# MAIZE GRAIN VALUE CHAIN IN RWENZORI REGION IN UGANDA

## CONSTRAINTS AND OPPORTUNITIES

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Heights for Progress

PROPER QUOTATION: RWENZORI REGIONAL THINK TANK, 2011

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# LIST OF ACRONYMS

NDP　　　National Development Plan
VCD　　　Value Chain Development
KRC　　　Kabarole Research and Resource Centre
SNV　　　Netherlands Development Organization
SATNET　Sustainable Agriculture Trainers Network
UNHCR　United Nations High Commission for refugees
WFP　　　World Food Program
MMU　　Mountains of the Moon University
GAA　　　Germany Agro Action
NAADS　National Agriculture Advisory Services
CABCS　Community Agribusiness Capacity Building Services
RICNET　Rwenzori Information Network
DRC　　　Democratic Republic of Congo
MSE　　　Micro and Small Enterprise
IMF　　　International Monetary Fund
PSF　　　Private Sector Foundation

# ACKNOWLEDGEMENTS

# EXECUTIVE SUMMARY

The Rwenzori Regional Think Tank initiative brought together Rwenzori regional agriculture stakeholders that reflected on the challenges facing agriculture sector in the region. Research was seen as one of the mechanisms through which knowledge can be generated to inform decisions and actions for improving agricultural productivity. It was against this background that study to identify constraints and opportunities in the maize grain value chain in Ruwenzori region was done. This research on maize trade was conducted to provide a precursor for in-depth value chain analysis. A survey of buyers in the districts of Kyenjojo, Kabarole, Kamwenge, Kasese and Bundibugyo as well as Buyers in Kampala was conducted. Data about trade volume and prices from 2007 to 2009 was colleted. A total of 399 buyers (stores and traders) in Rwenzori region and a total of key buyers in Kampala were established. This big numbers of buyers include both small and large scale operating in the districts of Kyenjojo, Kabarole, Kamwenge and Kasese.

The market liberalisation policy in Uganda provided opportunity for increased private sector involvement in the maize value chain. This has resulted into the proliferation of informal and forma traders with both registered and registered stores.  This led to high price variation. The positive outcome was that high prices per kilogram attract more stores to join the maize value chain and this was evidenced with the increase in number every 10 years. However, the negative outcome is low prices per kilogram discourage the farmers from participating in the maize value chain, leading to decrease in maize production. The presence of stores in the Rwenzori region is an opportunity for participation in the maize trade both at national and international levels. The informal and individual selling arrangement has not promoted better cooperation and linkage between farmers and buyers to negotiate better production and marketing terms. The exporters have made use the opportunity of the regional trade arrangements.

The poor regulation and control of quality of maize has become a constraint under the liberalisation policy. The enforcement through government agencies has not been robust. This has been a major concern from the stores and also exposes the general public to dangers of aflotoxins in maize. The poor adoption of harvesting and post harvesting techniques through the extension policy is a major constraint in relation to food safety standards. The quality standard of maize was raised as one of the major concerns by the stores. Access to inputs for quality control is a limiting factor. The delay in passing of the food and nutrition bill is one of the contributing factors.

The storage system was dominated by simple stores on rented houses in different trading centres with no preservation means, no cleaning and sorting and difficult to access. The stores therefore acted as maize transit centers where it would be stored awaiting other bulk buyers. The stores were initiated by individual traders as a normal way of buying, keeping and selling of maize. The only existing warehouse in the region (Nyakatonzi) offers better storage services in addition to sorting and cleaning though at a cost that is paid by the owner of the produce

The maize enterprise faces a number of challenges at all levels arising from farmers and buyers as well as other intermediate actors. Farmers have not fulfilled their responsibility to maintain and supply quality maize and have not implemented the required agronomic practices that have contributed to lowering of quality seeds and production. Buyers have not helped farmers to understand the importance of quality grain and how to get better prices and this could be explained by lack of cooperation between farmers and buyers but also the profit drive among buyers who take advantage of farmers situation to undermine their produce and end-up offering lower prices. At the same time, the sub sector face the usual contextual challenges like price fluctuation and poor road network that has made it difficult to access maize from village, the buyers who persevere with the hardship end up attaching a cost to it and in the end maize produce lacks market or a lower price is offered.

The governance of the value chain is mainly influenced by lead agencies namely World Food programme and Uganda Commodity exchange. These have had strong influence on maize quality,

price levels and traded volume. The Government agencies have not had strong influence as expected in the enforcement of the maize quality standards and monitoring them.

The upgrading in the value chain has opportunities such functional upgrading with transformation of maize grain into maize flour and livestock feeds, inter-value chain where the stores are used for other crops especially during the off seasons of maize, process upgrading through improved agricultural practises, vertical upgrading through the sales from rural agents to medium traders to large scale traders.

The analysis of the findings gives a lot of insight on what can be done for the maize sector development. A number of actions have been recommended from this research which have short-term and long term effect on marketing of maize, increased production and increased household income. The focus on Value Chain Development (VCD) and quality of maize provides better negotiating grounds between buyers and farmers but more important is the cooperation or linkage between farmers and buyers that would provide space for reflection, planning and getting appropriate solutions to the marketing and quality challenges. It is known that with fluctuations, better prices can be accessed unless the produce is stored and preserved but with the existing storage system, it's impossible to realize this, therefore, adoption of a warehouse receipt system provides better chances for storage but also guaranteeing farmers to access credit to meet their household needs. This together with diversification of crops at farmer's level would provide leverage for farmers to comfortably produce, store, negotiate with buyers but also think a head in terms of value addition.

The maize value chain is influenced by the agricultural related policies including agricultural extension such as NAADS, marketing policy, agricultural research policy that involves improved seeds, post harvest handling. These policies have provided opportunities such as access to improved seed, adoption of improved agricultural practises. However the effectiveness of the implementation is a constraint for many farmers have not adopted the practises, not accessed improved seeds. Economic policies such as the liberalisation policy have a strong bearing on the chain. The ICT policy has implications on the market information dissemination. The ICT policy has increased the opportunities for access to market information through mobile phones, radio, Internet. However, there are constraints of accessing market information trough ICT for the farmers in the rural areas and rural traders. There agricultural ministry has not put in place a good strategy for IT in agricultural development. The national transport and rural electrification policies affect the infrastructural implications. Poor access to electricity and the high power tariffs have been a major constraint in enabling the stakeholders have value addition and functional upgrading to make maize flour and livestock feeds from maize grain. From the NGOs, issues of inequality in distributional incomes especially with regards to farmers are very pertinent. There are many barriers of entry and economic rents that prevent farmers to get to higher levels of the chain where high prices can be obtained. The lack of stores, access to maize shellers for improved maize quality at household level, the low organisation capacities of the farmers groups, poor access to crop financing terms, poor access to technology in terms of agricultural inputs and IT facilities, human resource constraints in terms of the skilled labour to run the farmers associations all have detrimental effects on the distributional income in the chain with regards to the farmers. The local government policy has implications in terms of how much resources are allocated to concerns of farmers along the chain. This includes the maintenance of feeder roads which is a big bottleneck with regards to transport network.

# CHAPTER ONE: INTRODUCTION AND BACKGROUND

Improving the rural economies, in many developing countries like Uganda, entails having good strategies of agricultural development. Majority of the population in rural areas earn their income from agriculture. Some of the income sources are crop production which serves both as food security and cash crop. Among the crops that is predominantly grown in tropical areas is maize. Maize is one of the cereal crops that are wildly grown in almost all parts of Uganda. It constitutes the largest portion of Uganda's diet for both rural, urban as well as institutions such as schools, teaching colleges, hospitals, prisons and security forces. Therefore maize is very important in as far as food security is concerned and contributes significantly to household incomes especially in the rural areas in Uganda (Rates 2003).The Maize Subsector is estimated to be providing 2 million households with a living, over 1000 traders, 600 millers and more than 20 exporters (Rates 2003). The annual production for 2008 was estimated to be 1,266,000 MT from the FAO statistics. Not only is the crop important to food security, but has become a major export crop with the trade liberalisation and increasing need to diversify Uganda's export regime of non traditional export commodities in the regional markets and among relief aid agencies like World Food Programme. The crop has become important to rural development interventions that have been explored to address poverty by various development actors in many parts of Uganda.

Maize production in Uganda faces many challenges including harsh weather conditions, high post harvest losses, poor access to extension services, poor rural infrastructure such as roads, storage facilities which has affected those involved in its marketing, pests and diseases, poor access to market information, shortage of rural electric power, poor organisation of the farmers groups to take advantage of collective marketing. The enabling environment in terms of marketing of the crop was critical. In the late 1980s, the Uganda government adopted economic reforms that led to reducing its role in marketing of farmers' produce. This resulted into to the dismantling of parastals like Produce marketing Board. Some of the short comings of government controlled crop marketing were diversion of crop finance, lack of prompt payment and inability to reach rural farmers. This led to opening up of marketing of agricultural produce to competition with the trade liberalisation as one of the strategies under the economic reforms. This gave opportunities to the private sector get directly involved in the maize trade right from the farm gate to export. The Government went further to identify five major food crops namely maize, beans, soya beans, groundnuts, and sesame as Non traditional agricultural exports (rates 2003). Under the liberalised marketing, farmers were paid cash for their produce. These changes had varying outcomes to rural development in Uganda.

Rural development strategies in developing countries like Uganda have had mixed reactions during the era of economic reforms such as trade liberalisation, implementing Poverty reduction Strategic Plans like Poverty Eradication Action Plan(PEAP). On one hand, there have been reports of improved household incomes and poverty reduction in Uganda. On the other hand, there have been reports of food insecurity and poverty impacts as indicated in the participatory poverty assessments done in various districts in Uganda. This has brought into sharp focus the ways in which poverty and rural development is examined and analysed by both development practitioners and academicians. One of the approaches that has been adopted is the value chain analysis in the agricultural development strategies related to crop production that have been used to address rural poverty.

In recent years maize farmers have experienced increased production as well as price fluctuations. Farmers have had difficulty understanding market dynamics such as identifying potential buyers of their produce and how to access existing markets or develop new ones. Farmers have little say over the fluctuating prices of maize and other associated products, and they (farmers) are not benefitting from higher market prices. Middle men have taken advantage of the difficulties to access information by farmers and lack of clear linkages and communication channels between bulky buyers and the farmers. Different players in the maize sub-sector face multiple constraints that must be overcome before supply can meet the ever increasing expectations of demand for maize and its associated products. 'Maize bulky buyers in Uganda face a challenge of inadequate supply'. On the other hand, farmers in the Rwenzori Region complain about low prices and the lack of viable markets for the product. Smallholder farmers lack understanding about existing local, regional and national markets, their requirements and mechanisms, yet this knowledge is vital in enhancing market linkages as well as stimulating market-oriented production. Therefore, there was a need to strategically identify, assess, and analyse the existing local, national and regional markets and the conditions and mechanisms that could reinforce the supply side to focus on specific market-oriented production strategies that would increase Smallholder farmers' competitiveness to meet market demands while improving livelihoods at household level.

## 1.1 Purpose of the study

It is against this background that Kabarole Research and Resource Centre (KRC) and Mountains of the Moon university (MMU) commissioned a study to identify constraints and opportunities in the maize grain value chain in Rwenzori region. This would help in assessing the existing local, national, and regional markets for maize, and their terms, conditions and mechanisms as a means of enhancing market-oriented production for the maize sub-sector in the Ruwenzori Region. The results of this study will be used by a range of sub-sector development actors to focus resources on the various segments of the chain to maximise net returns of incomes especially for small holder farmers.

## 1.2 The specific objectives of the study were

1. To identify existing local, regional and national buyers of maize that could potentially provide a market for small holder farmers in the Rwenzori Region.

2. To analyze the terms and conditions of different buyers and possible opportunities for working with small holder maize farmers in the Rwenzori Region.

3. To identify demand-side constraints that affect different segments of and actors within the maize value chain

4. Examine the price trends and trade volumes of the actors in the value chain

5. To assess the extent to which global dynamics influence local maize production and markets.

## 1.3 The questions to this research were;

I. Who are the actors in the maize grain value chain in Ruwenzori region? What are their characteristics, role/functions, linkages and practises?

II. What are the maize production areas and production capacity in different districts in the region?

III. What are the constraints and opportunities for the actors in the value chain ?

IV. What strategies are vital for enhancing market-oriented production for maize subsector in the Rwenzori Region?

The Government of Uganda initiated and developed the National Development Plan (NDP) that started operation in 2010 with the aim of promoting growth, employment and prosperity through enhancements in productivity and competiveness as well as investment in education for skills development (NDP).

Government recognises that in the short and medium term, the agricultural sector will be a basis for job creation, export promotion and a source

of livelihood for the majority of the population. With this in mind, a new agricultural development strategy and investment plan has been developed based on the vision of having a competitive, market-oriented agro-industrial sector that accommodates both small and large scale farming in the different agricultural production zones.

The Rwenzori Region agricultural stakeholders meeting (linked to the regional Think Tank initiative) prioritised agricultural research areas that were directly relevant and affecting farmers' production capacities, marketing initiatives and eventually affecting household income and general livelihoods. With the need to compliment government efforts, research was conducted for maize enterprise to generate information that can help in coming up with better marketing strategies that can ensure that farmers are able to negotiate, link with buyers and sell their produce at better prices.

Research on existing buyers, marketing trends and constraints as well as opportunities for maize market has produced sufficient information that is crucial for maize value chain analysis and development. Key Actors within the maize enterprise will use the data for further development of the value chain processes, work out modalities for meeting market demands/terms and conditions, preparing farmers for quality maintenance, linking and negotiating for better transaction processes between buyers and farmers that would stimulate improved production, marketing, incomes and general livelihoods for smallholder farmers. The Value Chain Development (VCD) would provide opportunities for cooperation by the different development actors to provide coordinated technical expertise and resources to address various constraints along a particular chain. Information generated from this research is expected to contribute to better market linkages and marketing of maize enterprise by small holders farmers.

A number of efforts in VCD promotion for certain enterprises in the region are already being undertaken by different development actors for instance, sun flower, pineapple, dairy, honey by SNV, Arabica coffee by KRC & SATNET, goat meat by KRC. Therefore, maize and garlic were identified as other enterprises whose VCD process needed to be started and promoted.

## 1.4 Study Area

The study was carried out in The Rwenzori region in the Districts of Kabarole, Kasese Kyenjojo, Kamwege, Budibubyo, Ntoroko and Kyegegwa. Geographically the area is located in western Uganda on the foothills of Mt. Rwenzori commonly known as Mountains of the Moon. The selection of the area was based on the fact that Maize is one of the common crops grown throughout the region both as a cash and food crop.

## 1.5 Methodological approach to the study.

The design of the research was both quantitative and qualitative in nature and a survey was used to obtain data on Maize market. This methodology was deemed most suitable because of its capacity to give in-depth information about the number of buyers, prices, and the types of buyers as well as the conditions for buying maize.

The study required an enumeration of all the local and key national market players in the maize sub sector. To accomplish this, all the maize producing areas were mapped out and market centres capable of having stores and mills were identified and visited by a team of research assistants. The focus was on maize processors or grain millers, bulk buyers/middle men, companies, institutions (like prisons and schools), warehouses, and maize stores.

At national level, enumeration of bulk buyers, factories, Uganda commodity exchange, export promotion, UNHCR and WFP, was made and information on their terms and conditions assessed.

The scope of the study focused on establishing existing local, national and regional markets/buyers. The terms, conditions and existing mechanisms and dynamics of the markets/buyers were then analysed in order to enhance market linkages especially for small holder farmers, and to stimulate production for mutual benefit at both ends of the value chain within the Rwenzori region.

The target groups were at two levels namely; the local and national market, i.e. Maize bulk buyers (middle level and companies), institutions (prison, schools, medical centres), warehouses, maize stores, local exporters in the Region and the national Markets including among others, Uganda

commodity exchange, export promotion, UNHCR and WFP.

Administered questionnaire was used to get general maize sector information regarding buyers. Direct observation was employed to establish existence of the maize facilities and their state. The study used both unstructured and structured interview questionnaires. In the same study direct observations and guided discussions were employed in collecting primary data. Data was also collected through use of interviews with the Buyers in order to obtain first hand data in the shortest possible time. A database was designed under EPIDATA for recording entries. Semi structured questions were coded using code sheet and captured. The database was designed to store both single and multiple responses. Analysis was carried under the SPSS, a statistical program and excel spread sheet.

There were limitations in the process of accomplishing the study that included:

1. Some of store owners were not readily accessed during data collection as their stores were locked up for reasons beyond our control on a number of accusations.

2. Due to high levels of illiteracy, there was a challenge of proper records' management. It was difficult to get some data on quantities stored and their associated prices for various seasons.

