indicators						Tariff (estimated) faced by Uganda (%)
	Exported value 2014 (USD thousand)	Share in Uganda's exports (%)	Exported quantity 2014	Unit value (USD/unit)	Exported growth in value between 2010-2014 (% p.a.)	Exported growth in quantity between 2010-2014 (% p.a.)	
World	409,046	100	211,515	1,934	8	9	
Sudan (North + South)	59,983	15	31,035	1,933	5	5	5
Morocco	7,746	2	4,029	1,923	95	79	-
South Africa	3,320	1	1,642	2,022	12	7	-
Kenya							

	1,081	0	574	1,883	(11)	(11)	-
Eritrea	166	-	83	2,000	(42)	-	2
Egypt	117	-	58	2,017	(60)	(15)	-

Uganda should try to establish good trading relations with both Sudan and South Sudan so as to be able to supply that market as well as to have unencumbered access to the market of Sudan (basically a reseller to the Arab world). Government of Uganda has also supported South Sudan to maintain peace and security thus creating an enabling business environment. Uganda therefore has a good relationship with south Sudan; therefore trade negotiations can easily yield the best opportunity for both countries. Another area of opportunity is further development of trade with other East African countries. They share the problem of producing small amounts and therefore, by putting together offer of the same kind of quality of coffee will further improve market penetration. In this case we only project a growth in exports to Kenya of 20% per year, which would add up to \$3million in the five years of the strategy.

4.3 Growth trends

Table 13: Export growth trends

Importers	Trade Indicators						Tariff (estimated) faced by Uganda (%)
	Exported value 2014 (USD thousand)	Share in Uganda's exports (%)	Exported quantity 2014 (Tons)	Unit value (USD /unit)	Exported growth in value between 2010-2014 (% p.a.)	Exported growth in quantity between 2010-2014 (% p.a.)	
World	409,046	100	211,515	1,934	8	9	
Italy	72,195	18	37,214	1,940	26	31	-
Sudan (North + South)	59,983	15	31,035	1,933	5	5	5
Belgium	54,818	13	27,712	1,978	23	30	-
Germany	46,657	11	24,697	1,889	-8	-4	-
Spain	25,133	6	13,578	1,851	-	5	-
Switzerland	20,457	5	10,637	1,923	-12	-17	-
India	15,858	4	8,435	1,880	11	13	100
United States of America	14,814	4	7,262	2,040	11	10	-
Singapore	14,557	4	7,488	1,944	22	20	-

Morocco	7,746	2	4,029	1,923	95	79	-
Poland	7,683	2	4,165	1,845	2	4	-
France	6,931	2	3,469	1,998	33	40	-
Portugal	6,655	2	3,452	1,928	18	24	-
Korea, Republic of	5,676	1	2,848	1,993	193	194	-
Romania	5,185	1	2,581	2,009	39	43	-
Ecuador	4,829	1	2,689	1,796		428	13
Netherlands	4,101	1	2,084	1,968	-3	-	-
Israel	3,478	1	1,776	1,958	11	18	-
Russian Federation	3,358	1	1,609	2,087	11	6	-
South Africa	3,320	1	1,642	2,022	12	7	-
Sweden	3,238	1	1,697	1,908	21	27	-
United Kingdom	2,891	1	1,476	1,959	-4	3	-
United Arab Emirates	2,455	1	1,327	1,850	145	136	-
Korea, Democratic People's Republic	2,316	1	1,318	1,757	315	141	-
Denmark	2,212	1	921	2,402	12	10	-
Japan	2,040	1	1,073	1,901	43	44	-
China	1,846	1	909	2,031	8	16	-
Greece	1,526	0	778	1,961	41	51	-
Slovenia	1,203	0	634	1,897	-10	-10	-
Australia	1,102	0	572	1,927	12	14	-
Kenya	1,081	0	574	1,883	-11	-11	-
Croatia	775	0	366	2,117			
Algeria	437	0	221	1,977			30
Cape Verde	305	0	154	1,981			5
Taipei, Chinese	287	0	144	1,993		27	-
Estonia	247	0	115	2,148		37	-
New Zealand	242	0	115	2,104	6	-2	-
Mexico	241	0	117	2,060			20
Ukraine	168		77	2,182	114	40	-
Eritrea	166		83	2,000	-42		2

Dominican Republic	134	-	77	1,740			14
Egypt	117	-	58	2,017	-60	-15	-
Canada	109	-	58	1,879	-25	-17	
Finland	86	-	38	2,263	-52	-50	-
Macedonia, The Former Yugoslav Republic of	72	-	38	1,895			5
Latvia	71	-	38	1,868	5	-	-
Armenia	69	-	38	1,816			10
Viet Nam	69	-	40	1,725	-64	-31	15
Hong Kong, China	39	-	19	2,053			-
Dominica	37	-	19	1,947			45
Malaysia	33	-	18	1,833			-
Rwanda							-

The trend shows market growth both in value and quantity of the major importers for last five years is very impressive except for a few countries like Germany, Switzerland and Netherlands. The great potential exhibited by the new markets in Japan and Korea is a great opportunity to embrace, engage to expand and strengthen.

4.4 *Quality requirement of the final market*

There are about 27 European coffee standards that need to be met to enter specific markets. Some of them are globally accepted where as others are set and required by different specialty markets. The following are some of the commonly recognized.

Harvested By Women Norms and Standards: Almana Harvest Corp., a US based non-profit organization working to accelerate and sustain an international marketplace for the world's first gender certified coffee with the "Harvested by Women Seal of Certification". Almana Harvest thus provides an operational

infrastructure for the IWCA and its chapters in Coffee Consuming countries. The International Women's Coffee Alliance (IWCA) works through the so-called 'success through localization' method. The IWCA currently has national chapters' organization operating in 12 coffee producing countries in South America, Asia and Africa and 12 additional countries being classified as "information".

4C Association: The 4C Association is a multi-stakeholder organization that brings together actors that are genuinely committed to addressing the sustainability issues of the coffee sector in a pre-competitive manner. The members of the 4C Association include coffee farmers, traders (importers and exporters), industry players (coffee roasters and retailers) and civil society (non-governmental organizations, standard setting initiatives and trade unions). Members also include individuals committed to the Association's aims. This global community works together to improve the economic, social and environmental conditions of farmers who make their living growing coffee. Members also include individuals committed to this goal. Together the 4C Members developed the 4C Code of Conduct which sets out baseline social, environmental and economic principles for the sustainable production and trade of green coffee.

UTZ Certified: UTZ Certified is an independent, non-governmental, not-for-profit sustainability label and program dedicated to create an open and transparent marketplace for socially and environmentally responsible agricultural products. UTZ has developed three main tools to achieve these goals: the UTZ Traceability System, the UTZ Code of Conduct and the Chain of Custody documents

GLOBALG.A.P. Crops: GLOBALG.A.P. is a private sector body that sets voluntary standards for the certification of production processes of agricultural (including aquaculture) products around the globe. The GLOBALG.A.P Standard is primarily designed to reassure consumers about how food is produced on the farm by minimizing detrimental environmental impacts of farming operations, reducing the use of chemical inputs and ensuring a responsible approach to worker health and safety as well as animal welfare.

MPS-Socially Qualified (SQ): MPS is a Dutch private organization managing various certificates, with the aim of promoting sustainability in the horticultural sector. It has developed an environmental standard (MPS-ABC) on basis of registration of four environmental elements: minimum use of chemical crop protection, nutrition, and energy and split collection of waste. MPS also addresses social and quality issues via other certification schemes.

Sustainable Agriculture Network - Rainforest Alliance: The Sustainable Agriculture Network is a network of conservation groups committed to community-based conservation initiatives and research. SAN develops and implements social and environmental standards applicable to tropical agriculture. The certification program for SAN standards is operated by Rainforest Alliance.

SAI Platform - Farm Sustainability Assessment: SAI Platform has developed the Farm Sustainability Assessment to support farmers and companies in their procurement of sustainably produced agricultural raw materials. The Farm Sustainability Assessment has been developed with input from SAI Platform's members, suppliers, farmers and external stakeholders. The Farm Sustainability Assessment is the first globally focused, industry aligned tool for sustainable agriculture. The Farm Sustainability Assessment is a simple tool to assess farm sustainability, fully in line with the Principles and Practices for sustainable agriculture as developed by SAI Platform. Farm sustainability covers environmental, social and economic aspects. An easy scoring mechanism provides farmers with an overview of their farm's sustainability.

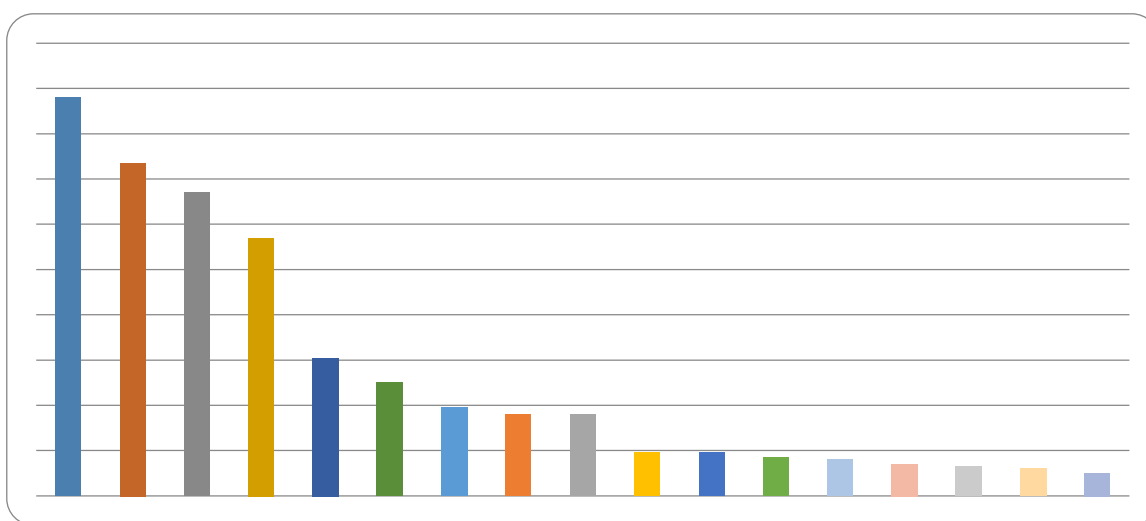
Unilever Sustainable Agriculture Code: The Unilever Sustainable Agriculture Code was launched in 2010 as the basis of the Sustainable Sourcing program, inspired by the company's sustainability commitment that by 2020 Unilever will buy all its agricultural raw materials from farms applying sustainable agricultural practices. The sustainable sourcing program relies on compliance with the Unilever Sustainable Agriculture Code, either through self-assessment and verification against the Code or through external certification standards recognized as equivalent to the Code, such as those of Rainforest Alliance or the RSPO. Through mandatory and good practice standards it defines a process of continuous improvement. This Code applies to all our suppliers of agricultural raw materials, the farmers producing them and contractors working on farms. Suppliers must comply with the Code's Scheme Rules, which detail external certification standards and self-verification methods.

Naturland: Naturland is an independent, non-governmental, non-profit organisation which promotes organic farming with social responsibility and fair partnerships on a regional, national and global level. It supports long-term and fair business partnerships while putting a lot of efforts in developing projects with small scale farmers. Naturland is both an organic farmers association with farmers as members, delegates and directors as well as a standard setting and certification body with its own label. It is run with the

principles of grassroots democracy. Standard setting and certification was ever since a trailblazing working area with new standards being developed beyond organic agriculture, such as social responsibility, organic aquaculture, organic forestry, North-South fair partnerships or sustainable capture fishery. Apart from its offices in Germany, Naturland works with a network of representatives in Egypt, Ecuador, India, Peru, Bolivia, Tanzania and in the USA. Currently over 40,000 farmers manage an area of some 250,000 hectares according to the Naturland standards.

4.5 Major importers of Ugandan Coffee and their market share (%)

Figure 11: Major importers of Ugandan Coffee and their market share



4.6 List of major buyers, processors

Table 14: Major Buyers of Ugandan Coffee at the International market

	Company	Market Share
1	Sucafina	22.17
2	Olam International	12.26
3	Altasheel	7.16
4	Bernhard Rothfos	5.21
5	Ecom Agro Industrial	4.83
6	Etg Commodities	4.63
7	Icona Café	3.21
8	Aldwami Company	3.18
9	Strauss Commodities	2.92
10	Socadec	2.65

11	Louis Dreyfus	2.57
12	Cofftea	2.57
13	Namyang	2.1
14	Abu Asma	1.9
15	Bercher Consulting	1.8
16	Abaco International	1.71
17	Koninklij	1.22
18	Vayhan Company	1.22
19	Volcafe	1.15
20	Elmathahib	1.1
21	Tata Coffee	0.99
22	CoffyHandels	0.96
23	China Tea & Coffee	0.8
24	A Van Weely	0.78
	others	10.13

Table 15: Leading Roasters and their Locations

	Company	Origin
1	Nestlé Sa	Switzerland
2	Kraft Foods From The USA (Since 2012, Mondelez International Inc)	USA
3	De Master Blenders 1753 Nv (Netherlands	The Netherlands;
4	Tchibo GMBH, Aldi (Germany)	Germany
5	Lavazza and Segafredo From Italy.	
6	Melita, Aldi and Dalmayr	In Germany
7	Ahold Coffee Company And United Coffee (UCC)	The Netherlands;
8	Rombouts	Belgium
9	Löfbergs Lila	Sweden
10	ArvidNordqvist B Sweden	Sweden
11	Starbucks	USA/ UK

Figure 12: Roasters/Wholesalers and Location

- 24grad Kaffee Rosterei - Germany
- Brandmeester's – The Netherlands
- Cafe Direct - UK
- Carasso - Italy
- Coffee Culture - Ireland
- Grower's Cup - Denmark
- Drago Mocambo - Germany
- Bertschi Cafe - Switzerland

4.7 *The gaps between the final market requirement*

The final markets demand quality coffee beans that meet the specification of the importer and international standards. Low quality that meet the minimum will always fetch lower price where as high quality premium coffee will always fetch for better prices. Therefore increasing the quality of coffee is paramount for the Ugandan producers.

Competitive challenges

- There is poor and inconsistent quality control of coffee across the chain coupled with limited capacity to monitor and enforce quality standards. This leads to supply of lesser quality compared to when the standards were strictly monitored from production stage.
- The productivity of coffee of 0.5 Kg/tree/season is still low compared to 2 – 3 kg per tree if the right agronomic practices are applied. Currently this is limiting the quantity of coffee put on the world market by Uganda compared to Vietnam and Brazil where they get about 12-14 and 7-8 kg per tree respectively.
- There is low local consumption of coffee and coffee products in Uganda and the East African region. Increased domestic consumption would contribute to boost local farmer incomes and increased competitiveness as for the case of Brazil where about 50% of its production is consumed domestically.
- There is limited willingness for formal market linkages with farmers. Currently most of the coffee exported is aggregated by the multitude of traders. This makes the farmer to get a very low share of the market price for their coffee. However, where farmers work under a cooperative arrangement,

they are able to get about 50% of the market price for their coffee. The farmer based and owned models need to be supported and promoted.

There are inadequate appropriate financial products, especially for farmers and the big exporters of coffee. Many financial institutions don't find agricultural financing more attractive. Therefore production is underfunded leading to low production and productivity and consequently Uganda selling less coffee compared to the potential that exists.

What other countries have done

Vietnam's government came in full force to support the farmers with inputs (input intensification), providing more land for expansion, establishment of effective policies as strategies supported by government and more importantly the government itself got involved to searching for the market. This brought a lot of coffee on the world market and enabled the country to get more foreign exchange. Currently Vietnam earns more than 2 billion dollars per year from their coffee.

The Ethiopian government on the other hand took lead in establishing licensing schemes and branding of their coffee. Currently about 100 licensing agreements have been signed between the Ethiopian producers cooperatives with importing, roasting and distribution companies in North America, Europe, Japan and South Africa. The government negotiated with Starbucks Company to distribute, market the Ethiopian coffee. All these initiatives have enabled the farmers to double their share and are currently about \$6-8 per kg compared to Uganda's \$ 2.39 -3.09 per kg for Arabica coffee.

Corrective measures:

- Strict enforcement of the coffee management standards along the value chain. This will improve the quality standards of Uganda's coffee thereby increasing the value benefits per kilogram of coffee.
- More investment into the agro input system. This will make farmers access and regularly apply the fertilizers and pesticides which will result into increased productivity leading to farmers earn more than what they are currently getting.

- The efforts of UCDA need to be complemented to promote both local and regional coffee consumption. This will widen the market for the locally produced coffee which in turn stimulates production.
- Establishment of a financial institution which provides funds responsive to agricultural terms and requirements. This will empower the farmers to increase both production and productivity.

In general terms, the international market is growing demanding quality coffee. Uganda needs to increase on the quantity, quality and an enabling environment more on production to earn more from the growing market that is becoming more differentiated demanding specific requirements. In all this, Uganda stands to gain more because of the climate, soil type that influence the quality of coffee. Uganda's premium coffee will become more competitive if the key quality and quantity parameters are addressed.

5 ANALYSIS OF HARD AND SOFT LOGISTICS

5.1 Road Transport

Of the 1,898 kilometres of road that comprises the Northern Corridor from Mombasa to Bujumbura, 45% of the road is reputed to be in poor or very poor status, and 42% of the 1,889 kilometres of rail tracks is in poor status and in need of some repair. As reported by the World Bank LPIs, and users rate the road portion in Uganda to be in much worse state than in Kenya, with two-thirds of respondents rating the quality of Uganda roads as low/very low.

Table 16: Status of the Northern corridor

Status	Length in Km	Percentage (%)
1 lane	1,738	91.5
2 lane	161	8.5
Paved	1,896	99.8
unpaved	3	0.2
Good	259	13.4

The statistics above indicates that there is much scope for improving the Corridors' infrastructure, and improvements in the condition of both roads and rail would have considerable effect on the cost and performance of freight logistic services in the region. The positive note is that governments committed and have actually invested heavily in the road network and the situation has improved.

5.2 Cargo Delays

Delays take place at two main points; one at the boarder points, this becomes a problem when no prior arrangement is done. It takes about 2 days. In the case of South Sudan, that problem is enormous. It was reported that it takes longer and not easy to complete. This is attributed to the newness of the country and the lack of systems and the lack of experience of the officers at the custom. However, it was reported that overall other than South Sudan, there has been an improvement where it previously took 4-5 days to clear the truck. The logistics companies in order to improve on the clearance of documents, they send them when the truck is still in Kampala. In addition, they also deploy a person at the border to move the

documents.

The second delay takes place at the port. The port is overcrowded despite the continuous expansion. Overall, it was reported that the delay was also reduced but more needs to be done.

5.3 Government Policies

It was reported that it looks clear to the freight operators that the government of Uganda favors the road transport than the rail. Despite the fact that rail is cheaper and can easily handle the bulk. This is the main reason why the costs of transporting the goods and in this case coffee are higher. A good freight logistics sector should have different transport modes complementing and competing with each other. In particular, railways and trucking can compete directly with each other for long-haul overland transport. This is what accounts for surface transport in East Africa is currently dominated by road transport. The study recommends that the policy environment for railways and trucking be examined and efforts made to balance these sectors, creating an environment where the two modes effectively
Compete with each other

5.4 Enforcement

There is a problem of poor or limited enforcement of traffic laws. In this case the behaviors of trucks drivers some times are demanding and sometimes lead to accident. These accidents when they occur, they exporter losses and most time they are not ensure as they ar in transit to Mombasa. There is also negligence on the effective enforcement of axle load regulations. This results into shortening the road durability because of the excess load. If the enforcement is well is effected, the road maintenance will be improves as well as also helping to create a level playing field for railways.

It therefore recommended two issues have to be done: that is; Capacity building of traffic law enforcers for stronger enforcement of loading limits; and Capacity and awareness building among transporters.

5.5 Corruption

Bribes are reported to be a major cost at border points and weigh bridges causing the costs of doing business higher. Studies estimated bribes to be to be in the order of US\$8 million per year within the EAC. Small and large corruption practices due to weak work ethics are pervasive in the East African freight logistics market. The World Bank LPI Survey, for instance, reports that informal payments are solicited for 50% of the shipments in Tanzania, 66% in Uganda, and 11% in Kenya. Often, clearing agents connive with

Customs officials to demand facilitation fees and other payments from importers and exporters, especially when Customs documentation is not in order. Operators call this type of corruption 'facilitation fees' and consider them to be normal although they recognize that they push up the costs of doing business. These fees are therefore perceived to be doing no harm to competition and market structure. It is recommended that code of ethics be introduced and all stakeholders sensitized and monitored to ensure that the cost of doing business is reduced.

5.6 Pilferage and Security

Transport operator reported pilferage to be a major cause of high operating costs, estimated to amount to about 0.5% of the total value of cargo transported. The World Bank LPI Survey reports that 50% of the shipments in Tanzania, 33% in Uganda, and 11% in Kenya are affected by theft, and that pilferage involves any type of cargo, coffee inclusive. The lack of security for the transporters on the Corridors is also a serious issue. The largest security issue is coffee theft, reportedly often involving drivers as accomplice and fairly organized. Since much pilferage takes place with the collusion of the truck driver, it is recommended that a number of solutions sought like increasing driver's salaries, capacity building of drivers, improvement of dispute resolutions between drivers and their masters. It is also important that tracking of the load must be improved to detect any attempted pilferage on a real time basis.

5.7 Rail Transport

The Northern Corridor rail system operates within Kenya and Uganda as a narrow gauge (1,000 mm) system. The line extends from the port of Mombasa to Nairobi, and further to Malaba, connecting to the Ugandan rail system serving Kampala and on to Kasese close to the DRC border. There are several spurs, the most important being the line to Kisumu on Lake Victoria, and the spur to Magadi Soda south of Nairobi. The rail link to Tanzania is closed, because of low traffic demand. This is also the case for the line between Kampala and Kasese, and the northern Ugandan line from Tororo through Gulu to Pakwach on Lake Albert, which has a road /rail bridge across the Nile. Rebel activity is also partly responsible for closure of this line, which was built as recently as the 1960s.

RVR inherited 39 mainline (Class 93/94) diesel electric locomotives from KRC, which form the core of the mainline fleet. These locomotives are North American GE U26Cs, fitted with 2,600 hp engines. A total of 26 were built in 1977 and the remainder in 1987 or later. The bulk of the mainline fleet is therefore 37 years old,

but remains serviceable and suitable for rehabilitation and upgrading. On the RVR Uganda section between Malaba and Kampala, the mainline locomotives are much smaller, similar to those used on the TRL system in Tanzania, 1200hp. During the 1980's the Nalukolongo railway workshop near Kampala was equipped and upgraded through a €40 million program by KfW, and it is well qualified to carry out full refurbishment of the Uganda locomotives, subject to financing being available. The longer term objective would be to replace the Uganda locomotives with larger units similar to those operated in Kenya, to allow for seamless railway operations.

In 2013, the Northern Corridor railway network carried about 1.2 million tonnes of goods, amounting to 5.4% of all the goods imported through the Mombasa port. The bulk of the RVR mainline fleet is over 39 years old and in need of servicing. While RVR has been making efforts to rehabilitate some tracks and add capacity and is offering new services, etc., the railway services are still seen as poor by many of those who we intervened although some people have started recognizing the improvements that RVR has been making.

5.8 Inland ports and waterways

Inland waterways played an important role in the Northern Corridor but this mode of transport has been in decline for a number of years. If this particular transport mode is re invigorated, could have significant beneficial impacts and reduce the dominance of road transport and the needs for additional road investments by providing a cost effective and viable alternative especially around Lake Victoria (Kenya, Uganda, and Tanzania). Potential cost savings in the transport of goods and passengers around Lake Vitoria.

Off-setting these advantages are a number of factors that make it difficult to achieve them; they are:

- Requirement for relatively large flows of traffic to off-set high fixed costs;
- Years of disinvestment in port facilities and equipment;
- Lack of fleet of vessels able to transport goods and passengers;
- Lack of support facilities such a shipyards and repair facilities for the vessels;
- Lack of trained personnel to operate the vessels and equipment; and
- Lack of standardized regulations between countries;

These issues may make the option very expensive and may take longer to be addressed.

5.9 Ports & Maritime Transport

All the interviewees reported that congestions at the port of Mombasa have been significantly reduced and the port recently commissioned a new container berth (Berth 19) which has raised the container handling capacity from the previous 600,000 TEUs to 800,000 TEUs per year and provides for handling of larger vessels with 16-meter draft. However, the container throughput of the port of Mombasa in 2012 was already over the new capacity, and the construction of a second container terminal with 1.2 million-TEU capacity has been in underway since 2012. The second terminal is expected to be ready for operation by 2015.

5.10 Air Transport

A very little quantity of coffee is transported by air. What is common is the smaller cargo between 5-200kg of coffee beans sent mostly to intending buyers for testing. It is also a growing trend for specialty markets that require small but regular amounts of coffee where high premium is paid to offset the high freight costs associated with air transport reaching as much as USD 4.90 per kilogram. This figure is one of the highest in the world. Coffee being bulky commodity, road and water transports are the most commonly used to deliver that product to the final destination

5.11 Types of services offered by logistics service providers

Trucking service providers are among the largest key players in the freight logistics market in East Africa. Clearing and forwarding companies often provide transportation services to clients, either as an integrated company service, using a fleet that is owned by the same firm, or through an arrangement with third-party transporter firms. Some cargo owners have their own truck fleet to carry their own cargo or may have a 100% subsidiary trucking firm that give them priority services over other transport contracts. The reliability of the trucking service provided is essential because engaging dubious transporters can cause delays if the truck is seized by Customs or road authorities during transit even if the qualifications of the clearing firm are impeccable. In addition, freight forwarding firms remain liable to Customs for all bonded cargo in transit, in the event that it is lost by the trucking company.

Trucking service, being one of the major sub-industries within the freight logistics market, has a number of further support functions and rules/norms. The analysis shows that there are a number of constraints limit the efficiency of the trucking service market in the in the EAC region. This makes the provision of these

services unnecessarily expensive. The main cost driver is the high cost of fuel and maintenance. In fact, the policy encourages fuel adulteration, which causes increased engine maintenance costs. Another major cost driver is the lack of qualified professional drivers and the substantial absence of human resource (HR) practices aimed at developing existing drivers as a valuable industry asset. Lastly, the sector presents large disparities in the availability, and consequently in pricing, of trucking services across the region. This is due to a combination of the lack of backhauling opportunities from certain locations and transport service providers' preference for operating on major corridors carrying major commodities.