## Rwenzori region.

The Rwenzori region is part of the east African west rift Valley and straddles the equator along the border between democratic republic of Congo (DRC) and western part of Uganda. It is a heterogeneous society comprised of the Bakonzo, Batooro, Bakiga, Bamba, Basongora, Batuku, Babwisi, Banyabindi, Bafumbira and the minority Batwa among others.

According to the population projections of 2002 population census (Uganda population census 2001-2005) The region is comprised of five districts; Bundibugyo with approximately a total population projection of 300,763 people, Kabarole 404,006 people, Kasese 693,317 people, Kamwenge 372,567 people, Kyenjojo 494,471 people.

There are various forms of land use in the region; most of the land in the region is under small-scale farmland. The Rwenzori region is predominantly an agricultural region with most of the land under small-scale farming but with a marked large scale cash crop production in tea for Kabarole; coffee and cotton in Kasese and cocoa in Bundibugyo.

Within the Ruwenzori region, stakeholders in the field of agricultural sector came together to discuss the development challenges affecting rural livelihoods in February 2010. The broad spectrum of stakeholders included community members, development actors in the regions, international agencies working in the region, local leaders and technical staff from local governments and representatives of civil society organisations Non government Organisations, academicians, farmers, community based organisations, opinion leaders, civil servants and many others. The consultative meeting was organised by Kabarole Research and Resource Centre (KRC) in conjunction with Ruwenzori Regional Think Tank initiative. The meeting identified different challenges facing agricultural production and productivity in Rwenzori region. The meeting identified different challenges facing agricultural production and productivity affecting small holder farmers that included marketing of maize, soil fertility, marketing of garlic and climate change. Maize marketing was identified as one of the key challenges affecting rural household incomes at smallholder farmers' level and it was therefore identified as one of prioritized areas for research in the region. To examine the constraints and opportunities of maize marketing in Rwenzori region, the value chain analysis was adopted as the best approach in the research. A brief description of Kabarole Research and Resource Centre, Ruwenzori Regional Think Tank is given hereafter.

## Kabarole Resaerch and Resource Centre

Kabarole Research & Resource Centre (KRC) is an indigenous non-governmental/non profit making organization, which has been operating in the Rwenzori region of Uganda since its inception in 1996. KRC's integral approach to development is geared towards the transformation of the social, political and economic spheres of the people in the Rwenzori region and Uganda at large. It involves the grass root communities in identifying their needs, designing possible solutions as well as monitoring and assessing their own progress. Talk about the achievements briefly to a reader especially the research component. The vision is

*An equitable society of empowered and enlightened people taking responsibility for their own lives in an economically dynamic and environmentally sustainable manner.*

## Mountains of the Moon University

In a bid to improve the research capacity, KRC formed a strategic partnership with Mountain of the Moon University (MMU). Mountains of the Moon University is a community trust, private, non profit University located in Fort Portal Town. MMU received an official licence to become active as a university in 2005. KRC entered into the partnership with MMU in 2007 to maximize on the comparative advantages accruing to each institutions and increase knowledge building that would contribute to Rwenzori region development. In the partnership, KRC and MMU jointly undertake research and publish information as conceived relevant by either and both parties while contributing to the knowledge base and relevant information for various use within and outside the region. The two organisations are members of the Ruwenzori Regional Think Tank.

## Rwenzori Regional Think Tank

The Ruwenzori regional Think tank is a group of development actors who critically analyse development ideas, generating knowledge to inform practical and informed decisions at planning and policy making levels in Ruwenzori region in Western Uganda. It involves critical assessment of the regional and national development context by stakeholders, conduct research and debates, carry out policy analysis and advocacy and development of innovations and alternatives relevant to regional development needs. The agricultural development challenges identified by the stakeholder's forum were turned into research themes by the Think Tank Initiative. Think Tank is currently coordinated by KRC and MMU. Key actors in the think tank include the community, regional sector stakeholders, regional leaders, Think Tank operation teams, Think Tank technical teams and Think Tank steering committees

# 1.6 Report outline

This report comprises 4 chapters. Chapters 1 comprise of the introduction and background, Chapter 2 reviews the concept of Value chain analysis and describes conceptual framework of the study and Chapter 3 presents findings that were investigated. Chapter 4 presents conclusions and recommendations that emerged from the study.

# CHAPTER TWO:

# The Concept of Value Chain Analysis, Maize Value Chain Actors and Market Dynamics

Value chain describes the full range of activities which are required to bring a product from conception through the intermediary phase of production (including the physical transformation and input of the producer services), delivery to final consumer and final disposal after use (kaplinsky 2000)

Value chain analysis (VCA) helps in finding out why the poor have not benefited from the local and regional trade. Why are poor excluded from the benefits of trade reforms in developing countries? VCA is more helpful that the orthodox trade theory is explained why the poor may face barriers to trade and how they can overcome them. Trade theory has assumptions on the link between trade, economic growth and poverty reduction that are highly questionable. For example countries like South Africa that have good economic growth and high trade volume still have high numbers of the poor. The gap between the rich and poor is very wide in South Africa despite having the largest share of trade in global terms compared to other countries in Africa.

The Human Development Report describes this as income inequality. Outside Africa, India is the other good example of an emerging economic power with increasing trade growth but with high levels of poverty.  The comparative advantage theory of trade has been irrelevant with globalisation as seen with economic growth in Asian countries that make products such as electronics, shoes that used to be the domain of the developed countries in Europe and USA. Trade theories have failed to offer policy makers, development practitioners and partners with plausible interventions for poverty reduction. Development practitioners like Non Government organisations and rural poverty scholars have adopted value chain analysis approach to devise interventions of addressing and examining rural poverty under the trade liberalisation and Poverty

reduction strategic plan era in developing countries.

Value chain Analysis is well suited in understanding how the poor in rural areas of developing countries like Uganda can engage or improve their terms of engagement in domestic, regional and international markets(Mitchel et al 2009). Mitchel et al(2009) enlisted  the benefits of the methodology to include

I.  It recognises the lack of economic power of the target beneficiaries compared to the more powerful firms setting the rules of the game in the value chain and how this constrains their choices

II. Is a powerful diagnostic tool that can identify critical issues and blockages for specific target groups and provides framework for interventions to change the circumstances of the resource poor

III. Indentifies the barriers to entry that determine who in the value chain benefits from production from the final markets
    IV. Can provide policy and restricting tool  to counter both for market and state failure

V.  Has economic viability and commercial sustainability at its core because of its  market focus

The key challenge confronting developing country producers trying to increase their share of returns from crop value chains (such as coffee, tea, vanilla, fresh fruits and vegetables) is to rapidly develop new varieties and coordination of production and logistics along the chain (Kaplinsky 2000). With trade liberalisation, the volume of exports of Non traditional agricultural exports and traditional exports increased but the ordinary Uganda farmer benefited little. While USA sold maize flour to Uganda as relief food, Uganda exported maize

grain to regional markets like Kenya and Sudan. The value chain analysis helps in explain the income inequalities of maize farmers of Uganda and those in the USA. The same analogy can be used for dairy farmers in Europe compared to those in Uganda.

The Overseas Development institute (ODI) working along International Development Research centre (IDRC) and Danish Institute of International studies(DIIS) have done extensive research in Africa and Asia in exploring the different ways the poor can engage successfully in the viable value chains. They proposed seven strategies of upgrading the position of the poor in the value chain:

i. Horizontal coordination-process of greater organisation (intra-nodal) in production and processing in form of collective structure such as producer group. This facilitates access to markets and coordination with others allows producers to achieve economies to scale and reduce transaction costs

ii. Vertical coordination- move away from one spot transaction to longer term relations such as contract farming. This involves governance. Services under this can be discounted input supply, access to credit, technical support and supply of capital equipment.

iii. Functional upgrading refers to changing the mix of functions performed by actors in the value chain by increasing or reducing the number of activities performed by individuals such as increasing value added by processing, shortening of the chain by exclusion of intermediaries

iv. Process upgrading involves improving the efficiency of the value chain by increasing the output volumes and reducing the unit output costs such as improving the agronomy, use of high yielding seed varieties to increase the yields.

v. Product upgrading involves improving the quality of the products such as statutory hygiene standards, EU and USA food safety standards, organic standards.

vi. Inter-chain upgrading-use of skills and experience from one value chain to productively engage in another usually which is more profitable for example shifting from growing traditional crops to high-value export crops for example in Mukono farmers adopted vanilla growing while beans was their major cash crop.

vii. Enabling environment-although not an upgrading in the strict sense but very important contributing factor in the success for example improvement in the support services such as extension services, institutional, legal and policy frameworks such as trade liberalisation.

For this study the focus was on the maize grain other than maize flour. In the value chain the actors were categorised by Rates (2003) as follows.

a) Producers-these are the farmers or primary producers , predominantly by subsistence but some are commercial farmers

b) Rural traders/agents-operate at village level and form the primary base of marketing in Uganda

c) Urban traders-often located in major trading centres and district towns. Some own or hire 2-40 ton trucks for collection and transporting of the produce.

d) Large scale traders-mostly based in Kampala and work closely with urban traders

e) Uganda commodity exchange-based in Kampala as registered brokerage company engaged in maize marketing that brings maize sellers and buyers together.

f) Millers-involved in value addition of milling maize grains into flour. Mostly rural based in the villages. There are some large-scale millers based in Kampala.

g) World Food Programme- UN relief agency that has warehouse receipt system for procurement of maize.

The key elements in the value chain analysis are governance, barriers to entry and rent that will be explored. These are to be explained in detail.

## Governance in the value chain

There are actors in the chain that have power relations in determining the *rules of the game*. There are three forms of value chain governance. Under governance in value chain, there is legislative governance that involves setting the parameters or standards govern the value chain, that is conditions for participation. This can be by parties internal to

the chain for example WFP, Uganda Commodity exchange and large scale traders in the maize value chain. Parties external to chain involved in setting the standards are Uganda government should look in aspects such as quality standards by the Ministry of Agriculture and Uganda National Bureau of Standards (UNBS), child labour standards especially in the ear of Universal primary education.

Judicial governance involves monitoring the compliance to performance standards set in the value chain. This can be by parties internal to the chain for example which WFP and private sector. Parties external to chain like Uganda government should look in aspects such as labour and quality standards. This involves monitoring the food safety standards to avoid food poisoning such as aflatoxins in maize. For example no school going children should be involved in the value chain to the detriment of their education.

Executive governance involves assisting the suppliers to meet the standards. This can be by parties internal to the chain such as WFP have played a good role and NGOs in the food security sector. Parties external to chain like Uganda government with agencies such as ministry of Agriculture, Uganda bureau of standards and agricultural extension services such as National Agricultural Advisory Services. These have played a very small role in assisting the farmers and other stakeholders in meeting the standards (Kaplinisky and Morris 2000).The exercising of the sanctions is critical to the governance in the value chain. Negative sanctions can be by exclusion or inclusion in the network such as access to the final markets. For instance Uganda commodity exchange can accept or reject maize depending on meeting their quality standards. Governance comes along with legitimacy –the right to sanction behaviour reflects popular support. Lead agencies such as WFP and Uganda commodity exchange enjoy this. This is reflected by the degree of trust between the lead agencies and maize traders and farmers.

**Barrier to entry and Economic rents in the value chain**

The value chain is important in understanding the distribution incomes arising from production and marketing among the various actors (Kaplinisky and Morris 2000). Some actors in the chain can protect themselves from competition hence the concept of rent which arises from the possession of scarce attributes and involves barriers to entry.

Economic rent accrues on the basis of unequal ownership/ access on control of scarce resources such as finances, technology. The different forms of economic rent are:

- Technology rents-having command of scarce technologies such as maize dryers, improved seeds

- Human resource rents- having access to better skills than competitors such large scale traders and World Food programme

- Organisation rents- possessing superior forms of internal organisation such as Uganda Commodity exchange and farmers organisation

- Marketing rents- possessing better marketing capabilities and valuable brand names for example WFP and co-operative society

- Infrastructural rents-access to high quality infrastructural inputs such as telecommunication in terms of internet, phones,

- Financial rents- access to finance on better terms than competitors for example WFP and Uganda commodity exchange

- Policy rents-operating in an environment of efficient government such as trade liberalisation policy as compared to state controlled marketing by marketing boards.

## 2.1 Analytical and Conceptual Framework

The relationship between maize production, marketability and household incomes can be conceptualized as follows in Figure 1 as mechanism for establishing sub sector strategy.

## Figure 1: Analytical and Conceptual Framework
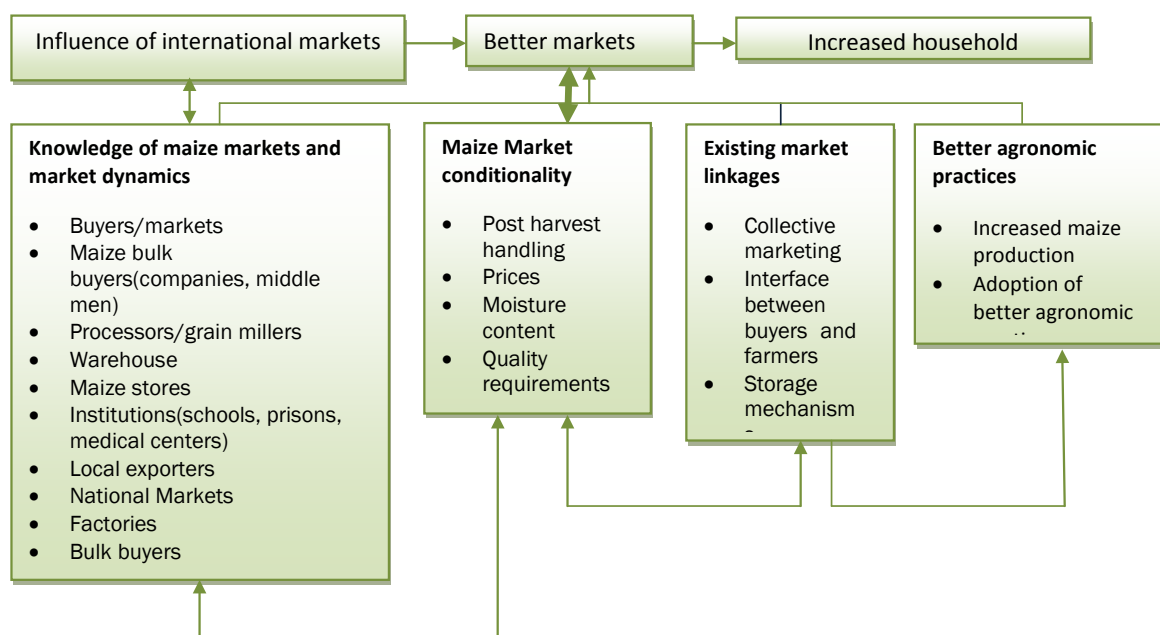


This Conceptual framework was employed to assess four categories of relationship i.e. assessing existing knowledge on the maize agronomic practices used.

For farmers to realize increased incomes from maize, the farmers should be in a position to access better markets at local, regional or national levels. These markets may also be influenced or determined by global events like increased demand that determines price variations.

For farmers to be able to market the maize produce they should be knowledgeable on the different buyers and their conditions and terms so that the produce does not lose market.
It is also envisaged that farmers should focus on market oriented production i.e. after understanding what the market desires; farmers can adopt better agronomic practices that ensure increased production and quality produce for the market.

## Assumptions / Operationalisation of the conceptual framework

1. It is a combination of better agronomic practices at farmer level, knowledge on market requirements, linkages between buyers and farmers and access to better markets with favourable global market influences that contribute to increased maize grain sales and incomes at household.

2. An increase in household income is the end result for farmers engaged in maize production. With increased incomes, farmers can be economically empowered which influences actions on other socio-economic decisions.

3. To get income from maize, farmers should be in position to market the maize produce by accessing better markets. Local markets are influenced by global trends of maize markets. The demand for local maize by international agencies is determined by demand and level of production in other producing countries.

4. Better markets are those markets that offer opportunities for negotiation and can offer farmers comparative advantage in form of prices, transport, easy reach in relation to the existing market trends

5. Better markets can be accessed if; a) farmers are able to understand different market dynamics and have knowledge on buyers and their terms and conditions/requirements, b) farmers are able to work on the modalities for linkages between buyers and farmers, c) farmers can produce enough quantity and the right quality through the use of better agronomic practices.

6. Farmers should be in position to focus their production based on market requirements (Market oriented production)

## Maize value chain and International trade

Maize is a staple food for many countries in Eastern and southern Africa. However, their consumption does not commensurate the production leading to become net maize food importers. According to Rates 2003 Uganda has 3 maize market export segments namely Relief, cross border and Southern Africa. Uganda is a major source of relief food to World Food programme in central and Eastern Africa. The relief market accounts for significant portion of the export market and the most assured when the maize quality is attained. With regard to cross border, Uganda has been exporting maize to Kenya mainly through informal and formal cross border trade. There has also trade with Rwanda and Democratic Republic of Congo. In the Southern African Market, Uganda supplied about 30,000 MT of maize to Zambia through Uganda grain traders Ltd. This level of success was attributed to the abduance of the production that depressed farm gate prices (Rates 2003)

Abdolreza et al (2006) noted that international maize economy has undergone major changes over the past two decades in terms of production, utilization, trade as well as marketing structure and these changes are said to be driven by a host of factors ranging from rapid advancements in seed and production technologies, changes in national policies and international trade, nearly uninterrupted expansion of feed usage across the globe and more recently the sudden surge in demand for ethanol.

Also, maize distribution and trade hinges on different routes and transportation systems as well as on the location of ports and terminal facilities. These factors play important roles in maize economy and are critical in the competition for markets within the national boundaries as well as outside. In addition, for the many countries which import maize but are landlocked, the regional transport systems are also critical. For example, in Eastern Africa, Mombasa is the largest port which not only serves Kenya but also the landlocked countries of Uganda, Rwanda, Burundi, the Democratic Republic of Congo, and Southern Sudan. Similarly, Dar Es Salaam which is the second largest port in East Africa (after Mombasa) provides alternative and more competitive rail/lake route to Uganda while also serving the landlocked countries of the Democratic Republic of Congo, Burundi, and Rwanda (by road) as well as Zambia, Zimbabwe, and Botswana by rail (Abdolreza et al, 2006).

For local farmers, domestic transportation cost is one important determining factor in prices they collect. Similarly, at the international level, the cost of transportation between countries can be a determining factor for exporters and importers alike.

It should be noted that there have been cases of food insecurity after bumper harvest as farmers have sold most of the produce and kept not enough to take them through the scarcity periods. In northern Uganda, some farmers in Lira district had to get relief food in 2009 even after bumper harvest. It resulted from the good prices that were offered by traders from southern Sudan which has a high demand for food. The good prices led them to have cash but its fungibility led to diverting it from food security issues to them uses like school fees, medical and social issues. When the period of scarcity came some home had no fall back position. Regional demand for food crops in food deficit countries in the era of liberalization have had negative impact of household food security in Uganda.

## 2.2 Knowledge of Maize Markets and Market Dynamics

Food prices and availability are highly politicised issues in the developing world, and there is a widespread view that governments are responsible for ensuring people's access to food (Klaus et al 2009)[1]. If government intervenes too little, it risks price fluctuations and other market outcomes that are politically and socially undesirable.

If government intervenes too frequently and unpredictably, it risks discouraging traders' participation in markets. Resulting low private sector activity then forces government to intervene in the market in order to achieve its social objectives. To the extent that the private sector is more timely and efficient in its operations, this situation results in an efficiency loss. However, much larger than these short-run efficiency losses are the inhibiting effects of uncertain government behaviour on long-term private investment and the overall development of the marketing system. Strategic interaction between the public and private sector is therefore an issue that fundamentally affects food security outcomes within these mixed marketing systems. Klaus et al (2009) studied the Government of Zambia's market reform where they mentioned that

1 The relevance of a rules-based maize marketing policy - An experimental case study of Zambia by Klaus Abbink, T. S Jayne And Lars C. Moller

it adopted maize marketing reforms as part of loan conditionality agreements with the World Bank and International Monetary Fund (IMF) in the late 1980s while facing extreme fiscal pressure. However, starting in 1993 the government reversed some of these reforms and progressively re-introduced a number of measures to control food prices and supplies.

According to Klaus et al (2009), private trade in Zambia has developed steadily since the early 1990s.  They revealed that during the past six years, the Mwanawasa and subsequent Banda governments have progressively introduced greater state intervention in food marketing and trade. Maize became the cornerstone of an implicit and sometimes explicit 'social contract' that the post-independence governments made with the African majority to redress the neglect of smallholder agriculture during the colonial period. Klaus et al, (2009) mentioned that many analysts have concluded that predictable and transparent rules governing state involvement in the markets would reduce market risks, allow for greater coordination between private and public decisions in the market, and enable governments to more effectively achieve food security policy objectives. The Post Washington consensus has shown that there is need for strong government intervention in food security policy matters in the era of liberalization.

## 2.3  Maize Market Conditionality

Trade and price stabilization policies often hinder price transmission. While import and export bans and quotas impede price transmission, import tariffs and export taxes do not. The latter allow international price changes to be fully transmitted to domestic markets in proportional terms, unless they are prohibitively high and weaken the incentive to trade.

The concept of price transmission is based on competitive pricing. Changes in supply and demand in one country will affect domestic prices which in turn will instigate trade with other countries. In theory, as trade restores market equilibrium over a period of time, prices in the domestic market should equalize with those in foreign markets, reflecting complete price transmission. Therefore, prices of a commodity sold in competitive foreign and domestic markets should differ only by transport costs. In practice, price transmission can be slow or far from complete due to a number of reasons including policies, transport costs, non-competitive traders and consumer preferences.

Apart from policies, domestic markets can also be partly insulated by large margins that arise from high transport and marketing costs. In developing countries, poor infrastructure, transport and communication services give rise to significantly high delivery costs of the locally produced commodity to the border for export, or the imported commodity to the domestic market for consumption. Such high margins hinder the transmission of price signals, as they prohibit arbitrage. As a consequence, changes in international prices are not fully transmitted to domestic prices, resulting in producers and consumers adjusting partly, if at all, to shifts in global supply and demand.

In general, food prices in Africa are quite volatile. A variety of reasons, such as weak supply response, climatic shocks and poor infrastructure, which often isolates regions and countries,

all lead to increasing price variability and present major challenges for governments. Consumer preferences over maize varieties could also insulate domestic markets, making them subject to domestic shocks only.

## 2.4  Market Information

Lack of accurate and relevant market information has been identified as a major obstacle in efforts to improve the agricultural sectors of African countries yet very few African farmers have access to such information (Shaun and Peter, 2004)[2].

Shaun and peter (2004) acknowledge that the process of liberalizing agricultural markets in African countries would have to be accompanied by the provision of independent market information to all stakeholders in the commercial chain in order to avoid distortions in these markets. They argued that Small-scale farmers, in particular, need to be assured that they receive a fair market price for their surplus production and to be given the necessary market signals to encourage and enable them to produce the type and quality of goods required by consumers. It has long been recognized that the process of liberalizing agricultural markets in African countries would have to be accompanied by the provision of independent market information to all stakeholders in the commercial chain in order to avoid distortions in these markets.

2 Developing Marketing information services in East Africa. The FoodNet experience – Local, National and Regional market information Service by Shaun Ferris and Peter Robbins

Over the past two or three decades, the markets for many of Africa's most important export crops have become a great deal more competitive. Consumers in industrialized countries are demanding a wider variety of goods, higher standards of quality, and cleaner, safer foods. The widening price differential between raw products and products prepared and packed for the supermarket shelf, combined with the lowering of import barriers for processed goods from Least Developed Countries (LDCs), offers these countries an opportunity to gain added value for their goods (Shaun and Peter, 2004).

The problem still remains, however, that if Eastern African countries aspire to compete in, what are now, globalized agricultural markets, significant improvements in market information provision need to be made. Most African farmers are unaware of prices and other market conditions even in their nearest town which puts them in an impossibly vulnerable bargaining position with traders who are able to take advantage of their ignorance. Farmers are also unaware of the types and quality of produce being sought by national, regional, and international customers which hinders the entire nation in its efforts to earn more from exports. The lack of market information has the effect of draining resources out of rural areas where most poor people live.

This has been due to the poor integration of ICT into the agricultural development in Africa and Uganda in particular. The has been a big penetration in telecommunication through the increase in access to mobile phones in Africa. This has had a tremendous impact on money transfer to the extent that mobile money services have transformed rural banking and trade. However, the use of mobile phones in market information services has not been used to its full extent in rural agricultural development. Some donor funded programmes in Uganda such as USaid, Danida have put up market information services where by with sms or internet one can know the price of commodities in various markets. The relevant policy organs such as Ministry of Agriculture have not had an aggressive ICT policy in agriculture. Uganda had an IT policy framework but the relevant government agencies have to draft one the complies to their needs. Ministry of health is in advanced stages in relation to mainstreaming ICT into primary health care but a corresponding response has not been seen in agriculture in Uganda. Some farmers and private sector in urban areas have access to Internet but the majority in the rural areas does not.

Throughout the developed world, farmers regard market information provision as an essential requirement of their business. European farmers, for instance, have access to over 200 Internet sites containing information on prices, contact details for buyers and input providers, market news, yield forecasts, quality and packaging requirements, etc. on dozens of different products. A plethora of additional information is available from specialist journals, government agencies, traders, and farmers' unions (Shaun and Peter, 2004).

## 2.5 Influence of International Maize Markets

Maize is assigned different types of grades and classes depending on a set of physical descriptions or qualities such as the minimum test-weight, feeding values, and maximum limits of damaged kernels and foreign material, planting size and growing conditions are critical elements in determining price developments (Abdolreza et al, 2006)3. They further added that some crops such as maize are also produced in both the northern and southern hemispheres and this can be regarded as an additional stabilization bonus as the world harvests. Any sudden turn in the weather and/or spill price effects arising from supply and demand developments in other markets can still influence maize spot and near-term prices during any given season but those conditions are usually sporadic as market behavior is mostly driven by its own supply and demand fundamentals.

Abdolreza et al (2006) noted that international maize economy has undergone major changes over the past two decades in terms of production, utilization, trade as well as marketing structure and these changes are said to be driven by a host of factors ranging from rapid advancements in seed and production technologies, changes in national policies and international trade, nearly uninterrupted expansion of feed usage across the globe and more recently the sudden surge in demand for ethanol.

According to Abdolreza et al (2006), United States is the largest food aid donor of maize, followed by the EU, China, and the Republic of Korea. On the recipient side, many countries in Africa normally occupy the top ten positions although consecutive droughts in recent years resulted in the Democratic Republic of Korea to join the world's

3 From the report prepared by Abdolreza Abbassian, grains analyst at FAO, with inputs from the other two members of the FAO grains team, John Heine and Claudio Cerquiglini.

**Figure 2.1: Maize prices in Eastern and Southern Africa**
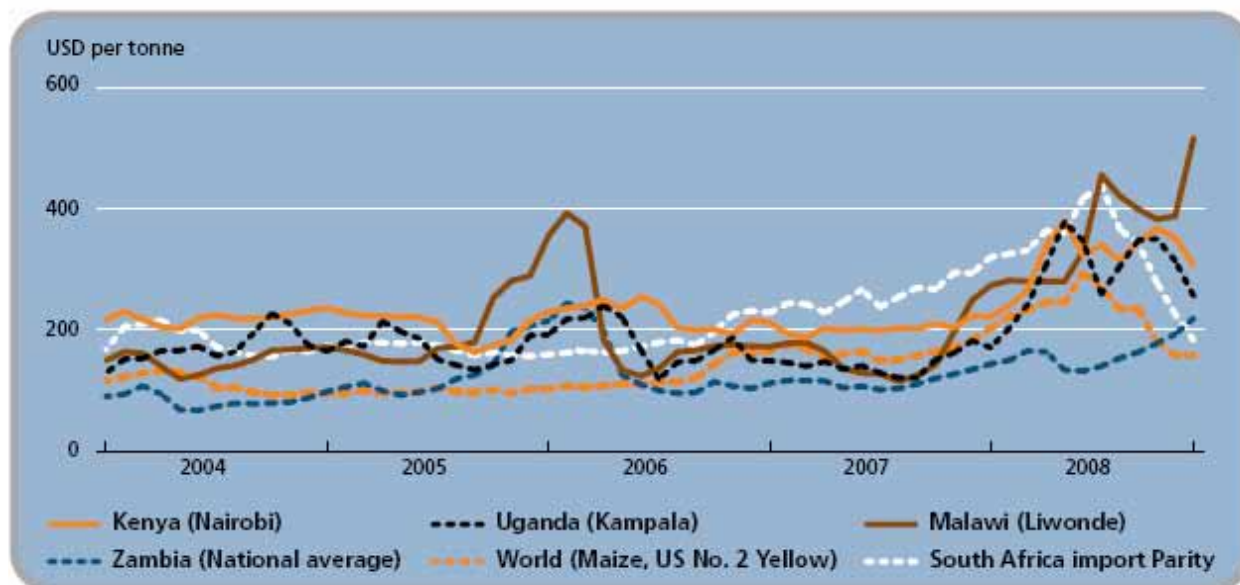


*Source: "extracted from the Transmission of International Maize Price Signals in Eastern and Southern Africa. By Trade and Markets Division, Economic and Social Development Department - FAO"*

leading recipients. In Africa, several countries, including Angola, Ethiopia, Kenya, Malawi, Mozambique, United Republic of Tanzania, Uganda, Zambia, and Zimbabwe, often received large amount of maize as food aid in recent years.

Also, maize distribution and trade hinges on different routes and transportation systems as well as on the location of ports and terminal facilities. These factors play important roles in maize economy and are critical in the competition for markets within the national boundaries as well as outside. In addition, for the many countries which import maize but are landlocked, the regional transport systems are also critical. For example, in Eastern Africa, Mombasa is the largest port which not only serves Kenya but also the landlocked countries of Uganda, Rwanda, Burundi, the Democratic Republic of Congo, and Southern Sudan. Similarly, Dar Es Salaam which is the second largest port in East Africa (after Mombasa) provides alternative and more competitive rail/lake route to Uganda while also serving the landlocked countries of the Democratic Republic of Congo, Burundi, and Rwanda (by road) as well as Zambia, Zimbabwe, and Botswana by rail (Abdolreza et al, 2006).

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importers alike.

## 2.6 Policy environment and the Maize value chain

There are number of policies that affect the value chain under the current broad framework of the National Development Plan (NDP). The NDP has evolved from the Poverty Eradication Action plan(PEAP). One of the major differences between NDP and PEAP is that PEAP has a strong focus on rural development while NDP goes beyond rural development. The policy environment has had implications on the maize value chain including the price policies and volume of the maize trade. The policies can be categorised under agricultural, economic, Information technology, transport, local government, rural electrification.

## 2.7 Agricultural policies

The agricultural policies include the extension policy under which the National agricultural advisory service (NAADS) has been mandated with training farmers in improved agricultural practises. The agricultural research policy has been under the jurisdiction National Agricultural Research Organisation (NARO) that produced improved varieties of maize crop which are high yielding and resistant to pests and diseases. Furthermore, Naro has also tackled post harvesting handling and soil

fertility. These were under the framework of Plan for Modernisation of Agriculture (PMA) which has been replaced with Development and strategic Investment Plan (DSIP) for Agriculture. PMA was part of the Poverty Eradication Action Plan (PEAP) as the poverty reduction strategic plan for Uganda.

Farmers tend to respond to increases in prices but as experience have shown particularly in maize production, over production leads to prices to slump. For example, the increase in the price of maize in the recent past drove most of the farmers into maize production and the bumper harvest that followed led to maize prices to slump. There are no storage facilities of national scope to store produce in order to stabilise the market prices or any form of support by government to shield farmers from such loss. In the end, the most needed consistence as that of their counterparts in developed countries is repeatedly compromised and the emphasis on undertaking farming as a business as laid out in the PMA policy paper becomes elusive to achieve.

## 2.8  Challenges for Agricultural Development

From the policy, institutional and sector performance analysis and also building from previous studies such as World Bank (2007), the core challenges facing agriculture are identifies as:

i)   Creating enabling environment (policy consistence, institutional reforms)

ii)  Finding sustainable markets for agricultural products

iii) Adding value to agricultural products

iv) Boosting production and productivity.

### 2.8.1  Creating an enabling environment for agriculture.

While agricultural sector policies have been developed, implementation of programs has not been consistent with specific government policies and strategies. This has created uncoordinated interventions and resulted in ineffective and inefficient use of resources. Most of the public and private institutions in the sector are weak both in terms of linkages as well as numbers and quality of human and other resources.  The agricultural sector coordination needs to be strong in mobilising the resources for implementation of agricultural programs. Part of this institutional coordination and management of agricultural sector interventions

include harmonisation of donor support and interventions in the sector.

There is lack of regular and reliable agricultural statistics for effective planning and monitoring. Coupled with this, decision makers cannot adequately provide early warning information to farmers on information related to changes in rainfall patterns, markets and availability of inputs among others.

### 2.8.2  Finding sustainable markets for agricultural products:

Analysis of agricultural markets and prices show that domestic, regional and international markets for agricultural products exist. However, the linkages from production to these markets are non-existent in some products or weak in others. Frameworks for regulations and quality assurance in agriculture output are still critical for international marketing and price setting. Many livestock products, for example meat, up to now cannot access the international market because of disease related constraints. Quality assurance infrastructure for crop, livestock and fisheries are hampering marketing of agriculture output, especially in export market. Other exogenous shocks such as volatility of prices create uncertainties of the market and therefore impacts on consistencies around production.