5.12 Customs procedures within the port area

Excessive customs procedures within the port area with respect to exports are greatly affecting vessel turnaround time. The many processes that export containers need to undergo within the port area means that cut – off times are not strictly being adhered to, thereby affecting the vessel turnaround time. Exporters and shipping lines have expressed their frustration at the requirement that all export containers have to undergo scanning despite the fact that stuffing is always supervised by a customs officer. Clearly, this is a duplication of procedures

Goods clearance is rated as average. This is due to the delays, and the extent of none ethical behavior exhibited by some of the staff and fright handlers. For the case of the South Sudan border, it was rated very low because, the poor handling, behavior of custom staff and the low non coordination plus the negativity exhibited to Uganda businesses.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 *Coffee export market potential*

Given the projections of the world coffee aggregate demand, the new comers like India, china, Koreas and Japan, market is clearly growing. The traditional importers of Ugandan coffee are also generally increasing their quantities demanded. This coupled with the increasing domestic consumption of coffee provide an opportunity for Ugandan to strategically produce to earn a significant share of the world's second widely traded commodity. It is therefore an opportunity to invest strategically in all possible areas coffee value chain.

6.2 *Potential areas for investment along the coffee value chain:*

- Supporting government coffee strategic plan to realize the projection of producing 20 million bags by 2040. This requires building capacity and supporting expansion of infrastructure (storage, road networks and machinery) to handle the expected sharp increase in coffee volumes.
- Supporting export market driven schemes like specialty and certification schemes.
- Support to government to facilitate the role of regulation and enforcement and policy formulation and implementation.
- Supporting local investors for large scale coffee growing schemes on a nucleus and out grower model to easy marketing of their coffee.
- Support farmer based models that empower them to produce and sell direct to international buyers as for the case of NUCAFE.
- A serious and aggressive effort is needed need to promote Uganda's Coffee in both the current and emerging markets like what Vietnam did. The Asian present and potential markets provide an opportunity to Uganda given the existing bilateral engagements. For example, Japan is a big coffee consumer but Uganda' market share is coffee is so low. India has highest tax on imported coffee but the imports are on the increase. Government of Uganda has to engage India or a lower tariff.
- Supporting the entrepreneurship efforts to establish roasters and grinding machinery for the growing domestic and regional markets through tax exemptions and promotion.

6.3 Critical issues regarding logistics

Theme	Issues	Strategic Corrective Measures
1. Road Transport	<ul style="list-style-type: none"> Higher and often varying road transport costs to Mombasa. Cost of truck and time consumed in transporting coffee in cargo trucks including traffic jam especially in urban areas and at customs 	<ul style="list-style-type: none"> Support the widening of trunk roads with adequate financing schemes for road transport and transit facilities. Good regulations governing entry of players into the logistics industry should be established to ensure only professional operators More investment in the road network More investment in real time tracking technologies Axle overloads needs to be supervised to ensure that improved roads are well maintained. Brokerage services could also be strengthened by new IT solutions including mobile applications to track on the road cargo. Since much pilferage takes place with the collusion of the truck driver, additional innovative solutions would involve improving industrial relations, professionalizing the drivers, and increasing drivers' salaries.
2. Rail Transport	<ul style="list-style-type: none"> Unreliable due to the aged nature of the entire system. The inland railway lines are having collapsed effectively connected to the main rail corridor. 	<ul style="list-style-type: none"> Support the development of rail freight terminals towards a standard gauge railway in the region to improve on railway transport
3. Inland Waterway Transport	<ul style="list-style-type: none"> Never been seriously developed for cargo transport Old and aged piers with only Port Bell being minimally functional. 	<ul style="list-style-type: none"> Creating cost-efficient waterway outlet (transport) options.
4. Ports & Maritime Transport	<ul style="list-style-type: none"> Inexistence of regulator maritime services because of the landlocked status of Uganda. This is a 	<ul style="list-style-type: none"> Establish a long term strategy to continuously advocate for laws and practices that boost and ensure efficiency at Mombasa port

	<p>fundamental bottleneck on Uganda's international supply chains both for imported inputs and timely international connectivity for exports.</p>	
5. Air Transport	<ul style="list-style-type: none"> • Inadequate airport infrastructure to fully comply with international standards, coupled with handling charges much higher than regional neighbors 	<ul style="list-style-type: none"> • Expanding terminals for ground-handling of cargo • Establish a price structure that allows and promotes competitive and stable prices for cargo handling.
6. Types of services offered by logistics service providers	<ul style="list-style-type: none"> • Containerization challenges because containers are expensive relative to neighboring countries (Kenya and Tanzania) • Customs documentation has improved but not all agencies are active on IT driven single window platforms being established , • Storage services especially at ports of entry in Mombasa are expensive and insufficient 	<ul style="list-style-type: none"> • Work with the Kenyan Government to increase the capacity of storage yards and ensure that they are efficiently managed • Support efforts towards trade documentation automation processes and have all relevant agencies on a single window for trade documents and information • Support improving the professionalism of clearing and forwarding agents. • Support to the Federation of East African Freight Forwarders Associations (FEAFFA) to establish a training program • Support interventions to facilitate new private and public investments in professional training in the
7. Customs	<ul style="list-style-type: none"> • Long queues of trucks clogging borders is still a common image on borders • Delays experienced by operators sometimes when enforcers are looking for "facilitation fees" 	<ul style="list-style-type: none"> • Provide support towards the effective implementation of single windows for trade documentation and up scaling digitization of the customs processes and establishment of reliable and efficient internet among partner states • Improvement in the customs and port management to reduce excessive customs procedures within the port area with respect to exports which greatly affect vessel turnaround time. • Establishment of fast tracking channels to allow for the fees to be paid transparently and eliminate the existing practice of making illegal payments as stated

<p>8. Institutional framework</p>	<ul style="list-style-type: none"> • Most of these institutions do not follow any harmonized laws. • Laws have not been revised to reflect the OSBP operational framework. • Corruption 	<ul style="list-style-type: none"> • Support the EAC to harmonize laws that govern trade facilitation activities along the northern corridor countries • Minimize human interactions that abet rent seeking and corruption practices. More and more automation should be done • Support to establishing legal and transparent fast track document processing channels for operators to use, which are transparently monitored • Continuous training of staff and freight forwarders
<p>9. Logistics performance of users of logistics services</p>	<ul style="list-style-type: none"> • There is not much one can do about the existing imbalance between imports and exports in there region. However, the backhauling imbalance can be minimized by establishing modern logistics brokerage companies that can offer 	<ul style="list-style-type: none"> • Develop corridor performance metrics in terms of travel time and cost (Corridor Performance Measurement and Monitoring, or CPMM) along the main transport corridors and major ports.

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**REPORT ON
VALUE CHAIN ANALYSIS OF
THE DAIRY SECTOR IN UGANDA**

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EXECUTIVE SUMMARY

Overview of the Dairy Value Chain: The main dairy products processed and marketed in Uganda included, UHT milk, powdered milk, pasteurized milk, yoghurt, cheese, butter, ice cream and ghee. Milk production is along the cattle corridor stretching in about 29 districts from the South Western region through North to the North Eastern Part of the country (Karamoja). According to the Dairy Development Authority (DDA), Uganda's milk production can be segmented into six milk sheds with contributions ranging from 7 percent (Karamoja shed) to 25 percent (South Western shed). Estimates from DDA shows that by 2014 over 1.9 billion litres of milk was produced in the country of which 30 percent was consumed at the farm and 70 percent are marketed. Of the marketed milk, the processed volume was only 20 percent implying that 80 percent was marketed in raw form. Milk production worldwide amounted to 782 million tons in 2013, an increase of 1.3 percent in comparison with 2012.

Structure of Dairy VC: Milk supply chain is structured into two segments that include the formal and informal markets. The informal marketing channels reach the buyers through various middle men from the producers (usually small scale farmers of livestock). The formal channels are usually well defined right from the bulking centres through the processors up to the last buyer. Much of the milk in the country comes from Western, Eastern and Central milk sheds with a combined proportion of over 80 percent. There are numerous collection and bulking agents in the country of different sizes especially in sheds with a lot of milk supplies such as Western and Central Milk Sheds. The number of milk coolers in the country was estimated to be 768 by 2013. The number of large, medium and small scale processing plants in the country is currently about 42 producing mainly pasteurized milk, UHT milk, yoghurt and ice-cream. Major milk processors are mainly based in Kampala and Mbarara areas.

Exports and End Market: In 2014 powdered milk was the most highly exported milk (over 1.7 million kg). Uganda's formal dairy export in 2014 amounted to USD 27 million rising from 4.5 million in 2008. The six year average growth rate is about 36 percent. Under similar conditions, export quantities can be expected to reach about 18.1 million litres of milk equivalent by 2020 and about 25 million litres by 2026. Formal exports indicate that much of Uganda's dairy products go to the neighbouring countries which include Burundi, DRC, Kenya, Rwanda, South Sudan and Tanzania but the greatest share to Kenya. Formal exports to Kenya in 2014 reached 34 billion shillings, 59 percent of observed formal exports of dairy.

Implications and conclusion: Satisfying the local market with processed dairy product requires concerted effort between government and the private sector. There is need for division of roles to be embraced where each stakeholder plays a role they are better positioned to effectively perform. This should be spearheaded and supported by government through DDA which is the apex agency in dairy development. Transport cost is one of the major cost factors for processors and exporters and the main intervention to reduce transport costs is to develop modern rail infrastructure on major routes but also improve road infrastructure network for collection especially in rural areas for easy accessibility. Developing modern livestock farming practices by the farmers will ensure steady supply of milk. This will also call for reward for quality to farmers and milk collectors as an incentive for quality improvement. There is also need for farmer's bank or loan scheme to capitalize investment in the dairy industry especially in machinery and equipment which require much financing.

1. INTRODUCTION

1.1 Objectives of the value chain analysis

The Government of Japan is spearheading efforts to assist the Government of Uganda in the formulation of the development plan of logistics network along the Northern Economic Corridor in order to facilitate the economic development of the region. Dairy has been identified as a key commodity expected to grow as major export commodities of the areas along the corridors with the potentials of higher value addition in Uganda. To support the master plan, a detailed study of the dairy value chain has been conducted;

- To estimate the size of the export markets of dairy products produced in Uganda.
- To identify critical issues regarding logistics for the development of the Dairy value chain (VCs)

1.2 How the report is organized

This report details the dairy value chain analysis to inform the Formulation of Master Plan on Logistics in Northern Economic Corridor. The methodology involved review of existing information and statistics about developments and progress in the dairy sector as well as stakeholder interviews to corroborate information.

The general analysis of the value chain is detailed in section two of the report starting with general overview, structure and connectivity of activities within the chain. The section also highlights the main players in the chain driven by processors, value addition along the chain with related cost factors.

Section three of the report analyses the export market with the import factor. Medium term projections have been deduced based on long term average. Performance of dairy in the export market is analysed in section four under end market analysis showing competition and the general situation in the export market.

Hard and soft logistics analysis is provided in section five with much of it relating to transport. Transportation of dairy products is mainly by road but also by sea. Rail and air transport is almost none existent in the sector. Conclusions and recommendations are provided in final section six of the report.

2. DETAILED VALUE CHAIN SURVEY AND ANALYSIS

2.1 Overview of the Dairy Value Chain

The Uganda Investment Authority undertook a comprehensive study of different sectors of the economy in 2008. The main dairy products processed and marketed in Uganda included was identified to be, UHT milk, powdered milk, pasteurized milk, yoghurt, cheese, butter, ice cream and ghee. This study focuses in a broad sense to general dairy products but with emphasis on cattle milk whether raw or processed (UHT pasteurised or powdered).

Milk production in Uganda can be traced along the cattle corridor stretching in about 29 districts from the South Western region through North to the North Eastern Part of the country (Karamoja). According to the Dairy Development Authority (DDA), Uganda's milk production can be segmented into six milk sheds based on the differences in geographical agro ecological characteristics, market dynamics and cattle population.

Table 1: Contribution of the Milk Sheds to the National Milk Production

Milk Sheds	Contribution to National Milk Production (%)
South-western	25
Mid-western	12
Central	24
Eastern	21
Northern	11
Karamoja	7
TOTAL	100%

Source: DDA, 2015

The leading sheds include South Western and Central milk sheds together contributing about 50 percent of the total national production. While South-Western and Central regions continue to experience surplus of marketable milk, the other milk sheds particularly Eastern and Northern experience deficit almost throughout the year. Estimates from DDA shows that by 2014 over 1.9 billion litres of milk was produced in the country of which 30 percent was consumed at the farm and 70 percent marketed. Of the marketed milk, DDA estimates processed volume to be only 33 percent implying that 67 percent is marketed in raw/loose form.

The world dairy situation 2014 showed that Milk production worldwide amounted to 782 million tons in 2013, an increase of 1.3 percent in comparison with 2012. With an estimated population of over 7 billion people in 2013, global average per capita availability of dairy products, expressed in milk equivalents, was 109.6 kg in 2013, or an increase of 0.2 percent in comparison with 2012. This is far above Uganda's per capita milk consumption estimated at 58 litres by 2010 growing from 16 litres in 1986. However, FAO acknowledges that accurately quantifying home dairy consumption is inherently difficult.

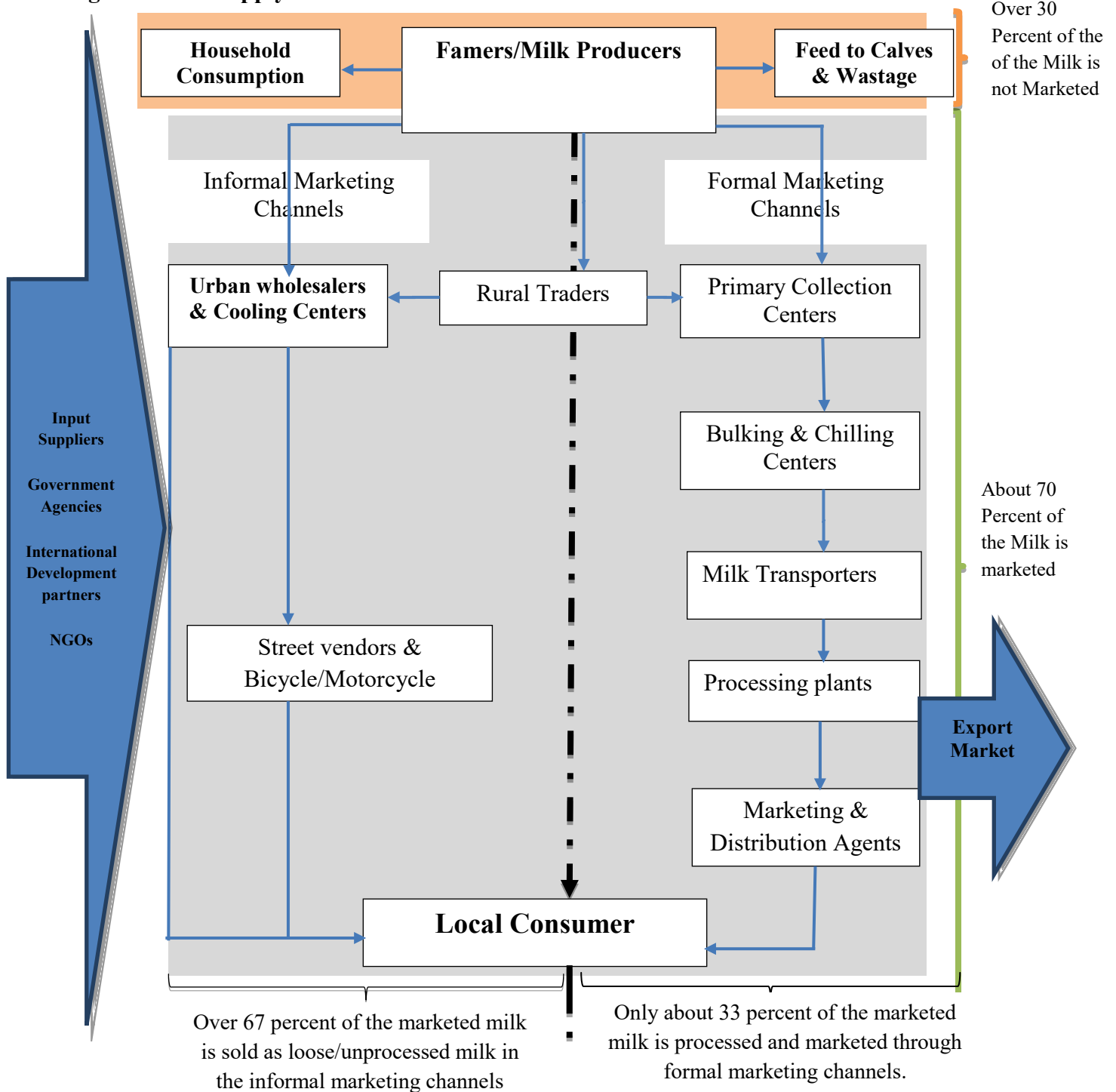
Uganda's GDP estimates rebased to 2009/10 indicates that Agriculture sector contributed 26.2 percent of the Gross Domestic Product (GDP) during the fiscal year 2009/10 and this gradually declined to 22.8 percent in 2013/14. The contribution of livestock has similarly reduced from 4.5 percent to 4.0 percent during the same period. It is estimated that the dairy sub-sector contributes about 9 percent of total agriculture GDP and about 3 percent of the country's overall GDP. A report of the Uganda Business Inquiry 2009/10 showed that in the Agriculture sector, Net Profit was the highest component of Value Added contributing 37 percent of total Value Added while Bad Debts component was the lowest, contributing less than 0.1 percent. This implies that the Agriculture sector has high profitability with less risk on bad debts making it one of the attractive sectors for investment.

A review of the dairy sector by FAO, DDA and MAAIF in 2010 identified the private sector as the key player in development of Uganda's dairy industry. The private sector plays key roles in development of infrastructure for milk transport, bulking and processing; marketing and market promotion; supply of inputs; as well as provision of advisory and business development services particularly animal health, breeding, farmer training and financial services. These include development partners in the sector and NGOs that support operations of the sector. The public sector was observed to be active in areas of research, education, and public infrastructure development. However, DDA has the mandate to provide development and regulatory services to ensure increased production and consumption of milk, sustainable and profitable dairy industry sector that will contribute to economic development and improved nutritional standards in the country.

2.2 Structure of Dairy VC

Milk supply chain is structured into two segments that include the formal and informal markets. The informal marketing channels reach the buyers through various middle men from the producers (usually small scale farmers of livestock). The formal channels are usually well defined right from the bulking centres through the processors up to the last buyer. William Matovu, the Country Director of Heifer International - Uganda Programme, identifies major dairy industry players to include dairy farmers, milk traders, dairy processing companies, milk producer cooperatives and associations of milk processors and traders, public institutions, NGOs, and input manufacturers/ distributors. This is generally in line with the supply chain suggested by Balikowa (2011) and here adjusted for processing and export indicated by stakeholders as shown in the figure 1 below.

Figure 1: The Supply Chain of Milk



2.3 The route(s) how Milk moves geographically

As presented in **table 1** above, much of the milk in the country clearly comes from Western, Eastern and Central parts with a combined proportion of over 80 percent. The cattle corridor in Uganda spans through 29 of Uganda's districts as of 2012, the entire length of the country southwest to northeast. The number of districts has so far increased but within the same areas. The major districts in relation to connectivity have been grouped according to the milk sheds as shown in the **Table 2** below.

Table 2: Routes for milk transportation

Milk Sheds	Major Districts	Contribution to National Milk Production (%)
South-western	Bushenyi, Mbarara and Ntungamo-Exit at Mpondwe	25
Mid-western	Masindi, Kamwenge and Buliisa,	12
Central	Kiboga, Luwero, Mubende, Nakasongola, and Kyankwanzi	24
Eastern	Katakwi, Kaberamaido, Kumi, Soroti, Bukedea and Serere – Exit through Tororo	21
Northern	Apac, Lira, Amolatar and Dokolo	11
Karamoja	Kotido, Moroto, Nakapiripirit, and Kaabong	7
TOTAL		100%

From **Table 2** above, it is evident that milk collection is widely spread countrywide. This is reflected on the numerous collection and bulking agents in the country of different sizes especially in sheds with a lot of milk supplies such as Western and Central Milk Sheds. The number of milk coolers in the country was estimated to be 768 by 2013. The bigger bulking agents are found in major towns. From the bulking agents, milk flows to processors (mainly in Kampala and Mbarara areas) as well as local distributors. This implies that the flow of milk from the farmers can be traced heavily along Bushenyi & Ntungamo – Mbarara - Masaka – Kampala highway and Masindi – Luwero – Kampala highway; which combined is over 60 percent of the country's milk production. The bulk of the milk produced from other regions are mainly consumed locally and do not usually feed into the process of value addition. As noted by Matovu of Heifer International, this is mainly because the breed qualities of cattle in Eastern and Northern parts of the country produce little milk. This is despite the fact that actual numbers of cattle in East and North is higher than the other regions. Major milk processors are mainly based in Kampala and Mbarara areas, implying that the flow of milk is from these towns to traders (major stockists), supermarkets and the proportion exported through exit points (especially Tororo and Busia destined to Kenya). This means that processed milk flows through major high ways to major towns where supermarkets and stockiest are located and to the neighbouring countries.

2.4 Major stakeholders involved in the supply chain of Milk

2.4.1 Collection and Bulking Agents

In 2012, James Ssemwanga showed that about 90 percent milk production comes from 2.5 million small holders under tradition production system with Microbial contamination high under traditional milk production system. From DDA's estimate of about 1.9 billion liters of milk, many milk dealers engage in hard milk boiling of over 67 percent of marketed milk as a way of preservation but with limited shelf life. The middlemen, especially collectors and bulkers have facilities for cooling. Such bulkers is *Kyenshama Dairy Farmers Cooperative Limited* in Lyantonde with 4,000 liters installed capacity of milk cooler owned by farmer group. According to their Chairperson, *Eric Katondwaki*, farmer members supply the milk to the center or the center collects the milk from the farmers for chilling and markets it collectively on behalf of the members. The association deducts the operating costs and overheads and distributes the balance among the members according to their supply.

Collection and bulking of milk is associated with a number of **challenges** identified by the operators to include the following as key;

- Lack of hydro power in many areas leading to use of generators which are costly
- Limited water supply
- Poor road networks especially deep in the villages which make some roads impassable and some areas inaccessible when it rains.
- Cans for milk collection are not only expensive to access but also more complicated to transport as compared with the banned plastic jericans.

The use of generators make collection and bulking less efficient and ineffective given that the centres have to operate diesel generators in the chilling process. William Matovu (Heifer) estimates that about half of the operational cost by bulking agents is incurred in running generators. By extending hydro power lines to bulking centres which needs to be close to the farmers, operational costs can be reduced significantly for more profitability. Grouping producer farmers in cooperatives and unions for collective chilling is a strategy that can be adopted for cost reduction in the short run. In the long run, infrastructural development in hydro power lines and road networks has to be undertaken for dairy collection and bulking for processing to be viable.

2.4.2 Processing firms

DDA puts the number of large, medium and small scale processing plants in the country is currently 76 producing mainly pasteurized milk, UHT milk, yoghurt and ice-cream. Out of all the processing companies, only 10 have general product quality certification which is a guarantee to consumers on quality. The largest processing plant has a total processing capacity of about 500,000 litres a day. Most of the processors are based in the South Western and the Central regions of Uganda. According to state minister for animal husbandry, Bright Rwamirama as quoted in the new vision of June 21, 2013, the country's daily milk processing capacity has also risen to over about 1.3 million litres per day attributed to the presence of the milk processing

plants in the country. The major processing companies in the country have installed capacity between 2,000 and 500,000 litres.

2.4.3 Logistics & distribution

Distribution of milk in Uganda has gone through a revolution in recent years. Before 2005, milk was distributed in all forms including uncooled milk but also using cans and in some cases plastic jericans. In 2006 there was a ban on transportation of milk in aluminium cans over long distances. Apparently, many collectors use bicycles to transport milk from farmers to collection centres due the narrow feeder roads. When the roads are developed, it will open opportunities for bulk transport from farmers to collection centres using vans or tri-cycles as opposed to the use of bicycles with very limited capacities.



A. Milk Cans for short distance transportation



B. Milk tankers for long distance transport

Milk traders and cooperatives have invested in purchasing of milk coolers as well as tankers for transporting milk for long distances sometimes supported by development partners. Heifer Uganda, for example, provides support to organized producer groups with financing in equipment. Support is usually in the form of interest free loans and sometimes guarantee of access to loans in commercial banks. Milk coolers are installed closest to the production centres of milk and milk is transported by aluminum cans and by bicycles through feeder roads to the cooling centres. From the cooling centres, milk is transported by tankers to major towns and to processors. Milk processors also own tankers that they use to transport milk to their processing plants. Some even own cattle farms for production of milk. As a consequence, a number of companies are now engaged in importation of machines and equipment for milk transportation and processing. William Matovu highlights that most of these equipment are from India and China and sometimes used equipment from Europe. Such operators selling milk machines include;

- i. Snowmans Group: Snowmans deals in a wide range of activities such as supply of milk handling equipment, packaging for Dairy and Food Products; sealing machines, refrigeration systems/air conditioners, compressors and generators. Snowmans distributes food ingredients i.e. food flavors, bakery enzymes, cultures and stabilizers

- ii. Family Choice Ltd: A New Zealand owned importer and distributor of ambient and chilled food products including dairy products.
- iii. KARMA MILK Machines: For portable & fixed milking machines with petrol engine e.g 2 cow, 4 cow, 6 cow & 8 cow machines. All parts, used milk coolers, milk cans and buckets.
- iv. Packo
- v. Mueller. Information on Mueller website indicates that Mueller received an order to produce 60 bulk milk coolers in 2015 for a Ugandan customer. The order does not only consist of delivering the tanks, together with 60 generators, but also to install them. The milk tanks and generators imply 60 milk collection points. Mueller is also responsible for training local staff at the collection points.
- vi. Agri-Hub Uganda: Sells, advices and installs secondhand milking equipment.

2.4.4 Other related industries for each selected VCs.

The dairy sector has witnessed a number of milk producer cooperatives being registered in recent years. A 2011 FAO study estimated that although 214 primary milk producers' cooperative societies were still active, about 153 of them were dormant. Primary cooperatives are organised into district level and latter regional or national cooperative unions. A list of some of the currently active cooperative unions is provided in the **table 4** below;

Table 4: Registered dairy cooperative unions

	Cooperative Union	Location	Milk Shed
1	Ankole Dairy Producers Coop. Union Ltd	Kiruhura	South West
2	Babyakigezi Dairy Farmers Coop. Union Ltd.	Kabale	South West
3	Bushenyi Dairy Industry Coop. Union Ltd.	Bushenyi	South West
4	Central Uganda Dairy Cooperative Union Ltd	Central Region	Central
5	Inka Dairy Coop Union Limited	Ibanda	South West
6	Kazo Dairy Farmers Coop. Union Ltd	Kiruhura	South West
7	Mbarara Dairy Farmers Coop. Union	Mbarara	South West
8	Ntungamo Dairy Farmers Coop. Union Ltd	Ntungamo	South West
9	Rukungiri Dairy Farmers Co-Operative Union Ltd	Rukungiri	South West
10	Sheema Dairy Farmers Co-Operative Marketing Enterprise Ltd	Bushenyi	South West
11	Uganda Crane Creameries Cooperative Union	Mbarara	South West

Source: Balikowa, 2011

2.5 Analysis of value-addition per process

Two milk marketing channels in Uganda are identifiable, namely; the formal and informal channels. The informal channels refer to milk sold directly from farmers to consumers without additional processing and packaging. The formal channels refer to processed and packaged milk and milk products sold through agents and in most cases through the super markets and retail outlets locally but also formally exported.