### 2.8.3  Adding value to agricultural products:

There is inadequate physical and mainly rural infrastructure for adding value, integration of markets and reduction of transaction costs for agricultural products. This infrastructure include; community and trunk roads; rural electricity; water; and commodity storage markets, among others

### 2.8.4  Boosting agricultural production and productivity:

Analysis shows that agriculture is faced with a number of production and productivity constraints. Reliance of rain-fed agriculture as a result of weather variability continues to stifle agricultural production and productivity. The declines in growth in some years since 1997 were mainly attributed to drought that hit many parts of the country affecting crop, aquaculture and livestock agriculture. In some cases, drought also lead to receding of water levels in some of the lakes leading to erosion of fish breeding grounds and

thus affecting fish production. Pests and diseases have remained a big problem for increasing yields mainly in crops and livestock. Other constraints are limited use of production in put factors such as, good breeds of seeds and stocking materials fertilizers, mechanisation, and irrigation among others. Limited or no compliance to regulations is also hampering production in crops, livestock and fisheries. Land tenure especially as it relates to ownership and access remains an issue especially among women farmers.  Production infrastructure related constraints include quarantine stations, holding grounds and fish landing sites.  There are still constraints related to availability, affordability and adoption of agricultural technologies. This brings the continued relevancy of a focused generation and provision of advisory services that targeting increased agricultural production and productivity. Specific problems in fisheries sector include resource depletion caused by overfishing of stocks, non-compliance with regulations and inadequate control of catches. The sub-sector is characterized by illegal transportation of fish to some factories and in the neighbouring countries. Other constraints relate to maintaining high quality and safety standards especially if the export growth is to be sustained. Sustainable use and management of water, soil and land resources remain a critical factor for agriculture production and productivity.

## 2.9 Economic and Trade Policies

The economic policies have included the market reforms and trade policies. In the past there was also the barter trade with Cuba before the trade liberalisation was adopted under the market reforms. The trade liberalisation policy resulted into abolishing government monopoly in agricultural marketing, price stabilisation and control mechanisms through marketing boards to private sector driven economy. This resulted into government mainly is dealing with policy matters such as regulation and the private sector dealing with both domestic and export trade. The trade policy also tackled aspects to standards development including food safety standards under the jurisdiction of Uganda Bureau of standards.

Agro processing and value addition have been more emphasised under the trade policy. Before current framework of the NDP, agro processing was one of the pillars of the PMA. Liberalisation also led to more private sector involvement in value chain with regard to transportation of maize grain and flour. This has resulted into shift from the use

of the produce trucks that used to collect maize grain from farmers to use of motor bikes, bicycles, lorries by the private sector. The use of the railway to transport maize from Ruwenzori region has been replaced by trucks owned by the private sector. The enabling environment has resulted into growth of informal and formal sector with improved economic growth under liberalisation in the maize value chain. Trade liberalisation has been resulted into growth of regional trade in the East African community and other Africa trading blocks.

The trade policy has led to the diversification of agricultural exports. From traditional emphasis on coffee to promotion of non traditional agricultural exports that included maize, beans among others. Maize has been key crop in the regional trade with the various African trading blocks such as COMESA, EAC, PTA.

One of the outcomes of trade liberalisation was removal of price stabilisation and controls. This has resulted into price volatility. The prices of maize can vary from 100 UGX at farm gate in the rural areas to 900 UGX for large scale trader. Price variation is good for it acts as an incentive for market actors to get involved when the prices increase. The variation is not a major issue but excessive variation should be a major concern for policy makers. This excessive volatility in price has sometimes discouraged the primary producers the farmers. On the other hand little or no variation in prices has been as result of policy intervention by the state such as price stabilisation during the era of marketing boards.   High variation is a sign of lack of market integration. By Market integration, we refer to the extent at which the actor is value chain is involved in the trade to get a good price for the commodity. There are structural bottlenecks that inhibit  farmers from being influential stakeholders include the poor road network especially during the rain season, poor access to market information and poor post harvest handling measures.

This challenge has contributed to inequality in the distributional incomes in the value chain especially for the primary producers the farmers. In comparison with the coffee value chain, it noted that farmers would get over 70 % of the final price of the consumer in the world market. In some cases, the coffee field has been bought even before the harvest. A part from big changes in coffee production in Brazil due to frost, there has not been high price volatility in coffee as compared to that in maize value chain. The Washington consensus that

included World Bank and International Monetary Fund advocated for less state involvement in trade. The post Washington consensus advocates for more involvement of state to control extremes of globalisation. It has been said the market is bad master in that leaving the market forces at play it may lead to many losers and few gainers. The farmers become big losers in market liberalisation with high price volatility and the state should come in to control theses excesses.

### 2.9.1 Regional trade agreements and market opportunities for small producers

The coming into effect regional trade agreements in the Africa region is a result of a shared need among African governments to cooperate in order to accelerate economic growth and reduce poverty. Uganda's membership to EAC and COMESA is interpreted as an opportunity to improved market access with over 200 million people as compared to the 31 million Ugandans. This creates opportunities for maize traders in Uganda especially in the Rwenzori region to have a wider access to market to the benefit of small holder farmers.

### 2.9.2 The East African Common Market (EACM) and Common Market of Eastern and Southern Africa (COMESA).

The EACM –the newest (2010) in the band of trade related agreements is an economic cooperation among five states namely: Uganda, Kenya, Tanzania, Rwanda and Burundi. The overall objective of the Common Market is to widen and deepen cooperation among the Partner States in the economic and social fields for the benefit of the Partner States. On the hand, COMESA incorporates 21 member states[4] and exists principally for the same reasons for her member states.

The main provisions of these protocols are: free movement of goods, persons and labour, the rights of establishment and residence and the free movement of services and capital geared towards accelerating economic growth and development of

the partner states. In light of the provisions of the protocol, member states are obliged to:

(a) Eliminate tariff, non-tariff and technical barriers to trade; harmonise and mutually recognize standards and implement a common trade policy within the common market;

(b) Ease cross border movement of persons and eventually adopt an integrated border management system;

(c) remove restrictions on movement of labour, harmonise labour policies, programs, legislation, social services, provide for social security benefits and establish common standards and measures for association of workers and employers, establish employment promotion centres and eventually adopt a common employment policy;

(d) Remove restrictions on the right of establishment and residence of nationals of other Partner States in their territory in accordance with the provisions of this Protocol;

(e) Remove measures that restrict movement of services and service suppliers, harmonise standards to ensure acceptability of services traded; and

(f) Eliminate restrictions on free movement of capital; ensure convertibility of currencies; promote investments in capital markets (stock exchange) eventually leading to an integrated financial system.

In effect, these provisions and the response from member governments are supposed to provide a relatively better opportunity for small producers to sell their produce.

According to available data on trade, there is a marked growth in trade in commodities that have regional market like maize, rice and beans. (Baffoe, 2000). For example, Uganda trades up to 1.2 million tonnes of maize in the regional markets from 300,000 tonnes in 1991. Although data is not explicit on who contributes to this stock that is traded, the contribution of small producers constitutes the largest part considering the fact that they dominate the agricultural sector.

Other pointers are in the trends in enterprise selection where more farmers appear to be venturing in 'new' crops which previously, they

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 The Republic of Angola; The Republic of Burundi; The Federal Islamic Republic of the Comoros; The Democratic Republic of Congo; The Republic of Djibouti; The Republic of Egypt; The State of Eritrea; The Government of Ethiopia; The Republic of Kenya; The Republic of Madagascar; The Republic of Malawi; The Republic of Mauritius; The Republic of Namibia; The Republic of Rwanda; The Republic of Seychelles; The Republic of Sudan; The Kingdom of Swaziland; The United Republic of Tanzania; The Republic of Uganda; The Republic of Zambia; and The Republic of Zimbabwe.

produced on small scale. For example, while maize is grown everywhere in Uganda, the highest producer districts of maize historically have been: Kapachorwa, Masindi, Mbale and Iganga. Although they remain in the lead, recent high producer districts have emerged in Kasese, Gulu, Lira and Mbarara. This trend may be attributed to the provisions of the protocol and the bigger market it represents. Likewise, for rice, the historical highest producer districts were in the Busoga region, but in the due course, recent large scale entrants include the districts of Hoima and northern Uganda region. This is a shift that may be logically linked to the market opportunity created by the provisions of the protocol. It can be concluded that the provisions of the protocols, particularly their influence on the market size provide an impetus to small producers to grow from a pool of crops that have a regional market as we observe districts taking on enterprises that were not formally their niche in market terms.

Additionally, competition clauses within these protocols guarantee equal opportunities to all market participants in the common market and especially to small and medium-sized enterprises. In real terms, it prohibits anti competitive practices such as subsidies outside the authority of the protocols and objectives of the common market which would otherwise distort the market. Emphasis is put on agreed standards in order to train participants in competitiveness within the common market while at the same time, enabling them to gain eligibility for international markets that operate high standards.

However, not all provisions of these protocols are implemented to the letter; there are cases where certain provisions are not respected and national interests override the development of the common market. There are events that have happened that point out that trade especially in agricultural commodities among partner states is not yet smooth as you would expect under the common market protocols. For example, Tanzania imposed an export ban on agricultural commodities in March 2006 and in the following year introduced new rules for trucks carrying merchandise at the Taveta border which altogether limited the volume of maize going into the country (UEPB, 2008). It is alleged that they relaxed these rules after a review of the maize situation and thereof allowed for maize exports again. This scenario confirms that there are reservations to the seemingly wide market enabled under the common market protocol. However, on the wide scale of things, the Tanzanian experience appears to be somewhat isolated to amount to a threat given the high demand food commodities

mainly maize in Rwanda, DRC and Southern Sudan but it cautions exaggerations about the stated/official benefits of the common market.

It also must be acknowledged that individual member states are endowed differently and these endowments have an influence on the extent these virtually standard provisions impact on the wellbeing of an individual partner state and their small producers. The agricultural infrastructure unique to partner states has a direct bearing on the competitiveness of partner states in the common market. For example, an effective response of individual partner states to a maize bumper harvest in view of reducing losses is a question of the level of agricultural infrastructure and less of tariff related aspects. A country like Kenya which has silos and widely spread agro processing facilities is able to better respond to a bumper harvest with minimum losses compared to Uganda. Uganda's current storage capacity is estimated at less than 300,000 tonnes with most silos in Jinja, Soroti and Gulu relegated to virtually no use. Such gross inadequacies in the agricultural infrastructure directly affect the translation of the market opportunities to real benefits to small producers.

## 2.10  Local government Policy

Local government policies have effects on the transport network in the rural areas with regard to the feeder roads. Under this policy, feeder roads are within the jurisdiction of the local governments ranging from the district to the sub counties. The truck roads are under the central government within the ministry of transport. Local governments also take charge of the agricultural extension and research implementation interventions. Local governments continue to play a big role in the performance of the agricultural sector. Working through Government programs like NAADS, local governments are providing support for sector interventions. Farmer groups are being supported to select enterprises. The local governments continue to provide (through mobilisation, monitoring, supervision and guidance) support to agricultural development. In spite of this, the link between the central agencies and local governments is weak probably because of poor interpretation of different roles of central and local government agencies. Cabinet has mandated MAAIF to strengthen its

presence in local governments.

## 2.11 Information and Communication policies

The information and communication technology policy led to developments with, liberalisation of telecommunication, the media including television and radio, access to internet. There has been removal of state monopolies to open space for more private sector involvement. This resulted into lincensing of more telecommunication companies in the mobile phones, private radio and television stations, internet service providers. All these have had a profound impact on the access to market information. Price information for maize has been disseminated through radios, Television, mobile phones through short messages and internet. There is a proliferation of internet cafes where market information via the worldwide web can be accessed.

### Rural electrification

Rural electrification has been one of the policies that have been critical in the maize value chain. This has been critical in the maize flour value chain with regard to agro processing. Maize flour processed from the maize grain has been in high demand in schools, prison, hospitals and household food security. Access to energy has also influenced the agro processing with regard to animal feeds production. Physical transformation of maize grain into livestock feeds has been promoted or hampered by the rural electrification access.

## 2.12 Food and Nutrition policy

Food security is one of the fundamental human right for every Uganda. The Uganda government developed a food and nutrition policy in 2003. The overall policy objective is to promote nutritional status of all Ugandans through multi-sectoral and coordinated interventions that focus on food security, improved nutrition and increased incomes. One of the policy specific objectives is ensure the availability, accessibility and affordability of food in the quantities and qualities to satisfy the dietary needs of the individuals sustainably. This would be achieved through building capacities at all levels from household to district level for adequate action to improve food and nutrition security. A mechanism of food storage must be established. It acknowledges that challenge of the impact of food

exports have on internal food security. Food quality and control must be applied at all levels along the food chain (Gou 2003). This should also cover the transportation of the food. It was suggested that Uganda national food and nutrition council be set up to implement the policy but this has not been done. To facilitate the implementation of the food and nutrition policy, food and nutrition strategy and investment plan was drawn in 2005 (GOU 2005). The food and nutrition bill 2010 is yet to be passed by parliament to operationalise these strategies.

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### Maize quality standards and Food safety concerns.

For any product to be sold there set quality standards. Maize quality is influenced right from the producers that is the farmers to the traders and middle men and finally the final consumers. To the farmers, the kind of seeds used whether local or improved matter. Furthermore, the agricultural practices such as control of pests and diseases to post harvest handling. To the traders, the way maize is transported and storage is critical to maize quality.

### Food safety concerns and aflatoxin contamination

Food safety standards are very critical due to dangers such as food poisoning. Food safety

issues have become a major issue with regard to trade between Africa and Europe. Poor quality food safety standards in maize leads to death in extreme cases.  The International Food policy and Research Institute reported that  Kenya had challenge  with high levels of aflatoxin contamination that  rendered at least 2.3 million bags of maize unfit for human and trade, to the detriment  of the millions of small-scale farmers that depend on the crop for food and income. The contamination with aflatoxin, a highly poisonous cancer-causing chemical produced by a fungus scientifically known as Aspergillus flavus, was a result of poor drying and storage of the grain following heavy rainfall near harvest time. From 2004 to 2006, nearly 200 unsuspecting people in Kenya died in this manner after eating highly contaminated maize. Aflatoxin is a silent killer that causes liver cancer and suppresses the immune system. It also retards growth and development of children. People exposed to very high aflatoxin concentrations experience liver failure and rapid death. Aflatoxin contamination is avoidable but many African countries with weak food safety standards enforcement do not regularly test for the deadly contaminant    leading to sale and consumption of infect maize grain. Contamination is more prevalent in maize stored by farmers after harvest. There is need to cheap an affordable and rapid mechanisms to detect maize with aflatoxins with levels above the government set standards.

If maize is not well stored, its grade deteriorates. That is why inter-trade in the region is very low. Kenya imports the bulk of its maize from South Africa partly because challenges of quality standards of maize in Uganda according to some media reports.  It was further reported by some media houses that in 2001, Uganda exported maize to Zambia, but there were

challenges with the quality. Uganda has all national standards but still produces low grade grains.

The quality is affected by harvesting and post harvesting handling. This requires:

● Harvesting the maize as soon as it dries and not overstay in the field to be attacked by weevils

● Drying the maize on concrete or canvas with use of tarpaulin but not on bare ground. Wet grains attract insects and moulds. Grains must be dried as soon as it is harvested. Drying is the systematic reduction of moisture content to safe levels of storage usually 12-15.5% moisture content. This inhibits germination and sprouting. Drying place should be clean. Drying can be in a crib before shelling and tarpaulins after it has been shelled.

● Removing the old grain and dirt  that comes along due to contact with harvesting tools, wheel barrows, bags, baskets

● Shelling using maize Sheller is preferred although this may not be affordable by most farmers. The common practice is beating the maize cobs with stick in a sack or a confined floor space where farmers can afford. Beating maize results into physical damage which makes it more vulnerable to pest and mould damage.

● In storage protection from  insect pests, rodents, moulds, birds and man is critical. The maize should be on pellets above the floor to avoid cold conditions that may lead to moulds. Should not allow re wetting  such as from leaking roof.

## Maize Quality Standards in Grades

| Defects | Maximum limits | |
|---|---|---|
| | Grade 1 | Grade 2 |
| Foreign matter % m/m | 0.5 | 1.0 |
| Inorganic matter % m/m | 0.25 | 0.5 |
| Broken gains % m/m | 2.0 | 3.0 |
| Pest damaged grains % m/m | 1.0 | 3.0 |
| Rotten and diseased % m/m | 2.0 | 4.0 |
| Discoloured grains % m/m | 0.5 | 1.0 |
| Moisture content  % m/m | 13.5 | 13.5 |
| Immature/shriveled grains % m/m | 1.0 | 2.0 |
| Fifth % m/m | 0.1 | 0.1 |
| Total defective grains % m/m | 4.0 | 5.0 |
| Aflatoxins in accordance with ISO 16050 | 10ppb incl max 5 ppb B1 | 10ppb incl max ppb B1 |

## Ministry of Agriculture, Government of Uganda 2009

Any  maize below these grades is under-grade.