In the informal channels, the only form of value addition is in form of boiling, chilling and transportation. The informal channel has wide range of operator. The channel includes direct sales by producers to consumers, sales through middlemen (such as milk collectors and coolers) as well as bulking agents. At all these segments of the informal channel, minimal value addition (such as hard boiling and/or chilling and transportation) is undertaken.

According to Sameer Agriculture and Livestock Limited (SALL), Value addition in the formal channels begins at established collection centres. These centres are usually equipped with coolers and generators as well as testing kits many times provided by processing companies and other support agencies. At the collection centres, collectors are trained in hygienic practices for milk handling and milk is cooled down to about 40 degrees Fahrenheit (4.4 degrees Celsius). However, according to Agnes Baguma of DDA, there is great need for development of general testing infrastructure in the sector. The milk is transported to the Bulking Centres, usually managed by the Cooperatives, where it is chilled a second time. Insulated tankers then take the milk to the processing plants and other distribution centres for loose sales.

According to Robert Walimbwa of Sameer, Milk processing undergoes a number of stages before final output. It begins with testing; milk is sampled and tested for quality, water content and drug content among others. Milk found with intolerable amount of water is rejected by processors but when the levels are tolerable, the milk is accepted but the owner is penalised. This is because processing plants incur higher costs in drying milk adulterated with water. Any milk containing drugs is usually not accepted by processing plants. The best quality is usually used for UHT and Pasteurised milk. The standard fat content is 4 percent but processors with wide range of products put to the market milk with 3.5 percent fat content. The 0.5 percent is extracted and used to make cream, butter and ghee.

At the processing plants, common featured item is Ultra-Heat-Treatment (UHT) milk as the main product although milk power ranks high on export. UHT process requires heating milk above 135 °C for 1 to 2 seconds (275 °F) of milk as opposed to high temperature/short time (HTST) in which the milk would be heated to 72 °C (162 °F) for at least 15 seconds. This is because of the desire for more shelf life since UHT can last for six to nine months as opposed to HTST (about 1 week). In 2014 powdered milk was the most highly exported milk (over 1.7 million kg) according to MAAIF statistics shown in Table 5. Another notably highly exported product was ghee. For SALL which is the largest processor in the country, Fresh pasteurized milk represents their major business, with about 45 to 50 percent of the milk processed daily used to produce pasteurized milk. About 30 to 40 percent of the processed milk goes into UHT milk, and the rest into the other dairy products. The ministry of Agriculture, Animal Industries and Fisheries (MAAIF) statistics show that powdered milk formed the bulk of dairy export in 2014 with export quantity over 1.7 million kg-**Table 5**.

Table 5: Export by type of dairy product, 2014

Product type	No. of consignments inspected and certified	Total Quantity of product exported
Milk powder (kg)	28	1,721,160
UHT (lts)	20	1,565,360
Ghee (kg)	71	1,063,483
Casein (kg)	54	911,000
Butter oil (kg)	6	596,720
Yogurt (kg)	26	243,450
Butter (kg)	9	3,155
Cheese (kg)	11	2,150

Source: MAAIF, 2014

Text box 1: The Case of a Medium Scale Milk Production and Processing

Located within the central milk shed and undertaking both own livestock farming but supplementing input by purchasing additional milk;

- Dairy farming is done on 600Ha of land on which a herd of over 650 Friesian cattle are raised under modern animal husbandry. Most of the feed for the animals is also produced at the farm. All the milk from the farm goes to the dairy plant which is also located on the farm.
- The dairy plant currently processes over 100,000 liters of milk a day. In addition to the milk from its farm, raw milk is sourced from over 150 out-growers within the vicinity of the farm and beyond, whose milk is selected after meeting strict quality parameters. These range from small scale farmers supplying 5 liters a day to bulk suppliers delivering over 15,000 liters.
- The company is an ISO food safety standard certified which is testament to the company's commitment to producing safe, high quality products
- It is also Halal certified and all its products have been certified under the UNBS Q mark system.
- The market for its products is primarily within Uganda, Kenya and South Sudan

2.6 Cost-break down in the production, processing and marketing

The general costs of production of milk can be disaggregated into two components, which includes that of raw milk as well as processed milk.

A study by the East Africa Dairy Development (EADD) in partnership with Heifer and other agencies on profitability of dairy farms provides an indication of the cost breakdown for fresh raw milk which has not undergone processing. In the study, the cost of milk was estimated including variable costs, fixed costs and milk to labourers and calves. Fixed costs included depreciation of machines, buildings and maintenance of buildings. Variable costs emanated from hired labour, feeds, animal health, breeding, extension, milk transport and cattle purchases. Other costs included losses from cattle death, milk given out and milk given to calves. From the six milk hubs considered in the study, the table 3 below provides the profitability of the extreme hubs (ie. Low profit hub – Kiboga and the High profit hub which was Ggulama in Masaka District.

Table 7: Cost break down of raw milk

Description	Low Profit - Hub		High Profit - Hub	
	Mean	Median	Mean	Median
Profitability excluding revenue from cattle sales				
Total revenue per litre	400.0	400.0	670.3	628.5
Cost of production per litre	492.2	316.2	362.5	337.4
Profit per litre	- 92.2	83.7	307.7	351.1

Source: EADD, 2012

As shown in the table, the profitability of raw milk ranges from negative 92 to over 300 shillings depending on the milk hub. The study noted that, although purchase of animal feeds was the highest cost of production of milk, it greatly affected the low profit hub contributing 55 percent of total costs. This implies that by reducing the cost of feeding animals the general profitability of the supply chain of raw milk can greatly improve.

At the processing plants, the cost of milk as an input varies depending on whether the milk is supplied by a trader at the factory gate or the milk is supplied to a collection centre owned by the processing company. Based on stake consultations, milk as an input at factory gate is about 700 shillings while at collection centres the processing companies buy milk at about 550 shillings from the suppliers/farmers. The factories then charge output price of about 1,900 shillings resulting into revenue (less cost of milk) of 1,200 shillings. This revenue (1,200/=) covers a number of expenditure items including; transportation of milk from factory owned collection centres (this can be inferred at 150 shillings per litre) which is observed as the highest cost component; Electricity estimated to be nearly the same as transport cost due high per unit cost of hydro power but also irregularity which leads to use of generators; other costs include water (estimated at 3litres for every litre of milk); communication; and overhead plus profits.

3. ESTIMATION OF EXPORT MARKET SIZE

Uganda's formal dairy export in 2014 amounted to USD 27 million rising from 4.5 million in 2008. This resulted from a growth in actual quantities of dairy products exported including milk, cheese, yogurt and butter. The rise has been from 2.9 million litres of milk equivalent in 2008 to over 13 million litres by 2014 as shown in **table 8**. This can be attributed to entry of many processing companies both large and medium scale driving the share of processed milk form 20 percent in 2011 to about 33 percent by 2015. There has been tremendous increase in export earnings (nearly 5 times since 2008) but the import values still remain significantly high as well showing the need for more value addition for domestic market.

Table 8: Dairy export, 2008-2014

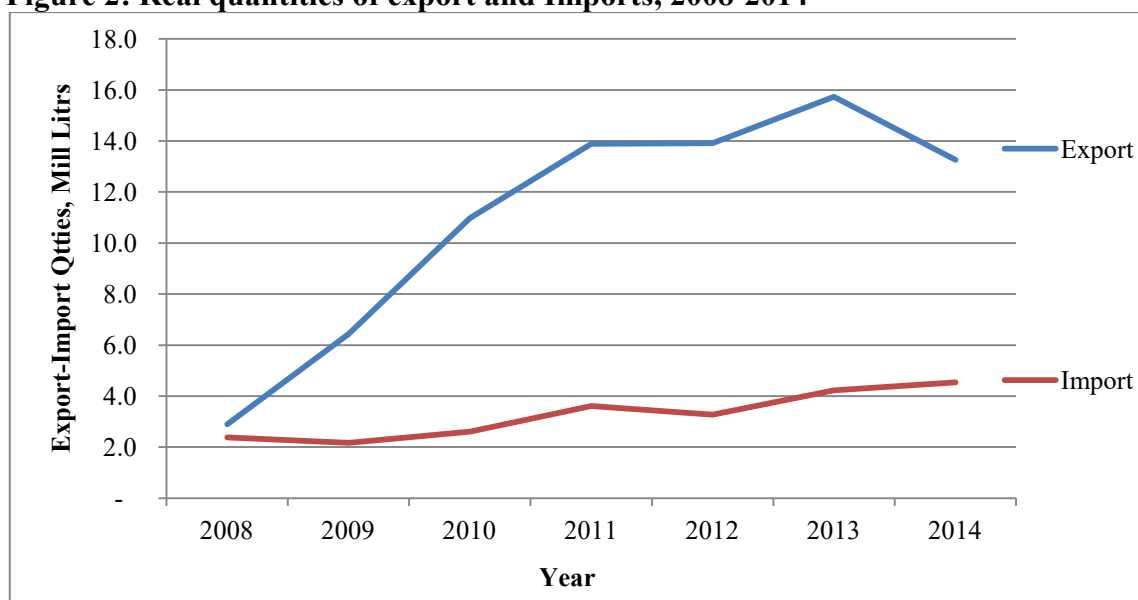
Year	Export				Import			
	Qty (Mill Ltrs*)	Growth (%)	Value, Mill \$	Growth (%)	Qty (Mill Ltrs)	Growth (%)	Value, Mill \$	Growth (%)
2008	2.9		4.5		2.4		5.3	
2009	6.4	122.7	6.4	41.9	2.2	-9.0	3.4	-35.8
2010	11.0	70.6	13.6	112.9	2.6	20.1	3.7	9.1
2011	13.9	26.5	17.9	31.3	3.6	38.6	4.8	29.2
2012	13.9	0.2	20.0	11.8	3.3	-9.3	4.8	-0.4
2013	15.7	13.0	24.8	24.3	4.2	29.1	4.5	-5.6
2014	13.3	-15.7	27.4	10.5	4.5	7.7	5.2	15.0

*Note: *All dairy products approximately aggregated as litres.*

Source: UBOS

Exports and imports in real terms were almost even in 2008 both below 3 million litres of milk equivalent. However, the entry of SALL in 2008 with market share in milk processing at 80 percent was a change factor. Between 2008 and 2011, exports grew at a much higher rate compared to imports. By 2011, SALL was still handling 68 percent of the total daily milk deliveries to processing companies despite the increasing participation of other private players in the market. Although actual export quantities have increased from 6.4 million litres in milk equivalent in 2009 to 13.3 million in 2014, the growth rate has been declining reaching -15.7 percent. From 2011, real export was irregular with up and down movements while imports showed a more regular growth although still much lower than export. (Figure 2)

Figure 2: Real quantities of export and Imports, 2008-2014



The six year average growth rate is about 36 percent. If this rate is anything to go by, then in the medium term of about six years, the export quantities can be expected to reach about 18 million litres of milk equivalent by 2020 and nearly 25 million litres by 2026. This would require similar conditions such as large scale processing in the size of SALL by 2016 and 2021. Alternatively, it

would require existing processing plants to double their operating capacity by the same periods. However, current processors do not operate at full potential due to limited supplies. While much can be done in expanding the country's processing capacity, a lot has to be done as well to ensure enough supply to feed the processors. This can only be achieved by not only discouraging sale of raw milk to final consumers but also improving breed quality and number.

In 2013, world dairy trade development slowed down according to the World Dairy Situation 2014. World trade reached a volume of 62.9 million tonnes in milk equivalents, a growth by less than 2 percent well below the average of previous years. Total production in 2014 is estimated at around 805 million tones, a 3 percent growth while 2015 is projected to grow by 2 percent. International projections expect a population of 9 billion inhabitants by 2050 up from current 7 billion. With the increasing population, income levels and urbanisation, OECD and FAO expect average per capita dairy consumption to increase by about 13.7 percent between 2011-13 and 2023.

TradeMap data shows that although dairy still ranks in the 20s in value among Uganda's export products, its share of total export gained a lot of momentum in recent years growing averagely above the growth in actual value of dairy exports as shown in the table 9 below.

Table 9: Uganda’s Dairy Export in the World Market, Value in ‘000 USD

Year	2011	2012	2013	2014
All products	2,159	2,357	2,408	2,262
Value of Dairy products** (Mill \$)	18	21	26	30
Growth (Percent)		13.9	24.1	14.8
Share of Total Export	0.29	0.88	1.07	1.31
Growth in Share (Percent)		198.2	21.5	22.2

Note: **Dairy products Includes other items such as honey in the category

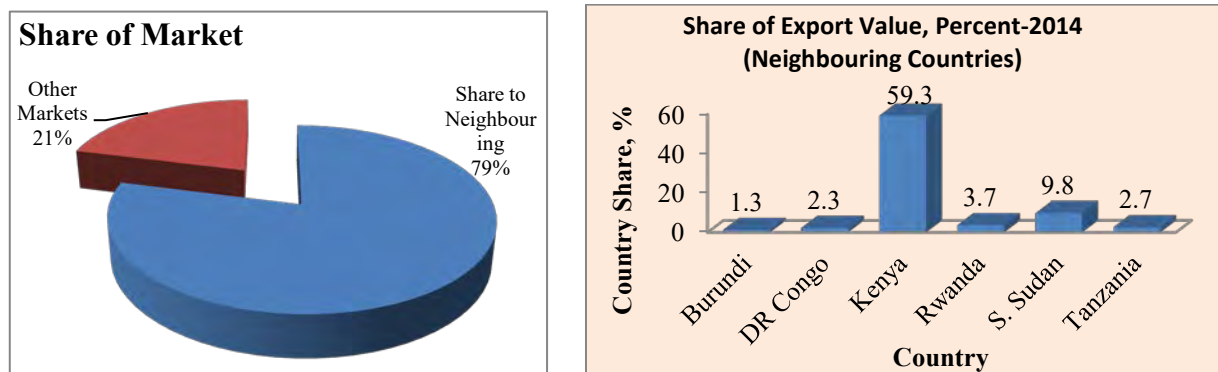
Source: TradeMap

4. END-MARKET ANALYSIS

4.1 Identification of the final market of the selected commodities/export destination

Formal exports indicate that much of Uganda’s dairy products go to the neighbouring countries which include Burundi, DRC, Kenya, Rwanda, South Sudan and Tanzania but the greatest share to Kenya. Formal exports to Kenya in 2014 reached 34 billion shillings, 59 percent of observed formal exports of dairy.

Figure 3: Dairy Export to Neighbouring countries (Share of Value, Percent)



Source: UBOS, 2014

The data shown in figure 3 compares well with TradeMap data which includes honey in the dairy category indicating how Kenya ranks as the top most destination for Uganda’s dairy products importing 63 percent of Uganda’s dairy exports in 2014 (about 81 percent of Kenya’s total dairy imports). Nepal ranked second but just the first time in recent years that Uganda has exported dairy product to Nepal. There was very little export to other North Corridor destinations as shown in **table 10**.

Table 10: Share of Uganda’s Dairy Export

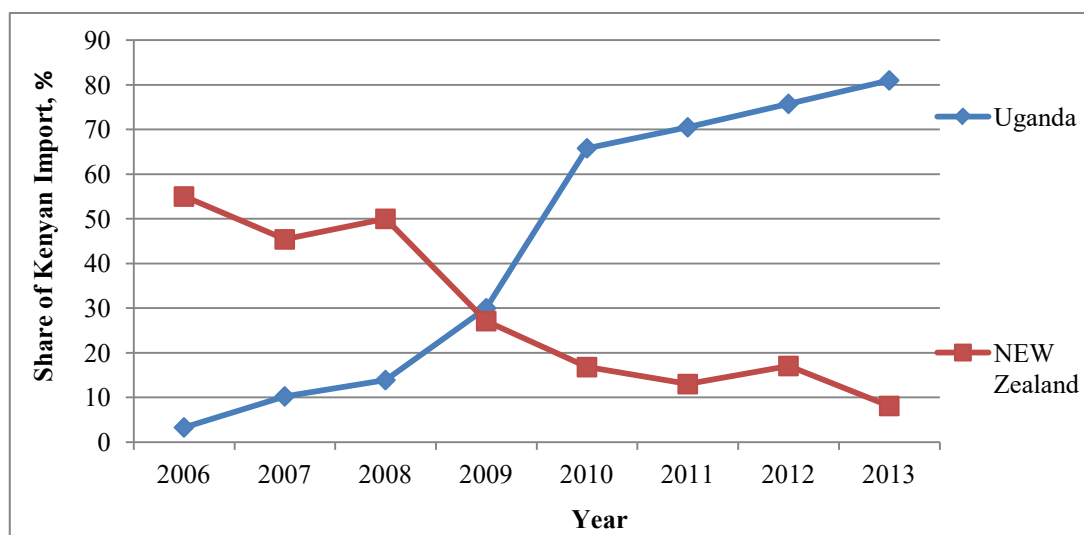
Rank	Market	Share of Uganda’s Product %
1	Kenya	63.2
2	Nepal	7.9
3	Zambia	5.0
4	Nigeria	4.1
5	UAE	3.5
6	Yemen	3.3
7	Sudan (North + South)	3.1
8	Tanzania	2.5
9	DR Congo	1.9
10	Rwanda	1.5
	Others	4.0

Source: TradeMap

4.2 Situations of competition of the dairy market

Kenya is undoubtedly Uganda’s prime destination for the dairy export. Uganda’s dairy products markets in Kenya are growing at the time when previously biggest dairy supplier New Zealand is losing in the same market. In 2014, New Zealand controlled about 8 percent of Kenya’s dairy imports down from its peak of 53 percent in 2006. There is evidence that Uganda gained market at the expense of New Zealand in the Kenyan market as shown in **figure 4**.

Figure 4: Country Share of Dairy Import by Kenya, Percent



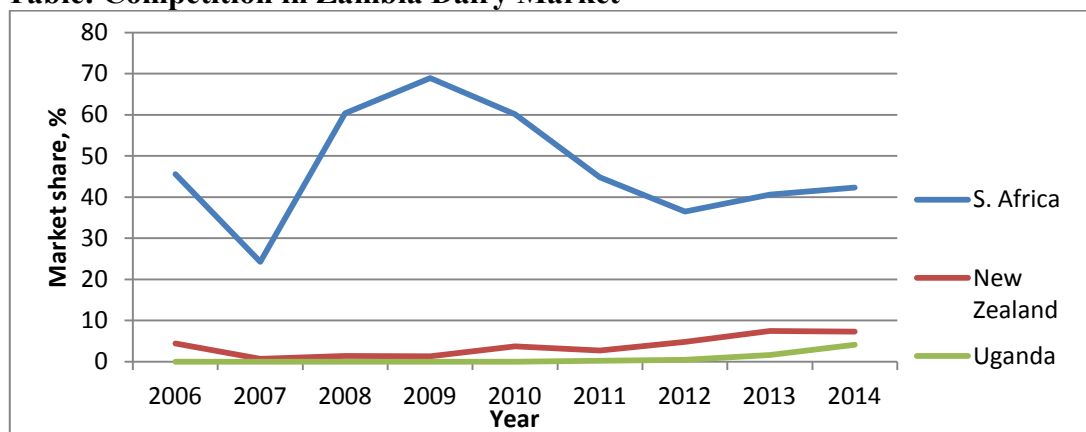
Source: TradeMap data

The growth in the share of Uganda’s dairy in Kenyan market can be attributed to a number of factors such as operationalisation of the East African Common Customs Union in 2005 and Common Market in 2010, licensing of influential dairy processing companies as well as increased support to the dairy sector by the Dairy Development Authority (DDA).

The supply of milk for dairy processing in Uganda is great but underutilized. With many collection and bulking centres coming up, Uganda is positioned to produce more dairy products. The local market for processed dairy products is still wide open given that about 67 percent of Uganda’s milk is sold unprocessed in the informal markets. Satisfying the local market with processed dairy product requires concerted effort between government and the private sector. While the private sector invests more in milk processing, it has to become more cost efficient in order to offer affordable prices to the local final buyers. They also have to target institutions for bulk purchasing of processed milk. DDA has made efforts in this area especially with schools milk program. It has conducted milk consumption campaigns in several primary schools, providing book covers and some branded school bags distributed. But government has to put in place enabling consumer policies on dairy products to remove competition from raw milk in order to attract more production.

However, greater incentive for milk processing will come from the export market due to higher returns. Uganda has not seen any significant export outside Africa, indeed outside neighbouring countries. The biggest export market has been the neighbouring countries but especially the Kenyan market. Other leading markets for Uganda’s dairy are still within the African region, namely, Nigeria and Zambia. The Kenyan market is a great opportunity for Uganda given that it is within a common economic block with minimal trade restrictions but a detailed review of the other markets reveals some details.

Table: Competition in Zambia Dairy Market



Source: TradeMap data, 2014

Uganda’s performance in the Zambian market is decimal and greatly out competed by South Africa as shown in the graph. In 2014, Uganda’s share in the Zambian market was 4.1 percent. However, there has been observed growth in the recent years rising from nearly zero in 2011. The trend has been similar for New Zealand in the market although New Zealand has consistently had greater share of the market compared to Uganda. Zambia may prove to be a difficult market for Uganda to gain significant share of the market given that South Africa which is the market leader enjoys over 40 percent of the market share despite irregular growth over the years.

Nigeria was the other market within the African region where Uganda has some reasonable share of the market at about 4 percent. The minimal share cannot give clear indication of the benefit

that Uganda can derive from this market. However, the Nigerian market can be very useful if Uganda can penetrate given the huge population of the country. A deliberate policy by government to target this market can be a major boost to the dairy sector.

4.3 Quality requirement of the final market

The current Dairy Industries' Act of 2000 has enabled the Uganda Dairy Development Authority (DDA) to put in a place some quality guidelines. Such guidelines include; Enforcing milk hygiene standards & quality control and requiring all traders to be licensed as meeting minimum public health & milk quality Standards. The key players in the industry such as Uganda National Dairy Farmers Association (UNDFA), Uganda Dairy Processors' Association (UDPA) and the Uganda Dairy Traders Association (UDPA) have based on such existing legislations and guidelines to provide training in upholding milk quality Standards and Improve Quality & Safety of milk & milk products leading to improved access to High-value markets within the region.

However, quality starts at the farm with the health of the animals. Robert Walimbwa of Sameer Agriculture and Livestock Limited (SALL) notes that ever since the veterinary services were transferred to the Ministry of Local Government, under facilitation has highly affected the service leaving the farmers to fend for themselves. Consequently, the milk supplied to processing firms sometimes fails to pass the quality test. Agnes Baguma of DDA suggests a deliberate pricing policy based on quality of milk and not quantity to provide incentive for producers to embrace quality. At the factories, processing plants carry out adequate testing to ensure that the milk meets international standards. This has enabled Ugandan dairy products penetrate export markets as far as Europe. Walimbwa notes that they have never had any cases of their products returned from the export market due to adherence to quality standards.

Different markets always have specific quality requirements which call for quality certification as an assurance. Sadly, according to DDA, out of about 76 processing companies in Uganda only 10 have general quality certification. Markets with predominant Islamic communities such as Arab countries have also set Halal certification as preconditions for imports of dietary products. In the bid to promote export to such countries there has been an establishment of Uganda Hala Bureau (UHB) for halal certifications that meet Islamic dietary codes according to Abbas Kisambira, the head of operations at the UHB. Although halal certification is not mandatory, UHB has certified most of the major dairy processors in the country in effort to promote exports to Arab countries as well as in-flight supplies to airlines en-route to such countries (such as Qatar Airlines and Emirates). Although Halal certification in Uganda is a new development having begun in 2010, Kisambira notes that there are more Halal standards (6 in number) in Uganda compared to any other African country.

4.4 Major players in the market shall be identified

According to data from Trademap, Uganda's leading export destination for dairy in 2014 was Kenya (about 63 of Uganda's export). The rest of the 37 percent was spread all over the world with shares less than 5 percent to countries within all the North Corridor States (the highest being 3.1 percent in South Sudan). The other regular destination of Uganda's dairy was Zambia where Uganda controls 5 percent of the market. Analysis of the two markets indicates that Uganda

controlled 81 percent of the dairy imports by Kenya compared to only 4 percent import by Zambia. Uganda’s dairy exports to other markets was insignificant in other countries except in Nepal (7 percents of Nepal’s Dairy imports in 2014) but this was the first time.

Table 11: Uganda’s Performance in Top Export Destinations

Exporting Countries to Kenya	Share (%)	Exporting Countries to Zambia	Share (%)
Uganda	81.0	South Africa	42.3
New Zealand	8.1	Hong Kong	9.8
Ireland	4.2	Netherlands	9.3
Denmark	1.3	France	8.1
Italy	1.0	New Zealand	7.3
Egypt	1.0	Uganda	4.1
Total	96.6	Total	80.9

Source: TradeMap, 2014

In the Kenyan Market, Uganda faces little competition from especially European countries. None of the North corridor countries have any significant presence in the dairy import by Kenya. This presents opportunities for Uganda’s dairy given that Kenya is the economic giant within the EAC as well as North Corridor Countries.

4.5 Major buyers, processors and other outlets

The major processors have been identified to include small, medium and large scale ranging from the smallest (Maddo Dairies Ltd with daily capacity of 2,000 litres) to the largest (Sameer Agriculture and Livestock Ltd – SALL at 550,000 litres). (Table 3) Some of the processors have the capacity to work double shift which would nearly double their processing capacity. However, they many times operate barely half their capacity due limited supply as well routine maintenance. The processing companies also double as the leading exporters of the dairy products.