- Foreign and inorganic matter refers to sand, soil, and glass

- Broken grains are grains that pass through 4.5 mm metal sieve

- Pest damaged are grains with weevil bored holes indicating presence of insects

- Rotten and diseased grains are unsafe for human consumption due to moulding, bacterial decomposition

- Discoloured grains are due to excessive heat caused by excessive respiration and dried damaged grains. These appear as darkened, wrinkled, blistered, puffed, swollen, seed coat may be peeling.

- Immature/shriveled grains are underdeveloped, thin and papery in appearance

- Fifth are impurities of animal origin such as cow dung, poultry litter, goat dung.

Aflatoxins cannot been seen  by naked eye but suspect materials  tend to be mouldy, rotten, discoloured, unpleasant smell, warmer than room temperature bitter taste. Aflatoxins contamination is encouraged by inadequate drying, physical damage due to poor shelling/ threshing methods, poor storage methods with exposure to moist conditions and insect infestations (Ministry of Agriculture, Government of Uganda 2009)

# CHAPTER THREE: | FINDINGS, INTERPRETATION AND ANALYSIS

## 3.1 Introduction

This section provides findings related to maize buyers in the region in relation to identity of the enumerated maize buyers, physical location, contacts, quantity of maize, trends of maize quantities stocked and the associated prices between 2007 and 2010 by individual maize facility. This section also presents findings and analysis of factors influencing purchasing trends and decisions of buyers, findings and analysis of the market terms and conditions that could be appropriate for farmers. This section explores the value chain analysis also analyses the findings on the constraints encountered and the desired relationship between the buyers and the farmers. The results explored the value chain that deals with marketing channel of stores. It looked at the vertical integration of the chain from rural agents to urban traders/medium stores to finally the large scale traders. Aspects to governance in the chain such as the role of Uganda Commodity exchange and World Food Programme as Lead agents are examined.

Farmers -------Rural trader/agents ----------Urban/medium scale traders-----Large scale traders-----WFP/Exporters.

Grouping of the stores according to capacity

| Category | Traded volume MT |
|---|---|
| Rural trader/agent | 1-100 |
| Urban/medium scale trader | 101-1000 |
| Large scale trader | 1001 and above |

The rural traders bought from the farmers mainly and some middle men while the large scale bought from the middle men and from lower capacity stores mainly.

## 3.2. Existing Market for Small Holder Farmers in Rwenzori Region

### 3.2.1 Maize Buyers in the Region

In the Rwenzori Region, maize is grown in the districts of Kasese, Kamwenge, Kabarole, Kyegegwa and Kyenjojo. About 399 stores of maize in the region that includes local buyers and warehouses were visited and documented. It is very important to note that in some areas, with the exception of Bundibugyo, it was difficult to access data about stores that had closed down[5]. Table 1 shows the numbers of stores per district.

### Table 1: Number of Maize Stores and Buyers in the Regional Districts

| District | Number of stores/ buyers | Percent |
|---|---|---|
| Kamwenge | 133 | 33.3 |
| Kasese | 100 | 25.1 |
| Kabarole | 81 | 20.3 |
| Kyenjojo | 66 | 16.5 |
| Kyegegwa | 18 | 4.5 |
| Bundibugyo | 1 | 0.3 |
| Total | 399 | 100.0 |

About 33 percent of maize stores were in Kamwenge district and about 25 percent were from Kasese. Kamwenge and kasese are predominantly maize growing areas. In the case of Bundibugyo there was only 1 maize store operated by one individual. Generally, these stores constituted the local maize market in the Ruwenzori Region. Kamwenge district's geographical characteristics are much favourable for maize production and this explains

5 where sufficient information was got indicating existence of only one store

*The presence of stores in the Rwenzori region is an opportunity for participation in the maize trade both at national and international levels due to bulk sales. Stores acts as an incentive for the exporters and large scale traders in kampala to purchase the maize in bulk leading to integrating the other stakeholders in international trade. The stores have backward and forward linkages which create opportunities. Rural traders and medium stores link the farmers to large scale traders creating an avenue for increasing household incomes. The large scale traders link the medium stores to the exporters and other domestic buyers from other regions like Kampala. Integration in the maize market creates opportunities with multiplier effects such as increase in the sale of inputs such as maize seed, farm implements. Presence of stores is also an opportunity from the government policy of market liberalization that led to the dismantling of Produce marketing board resulting into increased involvement of the private sector in the maize value chain.*

for the big proportion of local stores recorded. In case of Bundibugyo , smallholder farmers have preference for growing cocoa than any other crop due to better prices offered while geographical characteristics of Ntoroko (which recently became a district) do not favourably permit maize production.

The establishment of the stores varied over time. About 112 stores started 1980-1989, 91 between 1991-1999, 106 in 2000-2009 and 90 in 2010. This has bearing on their organisation capacity and source of data. Stores started in 2010 did not have data for 2007-2009. The increase in the number of stores being involved in the chain is an indicator of the outcome of the market liberalisation policy and relevance of the stores in the chain.

### 3.2.2 Physical location, Contact and Quantity of Maize in the Region

A key element of this study was to identify the various maize stores in the region by names of the stores or stores' owners, physical location, contact addresses and amount of stored maize. The tables in present the data only on the interviewed store owners and or their management.

### 3.2.3. Trends of Maize Price and Quantity stored

The study looked at the trend of prices and quantity of maize stored for the previous seven seasons and the associated prices. Table 2 shows these trends from the first season (February-June) of 2007 up to first season (February-June) of the 2010.

*From the rural small scale farmers' point of view, the importance of the stores in relation to market access is a constraint. Most of the farmers or farmers' organizations do not own stores. This has made them vulnerable to exploitation to private sector especially the truck drivers who buy at farm gate and the stores who take advantage of the distress sales after harvest. With market liberalization, poor bargaining of individual farmers of farm gate sales with middlemen such as truck drivers has contributed to low household incomes. However, it has given them access to cash sales compared to credit sales during the time of marketing boards. Necessity of stores is a barrier to entry to higher levels in the value chain. It has also contributed to inequality in the distribution income in the value chain among the different actors. The necessity of stores in the value chain has turned to be also barrier to entry for farmers to higher level. For the farmers to get higher incomes from the maize value chain, collective marketing requires having stores for bulk sales. This has brought about inequalities in distributional incomes of the players in the value chain with farmers in the lower end having low incomes and the large scale having higher ones.*

**Table 2: Trends of Maize and quantities stored**

| Season / Period | No. of Stores/ facilities | Maize Bought from Farmers (MT) | Average Price per kilogram |
|---|---|---|---|
| Season I 2007 | 260 | 32,474.5 | 250 |
| Season II 2007 | 190 | 23,688.6 | 240 |
| Season I 2008 | 307 | 40,435.1 | 300 |
| Season II 2008 | 222 | 38,144.5 | 400 |
| Season I 2009 | 337 | 52,328.6 | 440 |
| Season II 2009 | 248 | 45,869.4 | 450 |
| Season I 2010 | 332 | 60,148.7 | 250 |

The study indicates that during the first season, stores registered high quantities of maize as compared to the second season (table 2). This is because there are normally high production levels in season one due to prolonged favourable seasonal characteristics as compared to the short one in the second season. This implies that maize yields in Ruwenzori are seasonal with the first season having higher quantities compared to the second one. This confirms the crop production trends in Uganda. The storage quantities varied in various categories of the stores from the rural agents to Urban traders/medium stores to large scale traders. There is also possibility that rural traders could have sold to urban traders who also sols to large scale. Interestingly 100 stores only bought from middlemen and 144 stores only bought from individual farmers. For the large scale traders have the ability to store over seasons to get high prices in the off seasons.

The price at which store owners bought maize from the farmers and middlemen as observed in Figure 1 grew from about 240 shillings per kilogram in the second season of 2007 to 450 shillings in the second season of 2009, but then declined to 250 shillings in 2010. There was an increase in the price of maize in 2009 mainly as a result of the severe famine that occurred in most parts of eastern Uganda. It can be deduced from the data that more stores are involved in maize trade in the first season compared to the second season in the same given year. About 75 stores across the region only traded in first seasons. The aspects of

**Figure 1: Average Price of Maize per kilogram**



inter value chain are at play in rwenzori region. The stores are not only used for maize but other crops as we shall later explore in detail. About 21 stores did not store maize in all these seasons but stored other agricultural produce.

The average quantity of maize bought from farmers by the store owners has also been increasing as seen in the table 1. The analysis shows that while the farmers have increased maize production, the subsequent prices continued to decline as depicted in the above figure. A number of factors account for the increased production and among them; use of improved seed varieties and adaptation of the maize crop, upward price fluctuation caused by increased demand due to the famine in some parts of eastern Uganda resulting from the effect of the flood catastrophes. There is relationship between price of maize and the quantity of maize stored. As the quantity of maize increased from one season to another the price of maize in the same period decreased. This confirms the normal demand and supply laws of agricultural products.

However, more issues emerged when the data looked at district specific information in relation to prices and quantities stores save for Bundiugyo were only one store was involved in the study.

The price ranged from 100 UGX to 900 UGX in the season seasons. There were variations within districts and within the same seasons. This is because the large scale and urban traders can store the maize and sell off seasons to get high price while the rural traders deal mostly with individual farmers who trade the maize produce to deal with household challenges like school fees, medical expenses. Secondly the competition with the track drivers who manipulate the farmers to sell as give away prices. With the era of liberalisation, market forces determine the price. However, the low price given to small scale farmers is detrimental to their household incomes. This is partly due to lack of collective marketing among farmers especially t hose that are not in groups to strengthen their

bargaining power. These track drivers have poor handling of the produce in that many do not have tarpaulins on their tracks. This has led to loss in the quality of maize along the chain.

Taking Kamwenge district for a case study, it was revealed that Prices of season I were higher or lower than those of season II depending on the stores as indicated in the figure below. This further shows that although basic principles say when supply of agricultural commodities increase in supply the price fall, the data does not support that assertion. The individual stores set the prices and other factors come into play.

*There is high price variation in the value chain compared to the average prices. This is has positive and negative outcomes. The positive outcome is that high prices per kilogram attract more stores to join the maize value chain and this was evidenced with the increase in number every 10 years. However, the negative outcome is low prices per kilogram discourage the farmers from participating in the maize value chain, leading to decrease in maize production. This results in traders having less on the market.  The high prices also have negative outcomes on food security in that farmers sell off most of the maize and have challenges during the scarcity periods such as the period between planting and harvests. As much as they get the money, most of it is used to meet household needs like school fees, medical expense and many others and hardly any is kept for food security. The High price is an opportunity for actors in the chain both the farmers and maize stores while the low price is a constraint. For very high variation state interventions many be necessary to deal with extreme variations.*

### Comparison of Miaze prices of selected kamwenge stores in 2009
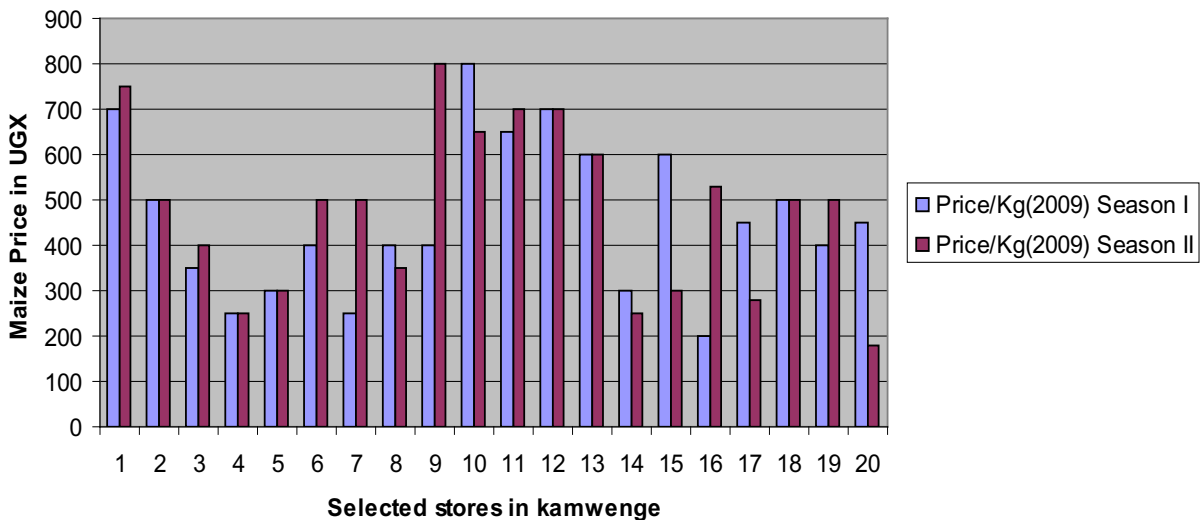


*The difference in the prices from season I and season II do not depend entirely on the quantity stored in that season. Some stores had higher prices in season one compared to season II while others is the other way round. This results from the some stores selling off season when the prices have gone up. This is most applicable to the middle scale and large scale traders who have some value addition interventions in the maize storage such as control of pests and ensure that quality standards are maintained. There is an opportunity for stores to have high prices by selling off season. For the farmers, failure to have their own stores is a constraint to getting high prices. Some farmers organizations have been facilitated to have their own stores such as Iruhura with capacity of 300MT by kabarole research centre. This has resulted in Iruhura farmers having the opportunity to get high household incomes because of bulk sales and strong bargaining with the medium and large scale stores. The farmers without stores sold their maize immediately after harvest hence low prices because lack of stores is a constraint.*

## Relationship between average price per Kilogram and Quantity purchased

| | | Average price per kilogram I 2007 | Average price per kilogram II 2007 | Average price per kilogram I 2008 | Average price per kilogram II 2008 | Average price per kilogram I 2009 | Average price per kilogram II 2009 | Average price per kilogram I 2010 |
|---|---|---|---|---|---|---|---|---|
| Quantity purchased in kgs season I 2007 | Pearson Correlation | .094 | .138 | .152(*) | .149 | .091 | .057 | -.079 |
| | Sig. (2-tailed) | .137 | .067 | .017 | .064 | .180 | .469 | .304 |
| | N | 251 | 178 | 247 | 155 | 217 | 163 | 173 |
| Quantity purchased in kgs season II 2007 | Pearson Correlation | .165(*) | .161(*) | .202(**) | .140 | .081 | .091 | -.101 |
| | Sig(2- tailed) | .026 | .032 | .007 | .086 | .326 | .258 | .283 |
| | N | 182 | 177 | 177 | 152 | 150 | 158 | 114 |
| Quantity purchased in kgs season I 2008 | Pearson Correlation | .128(*) | .170(*) | .157(**) | .157(*) | .085 | .039 | -.056 |
| | Sig. (2-tailed) | .044 | .023 | .007 | .031 | .171 | .590 | .413 |
| | N | 250 | 178 | 295 | 190 | 263 | 197 | 219 |
| Quantity purchased in kgs season II 2008 | Pearson Correlation | .132 | .180(*) | .184(**) | .174(*) | .131 | .102 | -.072 |
| | Sig. (2-tailed) | .079 | .018 | .008 | .017 | .079 | .160 | .392 |
| | N | 179 | 173 | 208 | 189 | 180 | 192 | 142 |
| Quantity purchased in kgs season I 2009 | Pearson Correlation | .125 | .206(**) | .163(**) | .194(**) | .068 | .048 | .000 |
| | Sig. (2-tailed) | .050 | .006 | .006 | .009 | .236 | .484 | .996 |
| | N | 245 | 173 | 286 | 183 | 302 | 213 | 247 |
| Quantity purchased in kgsseason II 2009 | Pearson Correlation | .109 | .167(*) | .139(*) | .198(**) | .123 | .045 | -.037 |
| | Sig. (2-tailed) | .147 | .028 | .046 | .007 | .083 | .504 | .644 |
| | N | 179 | 172 | 206 | 183 | 200 | 222 | 163 |
| Quantity purchased in kgs season I 2010 | Pearson Correlation | .120 | .193(*) | .149(*) | .132 | .104 | .116 | .102 |
| | Sig. (2-tailed) | .073 | .013 | .015 | .085 | .090 | .099 | .096 |
| | N | 226 | 166 | 267 | 172 | 269 | 203 | 268 |

**  Correlation is significant at the 0.01 level (2-tailed).
*  Correlation is significant at the 0.05 level (2-tailed).

The relationship between the average price for season and quantity stored was investigated. This was to find out if the relationship was by chance (one off occurrence) or there was regular events that had a consistent pattern. There is a positive and significant relationship between average price per kilogram season I 2007 and quantity purchased in season II 2007 as well as quantity purchased season I 2008.

There is a positive and significant relationship between average price per kilogram season II 2007 and quantity purchased for all seasons in the study apart from season 1 of 2007. The relation was even stronger for quantity purchased season I 2009 compared to the rest of the seasons.

There is a positive and significant relationship between average price per kilogram I 2008 and quantity purchased for all seasons in the study. The relation was even stronger for quantity purchased season I 2008, quantity purchased season II 2008, quantity purchased season I 2009 compared to the rest.

There is a positive and significant relationship between average price  per kilogram II 2008 and quantity purchased in kgs season I 2008, quantity purchased in kgs season II 2008, quantity purchased in kgs season I 2009, quantity purchased in kgs season II 2009. The relation was even stronger for quantity purchased in kgs season II 2009,, quantity purchased in kgs season I 2009 compared to the rest.

*Prices of one seasons can have a significant relations with the quantity purchased on other seasons. Not all prices for the seasons have significant relationship with the quantity purchased of other seasons. Some do and other do not. There are other factors which are beyond the scope of this study.*

This also implies that an increase or decrease in average price of maize for particular season is closely associated with quantity of maize stored for particular season (s). Interestingly the average price in some seasons did not have any significant relations with quantity stored for any of the seasons.

### 3.2.4  Factors Influencing the Quantities Purchased

The study looked at the factors that influenced the specific quantities of maize purchased by respective stores and other facilities. A number of factors were mentioned and these included: the price of maize in a particular season – the low the price, the higher the quantity, capital challenges, and quantity of maize produced by the farmers, which greatly depends on seasonal variations with season i being higher than season II, transportation systems and quality of maize. The level of their influence varied as summarised in Figure 2.

**Figure 2: Factors Influencing the Maize Quantity Purchased (n=392)**



*N.B There are multiple responses where by one respondent gave more than one answer hence the percentage goes beyond 100.*

The most contributing factors to quantity purchased were price and the market demand (Figure 2). The market includes both domestic and international. It is notable that quality of maize is a major contributing factor. There is very little value added from farmers to rural agents. The most quality aspects are influenced by how farmers dry the maize whether on tarpaulin  or bare ground, the storage at household level if the insect damage is controlled on not. Control of moulds varies at households. Very few households have well aerated storage facilities. Poor quality leads to conditions that favour aflatoxins contamination in the maize grains. This is encouraged by inadequate drying, physical damage due to poor shelling /threshing methods, insect infestations, poor storage with exposure to moist conditions. Many of the stores do not have good knowledge of post harvesting handling and rarely implement.

*Demand for maize being one of the factors contributing to quantity purchased is an opportunity and constraint. The demand for maize in the African regional markets and other sub regions of Uganda is high and this is an opportunity for the Rwenzori farmers.  However, the constraint has been addressing distribution challenges from the high production areas like Rwenzori to high demand areas in Uganda and neighboring countries.*

*Lack of capital is a barrier to entry. This separates the large scale traders and exporters who have access to capital in terms of crop finance   compared to rural traders or farmers. This capital determines how much the traded volume of maize the store can purchase in the era of cash purchases under the trade liberalization. Access to crop finance is one of the constraints that maize stores have. There have been many lines of credit by the interest rates are high especially from commercial banks and micro finance institutions.*

About 129 stores purchased the all their maize from middle men while 241 purchased all their maize from individual farmers. The rest dealt with both middle men and individual farmers in varying degrees of both extremes. This had t implications on quality, mode of transport. Some of the middle men are poor in enforcing the quality standards because of the competition during the era of liberalisation. In terms of transport most farmers use bicycles to the stores and Motor bikes while most middlemen use vehicles and motor bikes.

## Figure 3: Proportion of Store Owners by Commonly Used Mode of Transport
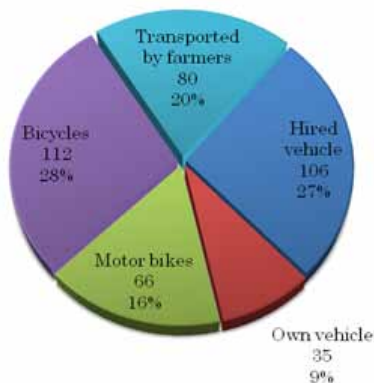


The stores accessed the maize grains via the different modes of transport presented in figure 3. Here it is clearly observed that most (28%) stores used bicycles to get the maize, followed by use of hired vehicles accounting for 27% of the stores, and 16% used motor bikes. Most store owners used more than one means of transport. Transportation of maize to the stores by the farmers themselves accounted for 20% of the store holdings.

*The nature of transport gives an insight that the store owners act as middle men who pick the produce from farmers. By implication, farmers have not organized themselves to have their own stores and resources to control uncertainties within the maize market. The mode of transport is also influenced by the policy framework for infrastructural development such as rural roads and truck roads.*

*The mode of transport defines the infrastructural economic rents. In places where the road network is good especially the feeder roads, this can be an opportunity for farmers to access markets while in place where there are poor it has been constraint rents. On the whole there has been an improvement in the truck roads and feeder roads. In the value chain analysis, bad roads have become barrier to entry in to the chain*

The study looked at the stores buying maize in the Rwenzori Region and Figure 4 presents these various buyers.

## Figure 4: Categories of the Stores' Clients (n=399)
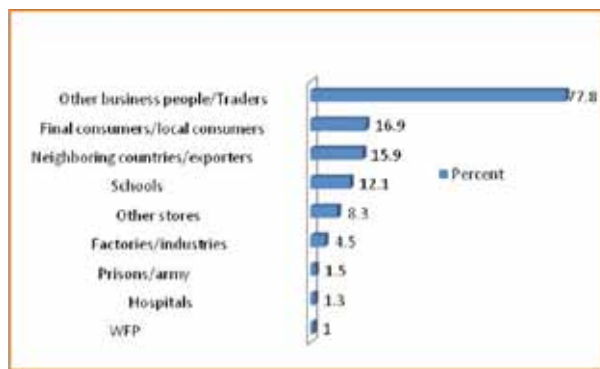


N.B There are multiple responses where by one respondent gave more than one answer hence the percentage goes beyond 100.

It was observed that about 78% of the stores sold their maize on to traders. This implies middlemen play a critical role in the value chain. Interestingly, about 17% maize from the stores is sold to final consumers. This showed that they are may players between the producers and final consumers.

It worth noting that about 16% of the stores trade with exporters. Noting that most of the neighbouring countries such as Kenya, Democratic Republic of Congo and Southern Sudan are food deficient, the exporters play an important role in the value chain. There could be facing the challenges of foreign exchange because there is no single currenty in the African trading blocks. This entails conversion from Uganda currency to the respective currencies of the countries. In terms of volume of traded maize the exporters have high demand. This has has had negative implications on the local food security sitiation. onsumers, local traders, and exportation to neighbouring countries, accounted for about 17% and 16% respectively.

Other buyers were as observed in figure 4 above. Most of these clients are involved in product upgrading in that Maize grains are transformed into maize flour. These clients include schools, Hospitals, final consumers, prison and amrmy. Factories and industries are involved in functional upgrading in the maize value chain by using the maize grain for animal feeds to mention. With the rise in the demand for animal products such as poultry, livestock products and adoption of improved animal management practises, the demand for maize grain to make poultry and livestock feeds

has increased. This has led to upgrading of the maize grain into maize brand which is then used in making the animal feeds.

Clients such as WFP and exporters have turned to be lead agencies for the maize grain value chain.

> *Presence of exporters is an opportunity for increased access to regional markets in the East African community and Comesa for the farmers in Rwenzori region.  Factories and industries have created an opportunity for functional upgrading in terms of the value chain development by transforming maize grain into other products such as maize flour and animal feeds. Maize grain is used to make maize brand which is an ingredient for livestock feeds. The demand form schools, hospitals, prisons and Army have created an opportunity to access to domestic markets.*

### 3.2.5  Registration and Ownership Status

The study assessed the maize facilities by their level of registration to establish their legal status. Among the different facilities registration varied from sub-county level to international level. However, findings also indicated that a number of these maize facilities were not registered at all.

### Figure 5: Registration Status of the Maize Facilities in the Region
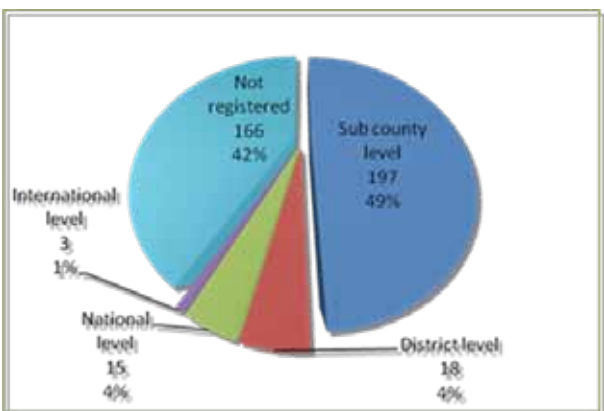


As observed in Figure 5, of the 399 maize facilities enumerated in the region, the majority (49%) were registered up to the sub county level (this was dependent on the location), 18% were registered up to the district level, 4% up to the national level and only 1% was registered in the international category; these were Duke of Brozze located

in Kasese district town council towards Kasese main road, ESCO company limited also in Kasese district, upper Rwendabara Kakonge town centre and Nyakatonzi warehouse in Kasese town.

However, 42% of the maize stores were not registered at any level. Among the unregistered stores by district, Kamwenge had the majority (34%), followed by Kyenjojo with 30% of the unregistered stores, Kasese constituted of 22%, Kyegegwa 9%. Kabarole 4% and in Bundibugyo, only one maize store was not registered.
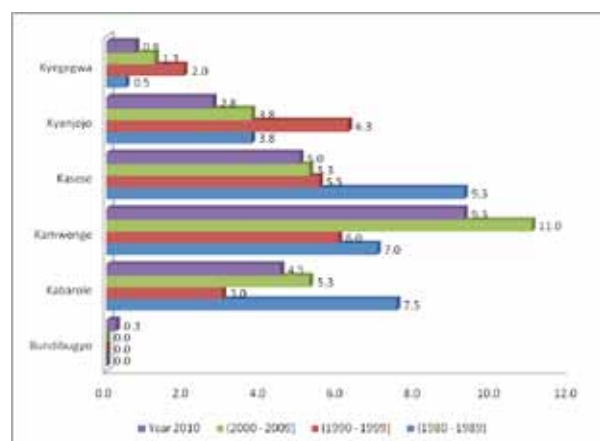
The study also found that although some maize stores have been in existence since 1980, most of them began between in the period 1996 and 2009. Figure 6 shows the percentage of stores by district and year of establishment.

> *The status of registration has not prevented the participation of actors. This is an opportunity created by an enabling environment for private sector led development. The market liberalization increased the involvement of the private sector in the value chain. However, the lack of registration by some stores is constraint because unscrupulous traders have ripped off the farmers.*

### Figure 6: Distribution of Maize Stores by District and Year of Establishment



As observed in Figure 5 Kabarole, Kamwenge, and Kasese have relatively large proportions of maize facilities that have been in existence for a long time.

### 3.2.6  Other Crops Bought and Sold by the Maize Stores

The study looked at other crops stored and marketed by the maize stores in the region. From the study it was observed that a number of crops were being bought and sold alongside maize and these included; beans, coffee, cotton, dry cassava, ground nuts, millet, rice, sorghum and soya beans. Table 8 presents the crops marketed by the different stores.

### Table 8: Proportion of Stores by the Crops Marketed (n=390)

| Crop | Frequency | Percentage |
|------|-----------|------------|
| Beans | 260 | 66.7 |
| Coffee | 59 | 15.1 |
| Cotton | 13 | 3.3 |
| Dry cassava | 49 | 12.6 |
| Grand nuts | 97 | 24.9 |
| Millet | 89 | 22.8 |
| Only maize | 33 | 8.8 |
| Rice | 31 | 7.9 |
| Sorghum | 22 | 5.6 |
| Soya beans | 68 | 17.4 |

N.B There are multiple responses where by one respondent gave more than one answer hence the percentage goes beyond 100.

From table 8, it can be observed that most of the stores (about 67%) engaged in selling and storing beans alongside the maize subsector. This was easily done as the two crops are intercropped by most farmers and their gestation period is almost the same.  Inter value chain linkage  is at play in Rwezori region. The stores are used for other crops such as beans, coffee (table 8). This has had the outcome of higher figures in the first season for maize and much lower figures in the second seasons. The same stores play role in coffee value chain which is a major export crop for Uganda and fetches much higher prices hence better contributor to rural livelihoods especially in Kasese with Arabic coffee. The same stores also play role in the Bean, cotton ground nuts, rice value chains in the region. Both the stores and quantities stored are much less when the other crops are more profitable for the stores and the farmers. This also brings about aspects of diversification of the farmers and stores to spread their risks amongst enterprises in various value chains.

*Stores play a relevant role in the Inter-value chain. The same stores used for maize also are involved in the value chains of coffee, beans, cotton, and groundnuts and may other crops. This is a good opportunity for diversification of crop enterprises. Secondly it enables the optimum use of stores for an off season for one crop is in season for another crop. This is an opportunity for the stores to be players under the diversification of non traditional export crops policy intervention.*

## 3.3   Terms and Conditions and Opportunities of Buyers Working with Smallholder Farmers

### 3.3.1 Terms and Conditions

Understanding the terms and conditions under which the maize facilities required farmers to work is important if the farmers are to benefit from the sub-sector. Store owners were asked on what basis they made decisions as to whether or how much maize to buy from farmers.

**Figure 7: Determinants of a better relationship between Buyers and Farmers (n=395)**



N.B There are multiple responses where by one respondent gave more than one answer hence the percentage goes beyond 100.

As observed in Figure 7, a number of factors were considered inter-dependently by the store owners when buying maize from farmers; a majority (about 87%) considered the quality of maize. Other issues considered included the market price and the demand for maize by other traders and consumers.

The study further investigated from the store owners whether farmers must be working

under any particular terms and conditions for the store owners to buy their maize. From the 399 stores 62% acknowledged the need for farmers to be following certain terms and conditions while 38% said that there was no need for any conditions.

From the interview with WFP Officer during the grain business fair in Kasese, it was emphasized that the quality of maize is always the first prerequisite for purchasing. Additionally, when all suppliers have fulfilled the right quality and quantities required by WFP, then they are subjected to the bidding process and in this case, a supplier who quotes a lower price and is willing to supply takes the offer. This means, prices in the open market have less influence because as farmers strive to sell their maize at higher prices, the buyers also strive to buy at lower prices. This is the reason why sometimes agencies like WFP opt to get maize grain from other countries like Malawi because enough quantity of better quality can be obtained at lower prices compared to the ones in Uganda. This means, to benefit from this market, farmers should be in position to document well on all expenditures incurred in the process of production so that at the end of the day they have a better decision as on what price level can they sell their maize produce.

WFP is strong player in the Governance of the Maize value chain In that, it's a lead agency whose terms for quality affect the other lower marketing channels in the chain such as the large scale, and urban traders that sell to it. The quality standards of WFP are enforced through non voluntary mechanism of rejecting the maize or determine who to buy from. The coercive enforcement by the government agency called Uganda Bureau of standards has not been evident in this region. The governance aspects of the maize value chain of Uganda government through Ministry of Agriculture, Uganda Bureau of standards and Naads Prgramme have been very negligent. In the Liberalisation era the private sector and lead agencies like WFP and Uganda Commodity exchange have taken a significant role in the maize chain governance aspects. There are dangers of poor enforcements of food safety standards especially by the government. For example in Kenya, some people died of aflotoxins because of poor quality standards of maize which is a staple food. Many of the rural agents and truck drivers never take serious consediation of the moisture content of maize. To compare with other value chains in relation ot quality, beans exported to Cuba under the barter trade agreements where rejected due to quality concerns. Similar cases

have been reported in the coffee value chain leading to a decrease in the coffee exports. In the coffee value chain, the rural agents and truck drivers bought un ripe coffee which was mixed with the ripe ones. This is one of the down sides of the liberilsation programme for aspects of quality are not a strongly enforced as the case during the era of coffee marketing and produce marketing boards. The two parastals where strong in the govenrnace of the coffee and maize value chain enforcing the quality aspects strongly.