Table 3: Major Dairy Processing Companies

	Company	Location	Milk Shed	Products
1	SAMEER Agriculture and Livestock Ltd. (SALL)	Kampala	Central	Pasteurised milk, UHT, yoghurt, ice cream, butter, ghee
2	Jesa Farm Dairy	Busunju	Central	Pasteurised milk, yoghurt, butter, ice cream
3	Pearl Dairies	Mbarara	South western	Pasteurised milk, UHT, yoghurt, ice cream, butter, ghee
4	Hillside Dairy & Agriculture Ltd	Kampala	Central	Yoghurt and UHT Milk
5	Amos Dairies	Kampala	Central	Pasteurised milk, UHT, yoghurt, ice cream, butter, ghee
6	White Nile Dairy	Jinja	Eastern	Pasteurised milk, yoghurt, ghee, cream
7	GBK Dairy (U) Ltd	Mbarara	South West	UHT, ghee, pasteurised milk
8	Dairi Board (U) Ltd ***	Mbarara	South West	Plant not operating at present
9	Birunga Dairy	Kisoro	South West	UHT
10	Teso Fresh Dairy	Soroti	Eastern	Pasteurised milk, yoghurt
11	MADDO Dairies Ltd	Masaka	Central	Pasteurised milk, yoghurt
12	Gouda Gold	Kampala	Central	Cheese
13	Paramount Dairies Ltd	Mbarara	South West	Cheese
14	Shumuk Dairy	Mbarara	South West	Pasteurised milk, yoghurt

*** Formerly Alpha Dairy Products (U) Ltd

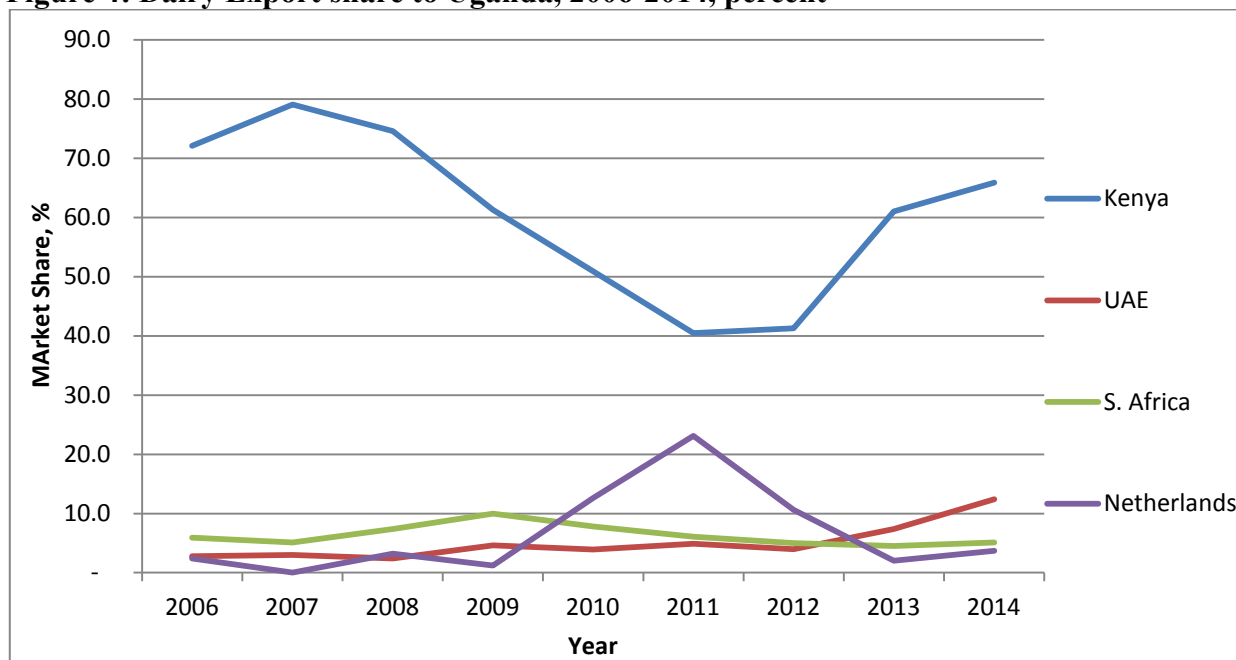
Source: Mwebaze, 2013 (supplemented with stakeholder analysis)

4.6 The gaps between the final market requirement and currently available commodities in Uganda

In the local market, a huge gap still exists. The informal market selling unprocessed milk still controls about 67 percent of the dairy products marketed in the country. Yet dairy imports value is still to the tune of USD 3.6 million. The main dairy products making up Uganda's imports being milk and cream (concentrated or sweetened), milk and cream (not concentrated nor sweetened), buttermilk and yoghurt. The domestic market is not yet satisfied and the trend of informal marketing seems to stagnate at very high levels. The barrier needs to be broken to shift the 33-67 percent share in favour of formal marketing of processed products. DDA has made a move in the right direction by banning sale of loose milk. What remains is to ensure enforcement of this regulation. This will lead to increased production of more processed dairy products but will also require consumer sensitisation to change the mindset of the local buyers to change their behavior in favour of processed dairy products. The fact that the sale of unprocessed milk continue to thrive even when prices are almost even with processed milk is a clear indication of a behavioral factor that has to be dealt with.

Uganda imported dairy products to the tune of USD 3.6 million in 2014. TradeMap data as presented in **figure 4** shows that the main countries of dairy products imports include Kenya, United Arab Emirates, South Africa, the United Kingdom, and Netherlands. In 2014, Kenya was the source of more than 65 percent of imports of milk and cream followed by the UAE (12.4 percent), South Africa (5.1 percent) and the Netherlands (3.7 percent).

Figure 4: Dairy Export share to Uganda, 2006-2014, percent



Kenya remains a big supplier of dairy to Uganda despite the fact that it is also the main destination of Uganda’s dairy export. Although Uganda’s export to Kenya is far greater than the import, it is clear that import from Kenya sharply grew since 2011. This may be a sign of growing demand in Uganda but also a more aggressive performance of the sector by Kenya in capturing regional markets given the current common market within the East Africa.

4.7 Competitive analysis and identification of necessary correcting measures

Uganda’s dairy products have made significant inroads only to the Kenyan market. One explanation can be the ease of transportation given that Kenya is historical trade route for Uganda’s exports. The Kenyan economy has also ranked high within the region for many years making it more lucrative for Ugandan traders. However, given the fact that Uganda controlled about 80 percent market share of Kenya’s dairy imports in 2014 implies very little opportunity for further growth in this market. Moreover, some of the main players in the processing industry such as Sameer Agriculture and Livestock Limited have very active presence in both Kenya and Uganda.

A deliberate strategy to strengthen export to other regional countries, especially those within the Northern Economic Corridor can yield short term dividends. SALL which is the leading exporter of dairy products notes that supply to the export market is being limited by inadequate input supply as a result of low production but also heavy involvement of the informal marketing of raw milk. The fact that the South Western region is an established milk production and processing shed implies that it would be less costly in terms of transport to export to Rwanda, the DR Congo and South Sudan where Uganda still has less than two percent share in each of the countries. Improving road and power infrastructure will be key in cost reduction.

Jim Muhangi, the Dairy Value Chain Development Project Coordinator of Uganda Crane Creameries Cooperative Union Ltd (UCCCU) which is considered to be the largest cooperative union in South Western region highlights the costs related with logistics. The experience of UCCCU shows that the union factors in about 30 percent of the cost of milk from the farmers at the point of sale to the processors. This is usually to cover transportation and distribution expenses, operations and overhead costs. The nature of the road infrastructure makes transportation the lead cost component.

5. ANALYSIS OF HARD AND SOFT LOGISTICS

5.1 Road Transport

Road transportation has been the only means of transportation of dairy products within the country. From the farmers, milk is transported along feeder roads to collection centers. According to Dr. Ssekawojwa Edward, the Ag. District Production Officer Lyantonde District Local Government, the milk is collected in an average radius of 30 Km. Dr. Ssekawojwa adds that Poor road networks especially deep in the villages make some roads impassable and other areas inaccessible during rain seasons. This affects the collection leading to much milk being wasted at the farm. In some cases, like the Cooperative Dairy Project under CAIIP (Community Agricultural Infrastructure Improvement Programme) an ADB funded project in Lyantonde, collection of milk from farmers is contracted but farmers are charged a fee. The contractor provides transport and handling incentives/facilities to the farmers who cannot deliver the milk to the collection center in form of trucks and motorcycles - Nuwabine John (Manager Kinuka Farmers Dairy Cooperative Society)

The road network from the bulking centres are usually marum or tarmac. However, transportation takes time given the usually heavy traffic flow along the roads which puts the milk at risk of becoming stale along the way.

5.2 Rail Transport

Currently rail transport is not in use due to lack of rail networks between milk production areas, collection centres, bulking centres and the processing companies as well as export routes. Establishment of railway network along major routes will go a long way in promoting bulk transportation of milk to factories and to export routes within record time. The major routes to consider include a network between Kampala-Mbarara-(Katuna and Mpondwe) for the purpose of export markets (Rwanda and DR Congo) via Masaka, Kampala-Tororo for the Kenyan market and beyond and Kampala-Elegu via Gulu for South Sudan market.

5.3 Ports & Maritime Transport

Marine transport is very critical in exportation of dairy products especially to Asia and part of Europe. The main port of exit is Mombasa. Marine transport though is much cheaper in comparison with road transport. For instance, it is much cheaper to transport a unit of dairy product from Mombasa to India compared to transporting the same unit from Kampala to Mombasa.

5.4 Types of services offered by logistics service providers

Logistics services in the dairy sector greatly relate with transportation but also storage. It includes actual transportation infrastructure and equipment, chilling and bulking equipment. The main players in the logistics services are those in collection and bulking as well as manufacturing companies. This is because they better understand the product and the impact of the nature of logistics involved. Many of the bulking and collection agents are organized in cooperatives and unions. One of such is the Uganda Crane Creameries Cooperative Union Ltd (UCCCU) based in Mbarara. The union, collects an average of 500,000 litres of milk per day operates a chilling system that use both hydro power and diesel generators. The union, like other similar operators, provides milk collection facilities like cans and transportation of the milk (using milk tankers) from the farmer at a fee. Milk from the collection centres is transported in stainless insulated mounted tankers to bulking centres and to either factories or final buyers of raw milk. Customs

Government through Uganda Revenue Authority (URA) rolled out the use of ASYCUDA World in 2013 and by end of 2014, it had seen about 98 percent of total customs transactions through this system. According to Richard Kamajugo, the commissioner for Customs at URA as quoted in AllAfrica website, the system has also improved clearance time to an average of 1.1 days compared to over five days before as well as improved transparency of customs operations through status notifications during declaration processing, reduced queuing and movements to different customs offices. Interface with other revenue authorities in the region has also been made possible including Kenya Revenue Authority, Rwanda Revenue Authority, and Tanzania Revenue Authority. This is evidence of the derived benefits of implementation of the Single Customs Territory (SCT) which has lead to reduction in the number of multiple declarations.

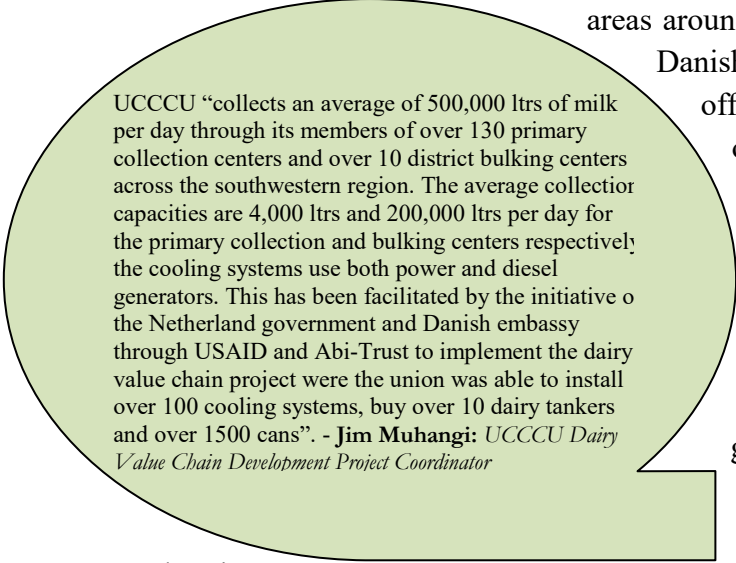
5.5 Institutional framework

The Dairy Development Authority (DDA) as the apex body in the sector is charged with oversight role of regulation and monitoring operations in the sector. According to its Annual report 2012/13, DDA partnered with Makerere University's College of Veterinary Medicine and Biosecurity, Heifer International, National Agriculture Advisory Services and Japan International Cooperation Agency to produce a simplified manual "Proper Hand Milking and Milking Hygiene - A Guide for Dairy Farmers" which is a move in the right direction. The report adds that the authority trained 20 cottage processors with one code of conduct for milk batch pasteurization centers developed. What remains to be seen is how well the guides and code of conduct are put

in use. As noted by William Matovu of Heifer International there is a weakness in enforcement of such standards. For the country to achieve and maintain the desired standards required at the international market, Matovu proposes division of roles to be embraced where each stakeholder plays their role effectively. However, this should be spearheaded and supported by government through DDA which is the apex agency in dairy development.

Of recent, notable support has come from a number of agencies such the African Development Bank through the Community Agricultural Infrastructure Improvement Programme (CAIIP) in areas around Lyantonde. The Netherland government and

Danish embassy through USAID and aBi-Trust have offered support to UCCCU which is a union of



UCCCU “collects an average of 500,000 ltrs of milk per day through its members of over 130 primary collection centers and over 10 district bulking centers across the southwestern region. The average collection capacities are 4,000 ltrs and 200,000 ltrs per day for the primary collection and bulking centers respectively; the cooling systems use both power and diesel generators. This has been facilitated by the initiative of the Netherland government and Danish embassy through USAID and Abi-Trust to implement the dairy value chain project where the union was able to install over 100 cooling systems, buy over 10 dairy tankers and over 1500 cans”. - **Jim Muhangi**: UCCCU Dairy Value Chain Development Project Coordinator

over 130 primary collection centers and over 10 district bulking centers across the South Western region to implement the dairy value chain. The other is Heifer International operating in Uganda since 1982 with 60 percent of its activities on dairy value chain spread all over the country using farmer groups modeled into cooperatives for 6 years now. Co-operatives stand out as one key player earmarked in the region to boost light of the ongoing legislation for the East

growth in

African Community (EAC) Cooperative Societies bill 2014.

Uganda is member of both the EAC Common Market and the COMESA Customs Union which means preferential treatment in the two market blocks. These markets have limited restrictions to member states but usually unintended restrictions to trade do occur. East Africa as a region is an important player in milk production and Uganda enjoys favourable conditions for increasing production of dairy products. In COMESA there have been disputes between partners in relation to quality of milk signifying the nature of hindrances Uganda may face in its bid to boost export. Uganda has experienced rejection of some of its consignments in the EU on account of standards and quality.

There are two main certification agencies for dairy products in Uganda. These included the Uganda National Bureau of Standards (UNBS) which has also launched revised standards in Uganda including the new ISO14001:2015 for Environmental Management. From December 2012 UNBS introduced a series of guidelines known as a Pre-Export Verification of Conformity to Standards Programme (PVoC) especially for imports. The PVoC verifies the conformity of all regulated products and enforces their standards. Compliance to PVoC requirements are applicable in addition to any existing import processes. Every consignment of regulated products exported to Uganda require a Certificate of Conformity. The other is Uganda Halal Bureau (UHB) which is also a point of reference on Islamic and technical knowledge on halal integrity

of consumer products and services in Uganda. UHB is a private entity that works in a tripartite public-private partnership with Uganda National Bureau of Standards and the standards Malaysia. In the tripartite arrangement, UNBS develops the halal standard and the UHB implements and does certification with technical support, guidance and training provided by Standards Malaysia. UHB works with public and private entities including the food and allied industries as well as the food service industry to invigorate the halal industry. It verifies products and services for halal compliance based on national standards and promote the halal brand to enable the consumer choose truly halal products and services. UHB currently offers halal certification services to food processing enterprises and notable companies with halal certification include Jesa and Pearl Dairies. The certification process starts with assessment of the application form submitted by the applicant followed by document assessment, facility audit and, if deemed necessary, product testing is done to confirm halal integrity. These certifications provide confidence to the buyers of the quality of dairy products that it does not contravene the Islamic dietary codes.

5.6 Logistics performance of users of logistics services (i.e. Exporters)

Clearing and forwarding agents have had a struggle to fit in the customs union operations. This has been as a result of limited capacity to equip themselves with facilities needed to fit in such developments as the single window communication connectivity. Clearing agent operating across East Africa have observed the need for expansion of parking yards to accommodate more cargo, and lights and security fixed at the border points for staff working through the night- Joram Nyanzi, the General Manager of Spedag quoted in the Uganda Radio Network website..

URA introduced Electronic Cargo Tracking System lead to elimination of physical escorts, improved security of goods in transit, improved staff performance and reduced transit time from eight days to two. The cost savings has been estimated at US\$400-600 per truck per day. This is still limited since traders feel it is less effective in other EAC countries.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Export market potential of selected commodities produced in Uganda

The potential for export is great. At present, the North Corridor Country markets have not been fully explored. Apart from the Kenyan market, the main buyer so far within this region is the UN missions. The dominance of Uganda's dairy products in regional markets signifies competitiveness. There are small markets that Uganda has supplied dairy products to in the Middle East including UAE and Yemen. Uganda's share in these markets is still insignificant compared to other suppliers. Attempt by Uganda's dairy products to enter the EU markets and other countries that subsidise their agriculture especially outside the EAC and part of the COMESA market have not yielded much success. In countries such as Nepal, Nigeria, Yemen, and others in the Middle East, Uganda's dairy products are drowned by competition and are

invisible. These markets are dominated by European suppliers. In the short run, Uganda may look to regional market to strengthen its presence there.

6.2 Potential for further expansion of the dairy products

For further expansion of the dairy sector, it is vital that animal breeds are improved to at least cross breeds. It has been noted that the South Western milk shed has had improved milk production having embraced improved breeds of animals. Local breed as opposed to the improved breeds of cattle take long period to produce milk. The cooperative dairy system is seen as the pathway in Uganda's path to dairy development. This can be combined with the propose quality pricing strategy as opposed to current pricing based on volumes. India has had Considerable success of co-operative dairy systems with a focus on improving milk productivity of livestock. (CGIAR 2011) This can ensure steady supply of milk inputs for processing.

6.3 Critical issues regarding logistics for the development of the dairy value chain

Key players in the dairy sector including collection and bulking agencies, unions as well as processing companies have identified transportation costs as the highest logistical costs component. The cost of transport is prohibiting due to the poor nature of road infrastructure. In some areas the roads can be impassable especially during rain seasons and this is coupled with high cost of fuel.

Milk is highly perishable item which requires very sensitive handling such as maintaining temperatures below 4°C. Milk transportation requires specialized insulated stainless steel tankers which are not easily affordable by most traders. Processing companies have arrangements with traders where they provide milk tankers and the middle men secure the trucks. Memoranda of understanding are signed and the traders use the tankers as long as they supply the milk to the company. In case of termination or expiry of the MOU, each party retrieves back what belongs to them.

According to Walimbwa, poor farming methods make farm gate prices of milk much more expensive in Uganda compared to countires like the USA or Netherlands. Ugandan farmers lack capacity and capabilities to prepare for off/dry seasons such as preparation of hays and silage as well as water storage making competition at the export market very difficult.

6.4 Suggested interventions

The main intervention to reduce transport costs in the medium term is to improve road infrastructure especially in rural areas for easy accessibility. However, the long term solution is to develop railway network, at the minimum for the export routes. Currently, the cost of transporting one ton of dairy product from Kampala to the port of Mombasa is estimated at approximately USD 100 in comparison with transporting by rail which is about USD 60.

Developing modern livestock farming practices by the farmers will ensure steady supply of milk. Matovu of Heifer International suggests division of roles among different stakeholders. Government should put emphasis on extension services to the farmers on farming practices that can withstand weather changes such as the use of hays and silage. This can be supported by development agencies especially organizations already working with farmers in educating the farmers on best practices. Processors can then take up the role of quality assurance and improvement since they are in the best position given that they know quality requirements for exports. Reward for quality to farmers and milk collectors can be an incentive for improvement. Other than just formulation, government should devise rewards (both positive and negative rewards) for adherence to quality and standards by all players in the sector.

Modern farming practices are an expensive venture and require reasonable capital which is not affordable to most farmers. Walimbwa suggests Revitalisation of the farmer's bank or loan scheme and this is indeed an ultimate sustainable solution. This is because commercial loans are quite expensive and with small or no grace period to start of repayment yet agriculture activities have long spans between cycles with tangible returns.

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ANNEXES

Map of Uganda showing routes from production and processing to end markets



List of Stakeholders Consulted

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UGANDA PALM OIL AND SESAME SEED VALUE CHAIN STUDY

Abstract

Oil Palm and Sesame Seed are key sources of vegetable oils produced in Uganda. This Study focuses on establishing the value chain for the two commodities with a particular interest in understanding logistical challenges faced by the main actors in the value chains who include producers, processors, distributors as well as exporters. It also analyses the major markets for the commodities with a view to understating Uganda's capacity to export to these markets. Solutions are then proposed to address the identified logistical challenges within the framework of a broader transport logistics masterplan in order to enhance the export capacity of Uganda in these and other commodities.

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LIST OF ACRONYMS & ABBREVIATIONS

BDS	Business Development Service
CAA	Civil Aviation Authority
COMESA	Common Market for Eastern and Southern Africa
CSO	Civil Society Organization
DRC	Democratic Republic of Congo
EAC	East African Community
EU	European Union
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
FFB	Fresh Fruit Bunches
FOB	Free on Board
FY	Financial Year
GDP	Gross Domestic Product
GoU	Government of Uganda
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IFAD	International Fund for Agricultural Development
ITC	International Trade Centre
KOPGT	Kalangala Oil Palm Growers Trust
KOPGA	Kalangala Oil Palm Growers Association
LPI	Logistics Performance Index
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MT	Metric Tonne
MTIC	Ministry of Trade Industry and Cooperatives
NAADS	National Agricultural Advisory Services
NARO	National Agricultural Research Organization
NaSARI	National Semi Arid Research Institute
NGO	Non-Governmental Organization
PPP	Public Private Partnership
R&D	Research and Development
RSPO	Round on Sustainable Palm Oil
SACCO	Savings and Credit Cooperative Society
SADC	South Africa Development Community
UBOS	Uganda National Bureau of Statistics
UEPB	Uganda Export Promotion Board
UGX	Uganda Shillings
UIA	Uganda Investment Authority
UNBS	Uganda National Bureau of Standards
UNDP	United Nations Development Programme
UNFFE	Uganda National Farmers Federation
UNRA	Uganda National Roads Authority
UOSPA	Uganda Oil Seed Producers Association
USAID	United States Agency for International Development
VCA	Value Chain Analysis
VODP	Vegetable Oil Development Project
WEC	World Economic Forum
WFP	World Food Programme

EXECUTIVE SUMMARY

Market potential for sesame is high and is evidenced by the strong growth in demand (over 40% between 2012 and 2014). Although its share in Uganda's total exports is small (about 1% in 2014), it is a good commodity for contributing to Uganda's development goals of improving the distribution of income and equity within Uganda.

There are also good value addition possibilities around several food chains including the confectionery industry and the oil chains. Sesame meal, a bi-product of sesame oil is an excellent high-protein feed for poultry and livestock and could therefore spur lateral linkages with the livestock feeds industry. Apart from producing excellent cooking oil, sesame oil is also good for cosmetics and food preparations industries.

Logistical challenges that need to be addressed along the VC are primarily, improvements in infrastructure. Better roads and better rail systems lead to an increase in transportation options available for hire hence reduction in the transport costs. It also makes access to sesame and palm oil producing areas as well as to markets much easier, hence a likely increase in the diversity of economic operators.

It is also vital to look beyond transport logistics. Support for extension services and other yield improvement programs to improve volumes are critical issues. Research, commercial production support logistics such as tractorisation, storage etc are equally important.

Quality and standards enhancement facilities and infrastructure are again key logistical issues to be addressed in order to put competitive sesame and palm oil products onto the market.

Palm Oil is an infant industry in Uganda. Harvesting in plantations established in Phase I of Uganda's palm oil development project significantly started in 2013. All the output is currently aimed at serving the BIDCO refinery. Other companies such as Mukwano continue to depend on imports from Indonesia and Malaysia and this will remain so until local production grows.

The key recommendation for palm oil intervention is to support production expansion and diversification. There is enormous domestic market scope to explore. It will propel the growth of both primary and secondary production entities hence value addition. The experience with Kalangala also shows it has the potential to grow household incomes of especially the producers. Further support towards existing research, ensuring that the required inputs are available, building the right human resource capacity for both research and extension services; ensuring that relevant market systems and structures are established are all but important and necessary interventions.

With regard to transport Logistics, to promote exports of value-added products (crude palm and palm kernel oil), the prompt implementation of the proposed railway development projects is critical. An alternative means of transport will be required for bulk movement of crude palm oil to ports of exit such as Mombasa. Probably, as production in the islands grows, the same thinking should be extended to creating cost-efficient waterway transport options for FFB or crude palm oil connection to the mainland.

INTRODUCTION

I.I OBJECTIVES OF THE VALUE CHAIN ANALYSIS

The main objective of this study is to identify critical issues regarding soft and hard logistics infrastructure for the development of the value chains along the Northern Economic Corridor and other markets for sesame seed and palm oil.

Specifically the study seeks to:

- i) Describe the process involved in the supply chain processing, logistics, distribution and modes of transportation
- ii) Identify the actors and their role in the value chain
- iii) Highlight the economic returns to the major actors along the value chain
- iv) Identify the challenges in the value chain and how they can be addressed

I.II HOW THE REPORT IS ORGANIZED

The report is organized into two parts A and B. Part A covers Sesame seed while part B covers Palm Oil. Each of these is organized in five (5) sections. The 1st section starts with a detailed analysis of the value chains. It also highlights the key findings of the surveys and interviews carried out in respect to this analysis. The next two (2) sections focus on characterizing the export markets for each of the commodities, clearly highlighting market size, trends, buyers, competitors, etc. The last section outlines and analyses the key logistical bottlenecks observed within these value chains and makes recommendations/proposals on actions and measures that may be undertaken to address these challenges.

PART A: SESAME SEED VALUE CHAIN

1.0 OVERVIEW OF THE SESAME VALUE CHAIN

The sesame value chain brings together various public and private actors. These actors include; producers/farmers, seed suppliers, traders at different administrative levels; sub -county, county, district and regional levels for provision of trade licenses; transporters, small - scale and large - scale processors and exporters. Other organizations that play vital role in the sesame VC are; the Ministry of Agriculture, Animal Industry & Fisheries (MAAIF), the National Agricultural Research institutions researching improved sesame seed varieties, Uganda Oil Seed Producers Association (UOSPA) an apex body for oil industry stakeholder association, NOGAMU for organic certification and Non - Governmental Organizations (NGOs) working to improve livelihoods in the north and eastern regions of Uganda, Uganda Investment Authority training and raising awareness about setting up investments, Uganda National Bureau of Standards responsible for the certification of processed sesame products. Ministry of Trade, Industry & Co-operatives (MTIC) to monitor the marketing aspects.

1.1 PRODUCTION

Uganda is one of the top ten (10) sesame producers worldwide, and the top five (5) in Africa – including Tanzania, Sudan and Ethiopia. This has accordingly attracted the interest of international grain and oil seed traders and/or importers, especially from Asia – particularly China, in the last decade. Farmers interviewed indicated that by 2010, traders/importers – especially of Chinese origin – were going as far as the farm-gate to source the required volumes for export. In Uganda, sesame is primarily produced in the Northern part of the country – see *Table 1: Total Area and Production of Sesame by Region*

TABLE 1: TOTAL AREA AND PRODUCTION OF SESAME BY REGION

Region	Second Season 2010		First Season 2011		Total		Yield (t/ha)
	Area (HA)	Production (MT)	Area(ha)	Production (MT)	Area (ha)	Production (Mt)	
Northern	123,931	80,434	34,832	13,128	158,763	93,562	0.6
Eastern	7,946	3,790	7,370	2,984	15,316	6,774	0.4
Western	612	253	316	312	928	565	0.6
Central	296	70	294	56	590	127	0.2
Uganda	132,786	84,547	42,811	16,481	175,596	101,028	0.6

Source UBOS, 2010

Some of the key producing districts include Kitgum, Lira, Gulu and Soroti. Regionwise, that is the Acholi, Lango, West Nile and Teso sub-regions.

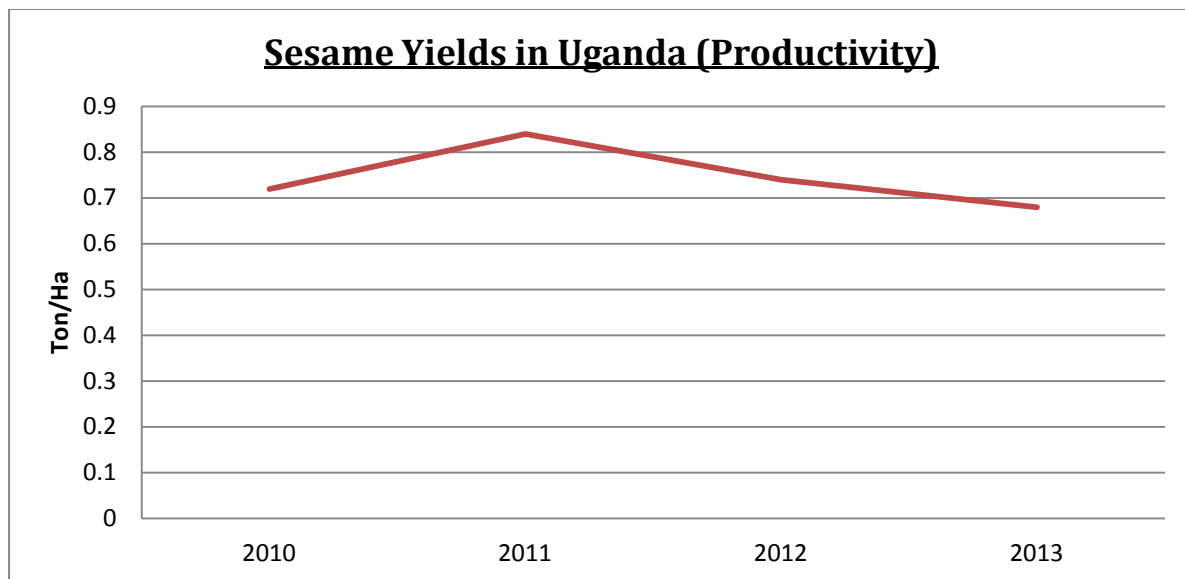
Sesame is majorly grown by smallholder rural farmers (or farmer households) – exclusively (pure stand) or intermixed with other crops (mixed stands). This is characteristic of grain crops in Uganda. The varieties grown fall into two groups. White sesame, which is white-to-golden in color and perceived to be dual-purpose – used for both oil extraction and direct consumption. Sesem 1, 2, and 3 are the common varieties in this class. The other group is that of black sesame, which is mostly grown in West Nile region from farm-saved seed and exclusively used for oil extraction. The UBOS 2010/11 survey revealed that of the 176,000 hectares cultivated with sesame that year, 68.1 per cent were pure stand and 31.9 per cent mixed stands. These smallholder farmers largely use manual labour (with the aid of ox-driven equipment for a few cases) and no inputs – fertilizers, improved seed etc. The production is entirely rain-fed. As such, there are two (2) crop seasons – March-April to June-July and August-September to November-December respectively. Ordinarily, the second season is significantly larger than the first. For example in 2010, 83.7 percent of the sesame produced that year – approximately 101,000 MT – was in the second season.

Being largely a household crop primarily grown for consumption in ethnic diets, the volume of tradable sesame available on the market largely depends on household surplus or disposition patterns which vary from region to region as depicted in *Table 2: Sesame disposition by region*.

TABLE 2: SESAME DISPOSITION BY REGION

Region	Ways of Disposition (%)			
	Sold	Consumed	Stored	Used for other purposes
Central	9.9	45.6	19.3	9.4
Eastern	27.9	34.1	27.4	8.4
Northern	33.7	37.1	23.4	5.8
Western	23.4	43.2	19.5	10.4
Uganda	33.2	37.0	23.6	6.0
Source: UBOS				

FIGURE 1: SESAME PRODUCTIVITY TRENDS IN UGANDA (2010 - 13)



The brief survey conducted in the areas of Kitgum and Soroti revealed that sesame, because of its income generating potential, is at the core of many rural livelihoods in the northern region. Infact, there are several livelihood support programmes crafted around this value chain such as by Oxfam that targeted supporting women producer groups in Kitgum and Lamor to acquire sesame and ground nut grinding machines. The same NGO also constructed community stores purposely for bulking, storage and collective marketing. One such is in Palabek – Gem, Lamor District. Some value chain actors actually view it as a ‘political’ crop especially in this region.

Another critical issue identified is that several producer clusters (farmer groups and cooperatives) have emerged and are being supported to – most importantly – enable the smallholder farmers; i) harness economies of scale – especially in transportation and storage and ii) increase their bargaining power through collective marketing. Trading entities in this value chain are becoming increasingly aware of this and therefore sourcing closer to the farm-gate through these structures, limiting the role of middlemen. But, the stability and effectiveness of these clusters – especially at the sub-county and district level – are threatened by politics and ethnicity. That is why initiatives at that level – such as the community stores – are not yet very effective. This was particularly observed with Lamor District. Proposals are to pick lessons from the tobacco and sunflower value chain, in addition to establish regulations to control trade especially at the lower end of the value chain.

From the perspective of logistics, the key challenges observed – directly related to production, where the cost and burden of moving labour and inputs during production, and produce - during harvest, between homesteads and fields – due to a poor state of road infrastructure and limited number of vehicles especially from the main roads to the villages.

This challenge emerged during the interaction with the women producers in Palabek-Gem, who indicated that several of the members have gardens at distances of more than a kilometer from their main homesteads. In intense fieldwork periods – such as during planting and weeding – the women have to temporarily relocate to community centres/homes nearer to their gardens to save on time and cost.

1.2 STRUCTURE OF THE VC - TRADE

The output at farm-gate is largely the surplus sesame – difference between the household production and household consumption needs. Producers rarely grow for commercial purposes only. That is why the trade starts with foot traders, village collectors and buying agents operating on foot, bicycle and/or rarely on motorcycles. These move from home-to-home or field-to-field collecting whatever is available for sale. They consolidate their collections at designated points within the villages. The collected volumes are either sold to urban traders – who move around with trucks between collection points – or transported by these collectors to the major trading towns by hired trucks. Key trading towns include Lira, Soroti, Gulu and Kitgum. Apart from the traders, trade at this level also involves designated company buying agents of processing and exporting companies such as OLAM Uganda, Nile Ply, METL Uganda and Shares Uganda. They have to compete for the available volumes. These actors are therefore key farm-gate price determiners or setters. Loyalty of farmers to single buyer is rare. Therefore it is all about the price offered.

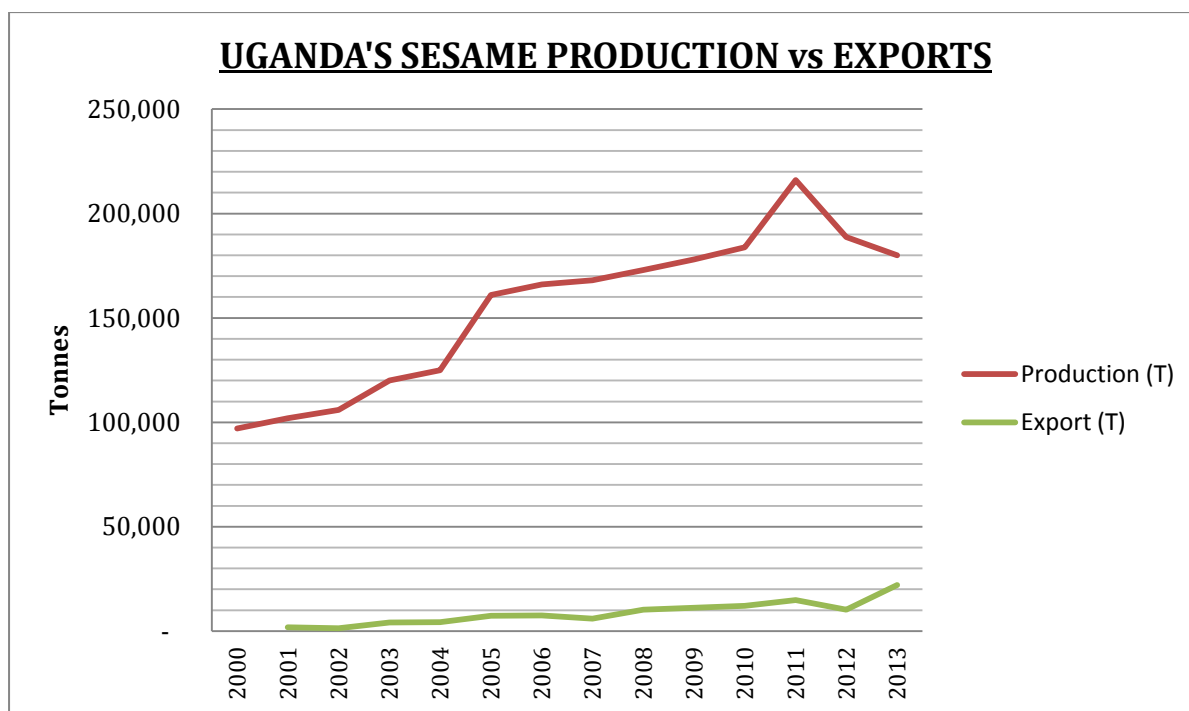
After the farm-gate, the sesame will go through different layers of traders operating within the producing region. However, in most cases, it ends up in the stores and warehouses in the major trading towns and Kampala – including company-operated warehouses. It's not common for these traders to engage in trade beyond the nearby towns or exports per se, because of the inherent costs and risk. The store/warehouse operators are traders as well – although they do not go out in search for the sesame – because of the associated transport costs and risks. They prefer to wait for traders to deliver at that point. At this level, quality is very important. The price offered to these traders, at the store/warehouse, depends on the quality delivered. Information from exporters and traders interviewed indicates that the stores have equipment such as moisture meters and oil content analyzers for this purpose. These stores are also the key sourcing points for exporters and traders from Kampala and other non-producing areas.

At the tail-end of the trading activities are the processors and exporters. The number and consumption of sesame millers (processors) could not be readily quantified due to lack of statistics. But, the general perception is that there are a number small scale millers scattered majorly in the producing regions. These produce unrefined oil as preferred by the local (especially traditional and rural) consumer households. The

larger vegetable oil produced prefer other oil seeds other than sesame due to cost of the raw material. For example Mukwano Industries and Mt. Meru Millers use sunflower.

The exporters are ideally export trading companies that simply stretch the trade across the border. The key export destination is Asia – particularly China – and EU. The sesame is exported in seed form – cleaned, graded and bagged.

FIGURE 2: SESAME PRODUCTION AND EXPORT IN UGANDA



The fundamental logistical challenge is the cost of transportation especially between Kampala and Mombasa – the main sea exit port. Despite the improvement in general road infrastructure and shorter border clearance times, the fee charged by transporters remain high and growing. Traders interviewed indicate a general dependence on trailer trucks making return trips to Mombasa/Nairobi, after delivering cargo in Uganda, Rwanda or Burundi. A trailer – with carrying capacity of 30T – charges at least US\$ 2,500. A Kampala to Mombasa trip normally takes two (2) days – with clearance time of upto two (2) hours.

TABLE 3: SESAME WHOLESALE AND RETAIL PRICES (US \$) – NOVEMBER 2015

	Central	Eastern	Western	Northern	Country Average
Wholesale	1.06	1.09	1.33	0.98	1.06
Retail	1.31	1.22	1.77	1.13	1.25

Source: FIT Uganda – November 2015
Exchange Rate: US\$ 1 – UG X. 3,395 (6 November 2015 – Bank of Uganda)

Other issues highlighted in the interviews, that affect goods in transit generally, include administrative delays at Uganda National Roads Authority (UNRA) weighbridge, cargo safety – especially when it cross out of Ugandan territory and fluctuation of fuel prices – making transport costs unpredictable. Another emerging issue is the lack of containers adequately designed to preserve the quality of grain products during long haulage, let alone the dwindling numbers due to reducing imports. Sesame exporters have to compete with the coffee, cocoa and other key export products for the few that are available. Infrastructure, especially between major towns and cities, in the country and across the EAC region has generally improved, although this is yet to have a positive impact on transport costs.

2.0 STRUCTURE OF THE SESAME VALUE CHAIN

2.1 THE SESAME TRADE ROUTE(S)

Sesame largely moves as grain from the producing areas to all other parts of the country and the export market. It is largely moved by the different types of traders – described above, using trucks – 10 to 14 T. For export, it is trucked in containers from Kampala to Mombasa. Another key product that moves along the same routes is the ODI (groundnut and sesame paste) that is finding a bigger market in the urban centres, as the population become more health-sensitive in the food consumption.

FIGURE 3: TRADE ROUTES OF SESAME



2.2 MAJOR STAKEHOLDERS INVOLVED IN THE SUPPLY CHAIN

2.2.1 Farmers (Producers)

Sesame producers are largely small holder farmers with fields of less than 1 hectare. The size and location of the farm largely depends on the land tenure system of the area in question. For example, members (women farmers) of the Palabek-Gem Women Group (Palabek-Gem Lamor District) talked to – in one of the interactions – indicated that for at least 75% of members, their gardens are less than 1 hectare and at a distance of not less than ½ km from the homestead. In this area, the land is communally-owned and therefore size and duration of usage is decided through the community leadership. As such, the production is highly fragmented. These small holder farmers face several challenges that limit their production capacity and thus real income from the sesame. These include high cost of labour which is largely manual labour – sesame is a labour intensive crop; inputs are relatively inaccessible, of poor quality and expensive; lack of adequate storage for bulk produce and limited financial capacity. At post-harvest the critical challenge is cost of handling – especially transportation from field to home or designated storage point.

The above challenges compound into the problem of low farmer/household productivity, farm-level adulteration/poor quality and limited bargaining power at the farmgate. This is clearly demonstrated by the Women of Palabek-Gem Women's Group who indicated that they have for long failed to bulk and market collectively because of the varying financial requirements forcing members to sale at different times and the inability to meet the cost of moving the sesame from field/home to the group store. The same trend was also observed with the Palabek-Gem Community Store initiative by Ox-fam.

2.2.2 Foot/Bicycle/Motor Cycle Traders and Buying Agents

The trade activities start with this kind of traders, whose major role is to move from farm-gate to farm-gate or field to field collecting the surplus sesame, available for sale from the farmers. Bulk producers often overlook this group of traders in search for better prices. These traders add no value to grain. They simply buy and bulk at designated collection points – with no quality control. Since they leave within these localities, they have knowledge and information on which farmers/households to target. Once they acquire adequate stocks – based on their financial capacities, they turn to searching from markets for their bulk. With the exception of designated buying agents, this group of traders is not fixed on trading in a single commodity. They switch from one product to another, especially grains – sorghum, maize etc – as the seasons change. They have no loyalty to any higher-level trader or buying company. An exporter, with collection stores in Gulu, interviewed indicated that they move with price trends, going after individuals/companies with the best offer. They operate as a network, exchanging information on prices and buyers. A buyer only needs to identify one of these traders,

and will then have access to the entire network. This segment also has brokers, whose role is identify and linking buyers and sellers.

From a logistics perspective, these traders take on the risks associated with dealing with farmers (unreliable and unpredictable); and with moving from farm-gate to farm-gate. These most especially include transport costs, which is why they opt for the minimal cost transport options such as bicycles and motorbikes. The challenging terrain, especially in accessing stocks in fields or villages with very limited infrastructure is big. This is a characteristic of many of the districts in the north where district authorities usually only have budgets to rehabilitate/maintain the major feeder and town-to-town connection roads.

Market information, though not a logistics issue can be a challenge. Farmers talked to at the Palabek-Gem Community Store indicated that they have no reliable market information, cannot regularly travel to town such as Kitgum to seek such information, and rarely have the bulk to influence pricing. They are therefore forced to sell at the influence of information offered by buying agents.

2.2.3 Rural/ Urban/Regional Traders

This the second layer of traders, operating outside the producing villages but within the producing region – mainly in the town. In the case of sesame these include – Lira, Gulu, Soroti and Kitgum. Characteristically, they avoid the risk of sourcing at the farm-gate, opting to buy from the village-level traders mentioned above. They operate stores/warehouses in the towns and buy on a need basis. They also operate trucks that, sometimes, drive to accessible bulking points in the villages – as long as the truck load or required capacity (say 10T) is guaranteed. Some of the traders talked to also indicated sourcing from open-air mobile markets. Farmers and village traders quite often come to these markets in search for better offers. Traders and exporters agree that at this level, quality is a very critical price determinant – cleanliness, appearance, smell etc. When asked about single color grain, they noted that this has not been a major requirement. The exporters/importers are willing to take the mixed color grain, as long as it meets the fundamental sanitary requirements. It was also noted that store operators have acquired different types of equipment for quality control – such as moisture meter and, oil content analyzers.

Two issues that are changing trading at this level are; i) the continued entry of foreign (mostly Chinese) owned export trading companies into the sub-sector which has led to importers have more direct access to the grain – at the farm or village-level. Farmers indicated that in the last two (2) years, Chinese traders have been sighted buying sesame in the villages. This continues to cut several traders out of the supply chain. ii) The continued support to producer clusters to build their capacity to bulk and market the sesame collectively. Although not yet very successful, traders view this initiative

negatively – anticipating loss of business since city traders and exporters will have access to the farm-gate grain.

From this analysis, it is apparent that the key logistical issues relate to quality of infrastructure. Value chain actors indicated that better roads lead to an increase in number of vehicles (particularly trucks) available for hire hence reduction in the transport cost component. It also makes the area easier to canvass hence a likely increase in the number of buyers (buyer diversity) and thus better prices. Support and extension services have also been hard to access since the respective local administration officers and private sector players were unwilling to venture into these areas. These actors therefore agitate for consistent road maintenance – at the local government level – and removal or streamlining any restrictive administrative barriers such as the levies charged on traders

2.2.4 Exporters

Sesame, in the last 5 – 10 years, has become a lucrative export product. This has seen the emergence of a big number of export companies other than the usual – Shares Uganda and OLAM. In the last 3 years, several foreign-owned export trading company have also joined the race for the oil seed. Initially these worked through Ugandan traders, but once they attained a good level of confidence in engaging with the supply-end, they minimize and/or completely eliminated the role of these agents. That is why it is quite common for producers or rural traders to deal directly with the exporter – with no go-between.

The central role of the exporter is to aggregate volumes enough for them to realize economies of scale, especially with the logistical costs. Sesame is exported by road to Mombasa and then sea to the destination country. Therefore, the higher the volumes, the lower the transport cost per unit.

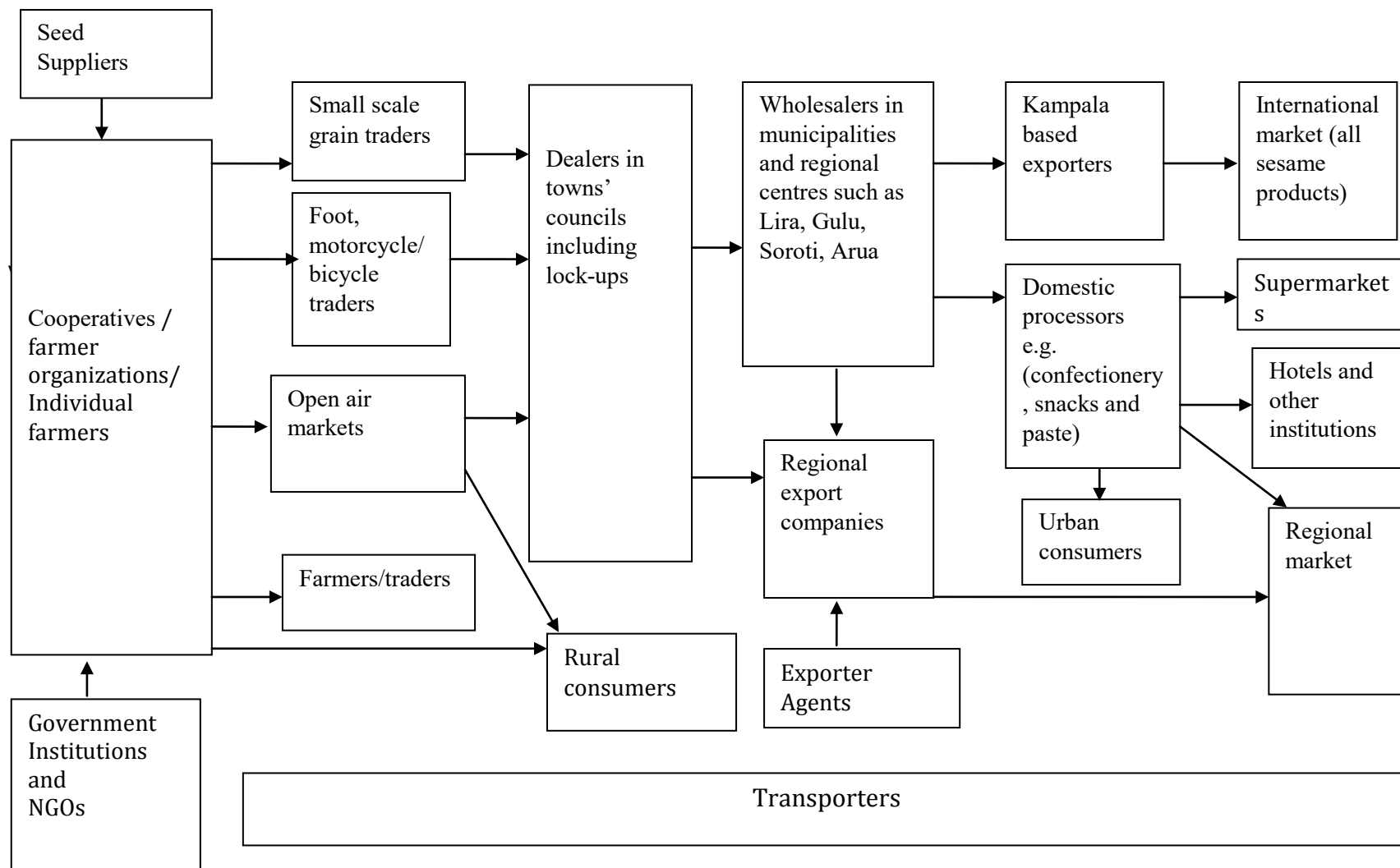
Exporters also exercise a higher level of quality control – to meet the requirements of the importing market and the buyer. Ordinarily, the sesame for export is transported from bulking point to cleaning facility¹, where it's cleaned, bagged and documented. The bagged sesame is then loaded into containers for shipment. It is projected that a 20' feet container can take up to 14 tones.

Other exporter companies include Export Trading Company (ETG), AY International Trading Co. Ltd., White Gold International Ltd. and Lagoon Trading.

The actors in the value chain are summarized in figure 5 below

¹ There are no dedicated cleaning facilities for sesame. In most cases, exporters used facilities of coffee processors which have been duly certified to handle grains of different types. An exporter consulted indicated that to date the best facility is at a place known as Growers in Bwaise – Kawempe, Kampala. Other facilities normally used include that of Shares Uganda, Lakeland Holdings Ltd and OLAM

Figure 4: Sesame seed Value Chain and actors in Uganda – Adapted from ICRISAT and improved with Research during this Study



2.3 ANALAYSIS OF VALUE ADDITION PROCESSES

Sesame is generally regarded as an oil seed and therefore primarily grown for that purpose. It contains approximately 50% oil and 25% proteins; 47% oleic and 39% linoleic acid. Value addition in Uganda is basically limited to the following:

2.3.1 Oil Extraction

The sesame oil extract comes in two basic types. One type is a pale yellow liquid with a pleasant grain-like odor with a nutty taste. This oil is high in polyunsaturated fats much like safflower, soybean and corn oil. As such it is excellent for use as cooking oil, in cosmetics and food preparations. The other type is amber colored and aromatic, made from pressed and toasted sesame seeds. This is a popular ethnic food ingredient and is not used as a cooking – because its intense flavor and burns quite easily too. It's normally added as a flavoring agent in the final stages of cooking (Hansen, 2011).

Sesame oil extraction – or milling – in Uganda is relatively low, with much of this being done by small-scale millers scattered around in sesame producing regions. The oil produced is for local household consumption as in traditional dishes and cuisines. There is no clear data on how much sesame is milled and where.

Typically the process does not go beyond the production of sesame paste. Both the process and the packaging of the product for sale are basic with unlabelled plastic tins (see Figure x below) used to pack the product for sale in the local markets.

Figure 5: Basic Level processed sesame



Source: Taken by Research in Northern Uganda

2.3.2 Animal Feed

The residue of the oil extraction process, called sesame meal, is an excellent high-protein feed for poultry and livestock. This is locally gathered and fed to animals without any other serious value addition.

2.3.3 Clean Grain

The sesame seed is also consumed in its whole grain form. Roasted sesame seed, sesame balls and other such snacks are common all over the country. It is also widely used as seasoning in confectionaries and as an ingredient in food pastes and appetizers such as ODI paste, the ground mixture of roasted ground nuts (pea nuts) and sesame. The latter is now a common product on supermarket and shop shelves in Uganda. There are however known exports.

Snacks and pastes – are majorly products of cottage industries. Importantly, several women-owned enterprises and producer clusters are engaged in the making of these products. Over the last five (5) years these products have significantly evolved – especially in relation to packaging, branding and labeling.

Therefore the fundamental logistical issues highlighted were in relation to the distribution of the products. Hiring a vehicle for a day is expensive. Secondly, several of the peri-urban areas and suburbs of Kampala remain relatively inaccessible because of the poor roads. As such, an effective distribution system must involve a mix of transport means – cars, motorcycles and bicycles in some cases. Product losses during transportation are also common since the delivery cars are not specifically designed for that purpose.