*Governance aspects of the maize value chain have been more influenced by the private sector and lead agencies like WFP and Uganda Commudity exchange. There is very little influence of the Uganda governmanr through its agencies like the Uganda beraue of standards and Minstry of Agriculture. Liberalisation did not completely remove the role of government but oly reduced it. The food safety standards enforcement in the maize value chain are weak and the dangers of aflotoxins still high in Uganda.*

**Figure 8: Preferred Terms and Conditions of Store Owners in Dealing with Farmers**
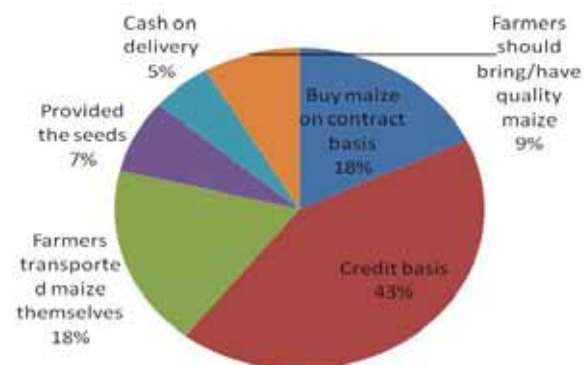


As observed in Figure 8, the majority of the store owners (43%) wanted to get maize on a credit basis from the farmers and pay them after the sale. This procedure is also used by Nyakatonzi maize store through the receipt system. Other stores (18%) wanted farmers to ensure quality, and another 18% wanted farmers to transport the maize to the stores. Other terms that stores required are presented in figure 8.

*Cash on delivery by stores is one of the outcomes of the liberalization policy and an opportunity that gives farmers to meet their household needs. However, the poor access to agricultural finance is one of the major constraint to the stores hence the desire for credit sales. The current financing mechanisms have high intersest rates and agriculture is not attractive field for banks. Some promising avenues are coming up with Stanbic , DFCU , Centenary bank but the fruits are yet to been seen. The warehouse receipt system is one of the emerging opportunity for in the maize value chain.*

## 3.4. Demand-Side Constraints that Affect Different Segments of and Actors within the Maize Production Value Chain

### 3.4.1 Constraints Encountered

The study investigated challenges encountered by the store owners in the maize sub-sector. These included: poor transport network, poor quality maize produced by the farmers, lack of trust by the middlemen, bad weather due to seasonal variations, poor or lack of communication between traders and farmers, and price fluctuation. Figure 9 presents the challenges faced by different proportions of store owners.

**Figure 9: Challenges Encountered in the Maize Sub sector (Store Owners) (n=397)**



N.B There are multiple responses where by one respondent gave more than one answer hence the percentage goes beyond 100.

As observed in Figure 9, among the many challenges identified, the majority of store owners (40.8%) said the existing poor transportation network seriously affected the sub-sector as it was difficult to access farmers and to transport maize. This influenced the availability of markets for the maize as mentioned by 29% of the store owners. Price fluctuation was another challenge, which a number of the traders said led to losses through ever declining prices.

*"When prices came down, we made losses on our capital which caused our Decline in the purchases – **Magara miller"***

*Despite the enabling policy environment there are constraints that have led to failure of the actors to enjoy the benefits. Lack of maize preservatives has had implication of maize quality with detrimental effects of the prices. This has resulted in low prices being offered by exporters and traders hence low household incomes. Furthermore, it has exposed the final consumers to danger of poor quality like aflatoxins. This also has policy implications in that the food safety standards policy should ensure that actors have access to the inputs because of the danger of aflotoxins and broad danger to human health. Lack of preservatives and store space are barriers of entry and barriers of economic rents in the value chain. This is constraint to farmers and stores because they can not access some markets for example sale to WFP which requires certain quality standards and volume to be one of their clients. Poor Adoption of post harvest handling techniques through the agricultural extension programmes and knowledge of food quality standards has been constraint in the value chain for many actors especially the farmers and traders. For example maize quality is improved with the use of maize shellers at farm level.However not may farmers have access to maize shellers resulting into loss of quality of maize along the chain. This is barrier to entry due to poor access to technology rents in the value chain.*

Case study of lack of trust by farmers

*Lack of trust by the farmers as many sold the maize to different buyers after obtaining credit from other buyers during early stages of crop growth.  This was done with the agreement that they would sell them the maize on maturity, for instance in the case of Mwa Mululema who had 2 separate stores in Mubuku trading centre, Kasese district. He lost a lot of money to farmers after advancing them some money to address their needs on the assumption that they would sell the maize to him after harvesting.*

*Access to market information has been influenced by ICT in maize value. Poor communication farmers and traders can be enhanced by use of mobile phones, computers in the information centres spread across the rwenzori region. KRC has supported a number of Information centres in kasese at Bwera  to mention a few. The price and quantity information can be transmitted via mobile phones with sms messages. The study showed that these facilities have not be made good use of. For farmers with access to ICT this was an opportunity for good access to market information. However for farmers and traders with no access to ICT this was a constraint with regard to access to market information.  The ICT policy and the liberalisation of the media industry created opportunities for growth of the telecommunication sector, influx of internet cafes. The ICT policy in agricultural sector is very poor and the IT policy has not been made good use of. Use of Mobile phones can enhance the performance of the maize value chain for providing information on prices, quantities and other aspects.*

Factors like power tariffs much as sighted by a few facilities, had a negative impact on the sustainability of the facilities. For example the statement below from Kamida millers reveals the burden associated with electricity;

> *I think am about to pull out of the maize since the electricity here has become a big problem and prices of maize have gone down* – Kamida millers, Kasese.

*It should also be noted that there are quite a number of emerging opportunities for the storage facilities in the region e.g. the warehouse in Kasese provides both storage and preservatives opportunities for farmers. However, it could be quite expensive for farmers in Kyenjojo and Kamwenge to utilize a warehouse in Kasese. As it is economically feasible, it is quite important for actors to lobby for warehouses that would guarantee benefits to farmers in these regions.*

*Warehouse benefits include; storage, preservation, finance and marketing. The receipt system used by warehouses gives ample time for farmers to look for better markets/prices for their produce as they use receipts to acquire money from the banks to meet their basic needs. The warehouse also has a cleaning machine that does the sorting and cleaning of maize seeds at a cost that improves and guarantees the maize quality.*
*Once the produce is stored in the warehouse, different actors including the owner of maize, the warehouse manager, the banks and other agencies engage in marketing that guarantees quick and easy process of getting buyers at better prices.*

The policy environment has been not very good. The rural electrification policy has not been fully enjoyed in the rwenzori region hence affecting the maize value chain. This was made worse with infrastructure aspects as us poor raod network. This has affected the marketing channels in the value chain from the rural agents to large scale traders. This has been to the detriment of the farmers by having the rural agents buying at very low prices to the tune of 100 UGX  per KG yet the traders sell up t 900 UGX per Kg in the same season.

*Poor quality of maize is a partially result of poor adoption of harvest and agronomic practices. This is mainly due to poor access to extension services to build the capacity in improved agricultural practices, access to research output from research centers such as technologies on harvesting and household storage techniques. The National agricultural organization has developed a number of technologies to improve the quality of maize but the constraint has been the poor research –extension linkage to enable the farmers and traders to benefit from the agricultural policy strategies. From value chain analysis, process upgrading is very low in the maize value chain.*

## 3.4.2  Desired Relationship with Farmers

Store owners were asked to highlight how best they could work with farmers as a way of improving sub-sector benefits.  A number of issues were mentioned as summarised in Table 9.

**Table 9: Desired Relationship with Farmers (n=331)**

| Interest of the Store Owners in Improving relationship with Farmers | Responses | Percentage |
|---|---|---|
| Having dialogue meeting with the farmers | 70 | 21.1 |
| Farmers should work in groups and market  collectively | 68 | 20.5 |
| Farmers should supply clean maize | 56 | 16.9 |
| Share transportation costs with farmers | 50 | 15.1 |
| Linking farmers with micro finance institutions | 49 | 14.8 |
| Farmers should be trustworthy | 40 | 12.1 |
| Farmers should be paid cash on delivery | 24 | 7.3 |
| Farmers supply maize on credit | 23 | 6.9 |
| Farmers should call them when they have maize | 17 | 5.1 |
| By training farmers on post harvesting | 14 | 4.2 |
| Farmers should have market information | 13 | 3.9 |
| Provide farmers with post harvesting facilities | 12 | 3.6 |
| Farmers should plant improved seeds | 11 | 3.3 |

N.B There are multiple responses where by one respondent gave more than one answer hence the percentage goes beyond 100.

As observed in the above table, the majority of the store owners (21%) said that there is a need to have a dialogue between the store owners and the farmers to share experience and come up with proper means to improve the sub sector for their mutual benefit.  This was followed by 20% of them who mentioned the need for farmers to work in groups and market collectively, given the challenges of the poor transportation network.  In relation to the challenges of poor transportation difficulties, 15% of the traders suggested the need for farmers to share the transportation costs with them.  There was also a stated need for farmers to improve the quality of maize sold to the stores as revealed by 17% of the store owners. This was said to be a factor that can improve the working relationship between the farmers and the stores directly, hence eliminating the middlemen as supported by 44% of the respondents in Figure 10.

The store owners also wanted the farmers to dry the maize sufficiently as it was revealed that most farmers did not wait for the maize to dry well before selling it, which affected the quality.

*Market liberalisation has opportunity of farm gate sales which are accrued by individual farmers. However, there is a constraint of poor bargain of individual farmers because of failure to get benefits of collective marketing. Farmers organizations such iruhura farmers organization have benefited with  links to nyakatoza co-operative. The desire for credit sales from farmers may be toll order because of the bad experience during the era of marketing boards but this can be addressed by access to agricultural finance.*

**Figure 10: Suggestions by Buyers on Ways farmers can get maize grain market   (n=397)**
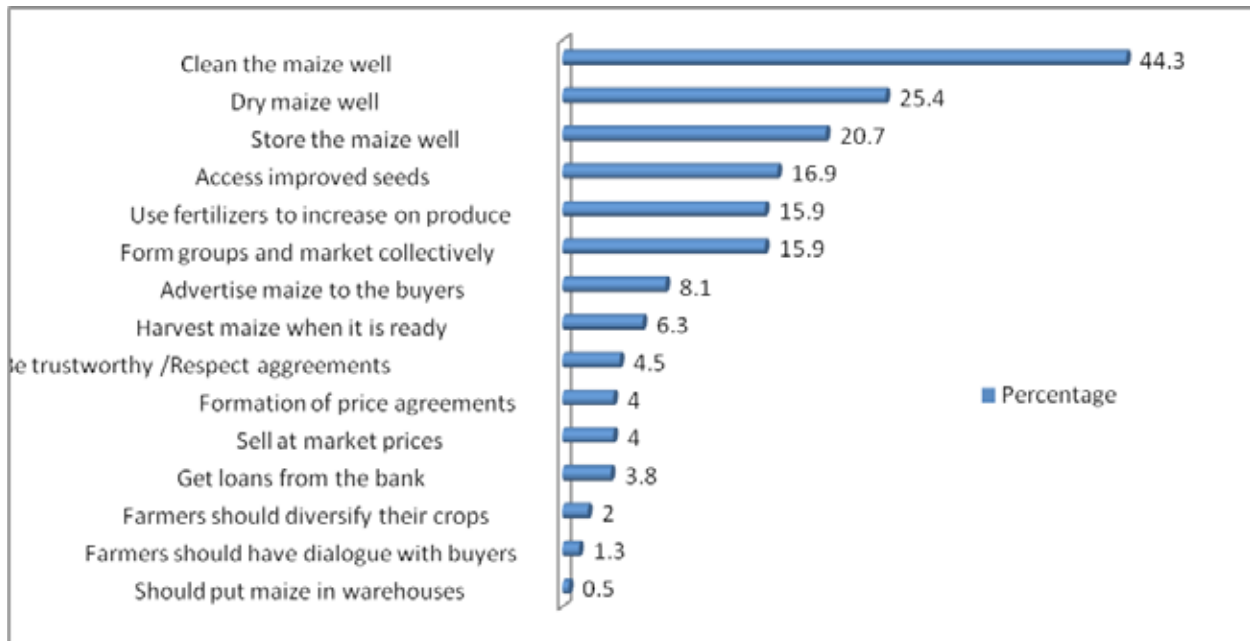


N.B There are multiple responses where by one respondent gave more than one answer hence the percentage goes beyond 100.

If farmers improved post-harvesting handling, the stores suggested they would increase direct contact. They also identified a need for farmers to apply better seeds and in some situations apply fertilizers to increase production. About 16% of the store owners cited the need for farmers to operate as groups to improve on marketability and reduce transportation costs. This was said to help improve the farmers' bargaining power.

This statement from Triple B enterprise contradicts what some of the maize facilities who anticipated little improvement claim.

"*It is impossible to provide attractive prices for farmers because if the sub sector is flooded with maize, then no way can they get high prices unless the government sets uniform prices* –
**Triple B enterprise, Kasese district "**

Other areas mentioned for improvement included; the need for farmers to develop a sense of trustworthiness in order to improve their relationship with store owners, and access to credit. Another observation was that since there was constant fluctuation in maize prices, farmers need to diversify their production by integrating other crops with maize so as not to rely only on maize. Upgrading in the maize value chain has not been fully utilised.

Process upgrading that involves increasing the efficiency of internal process has not been made

good use of. This can be through access to improved seeds, adoption improved post harvesting handling techniques like drying, storage and cleaning the maize, proper harvest as seen in figure 10. This implies inadequacies in the agricultural extension policy.

## 3.5.    Maize Exporters and Bulky Buyers in Kampala

Sample of 31 maize buyers were selected from Kampala in three suburbs namely Kampala central were 10 buyers were identified, 5 from Lubanga and 16 in Kawempe. Location and contacts of these traders were obtained included some key maize exporters as seen in Appendix 2 and the sampled Kampala maize buyers were in the tables placed under Appendix 3.

## Table 10: Trends of Maize Price and Quantity stored

| Year & Season | No. of companies | Qty Bought in MT | Average Price per Kg (U.shs) |
|---|---|---|---|
| Season I 2007 | 31 /31 | No records | No records |
| Season II 2007 | 31/31 | No records | No records |
| Season I 2008 | 31/31 | No records | No records |
| Season II 2008 | 4/31 | 1,115. | 640 |
| Season I 2009 | 17/31 | 130,572. | 590 |
| Season II 2009 | 24/31 | 350,361. | 595 |
| Season I 2010 | 24/31 | 984,480. | 386 |
| Season II 2010 | 9/31 | 11,379. | 254 |

As observed in Table 10, the quantity of maize bought increased from season to season, which portrays the same pattern earlier observed from the regional stores' purchases. Also the price at which company's owners bought maize form the local stores declined from 640 shillings per kilogram in the second season of 2008 to 590 - 595 shillings in 2009 and 254 shillings in the second season of 2010. Generally the pattern of prices offered by both National and regional maize buyers were nearly the same. This was also depicted by the plotting purchasing prices by season for the same period as in Figure 11.

## Figure 11: Trend of Maize Purchase Price by Companies
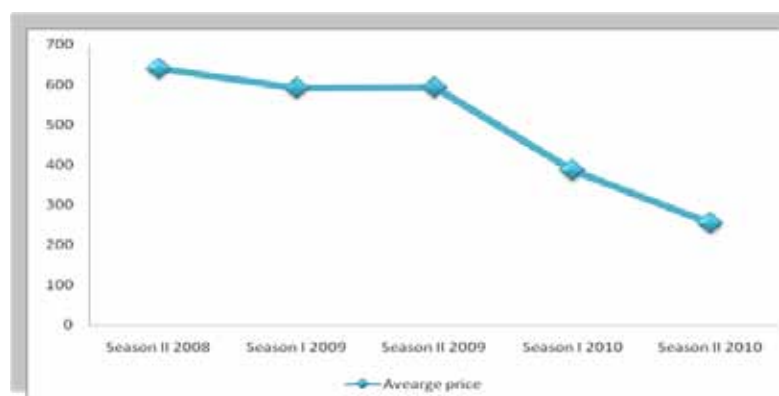


As observed in figure 11, the pattern of maize price continues to decline season by season and this is also attributed to the factors earlier lighted – responsible for increased production by the farmers. However investigations from the buyers showed that a number of factors as indicated in Figure 12 explained for the quantities purchased.

## Figure 12: Factors influencing the quantities Purchased  (n=399)
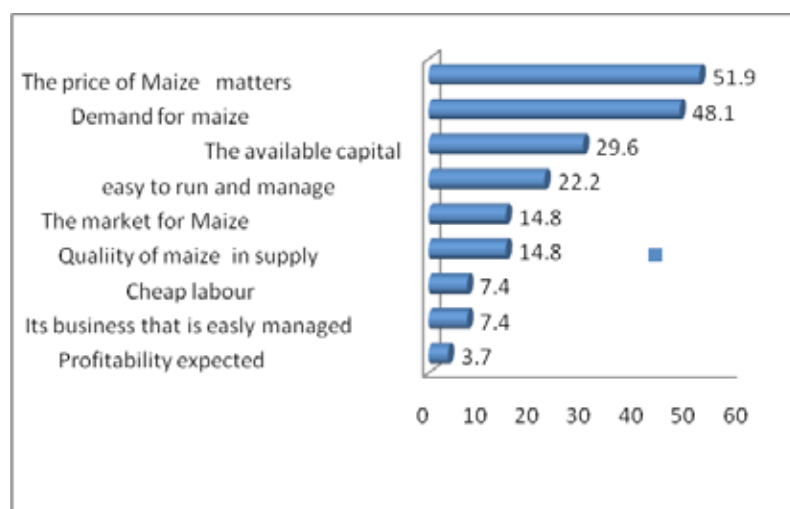


As observed in Figure 12, most (52%) responses showed that the price of the maize mattered as their counterparts in the Rwenzori region. This was followed by responses on demand for the maize as mentioned by 48% of the interviewed national buyers, availability of capital ranked number three, followed by responses that indicated that generally, the maize enterprise was ease to run and manage, the availability of market for maize both locally and abroad. The quality of maize in supply ranked number 6, followed by availability of labour and lastly, the profit associated with the maize sector.