3.0 COST-BREAKDOWN IN THE PRODUCTION, PROCESSING AND MARKETING

Data and Information obtained via filed interviews with several actors in the sesame is summarized below

3.1 GROSS MARGINS – BASIC LEVEL PROCESSING.

TABLE 4: GROSS MARGIN ANALYSIS FOR A 500GM TIN OF SESAME PASTE

Description	Unit Cost	Amount
Cost of 1 kg. of simsim	2,500	2,500
Cost of Grinding – per kg.	800	8,00
Packaging – 3 tins	400	1,200
Other costs		1,000
Total Production Costs		5,500
Cost per 1kg tin		5,500
Sales per 1kg tin		8,000
Gross Profit per 1kg tin		2,500

(Source: Women Group in Ogiri)

3.2 SESAME BASIC VALUE ADDITION PROCESSING COSTS – SESAME PASTE

Items	Shs Amount
Purchase of raw material (sesame seed)	3,000,000
Farming costs per season	1,000,000
License (per 6 months)	200,000
UNBS certification process (each visit x 3 times in a year)	200,000
Labour (threshing, roasting, running machine, etc.) per day	100,000
Packaging material and transportation from Kenya (per 3 months)	2,200,000
Transport of raw material	200,000
Transport (distribution) of finished product	200,000
Communication (airtime, email)	100,000
Rent (per month)	500,000
Electricity per month	500,000

These costs were provided by one of the small scale processors with the largest production capacity of 300 kgs of paste per day. The enterprise sells a finished packed product at UGX.15,000 per kg. The paste also goes to the Kenyan market.

The enterprise has critical logistical challenges around packaging (see photo below) and certification. Mr. Nasur Opio, the proprietor, observes that if these two challenges were resolved, the company has market potential for Ethiopia and Dubai in addition to the current Kenyan market if the packaging and certification issues are solved.

3.3 SESAME SEED TRADERS MARGINS

Traders, in this context, is presumed to refer to business persons involved in the collection and bulking within the sesame growing village for transport and sell to store/warehouse operators in the towns – for this study case, Kitgum. Palabek-Gem is a town on the Kitgum-Lamwo road which is estimated to be 66 kilometres in totality. Palabek-Gem is therefore about 20 km from Kitgum town.

TABLE 5: GROSS MARGIN ANALYSIS FOR SESAME SEE TRADE

	1 kg	100 kg bag
Farm gate price ²	2,500	250,000
Packaging bag (100 kg capacity, polypropylene bag)	12	1,200
Bagging	5	500
Loading	10	1,000
Transport (80 bag capacity truck charges 160,000 – 240,000 UG X. from Palabek Gem to Kitgum)	30	3,000
Offloading	10	1,000
Traders Margin ³	760	76,010

(Source: Traders & Kitgum/Lamor District Farmers)

² Farm gate prices, according to traders in Kitgum and farmers in Palabek-Gem Lamor District, have ranged between UG X. 2,500 – 3,000 in the last 3 seasons

³ Based on regional wholesale prices from FIT Uganda and that the quality delivered at the store is adequate to command the estimated price

4.0 ESTIMATION OF THE MARKET SIZE

4.1 LOCAL AND REGIONAL MARKETS:

Most of the sesame produced in Uganda is consumed domestically – direct household consumption in ethnic diets; in the confectionary industry – mainly as a seasoning; and as a snack in different forms. Derived value-added products are majorly food pastes and appetizers – such as the popular ODI paste. Approximately 20% is exported to various markets but especially Asia (China).

There are no reliable statistics on the size of the local market. But, it can be estimated at approximately 45 per cent of the annual production – excluding consumption by the producing households. For example, in 2013, FAO statistics put the production at 180,000 tonnes. The UBOS 2010/11 survey then revealed that about 43% of this crop was consumed (or used) within the producing households – approximately 77,400 tonnes. According the 2013 formal merchandise export statistics, 22009 tonnes were exported that year. This puts the internally traded volume (including grain losses) at about 80,000 tonnes.

Value chain actors have also indicated that there is a substantial percentage of the sesame exported informally. But, reports – such as the informal cross border trade survey report of 2013 – do not give any indication of such volumes or values. But, of Uganda's direct neighbours, only Kenya imports significant volumes of sesame – having taken in 3,193 Tonnes worth US\$ 2.3 Million in 2014. Tanzania only imported 242 Tonnes in the same year. It should not be forgotten that Tanzania and Sudan are major producers of this oil seed and therefore can service much of their domestic demand. If any such informal trade occurs, then it is with Kenya.

4.2 INTERNATIONAL MARKETS

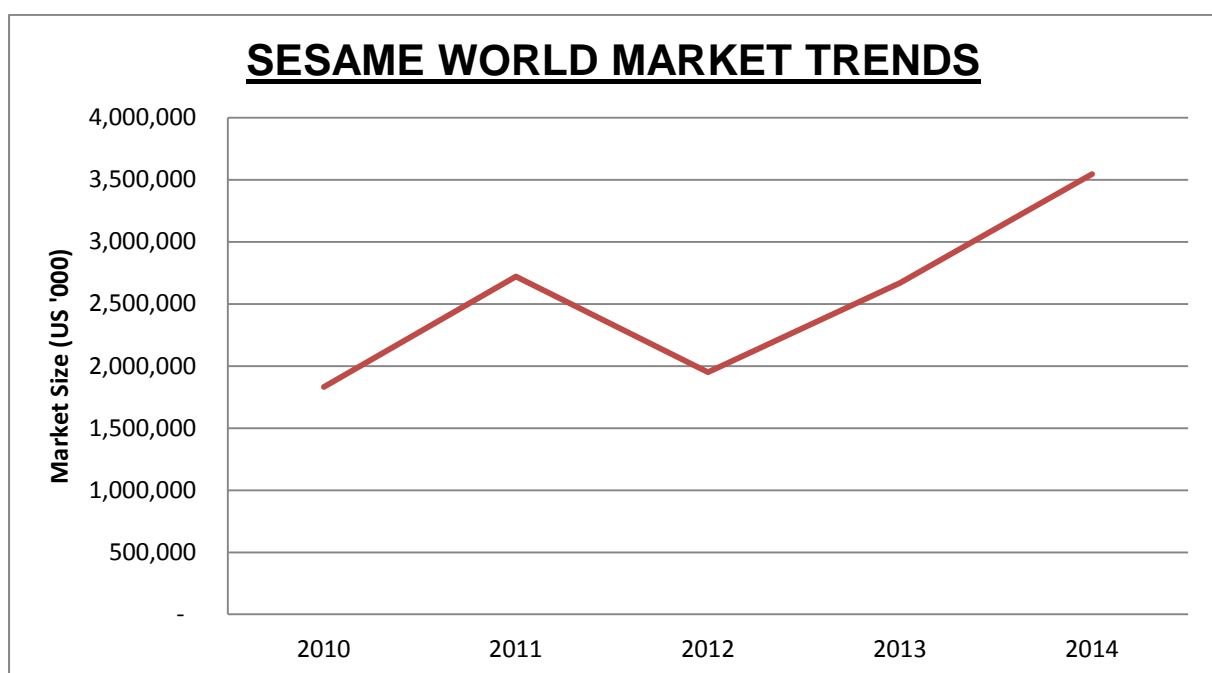
The size of the world market for sesamum – measured from the demand perspective – surpassed the US\$ 3 Billion mark in 2014, expanding to US\$ 3.546 Billion (1.67 Million tonnes) - from US\$ 2.67 Billion (1.4 Million tonnes) in 2013. China, Japan and Turkey – the top sesame importing markets - represent 32.4, 10.8 and 6.2 per cent of this market, respectively. There are several other importing markets which include the Netherlands, UK and UAE.

5. END MARKET ANALYSIS

5.1 MARKET TRENDS

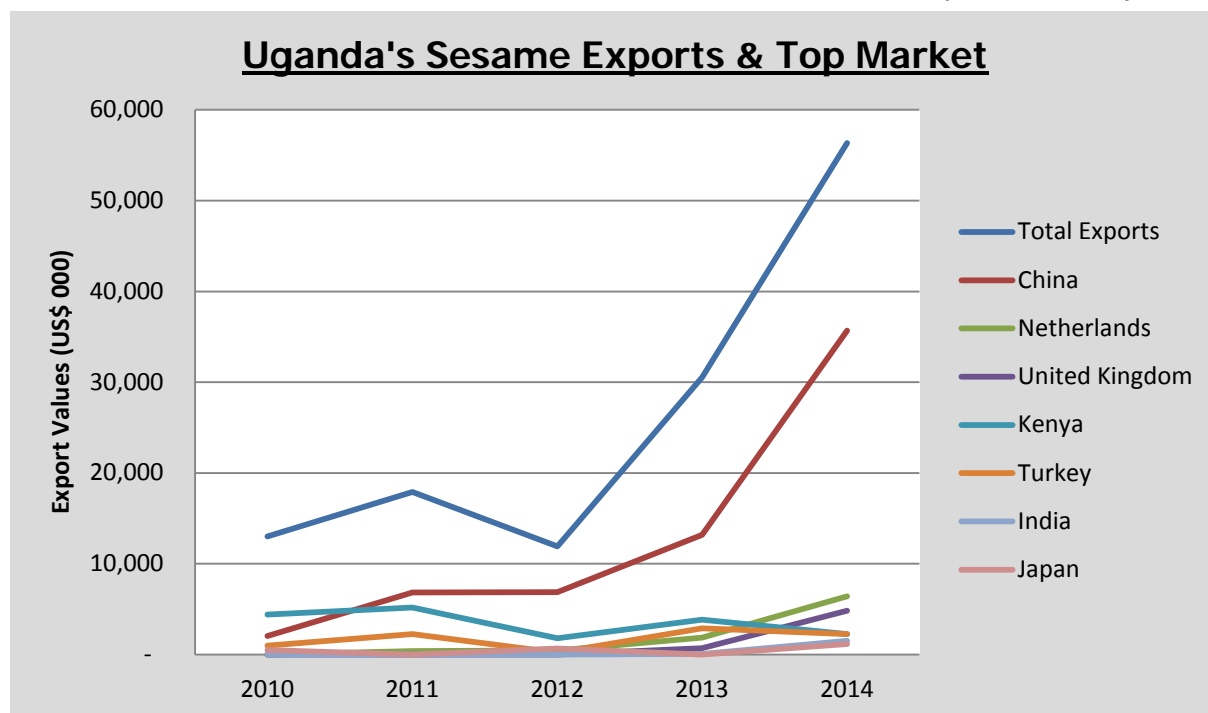
Uganda's main export market for sesame is China – accounting for 62.8 per cent of the country's total formal export earnings from sesame in 2014 – which amounted to US\$ 55.165 Million from 39,833 tonnes. These exports have been consistently growing – at an annual average of 41 and 32 per cent by value and volume, respectively, over the last 5 years (2010 – 2014). The market trend is as indicated in the Figure below, with a growth of over 40% between 2012 and 2014

Figure 6: Sesame world market growth trends



Other key importing markets include Netherlands, United Kingdom, Turkey, Kenya and India. All these markets – except Kenya – have indeed exhibited growth over that 5 year period. For example Netherlands which recorded no sesame imports in 2010 has since steadily grown to US\$ 6.413 Million worth in 2014. The UK has increased imports of sesame from Uganda, from US\$ 0 - between 2010 and 2012 – to as much as US\$ 4.813 Million in 2014. India, which recorded no imports between 2010 to 2012, has steadily grown from sesame worth US\$ 0.079 Million in 2013 to US\$ 1.515 Million in 2014. All these are clear indications that the market for sesame is growing in both size and diversity.

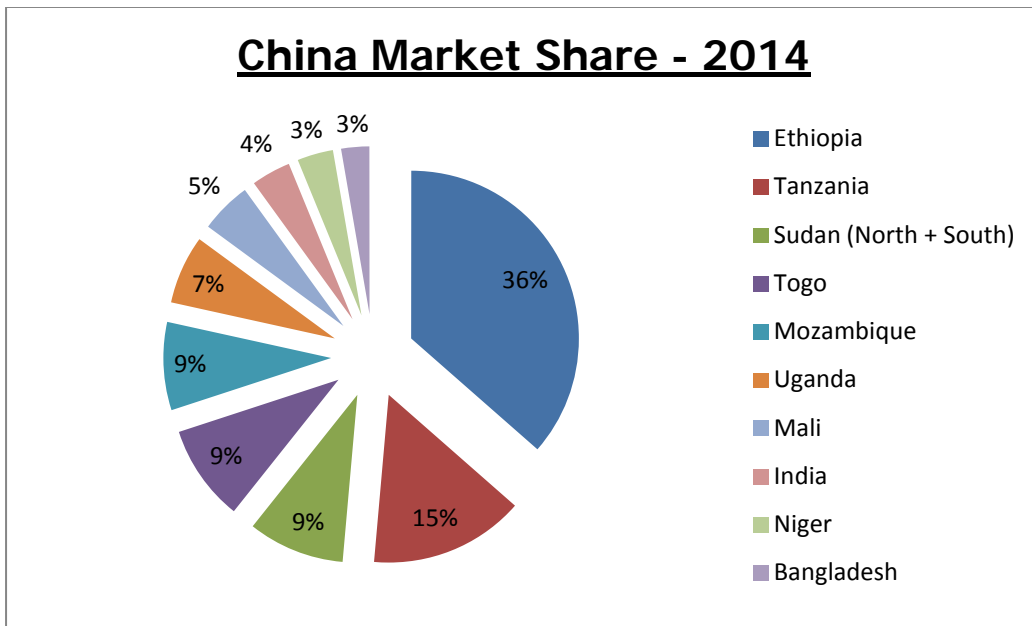
FIGUR 7: UGANDA'S SESAME EXPORTS & TOP MARKET TRENDS (2010 - 2014)



5.2 COMPETITION

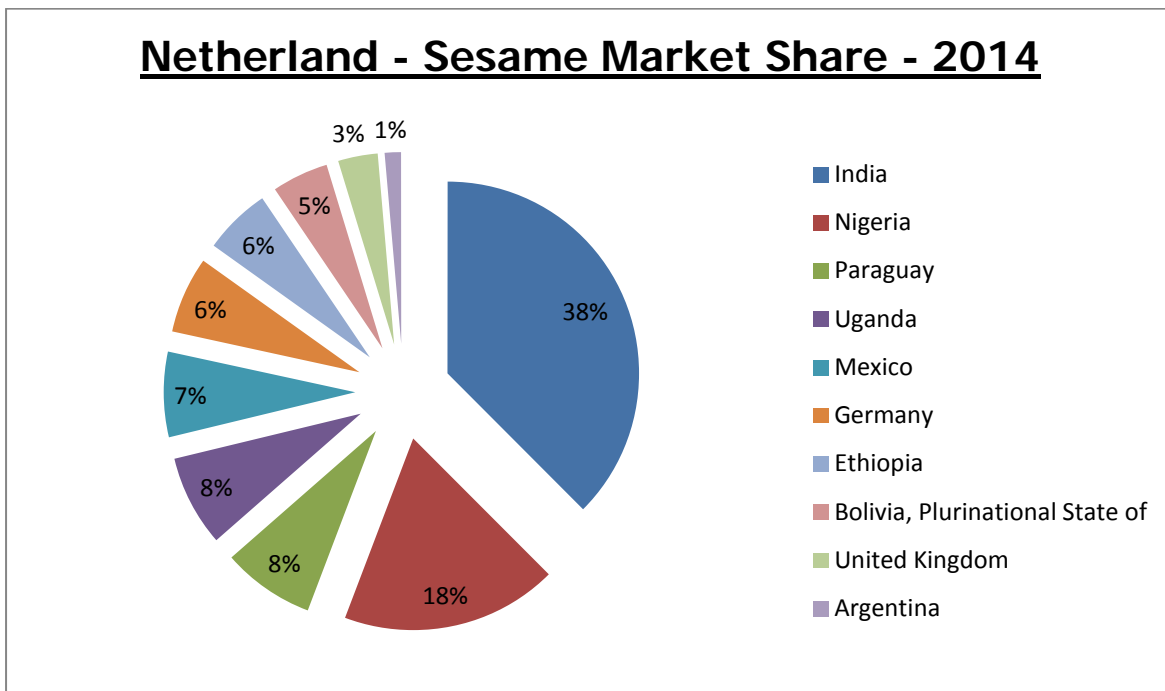
In China, Uganda faces competition from Ethiopia, Tanzania, Sudan, Togo and Mozambique. They rank as the top five (5) suppliers of China's sesame, ahead of Uganda which is in sixth. But, Uganda's supply to China is growing much faster than all these competitors - 54 per cent per annum on average over the last five (5) years. Only Togo is growing much faster at 114 per cent per annum over the same period. However, it is important to note that the average unit value for Tanzania and Mozambique is significantly lower - US\$ 1,937 and US\$ 1,909 respectively. This is an important price competitiveness indicator. As such, it should be noted the likelihood of importers to switch from, say Uganda to Tanzania since the distance to the market is relatively the same, is high. Tariff applied by China for all these countries is zero.

FIGURE 8: CHINA SESAME MARKET DISTRIBUTION - 2014 (TOP 10 SUPPLIERS)



In the Netherlands (much like in the rest of the EU), Uganda faces competition from India, Nigeria and Paraguay – as depicted in Graph 3: Netherland Sesame Market Share - 2014. The important point about this market is that from the 2014 statistics, it is apparent that the unit value (per ton value) of sesame from Uganda is much lower than that of the other ten competitors. Again this either points to price competitiveness or quality of the sesame exported to the market.

FIGURE 9: NETHERLAND SESAME MARKET SHARE - 2014



5.3 MAJOR PLAYERS (BUYERS) IN THE MARKETS

On the supply-end (Uganda) trade in sesame is majorly dominated by agro-produce rural traders. These collect the sesame from the farm-gate or village collection centres, bulk and then supply to the upstream market (urban traders, processing companies and exporters). They are the major link between the producers/farmer and the end-market. Although they are deemed to be farm-gate price setters, at the fundamental level they are simply price transmitters. Prices are set by the end-market (processors or exporters). The traders adjust the price accordingly – downstream – to factor in their profit margin, operational cost and risk.

Trade in sesame is relatively unregulated. Therefore any individual with the financial capacity can enter, and exit, the trade freely. Farmers talked to have indicated that in the last two (2) years, Chinese traders have been seen sourcing sesame at the farm-gate or in the producing villages. Also several exporting and processing companies have contracted buying agents. For example Mukwano Industries – for its processing unit in Lira, OLAM Uganda and another company that has often been referred to as Twin Brothers.

By 2011, only one Ugandan firm (Shares Uganda) was exporting organically certified sesame creating a niche market and receiving premium prices, but other companies like Capital Reef (U) Ltd, Export Trading Co. Ltd, Olam Uganda Ltd, and others do currently export

5.4 THE GAPS BETWEEN THE FINAL MARKET REQUIREMENT AND CURRENTLY AVAILABLE COMMODITIES IN UGANDA

The sesame market is way huge, estimated at US\$ 3.546 Billion (1.67 Million tonnes) in 2014. Out of this, Africa accounts for 0.95 million tonnes. Uganda is ranked the second largest producer in Africa, after Sudan and Nigeria but is able to export only about 20%, according to Uganda Oil Seeds and Producers Association (UOSPA)

Absence of large scale commercial production of sesame is hindering Uganda from fully tapping into the huge gap in the global market. Despite the climate that favours massive production of sesame, especially in the north, north-eastern and parts of West Nile, many farmers are growing the crop at household level primarily for home consumption, while developing the crop for commercial purposes is only secondary. Exporters interviewed report finding it hard to meet the required volumes for the market.

Denis Ntege, proprietor DH-Link, an exporting company, says that because of low production, the volumes he has been supplying to his customers mainly in Egypt have been dwindling. *“I am scared because of the inconsistencies in supplies. I might lose my contract and this means a great setback for the business,”*

5.5 COMPETITIVENESS CHALLENGES

There are several competitiveness challenges that hinder fully participation in the market. These are outlined below

- Proper product handling after harvest remains a challenge which affects the quality and often discourages the buyers. Exporters and rural assemblers give a higher priority to cleanliness. The problem of cleanliness arises during the shelling and drying stages of sesame harvesting. Most farmers thresh and dry sesame on the bare ground, this leads to unclean sesame grains since sesame becomes mixed with soil. Proper handling would increase price. Traders reported the most important trade traits were grain color (86%), cleaned grains (71%) and percentage of foreign matter (54%).
- Access to the market requires meeting stringent certification and standardization requirements. This poses a logistical nightmare for small scale producers and traders in the commodity. For this reason, most Ugandan sesame is exported to markets that pay less attention to stringent quality standards. These markets are mainly Asia and Middle East countries including United Arab Emirates and China which pay the third lowest and the second lowest prices, respectively, thus denying producers and traders a better price offered in Europe.
- Because of the Middle East focus, farmers and traders have no incentive to invest in practices and equipment that will increase eligibility of sesame for access to higher value markets. Only one Ugandan firm (Shares Uganda) exports organically certified sesame to Europe, creating a niche market and receiving premium prices.
- As highlighted under actors, assemblers sell accumulated stocks to rural open-air traders on rural open-air markets on designated market days. There is no infrastructure whatsoever for quality trade. Rain soaks produce, sometimes its covered with dirty tarpaulins, mixed with other produce thus increasing rejection rates and downgraded prices.
- As noted earlier, other traders are assemblers including rural wholesale and retail traders. These are stationary traders operating from semi permanent and permanent premises such as shops and grain stores. However, they have little, if any, quality preservation or improvement infrastructure such as grain storage tanks, aerated rooms and fumigation facilities.
- Low productivity levels are common because of the subsistence nature of the crop. From a logistics perspective, for Uganda to fully tap into the global demand, issues that improve productivity eg quality seed have to be addressed. Better yields are needed to harvest high volumes for the market.
- It is also noted that due to the fragmented and small-scale nature of production, considerable effort is required to assemble sesame into economically viable volumes for trade. It is very costly to collect good quality sesame since many farmers are

scattered and do not have equal capacity and good practices along the entire value chain. This means that traders and exporters must pay more to gather enough volumes for local trade and export

5.6 CORRECTIVE MEASURES

Some of the possible corrective measures include the following:

- Support adoption of high yielding varieties. Recently released sesame varieties: NCRIBEN-01M and NCRIBEN-02M, and Ex-Sudan (exotic variety) readily meet the premium quality requirements for sesame export (1000 seed weight 3.0 g, 40- 50 per cent oil content and pearly-white seed color). This will enable Uganda improve production levels for sustainable export volumes. It has been observed for example that Nigeria as compared to Uganda has experienced phenomenal rise in prices mainly driven by the relative abundance of sesame and attracting exporters who require large volumes that will offer economies of scale for foreign buyers
- Quality improvement and traceability infrastructure for producers is an important logistical intervention. Investments in mechanized cleaning and sterilization equipment can go a long way in addressing concern in this area.
- Support improvements at regional market centers such as Soroti, Lira, Jinja and Gulu. There are relatively well established businesses with the capacity to handle large volumes of sesame. Here are relatively better investments in storage and transport facilities and there is adequate access to formal credit. Investments here can spur a downward spiral of improvements to encourage higher and better production for export
- In Kampala, exporters screen, clean and bag sesame into 50 kilo bags. The bagged sesame is then packed into 20 and 40 metric ton containers which are transported to the shipping lines for onward shipment to the export destinations through Mombasa. Logistical improvements here may need to focus on better rail lines, access to containers and general road transport quality improvements
- At Farmer groups and farmer associations level: logistical improvements may need to focus on collective marketing facilities such as group owned stores, testing labs etc. to secure quality and improve bulk quantities for voluminous business transactions and thus gains on economies of scale.
- Research related logistics are also critical. Sesame research is carried out by NaSARI, based at Serere in Eastern Uganda. Several improved varieties of sesame have been released to farmers. SESAME II is the most popular as established through participatory varietal selection with sesame farmers in the mandated regions. It is

important that more logistical investments are made in better search labs and land clearing tractors etc

- Provide support for Collective market infrastructures and logistics for farmer groups or cooperatives. This would improve their capacity to take produce to regional markets centres for bulk economies and logistics efficiencies but also earn higher returns as compared to selling at assembly level.
- Invest some significant resources and effort to raise the standards and certification logistics to overcome non-tariff barriers of entry into lucrative markets. Such logistical investments would for example focus on cleaning facilities and centers in trading hubs and link them to rural collective centers for sesame produce.
- There is need to support and popularize the farmer cluster/cooperative model – as a critical entry point - in the sesame value chain. There is a visible weakness in this area, farmers are isolated and hence cannot harness the full benefits of the crop. A good and clear regulatory framework (product-specific byelaws, regulations etc can help scale up this model
- Development of data/information capture infrastructure across the value chain to aid the development planning process and ascertain the economic impact of the crop
- Some attention also needs to be paid to addressing some trade barriers especially procedural complexities and costs, streamlining of duties, levies and taxes
- Market information to and export-related capacity building for especially farmer clusters to encourage direct farmer engagement in exports and quality enhancement (export-readiness)
- Gender mainstreaming is also an important intervention since women form a larger percentage of the producer community. For example women producer associations can be encouraged to enable these women have more control over their products.
- Encourage sustainable production practices which farmers are still relatively insensitive to in order to counteract effects of climate change that will soon have a negative effect on production.
-

6.0 ANALYSIS OF HARD AND SOFT LOGISTICS

Uganda is a landlocked country. This status translates into reduced connectivity and a higher cost of access to global markets. Therefore, it presents specific challenges to economic operators in Uganda not just for sesame but others as well. Below we shed some light on these logistical aspects and challenges

1.1 Road Transport

Road transport has become the dominant transport mode for freight, even though the distance between the sea and the main economic centers is enormous. World Bank (2014) pointed out that for many land-locked developing countries; centers of production and consumption are located more than 800 kilometers (km) away from the closest seaport. Uganda in particular is between 1300 – 1650 kms from the sea port. This implies higher and often varying road transport costs to Mombasa. This, according to exporters interviewed, is a common phenomenon. Exporters pointed out that trailer with carrying capacity of 30T – charges at least US\$ 2,500.

There can be no doubt therefore that bulk sesame exporters are feeling the brunt of this cost and this partly explains the relative low level of trade volumes compared to competitor countries like Sudan and Nigeria with sea ports. World Bank (2014) also indicates that prices charged significantly exceed underlying costs, suggesting large profits for transporters, thus disadvantaging exporters.

1.2 Rail Transport

According to Exporters, Railway transport would be a cheaper alternative but it is considered unreliable due to the aged nature of the entire system. The inland railway lines in the country are shorter and less connected to the main rail corridor. The railway is not maintained compared to the more agile and competitive road transport system.

1.3 Inland Waterway Transport

The inland water way in Lake Victoria has generally never been seriously developed for cargo transport across the region. It still relies on very old and aged piers with only Port bell being minimally functional.

1.4 Ports & Maritime Transport

Uganda being landlocked experiences challenges associated with inexistence of regulator maritime services. This is a fundamental bottleneck on Uganda's international supply chains both for imported inputs and timely international connectivity for exports.

1.5 Air Transport

Sesame from Uganda is not exported by air and in general a very small part of the overall exports are transported by cargo aircraft. This is mainly flowers, fish and fresh fruits and

vegetables. The country has no any air cargo fleet. International cargo aircraft is very low because of low cargo business that cannot support dedicated cargo operations. The air transport industry depends on adequate and efficient airport infrastructure, which complies with international standards. However, this is not available in Uganda. The main airport in Entebbe has relatively simple service offering with very basic facilities. According to the World Economic Forum (WEF) survey (2012), this is the general state of many other African air transport systems. Ground handling charges at the Entebbe International Airport. Cargo handling costs have also been said to be uncompetitive and unstable. The tariff structure (2014) has Boeing 737 passenger aircraft pay \$1,200 while Boeing 767s pays \$2,100 (CAA 2014). These prices are for example about 16% higher than what Kenya charges.

1.6 Types of services offered by logistics service providers

These range from containerization to freight services, customs documentation, brokerage services, storage services especially at ports of entry in Mombasa and inland warehouses and ports. The challenge here is in export documentation. According World Bank's Doing Business (2014) , LDCs like Uganda, on average, are characterized by a higher number of documents, a higher cost per container and a longer period of time required to export or import compared to coastal countries.

1.7 Customs

Overall customs services have improved over time with URA having its processes automated. Efficiency of customs and other border agencies in expediting cargo clearance is gradually improving with EAC implementing a regional program to convert internal and external borders in East Africa into OSBP. Despite this, the World Bank (2014) pointed out that long queues of trucks clogging borders is still a common image on boarders resulting into considerable delays to the port of Mombasa

1.8 Institutional framework

Most of the key trade support institutions especially those having operations at the boarder have been organized into One Stop Boarder Points (OSBPs) as indicated in 1.7 above. While this represents a good leap forward in terms of institutional cooperation for efficiency, from another perspective, it also constitutes both a legal and operational challenge not to underestimate. Most of these institutions do not follow any harmonized laws. Many still look onto parental laws in the country, which laws have not been revised to reflect the OSBP operational framework. This causes variances in governance frameworks which lead to rent-seeking practices.

1.9 Logistics performance of providers of logistics services

A 2014 World Bank Report pointed out that for a number of countries in Africa including Uganda, the competence of the local logistics industry is not lacking and is not the major challenge. The logistics performance Index for Uganda, on a scale of 1-5 had improved from 2.5 to 2.8 in 2007 and 2014 respectively. The major gap pointed out by the Logistics Performance Index (LPI) was in the ease and affordability of arranging international shipments and ability to track and trace international shipments en-route in which Uganda

was not performing well in comparison to coastal countries. According to the authority, the Ugandan business community, which remains the top transit users of the port, has not effectively been clearing cargo on time.

In March 2014, Kenya Ports Authority for example indicated that there were 2,435 containers (3,464 twenty-foot equivalent units) for Uganda customers that had been at the port of Mombasa beyond 21 days. 293 units had been in the port for more than three months⁴

6. 0 Measures to overcome the Logistical challenges

Progress in logistics performance and overcoming the challenges will be driven primarily by improvement in infrastructure and basic border management. Below are some of the proposals for achieving this.

- Improving on trade facilitation efforts such as up scaling digitization systems and processes and support the effective implementation of single windows for trade documentation.
- Support initiatives to raise awareness and help reduce bottle-necks along certain road and rail corridors. For example, develop corridor performance metrics in terms of travel time and cost (Corridor Performance Measurement and Monitoring, or CPMM) along the main transport corridors and use this to constantly raise red flags when travel times and costs begin to harm trade along the corridor
- Support efforts towards freight terminals improvements as these are critical nodes along transportation routes (or networks of routes). These points of interchange provide services for the loading, unloading and storage of freight in their facilities
- Via PPP arrangements, invest in improving the capacity of the private sector to effectively manage and improve provision of accompanying services for the terminal infrastructure. Government can play an important role in making the supply chain work seamlessly.
- Support the establishment of appropriate incentives and a suitable regulatory environment for adequate financing schemes for road transport and transit facilities. PPP financing arrangements can for example be encouraged

- As in the case of roads, support as well the development of rail freight terminals. Given the much longer distances to the port Mombasa, the railroad is the main solution for long distance transportation. Also extensive and maintenance of the rail network is vital. The interface between railways and other modes of transport is as well critical. In Uganda, Tororo, Malaba, Kizarewe could be upgraded. When these terminal facilities are located near the final destination or an economic center, they serve as cargo consolidation and distributions centers

⁴ <http://www.the-star.co.ke/news/uganda-bound-containers-choking-mombasa-port>

- It is also important that good regulations governing entry of players into the logistics industry are established to ensure only professional operators can provide trucking services and curb the observed rent seeking cartels that keep transport charges unnecessarily high.
- Uganda should establish a long term strategy to continuously advocate for laws and practices that boost and ensure efficiency at Mombasa port
- Regarding air cargo transport, the focus should be on expanding terminals for ground-handling of cargo and charge competitive and stable prices for cargo handling.

7. CONCLUSIONS AND RECCOMENDATIONS

1.1. Export market potential of selected commodities produced in Uganda

Market potential of sesame is high and is evidenced by the strong growth in exports for sesame even though the total contribution to exports remains small (about 1%). It is a good commodity for contributing to Uganda's development goals of improving the distribution of income and equity within Uganda.

1.2. Potentials for further expansion of the product in terms of value-addition, diversification, up-grading and forward and backward linkages

There are also good value addition possibilities around several food chains including the confectionery industry and the oil chains. Sesame meal, a bi-product of sesame oil is an excellent high-protein feed for poultry and livestock and could therefore spur lateral linkages with the livestock feeds industry. Apart from producing excellent cooking oil, sesame oil is also good for cosmetics and food preparations industries.

1.3. Critical issues regarding logistics for the development of the value chain (VCs) of the commodities

The last two chapters of the study have outlined most of these. It suffices to state in conclusion that of critical importance are primarily, improvements in infrastructure. Value chain actors indicated that better roads and better rail systems lead to an increase in transportation options available for hire hence reduction in the transport costs. It also makes access to sesame producing areas and markets much easier, hence a likely increase in the diversity of economic operators.

It is also vital to look beyond transport logistics. Support and extension services and other yield improvement programs to improve volumes are critical issues. Research, commercial production support logistics such as tractorisation, storage etc are equally important.

Quality and standards enhancement facilities and infrastructure are as also key logistical issues to be addressed in order to put a competitive sesame product onto the market.

PART B: PALM OIL VALUE CHAIN

1.0 OVERVIEW OF THE PALM OIL VALUE CHAIN

Palm oil is a common ingredient of margarines, confectionaries, breakfast cereals, instant noodles, shampoos, lipsticks, candles, detergents, chocolates and ice creams. Actually, the list of products that rely on the unique properties of palm oil is extensively. Todate, it's the most widely used vegetable oil on the planet accounting of 65 per cent – by value⁵ – of the vegetable oils traded internationally.

Palm oil is an edible vegetable oil derived from the mesocarp⁶ of the fruit of the oil palms. Most of the oil palms grown worldwide are primarily of the African oil palm variety. The oil palm tree takes approximately four (4) years to initial harvesting. Palm oil is naturally reddish in color because of a high beta-carotene⁷ content. *It should not be confused with palm kernel oil – derived from the kernels of the same fruit. The latter lacks carotenoids and is therefore not red.* Also, the palm mesocarp oil is 41 per cent saturated whereas the kernel oil is 81 per cent. Palm oil is one of the few highly saturated vegetable fats and is semi-solid at room temperature. It also contains very little cholesterol. (Wikipedia, 2015)

⁵ Based on statistics from COMTRADE Database

⁶ Reddish pulp

⁷ Red plant pigment found in carrots and many other plant structures

1.1 PRODUCTION IN UGANDA

Like much of Africa, oil palms have been part of livelihoods in many traditional communities – providing several benefits such as the cooking oil, soaps and medicines. Much of this traditional use was with fresh fruit bunches (FFBs) harvested from natural (wild) stands. Commercial trade in palm kernels and palm oil came with colonialism and thus the introduction of the plantation system. But, these commercial plantations were not available in Uganda until after 2003. The public-private partnership (PPP) agreement, signed in 2003, between the Government of Uganda – represented by VODP⁸, BIDCO⁹ – a private investor and hence the major shareholder in Oil Palm Uganda Ltd. (OPUL)¹⁰, and smallholder farmers¹¹ – represented by the Kalangala Oil Palm Growers Trust (KOPGT) marked the birth of oil palm plantations in Uganda. This IFAD supported project was premised on the opportunity presented by the heavy reliance of Uganda on imported vegetable oils (90 per cent being palm oil). Kalangala was chosen as the project area to address the rising poverty situation – being the 7th poorest district in the country at the time. One of the key poverty drivers was the over-reliance on fishing amidst dwindling fish stocks in Lake Victoria. The area also had lots of virgin land that could be cost-effectively developed into commercial plantations. This initiative was also motivated by the promotion of industrial oil palm plantations for agrofuels in Africa especially in the period of 2006 – 2010 (Carrere, 2013).

Briefly about the PPP; under the agreement signed in 2003, BIDCO (under the umbrella company, OPUL) agreed to invest upto US\$ 120 Million to develop upto 26,500 hectares of plantation (nucleus estates and processing facilities), in addition to building an oil refinery. The first 10,000 hectares were to be developed on Bugala Island¹² – 65% nucleus estates and 35% smallholder farms – together with a mill of processing capacity of 30 to 60 tonnes of FFB per day. The government, on the other hand, was to provide leasehold land, free from encumbrances, for the nucleus estate. The lease was to be for a period of 99 years. This agreement also stipulated that KOPGT would hold 10 per cent shares in OPUL. OPUL issued KOPGT with its shareholding certificate in 2009. The first phase of this project that ended in 2011 focused on Bugala Islands.

The second phase of the PPP, which started in 2012, targeted spreading the production to other areas especially Buvuma Islands in Mukono Districts where another nucleus estate and mill would be setup. This phase also included upscaling smallholder activities in Bugala by another 1,200 hectares.

⁸ VODP – Vegetable Oil Development Project – under Ministry of Agriculture, Animal Industry & Fisheries

⁹ BIDCO Uganda Ltd. is a subsidiary that was established by BIDCO (K) Ltd, an oil seed company

¹⁰ Oil Palm Uganda Ltd. is owned by Wilmar Group of Malaysia, Josovina Commodities of Singapore and BIDCO Oil Refineries of Kenya

¹¹ Smallholders have typically established about 2 – 4 hectares of oil palms

¹² Bugala is an island off the shores of Lake Victoria

Project evaluation data from VODP indicates that as at December 2012 upto 9,698.4 hectares of land had been planted – 63% by OPUL. Land availed to OPUL by the government, by that time, for the nucleus estate in Kalangala was 7,500 hectares. Also, over 1,523 rural household are participating directly in this value chain with approximately 38% of the farmers being women. The first FFB were harvested in 2010 and by the end of December 2012 upto 12,051 Metric tonnes had been realized from all plantations – with 26.3% of this volume from smallholder farmers. Statistics indicated that by December 2012 monthly harvest was averaging 700 MT from smallholders and 3,000 MT from the nucleus estate. It is projected that smallholder farmers earned upto UG X. 4.8 Billion between (January 2010 and December 2012).

Beyond this Kalangala project, trials are ongoing in Kibale District at Kagadi – where 2 farmers have planted 160 trees and 60 trees in Karuguza. In Kyanamukaka – Masaka District – one (1) hectare has been established whereas other areas in Rakai await seedlings. In Bugiri district, 240 trees planted are under surveillance much like the trials in Bundibugyo, Buvuma and Hoima. In Mayuge District, the farmers participating in the oil palm trials have started harvesting and are locally extracting the oil from the FFBs (Project, 2012). VODP has also signed a memorandum of understanding with NARO (Coffee Research Center (COREC) – Mukono) to establish a systematic collaboration to carry out oil palm research and disease surveillance in established oil palm areas.

2.0 STRUCTURE OF PALM OIL VALUE CHAIN IN UGANDA

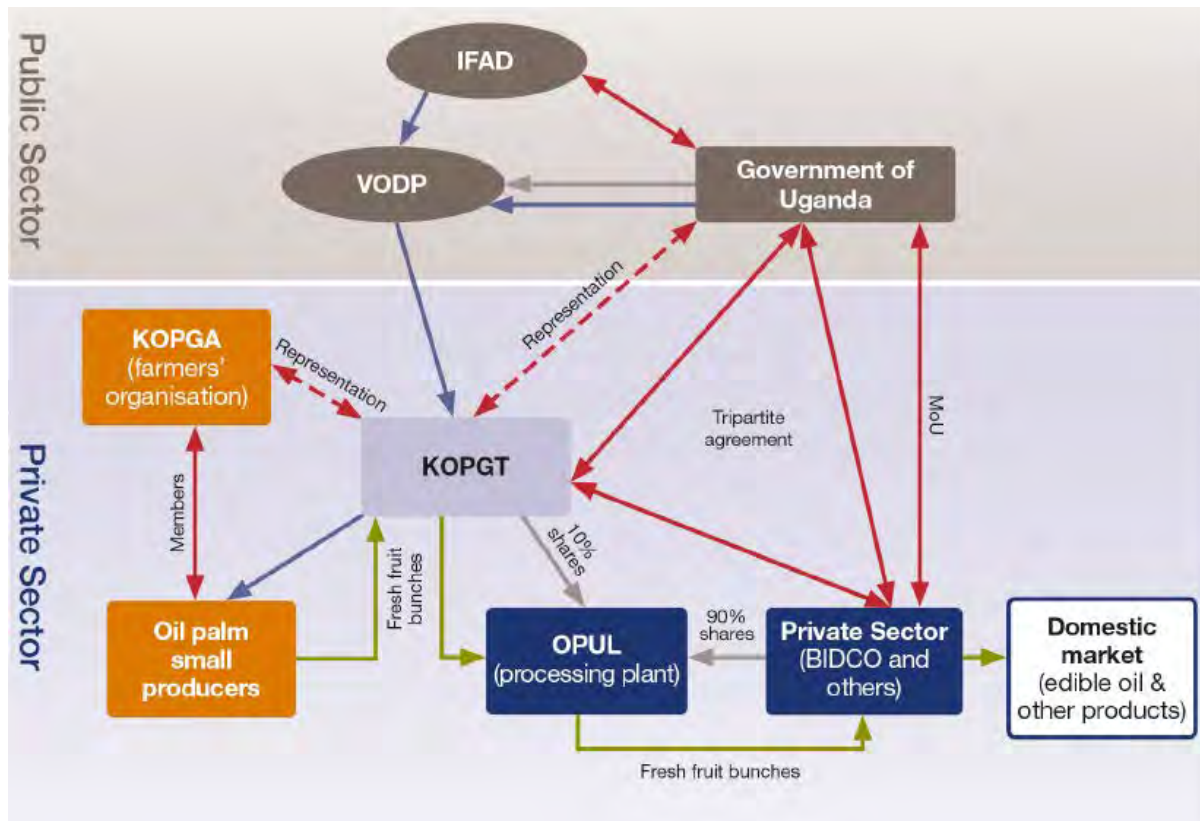
The project owners and sponsors describe the palm oil value chain as fully integrated, creating and retaining wealth in Uganda. It is based on the philosophy – “From soil to pan.” It has, as its target, making Uganda self-reliant in terms of edible oil, cutting out the almost US\$ 100 Million imports. (Uganda, 2011)

Fundamentally, its fresh fruit bunches (FFBs) from farm to mill. The extraction process at the oil mill produces crude palm oil that goes to the BIDCO palm oil refinery in Jinja, whose outputs feed into the several production lines for making of consumer product – cooking fats & oils, soap etc.

Importantly, this initiative has created the mass of smallholder plantation owners – said to number upto 16,000 todate – 38% of whom are women – and collectively holding a projected total of 3,500 hectares. (IFAD) These buy oil palm seedlings – imported by OPUL – with the aid of a government loan. Therefore OPUL is the primary production input provider. Through KOPGT, they are able to access financial and technical assistance to effectively manage their plantations. According to VODP, between 2005 – 2012, loans disbursed to smallholder farmers amounted to UG X. 27.38 Billion. Initially, the Kalangala farmers were reluctant to take up oil palm growing since it was relatively new to them. It took a sufficient amount of sensitization and training to convince to get them involved – indicated an IFAD official (IFAD). But, ever since the harvesting started, in 2010, farmer enrollment has increased owing to the observed benefits – especially relating to increased real household income and social transformation. Many are now seeking for more land to expand which has now led to the escalation of land conflicts – and in the worst case displacements.

Alongside KOPGT, some farmers also established Kalangala Oil Palm Growers Association (KOPGA), an independent association but with representation on KOPGT board. The reason was that the KOPGA founding farmers felt that they were not being effectively represented by KOPGT, claiming that it which was more inclined to toward government and other stakeholder interests. ((IDS), 2015).

FIGURE 10: PALM OIL VALUE CHAIN IN UGANDA



(Source: ((IDS), 2015)

As indicated earlier, the activities and actors in the Palm Oil value chain in Uganda are governed by the PPP arrangement of 2013. Smallholder producers through their associations – KOPGT and KOPGA – provide the raw material, which is traded through one outlet – OPUL – which operates the palm oil mill and oil refinery. There are no processors and traders/buyers outside this arrangement. That is why the smallholder producers are part of the higher-end entities and pricing processes to avoid any negative effects the inherent monopoly. Government and donors play more of a supportive and oversight role especially due to the high investment requirement that smallholder farmers cannot meet on their own. Their efforts are towards the poverty alleviation sustainable development agenda.

As the smallholder farmers start to realize the income potential of oil palm growing, many are seeking out for more land to expand their plantations. Also, absentee landlords are also returning, repossessing their land, to tap into this lucrative opportunity. This has led to emergence of land conflicts. As such several local and international advocacy organizations have also taken interest in the activities of this sub-sector, in the wake of these land conflicts and the potential negative environmental effects.

2.1 THE PALM OIL TRADE ROUTES

Currently, there is only one output channel for the FFBs produced. As per the agreement, the smallholder farmers sell their produce to the OPUL oil palm mill located on the nucleus farmer.

FIGURE 11: PALM OIL VALUE CHAIN MAP



The FFBs are ferried by KOPGT trucks from the farm to the oil mill which is located on the nucleus farm in Kalangala. After extraction, OPUL transports the crude oil to the BIDCO Uganda Ltd. (BUL) palm oil refinery in Jinja. The current production capacity of the oil mill is 20 tonnes per hour and as at December, the actual monthly output (average) stood at 666 MT – 81% of which was from the nucleus farm FFBs. The BUL refinery started operations in 2005. At this time the company entirely depended on imported crude palm oil. The imported crude oil comes in through Mombasa port, the eastern border points – especially Busia and Malaba – to Jinja. All the refined palm oil directly goes into the production lines of the several consumer products manufactured by BUL. These include cooking oil and soap. These products are then distributed throughout the domestic and regional markets – such as Rwanda and DR Congo.

Activities of the other major value chain actors – such as Mukwano Industries – are quite similar to those of BUL, lest for the fact that they, unlike BUL, depend entirely on imported crude palm oil imports.

2.2 MAJOR STAKEHOLDERS INVOLVED IN THE SUPPLY CHAIN

As outlined in the arrangement, the major stakeholders are;

2.2.1 Smallholder Producers

These are the local (Kalangala) farmers that have been signed on, through KOPGT and KOPGA, to take on oil palm growing thus supplement the production by the nucleus farms. The primary condition of joining this programme is that the farmer must own the land (registered title holder or legitimate kibanja holder) on which the plantation is to be setup. These plantations are typically less than 2 hectares. With support of the Trust and KOPGA, these farmers acquired oil palm seedlings from OPUL which they used to establish the plantations. The FFBs produced are sold to OPUL at the oil mill which is located within the nucleus estate. To ease access to the mill, evaluation reports indicate that by December 2012, 400 km of farm roads had been built by OPUL and 230 km of link roads have been opened up by KOPGT and Kalangala District Local Government.

The major challenge facing these smallholder farmers relates to land ownership. Several of these individuals are kibanja holders with no land title. As such, the land owners (land title holders) are increasingly attempting to illegally evict them with the intention of setting up their own fields – as evidenced by the increase in number of cases filed in respect to illegal evictions in the area. Absentee landlords are also returning to the island which is creating more tension.

Secondly, several of the registered women smallholder farms are using land or plots borrowed from their husbands. But, ever since harvesting started in 2010 in the established plantations, shifts or differences in personal incomes – between these women and their husbands – have emerged. Taking into account that the project registered these women as the land owners, the husbands now view this arrangement with suspicion. They consider their land to be at stake of being completely taken over (stolen) by the women. This has resulted into domestic conflicts – which are likely to affect the production especially by the 38% female smallholder producers.

Also, most of the small holder farmers continue to view themselves as beneficiaries and not shareholders in the PPP. Therefore, their willingness and dedication to full participate and invest in the project is in doubt. For example there is laxity in adoption of good agricultural practices such as field maintenance and application of fertilizers, selling rather than using fertilizers acquired under the subsidy programme etc. This is affect smallholder plantation output and constrains the ability to pay loans

Low productivity in stony areas and grasslands which is affecting loan repayment by the farmers. The factor of difference in soil fertility, thus productive capacity, was not factored into the loan scheme design which is affecting repayments from affect individuals

Sustainability of KOPGT's financing model is also threatened by the lack of long-term commitment on the part of farmers. Once these farmers are no longer indebted, there is no mechanism to ensure they continue to remit fees and levies to support the activities

of the Trust. This is likely to lead to the institution of other sources of income such as charging for extension services or introduction of levies on FFBS.

2.2.2 Private Investors

These are under their umbrella entity – OPUL. They operate the palm oil mill and oil refinery. There are not processors and traders/buyers outside this arrangement

2.2.3 Government

Through Ministry of Agriculture, Animal Industry and Fisheries – Vegetable Oil Development Project (VODP). The roles of VODP include supporting infrastructure development, land leasing, granting exclusive production rights, providing financial support and technical expertise/advisory to the producers.

2.2.4 Donors

The major funder for this project has been IFAD – International Fund for Agricultural Development.

2.3 ANALYSIS OF VALUE ADDITION PROCESSES

In Uganda, palm oil is largely used as an industrial input for production of majorly cooking fats and oils. Other products include soap. The leading manufacturers of refined palm oil products in Uganda are BIDCO Uganda Ltd. and Mukwano Industries. The latter entirely depends on crude palm oil imports.

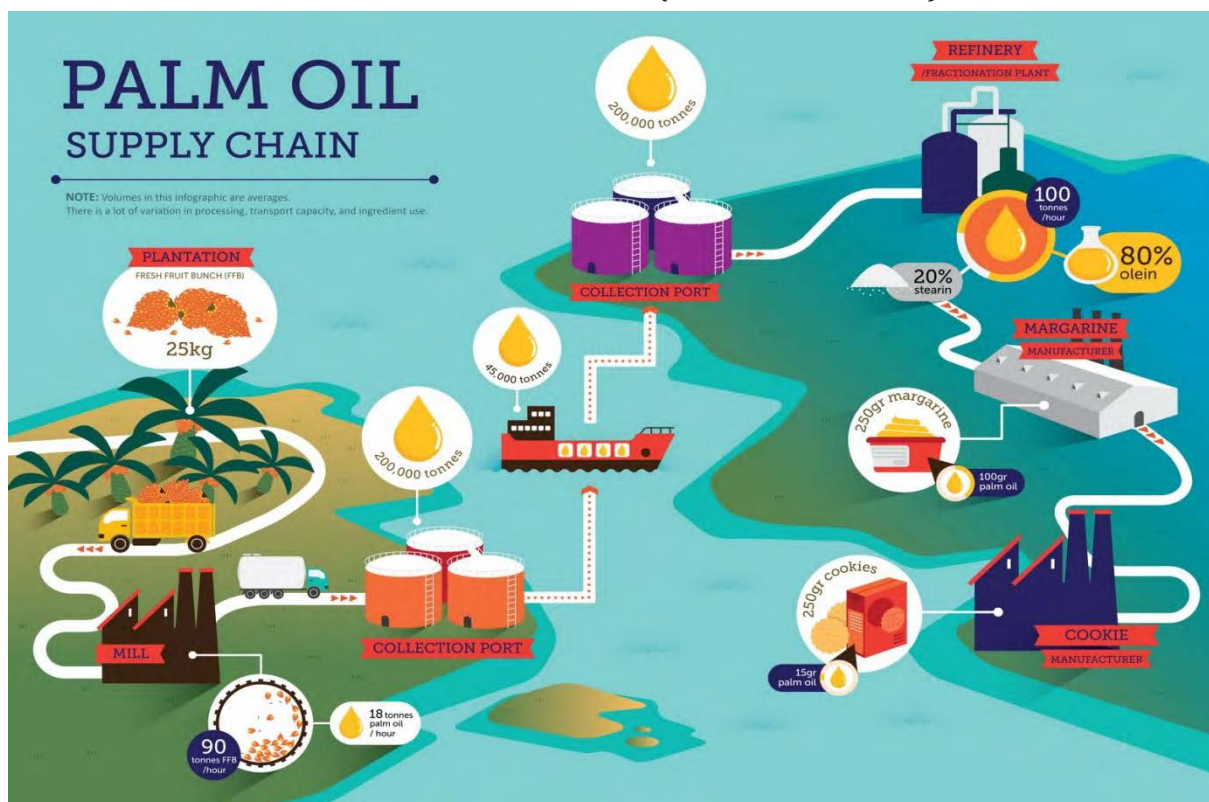
FIGURE 12: VEGETABLE OIL AND LAUNDRY PRODUCTS FROM BIDCO UGANDA



It's also important to note that there are no small-scale or cottage industries processing (refining) palm oil. Therefore, the value addition process in Uganda starts with the oil mills that extract the crude oil from the FFBs, which crude oil feeds into the BUL refinery at Jinja, together with the imported volumes. The refined palm oil is then used in the manufacture of related consumer products as shown in figure 5: Vegetable oil and laundry products from Bidco Uganda.

But, from a more generic perspective, worldwide, the palm oils are fitted in two categories – Technical Palm Oil (TPO) and Special Palm Oil (SPO). Household consumers prefer to use TPO for cooking because of its tangy flavor – due to higher concentration of fatty acids. The SPO is what's used to meet the needs of industrial processors that, after refining the oil, sell it to manufacturing industries for use in products such as soaps, candles, pharmaceuticals, lubricants, agrochemicals, paints and biodiesel. Palm kernel expeller (PKE) are used as a feed for livestock and as biofuel for generating electricity especially to run the mill and refinery.

FIGURE 13: TYPICAL PALM OIL PROCESSING (VALUE ADDITION) CHAIN



3.0 COST-BREAKDOWN IN THE PRODUCTION, PROCESSING AND MARKETING

Production of palm oil starts with acquisition of planting material, preparation of land (field) and planting – to establish the plantation. Oil palms take about 4 years before the initial harvest. This period requires continuous field maintenance which includes weed and disease management, application of fertilizers and human capacity development especially on harvesting and post-harvest handling.

Once harvested the FFB are transported to the mill for extraction of the crude palm oil. Producers are paid in accordance with the quality of FFBs delivered. Most important are the general ripeness of the FFB bunches and quality of individual fruits. The extracted crude palm oil is then sent out to the refinery for further processing. The value chain as it is in Uganda does not involve external traders or middlemen. The current agreement is that the farmer sells to OPUL – at the mill – which in turn supplies to the BIDCO refinery. Prices are set by OPUL in consultation with the producers – through KOPGT and KOPGA. There are no marketing costs involved as such.

3.1 GROSS MARGINS.

The fundamental cost to the farmer relates to harvesting – because of the labour requirement – and transportation from field to mill, which is done by KOPGT.

TABLE 6: GROSS MARGIN ANALYSIS FOR PALM OIL (PER TON)

Cost Item	Amount (Shs)
FFB price at mill	374,416.7
Less: Labour	220,000
Less: Transport Costs	40,000
Gross Margin	114,416

(Source: Computed based on primary data from KOPGT)

Note:

- **Transport Costs** – were agreed upon by the farmer leaders in each block. Note that the blocks were cut out into three (3) based on the distance from the oil mill. The charges are UG X. 45, 40 and 35 per kilo
- **Productivity** – the average yield per acre is 800 to 1,200 kg per acre per annum of FFB

TABLE 7: FFB PRICES (2010 - 2014)

	2010	2011	2012	2013	2014
Jan	215	407	391	340	397
Feb	215	431	401	369	381
Mar	227	434	397	378	395

Apr	247	410	443	371	431
May	246	398	466	358	407
Jun	248	466	422	365	398
Jul	252	428	386	370	390
Aug	256	436	393	357	393
Sep	280	468	408	377	355
Oct	285	465	393	371	334
Nov	328	422	349	379	346
Dec	348	411	348	403	373
Annual Average	262.25	431.33	399.75	369.83	383.33

(Source: KOPGT)

4.0 END MARKET ANALYSIS

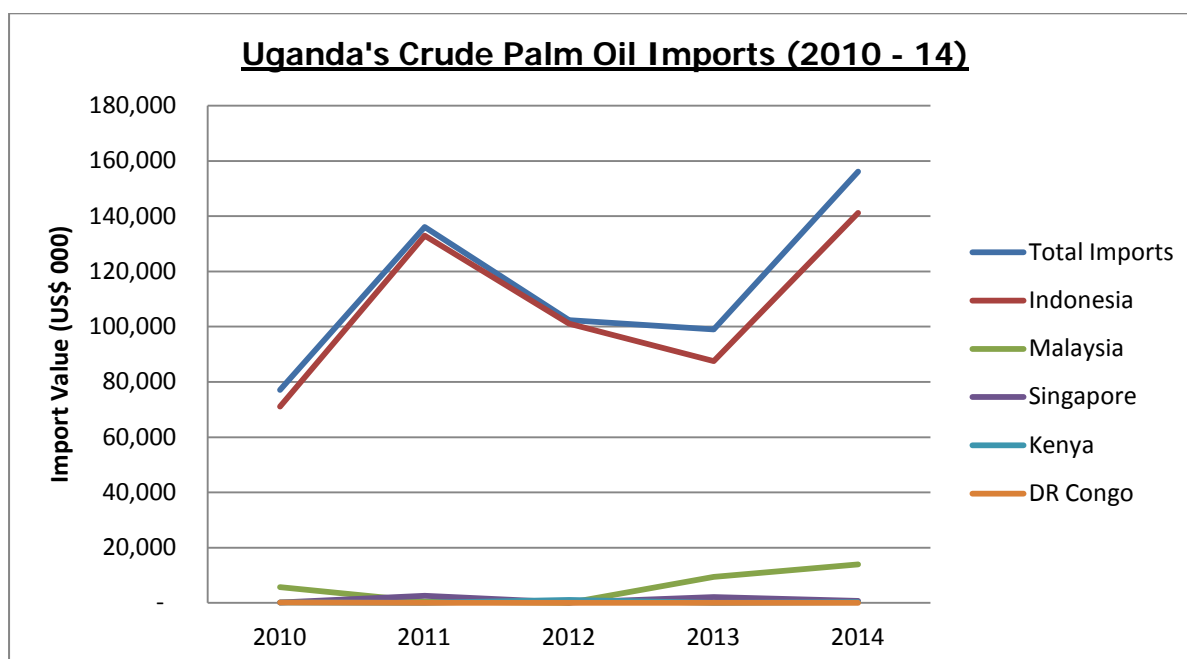
4.1 MARKET SIZE & TRENDS

Formal export statistics indicate that Uganda does not export any crude palm oil. The only related exports are of refined palm oil products. In 2014 such exports amounted to US\$ 32 Million and this was to DR Congo, Rwanda, Sudan, Tanzania and Burundi in that order. These markets represented 38.5, 31.4, 28.7, 0.8 and 0.6 per cent respectively. For this report, the end-market of interest is therefore that of crude palm oil.

4.4.1 LOCAL MARKET

First and foremost, in 2014, Uganda imported 171,086 Tonnes of crude palm oil valued at US\$ 156.190 Million. This came from Indonesia, Malaysia, Singapore and Kenya - 90.4, 8.9, 0.5 and 0.2 per cent respectively. The major importers of this are Mukwano Industries and BIDCO – since the plantations are yet to start producing oil palms optimally. This is the first and most feasible market for any potential crude palm oil producer in Uganda. This importation has been growing at a rate of 12 and 13 per cent of the last five (5) years - value and volume. It's also worth noting that this comes in zero-rated, as raw materials for the related industries.

FIGURE 14: UGANDA'S CRUDE PALM OIL IMPORT TRENDS



4.4.2 INTERNATIONAL MARKET

The world demand, on the other hand, for crude palm oil fell by -5 per cent in 2014 to US\$ 12.045 Billion, according to the UN COMTRADE statistics, from the 13.882 Million Tonnes traded. This is mainly due to increasing preference from oil seed edible oils as

well as increasing concerns about the negative effect of oil palm production practices on the environment.

The biggest part of this market 44.1 per cent is in India and 15.7 per cent in Netherlands. Other top markets include Italy, Germany and Spain. In Africa, the top importers are Nigeria, Tanzania, Uganda and Mozambique. All the top markets apply a tariff of between 0 to 0.5 per cent except for India, Nigeria and Venezuela which apply 98.3, 35 and 38.5 per cent respectively.

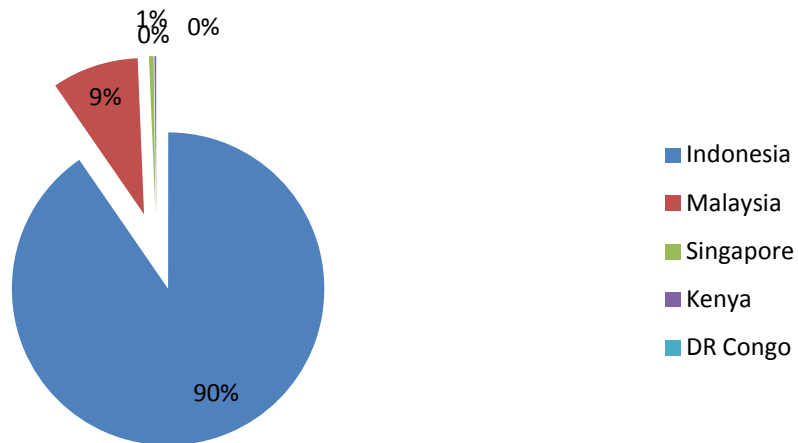
One critical emerging issue in the oil palm industry is that of sustainable production. It has been observed that the negative effects of oil palm plantations on the environment and communities can be avoided by ensuring the continued cultivation and future production of oil palm is sustainable. That is why several non-governmental organizations are now taking interest even in the Kalangala project. To this end, in 2004 RSPO a non-profit initiative which combines over 500 palm oil growers, oil processors, manufacturers, retailers, NGOs and palm oil investors all whom share the same goal of promoting the sustainable use of oil palm, was created – towards addressing this issue. RSPO¹³ is responsible for setting a strict standard for responsible oil palm plantations, and created an independent system for auditing plantations, mills and the supply chain right up to the end users. Latest statistics show that in 2011, over 5 Million tonnes a year (approximately 10 per cent) of the total amount of palm oil produced around the world is RSPO certified. Over 114 palm oil producing and processing companies are RSPO-certified producers.

4.2 COMPETITION ANALYSIS

Imports into Uganda are majorly sourced from Indonesia – over 90%. So this supplying country enjoys a relative monopoly in Uganda. BIDCO Uganda is the other major supplier of crude palm oil used in Uganda – although all this is internally processed (refined) – at Jinja – and used by the company in the manufacture of its consumer products. This further emphasizes the fact that there is virtually no competition in Uganda.

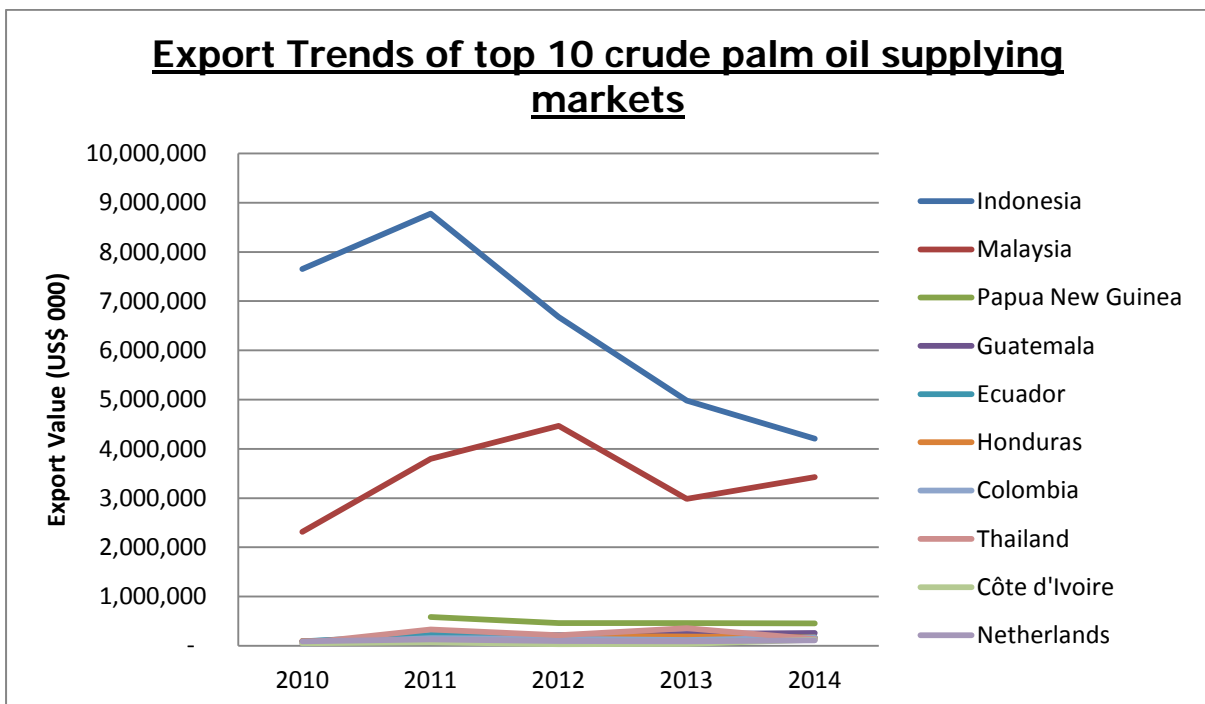
¹³ RSPO – Round on Sustainable Palm Oil officially created in Zurich has its main office in Jakarta (Indonesia) and Kuala Lumpur (Malaysia) and a communications office in Brussels

FIGURE 15: Uganda's Crude Oil Market Share



On the international market, Indonesia and Malaysia, alone supply about 78% of the crude palm oil traded worldwide – 43.5 and 35 per cent respectively. But, the statistics also indicate that the value and volume of Indonesia have been significantly shrinking over the last 5 years, -16 and -12 per cent on average per annum. There are a number of possible reasons for this such as emergence of other small producers near to the consuming markets thus cutting back on volumes obtained from Indonesia. However, it remains the major producer and controls the largest percentage of the world market.

FIGURE 16: EXPORT TRENDS OF TOP 10 CRUDE PALM OIL SUPPLYING MARKETS



4.4 MAJOR PLAYERS (BUYERS) IN THE MARKETS

Some of the key international players in the crude palm oil market include;

- Cargill, an international producer and marketer of food, agricultural, financial and industrial products and services.
- P&G chemicals, a self-proclaimed relatively small user of palm oil that relies on a by-product, palm kernel oil (PKO), for use in food, beauty and fabric care products

In Uganda, the key player is;

- BIDCO (Uganda) Ltd. a subsidiary of BIDCO (K) Ltd. – under the PPP
- Mukwano Industries Ltd. – a major importer and consumer of crude palm oil in Uganda

4.5 THE GAPS BETWEEN THE FINAL MARKET REQUIREMENT AND CURRENTLY AVAILABLE COMMODITIES IN UGANDA

The fundamental gap that exists with Uganda's palm oil production relates to capacity. The country is yet to produce a sufficient amount of crude palm oil to satisfy even its internal requirements. That is why Uganda still imports a significant amount of crude palm oil. In 2014, this amounted to 171,086 Tonnes valued at US\$ 156.190 Million, from Indonesia, Malaysia, Singapore and Kenya. Most of this palm oil is imported by Mukwano Industries and BIDCO Uganda Ltd. the major local manufacturers of refined palm oil products. The Kalangala initiative currently feeds the BIDCO oil refinery requirements with nothing left for the other processors.

CRUDE PALM OIL CHARACTERISTICS AND QUALITY SPECIFICATION IN INTERNATIONAL TRADE

BIDCO Uganda – the consumer of palm oil produced in Uganda, is part and parcel of the palm oil value chain – operating nucleus farms that provide most of the FFBs (at least 70%) and supporting smallholder producers with inputs and technical assistance – as and when required. The driving objective is to ensure optimal plantation output, FFB quality and amount of crude palm oil is obtained from the FFBs. The company is in full control of the palm oil right from the oil mill (crude palm oil) up until the final consumer products. The quality related roles of the other players therefore go as far as the farm gate (FFBs).

But, in view of expanding production – beyond the requirements of BIDCO refineries or outside the scope of the PPP, it is important for value chain actors to have an appreciation of the commercial quality specifications.

Palm oil is fundamentally composed of fatty acids – particularly the saturated fatty acid, palmitic acid – hence its name. It has several other saturated and unsaturated fatty acids as in the table below. Palm oil is actually said to have an almost balanced fatty acid composition. This is a critical product characteristic that is key to commercial trade and usage.

TABLE 8: FATTY ACID COMPOSITION OF PALM OIL

Fatty Acid		Composition
Myristic	Saturated	1 %
Palmitic	Saturated	43.5%
Stearic	Saturated	4.3%
Oleic	Monounsaturated	36.6%
Linoleic	Polyunsaturated	9.1%

Other characteristics include the tocopherol content, low level of linoleic acid and virtual absence of linolenic acid make the oil relatively stable to oxidative deterioration and the carotene content. All these are fundamental drivers of demand and usage of this product and therefore central to the product's quality specification.

In trade terms, the identifying characteristics usually relate to authenticity and/or purity. These characteristics are based on the physical properties and chemical composition of the oil. The technical applications of vegetable oils and their uses in edible and non-edible products depend on physical properties such as melting behavior and viscosity. A more exhaustive list of characteristics is in the table below

TABLE 9: PALM OIL CHARACTERISTICS

Identity Characteristics		Quality Characteristics
Chemical	Physical	
Fatty acid composition	Slip melting point	Peroxide Value
Triglyceride composition	Solid fat content	E ₂₃₃
Iodine value	Apparent density	E ₂₆₉
Carotene content	Viscosity	Anisidine value
Chlorophyll content	Impurities	DOBI
Tocopherol content	Refractive index	Iron content
Saponification value	Colour	Copper Content
Unsaponifiable matter		Phosphorus Content
		Free fatty acid Content
		Oxidative stability
		Discriminant Function
		Moisture & Volatile Matter

Crude palm oil and crude palm kernel oil quality – in trade today – is generally defined by specifications as set out by Bursa Malaysia Derivatives (BMD), Crude Palm Oil Futures (FCPO) and Crude Palm Kernel Futures (FPKO) contracts.

A typical FCPO contract specification – for palm oil of good merchantable quality, in bulk, unbleached, in port tank installations approved by the Exchange – located at the option of the seller (such as at Port Kelang, Penang/Butterworth and Pasir Gudang), free fatty acids (FFA) of palm oil delivered into port tank installation shall not exceed 4% or from port tank installations shall not exceed 5%. Moisture and impurities shall not exceed 5%. Deterioration of Bleachability Index (DoBI) value of palm oil delivered into port tank installation shall be at a minimum of 2.5 whereas that delivered from port tank installation shall be at a minimum of 2.31.

A typical Crude Palm Kernel oil specification - Crude palm kernel oil of good merchantable quality and stored at a port tank installation, free fatty acids (FFA) content of oil delivered into port tank shall not exceed 3.5% whereas out of port tank installation shall not exceed 4%. Moisture and impurities shall not exceed 0.5%. Iodine value should be at range 16.5 – 18.75%. Colour range 4 Red – 8 Red and 60 Yellow maximum (Contributor(YCW76), 2014).

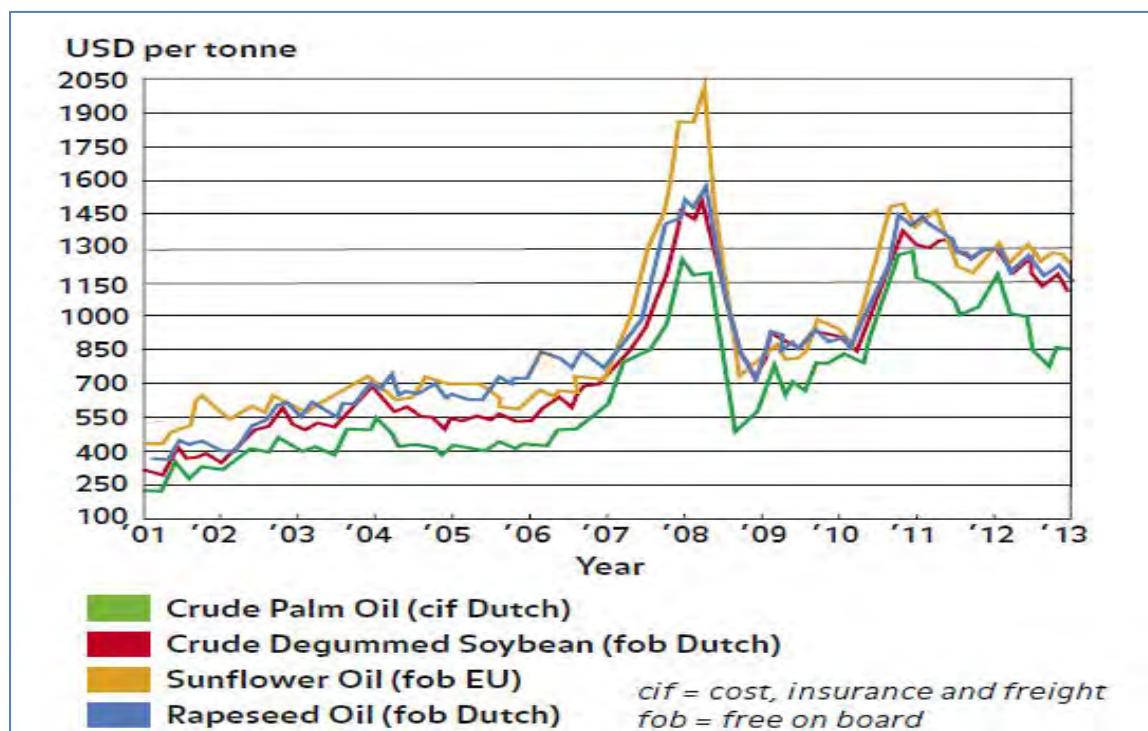
5.0 CHALLENGES OF THE PALM OIL VALUE CHAIN

5.1 COMPETITIVENESS CHALLENGES

From the perspective of the Ugandan market, the major competitiveness issue lays with volumes and cost of production.

- a) The first phase of the project targeted a planted oil palm area of 65,000 hectares in Kalangala by the end of the phase in 2011. At an average palm oil productivity of 4 tonnes per hectare per year (Oil World, 2013), this should lead to an approximate annual production of 260,000 MT. But, even with at least 50 – 60 per cent of the plantation now yielding (as at the end of 2013), Uganda still imported up to 180,000 tonnes in 2014 – which is about 69 per cent of the overall projected production capacity. It has also been noted that some of the planted areas will not produce as expected due to low fertility.
- b) Secondly, imports from Indonesia and Malaysia will continue to influence the popularization and expansion of palm oil production beyond the Kalangala project scope. For example, palm oil prices have generally been falling – over the last 3 – 4 years. This translates to the fact that it may not be the most optimal investment for farmers. In the north, for example, the drive is for increase in production of sesame and sunflower – which as seen in Figure 8: Comparison of world market prices of major vegetable oils, fetches higher world market prices. Therefore, expansion of domestic oil palm plantations will continue to face competition from other oil seeds. In 2014, the average unit value of crude palm oil imported from Indonesia and Malaysia were US\$ 917 and 880. These are the prices that domestic production must contend with to take over the imported crude palm oil segment in Uganda.
- c) Another fact worth noting is that oil palm plantations lock in the land resource for indefinite amounts of time. Also, once fully mature, intercropping is also not possible. The typical Ugandan farmer is more interested in working with shorter term crops that offer the flexibility of switching between crops as prices change.
- d) As prescribed under the PPP, pricing is not market-driven, being largely influenced by project partners. The key issue is whether this pricing model is scalable – beyond the project. Using relatively-fixed prices against market driven prices has negative effects on competitiveness. For example the desire by plantation owners to have FFB farm-gate prices fixed in certain ranges will certainly influence the domestic crude palm oil prices, and hence buying choices of other manufacturers other than BIDCO.

FIGURE 17: COMPARISON OF WORLD MARKET PRICES OF MAJOR VEGETABLE OILS



Source: Oil World, 2013

5.2 LOGISTICAL CHALLENGES

Considering the state of the palm oil value chain in Uganda today, the key logistical challenges relate to; i) the movement of FFBS from smallholder farms/plantation to the OPUL mill in Kalangala; ii) movement of crude palm oil from mill in Kalangala to BIDCO refinery in Jinja; and iii) the general movement and/or efficiency of refined palm oil products distribution chains – domestically and regionally (EAC, DR Congo and S. Sudan – the key export destinations).

In respect to movement of FFBS from plantation to oil mill, 400 km of farm roads have been built by OPUL and 230 km of link roads have been opened up by the KOPGT and the Kalangala District Local Government. However, the challenge now lies with the vehicles used to ferry the FFBS. Note that the prices payable – for FFBS delivered to mill – are not as dynamic as the fuel and spare part prices. As such, although KOPGT – which is the primary transporter – is continuing to expand its fleet, the transportation charge payable by the farmers may not be enough to sustain maintenance of this fleet hence the service. The existing price and charge setting regimes are also rather prohibitive to the entry of other private players

Plans to further expand the road network have also been hit with issues of compensation. The prospects presented by the palm oil project have driven asking prices – of land owners – much higher than had been initially anticipated. Also, in many

cases, establishment or expansion of roads involves destruction of oil palm trees – in plantations that were established using loans. This is making infrastructure development more expensive and challenging.

In terms of moving crude palm oil from mill to refinery, and the distribution of the refined palm oil products, there is need to develop more cost-effective alternatives to road transport. As it is with other value chains, actors in the palm oil value chain are calling for the exploration of the railway option. This is not only for the Kalangala project but in respect to the view of diversifying production beyond the islands

6.0 MEASURES TO OVERCOME THE CHALLENGES

- First and foremost, there is need to support efforts to diversify production beyond the Lake Victoria islands – Kalangala, Buvuma etc. The productive area (acreage) on these islands alone will not be able to service the growing demand, especially domestic. There have been a number of lessons learnt with the Kalangala project that will enable a more pragmatic and sustainable approach to promoting production in other areas. Trials are already underway in other potential producing areas. But, the targeted small holder farmers will need support – similar to the in PPP project – to setup the fields and maintain them before they are productive. Primary processing facilities – FFB mills that produce the crude palm oil – will be required in these new areas to avoid moving the bulky FFB over long distances. It will reduce costs and pressure on infrastructure.
- Incentivizing oil palm production will also be necessary, to promote increased production. Note that land is a fixed resource and the producers have alternatives – which are profitable even in the short run. For example, there are efforts promoting the production of other oil seeds or expansion of tea and coffee plantations. Creating an all-involving and transparent FFB price setting system was an attempt in this direction, with the Kalangala project. But, is this scalable beyond the current scope? Therefore this is another area that has to be thought out clearly.

7. CONCLUSIONS AND RECOMENDATIONS

7.1 Potential of the Palm Oil Value Chain in Uganda

Palm Oil is an infant industry in Uganda. Harvesting in plantations established in Phase I of the project significantly started in 2013. Thereon, plantation output is expected to grow, even with plantation expansion by the farmers and Phase II of the project. All this output is currently aimed at serving the BIDCO refinery thus the associated industries' requirement. Other companies such as Mukwano will continue to depend on imports from Indonesia and Malaysia until local production grows.

The critical focus should therefore now be on production expansion and diversification as indicated above. There is enormous domestic market scope to explore. This market is not complex and any local producer will be competitive – given the advantage of proximity to market. It will propel the growth of both primary and secondary production entities – value addition. The experience with Kalangala also shows it has the potential to grow household incomes of especially the producers.

7.2 Proposal for Growth and Expansion of the Palm Oil Value Chain in Uganda

The recommendation therefore is for increased efforts to ensure that; i) existing research and trials are effectively and expeditiously conducted. Results of such trials should be documented and published to create the necessary public interest and appreciation; ii) the required inputs and production support are available to boost uptake in the identified potential areas. This includes having the right human resource capacity for both research and extension services; and iii) the relevant market systems and structures are established to ensure an efficient market. This includes standards and governing bodies. Indonesia and Malaysia, for example, established bodies that regulate the activities of the sector and look out for especially public and smallholder producer interests. Also, environment and livelihood effects must be checked early in the sector development stages.

Linked to the above, significant public and private sector awareness and capacity building will be required – as it is in other crop sectors. It is important to ensure that there is market-guided production development.

7.3 Export Development for Crude Palm Oil and Refined Palm Oil Production

To promote exports of value-added products (crude palm and palm kernel oil), practitioners propose the prompt implementation of the proposed railway development projects. An alternative means of transport will be required for bulk movement of crude palm oil to port of exit such as Mombasa. Road transport is expensive and will make the local products uncompetitive in the export market. Probably, as production in the islands is growing, the same thinking should be extended to creating cost-efficient

waterway outlet (transport) options for FFB or crude palm oil – connection to the mainland.

Complete list and contacts of major actors

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All these cooperatives are producing and marketing sesame and other agricultural products

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Moses Awiyo
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Aboke

Mike Ariyo
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Lira District

Soroti

Jackson Epeduno
Omulala, Asuret

Akello Hellen Emuron
Mobile Produce Store

Judith Atai
Soroti Municipal main market

Joyce Akello
Soroti Municipal main market

Richard Nick Kabuleta
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