N.B There are multiple responses where by one respondent gave more than one answer hence the percentage goes beyond 100.

## 3.6 Registration, Ownership Status and Terms & Conditions for Maize Buyers in Kampala

Unlike the earlier case observed in the regional stores, all the visited companies visited were registered under privately owned companies. Assessing the terms and conditions used by these companies showed as in Figure 13, that 50% considered the quality of maize supplied, followed by the subsequent demand or outlet markets.

**Figure 13: Terms and Conditions under Which Bought Maize (n=30)**
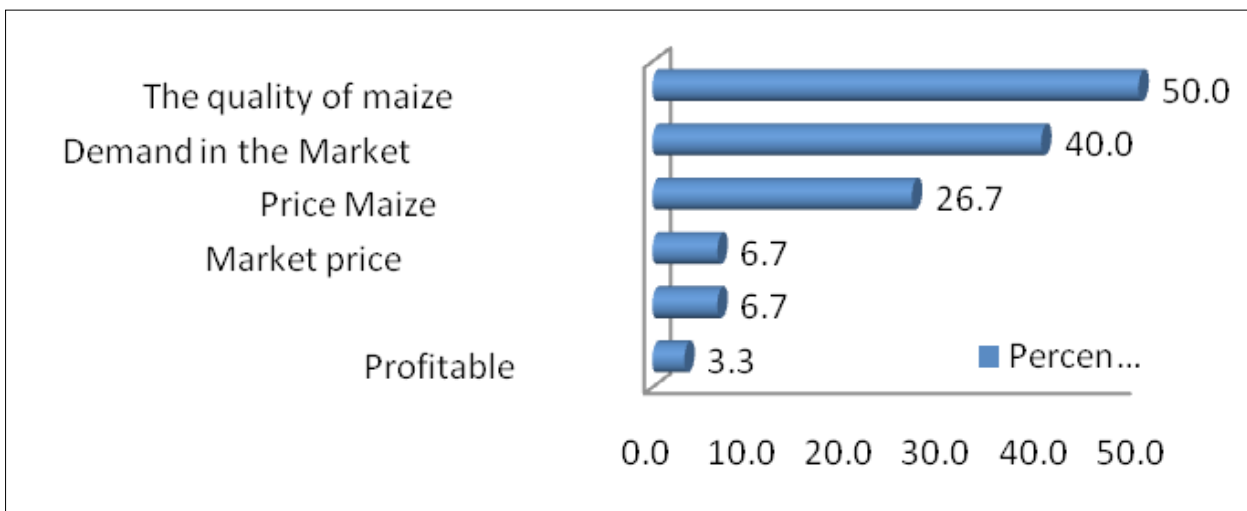


N.B There are multiple responses where by one respondent gave more than one answer hence the percentage goes beyond 100.

Another issue considered was the existing maize price and the maize outlet market price as indicated by 27% and 7% responses respectively.

Others mentioned that maize sector was any easily managed business and it was also profitable as supported by 7% and 3% responses respectively.

The price range for Kampala stores for maize is 150 to 800 UGX. The quantity varied from 3 Mt to 500,000 MT.

## 3.7 Constraints Encountered by buyers in Kampala and strategies for Improved relationship with Farmers

Like it was the case for regional buyers, national buyers also faced a ranged of challenges and most of them were quite different from those faced by the local buyers or stores in the Rwenzori region as showed in figure 14.

**Figure 14: Constraints Encountered in the Sub sector (n=30)**
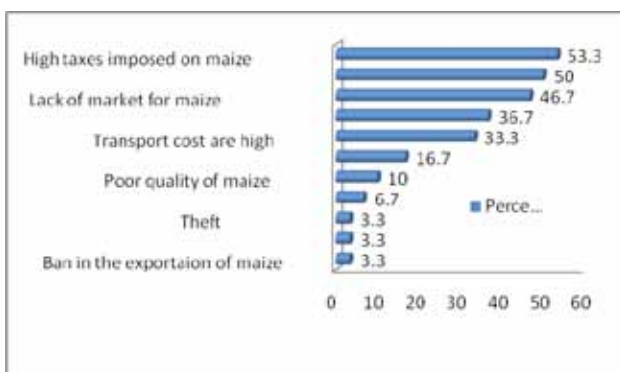


N.B There are multiple responses where by one respondent gave more than one answer hence the percentage goes beyond 100.

Among the challenges mentioned high taxes imposed on maize was ranked number one. This was followed by the problem of unstable prices in the maize sector. The third ranked challenge was lack of market for maize followed by the power/electricity challenge. The fifth mentioned challenge was the problem of transport costs from the rural areas where buyers bought the

maize both from the individual farmers and local stores. Other challenges included; rent for the company premises, the poor quality of the local maize, general high management and operational costs, theft, competition within the country and the ban imposed by the government of maize exportation outside Uganda.

Despite the observed challenges, the traders mentioned a number of issues that could help improve the maize sector in specific reference to their relationship with farmers as in Figure 15.

*The imposition of taxes on maize, ban on export of maize are areas of wrong information because the liberalization policy removed them. This is an indicator of poor market information flow to the grass root stakeholders in the chain.*

## Figure 15: Desired Relationship with Farmers
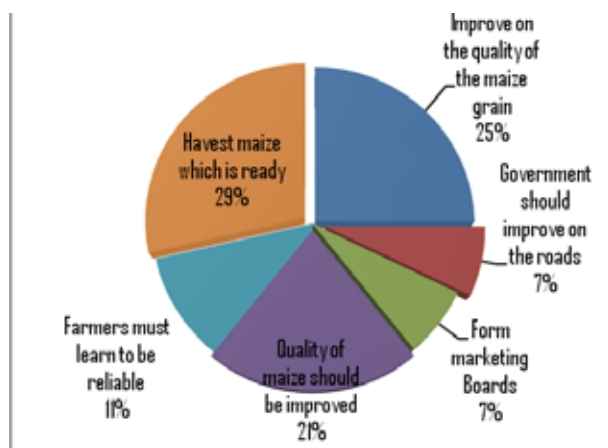


Among strategies mentioned was; the need for the farmers to harvest only mature maize, which was ranked one in order to improve the quality as supported by 21% who highlighted that the quality of maize should be improved. This was followed by traders who wanted farmers to learn to trust and become reliable and the need to form marketing boards as mentioned by 11% and 7% of the traders respectively. Other issues recommended by traders that did not directly concern farmers were the need to improve on the quality of the maize grain and the need for Government to improve on the road system. In relation to the road system, state or government intervention in maize marketing should focus on transparent rules in the maize market that could minimise risks and allow for greater coordination between farmers, private sector and public decision marketing at household level and in the market while ensuring the objective of food

security is attained. The government should ensure that smallholder farmers receive a fair market price in the maize sector and give the necessary mechanisms for improving quality as required by the consumers.

## Policy framework

The maize value chain is influenced by the agricultural related policies including agricultural extension such as NAADS, marketing policy, agricultural research policy that involves improved seeds, post harvest handling. These policies have provided opportunities such as access to improved seed , adoption of improved agricultural practises> However the effectiveness of the implementation is a constraint for many farmers have not adopted the practises, not accessed improved seeds. Economic policies such as liberalisation policy have a strong bearing on the chain. The ICT policy (and if the agricultural IT policy exists) have implications on the market information dissemination. The ICT policy has increased the opportunities for access to market information through mobile phones, radio, Internet> however, there constraints for the farmers in the rural areas and rural traders have not made good use. There agricultural ministry has not put in place a good strategy for IT in agricultural development. The education and labour policies y have implications on the involvement of school going children in the value chain. The national transport and rural electrification policies affect the infrastructural implications. Poor access to electricity and the high poer tattifs have been a major constraint in enabling the stakeholders hav e value addition and fuctional upgrading to make maize floue and livestock feeds from maize grain. From the NGOs, issues of inequality in distributional incomes especially with regards to farmers are very pertinent. There are many barriers of entry and economic rents that prevent farmers to get to higher levels of the chain where high prices can be obtained. The lack of stores, access to maize shellers for improved maize quqlity at household level, the low organisation capacities of the farmers groups, poor access to crop financing terms, poor access to technology in terms of agricultural inputs and IT facilities, human resource constraints in terms of the skilled labour to run the farmers associations all have detrimental effects on the distributional income in the chain with regards to the farmers. The local government policy has implications in terms of how much resources are allocated to concerns of farmers along the chain. This includes the maintenance of feeder roads which is a big bottleneck with regards to transport network.

# CHAPTER FOUR: | CONCLUSIONS AND RECOMMEDATIONS

## 4.1 Conclusions

The maize market was diverse with no clear standard/uniform system for marketing the maize grain. The players involved in production and marketing segments were of mixed scales (large, medium and small) as shown by the following characteristics.

1. **Lack of a clear system for organizing the relationship between buyers and farmers**
   - Storage system are not developed (simple stores in most of the districts and one major warehouse in Kasese). They do not meet the required standards to preserve maize grains, they do not carry out sorting and grading, and store owners determine the price to give farmers.
   - Maize market is dominated by individual traders who own stores and sell to other buyers.
   - Maize buyers are concerned with performance of their businesses and pay less attention to farmers needs.
   - There has been no space for discussion and linkage between maize buyers and farmers for the mutual benefit of all
   - The governance of the maize value chain has had minimal role from the government and much more influenced by private sector to spearhead concerns of maize farmers. However, there are some NGOs that have worked with farmers on marketing initiatives like KRC, CABCS, SATNET, and SNV. This provides an opportunity for prioritizing maize value chain development. Lead agencies such as WFP, Uganda commodity exchange and the private sector have strong influence on the governance of the chain in terms of quality and market price.

2. **There are many stores and traders for maize distributed in all the districts (399) and national level**

3. **Lack of harmonized Cooperation between buyers and Farmers:**
   Linkage between local buyers and farmers with big companies and exporters is very weak. This limits accessibility to information on marketing trends at both national and global levels.

4. **Capital constraints for purchase and establishing better storage systems: Local traders who dominate the maize market lack capital for bulky purchases**

5. **Quality of Maize:**
   Quality of maize (well dried and clean) has been a major obstacle for better cooperation between farmers and buyers. Most of the farmers had poor handling of maize and at the time of marketing maize produce, maize was found dirty with high moisture content that affects the marketing/demand. There is a strong danger of aflotaoxin in maize due to poor storage. The poor enforcement of the quality standards is very critical in the food security of the region and the country.

6. **Contextual Bottlenecks:**
   There are indirect factors that affect maize marketing like the poor road network in the region that makes it difficult for farmers to bring produce to the market. This situation was exploited by traders who moved deep in the villages and offered lower prices to farmers. There are a lot of price fluctuations and farmers have no control over prices.

**7. There is inter value chain linkages through the stores.**

The same stores for maize play a role in the other value chains such as Coffee, beans, rice and many others. This has had a bearing on the maize stored in the first seasons compared to the second seasons.

**8. The relevant policy framework is in place.**

However, there is need for effective policy implementation of the various policies and making necessary adjustments where the livelihoods of the actors in the chain is negatively affected.

# 4.2  Recommendations

### 4.2.1  Value Chain Development (VCD) for Maize.

Deep analysis of the different segments of maize enterprise and key players with the intention of looking and exploring on prospects for value addition, better negotiation but also discovering the segments with challenges that would need urgent intervention. This would minimize risks and uncertainties when it comes to focus on market oriented production.

### 4.2.2  Quality management :

Farmers should prioritise application of better agronomic practices and post-harvest handling to guarantee quality seeds but also clean and dry maize grain.

### 4.2.3  Linkages and negotiation :

With many players that are dominated by business individuals, in the short term, negotiations between buyers and farmers could be arranged for better coordination, information sharing but also exploring the opportunities for continued networking in the supply and demand chain. This could somehow address concerns on transportation, collective marketing and bulking and timely market information.

### 4.2.4  Adoption of warehouse receipt system:

The availability of the warehouse receipt system would address both short term and long term challenges/constraints of the sector. It caters for cleaning and sorting of maize for quality promotion, it stores and preserves maize grain for longer periods, it offers an opportunity for farmers to keep maize as they look for better markets, and also allows them to get financing from banks to meet household/farmers immediate needs. Since, warehouse are not established all over the region, *building from existing storage systems for marketing associations to negotiate for better prices with buyers but also working out an advocacy strategy to demand for warehouses from government.*

### 4.2.5  Diversification

There is a need  for alternative crops at farmer level because over dependency of farmers on maize exposes the farmer to a lot of vulnerabilities as farmers have less control on prices, this was demonstrated by price fluctuations over a single season.  Diversification would supplement a farmer's source of income in situations when maize is kept in the store

# ACTIONS BY REGIONAL AGRICULTURAL STAKEHOLDERS ON MAIZE MARKET SURVEY FINDINGS AND RECOMMENDATIONS on 4th November 2010

| Findings | Recommended Action | Roles | Source of funding | timeframe | Lead person | Follow-up |
|---|---|---|---|---|---|---|
| Poor quality of maize characterized by dirty grain with high moisture content, poor storage, poor agronomic practices. The market requires clean and well dried maize grain | **Quality management for maize enterprise** -improve quality of maize at farmer level through following better practices to get clean and well dried maize grain | **LG** Orient and train all stakeholders in the value chain Streamline extension service delivery | **NAADS, KRC** | **Starting December 2010** | LG PDN COORDINATOR Kabarole Amos Mugume, NAADS, | **Think tank operational and technical teams** |
|  |  | **CSO** Provide information to farmers on quality seeds Provide information and training on post harvest handling Training farmers on recommendable agronomic practices |  | December 2010 through 2011 | Mugweri KYEDFA, KRC | Think tank operational and technical teams |
|  |  | Farmers Training farmers in good agronomic practices thru existing farmer groups Develop policies on group marketing on quality standards with farmers Develop house hold storage and drying facilities |  | 2011 |  | Think tank operational and technical teams |
| No coordination between buyers and farmers, Market not organized Market dominated by private individuals Private business only focus on profits No stakeholder is concerned about the farmer Buyers get maize from farmers who sell individually Information on markets not available to farmers There are many maize stores/buyers who don't know each other and don't share information | **Market linkages and coordination** Improve coordination, information sharing and negotiation between farmers, buyers and other actors for better marketing of maize | **LG** Mobilize, sensitize and trainings and market linkages Identify and conduct meetings with key players | KRC | November 2010 | District Production and marketing officer | **Think tank operational and technical teams** |
|  |  | **Farmers groups** Mobilize farmers to start collective marketing association/ cooperatives Formation of rural producer organizations |  | Starting January 2011 |  | Think tank operational and technical teams |
|  |  | CSOs Maize business forum and stakeholders meetings | KRC | November 2010 And through 2011 | Medius Bihunirwa of KRC | **Think tank operational and technical teams** |
|  |  | **Private Sector** Linking farmers with buyers and financial institutions |  | Starting November 2010 | Nyakatonzi Francis, Baluku Andrew of Ikongo, Michael Kushaba from Irihura MA | **Think tank operational and technical teams** |

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| No special investment to address chain problems, Value chain for maize not developed, segment actors do not link and share information No lead actors spearheading value chain development | **Value Chain Development** Focus on VCD for maize enterprise to identify actors, segments right from marketing to production and provide alternative interventions | **LG** Identify areas for support and communicate them to NAADS and the private sector | | On going | NAADS coordinator Kabarole | Think tank operational and technical teams |
| | | Farmers groups Advocacy on different radio programs on value addition Link farmers to financial institutions with affordable credit | | Starting January 2011 | | Think tank operational and technical teams |
| | | CSOs Information dissemination on the maize value chain | | Starting 1ST Quarter 2011 | Timothy RIC-NET, John Kabango (commercial Official Kabarole), Diana KRC | **Think tank operational and technical teams** |
| | | **Private sector** Linking farmers with buyers and financial institutions Providing market information | | Starting november | Nyakatonzi Francis, Baluku Andrew of Ikongo, Michael Kushaba from Irihura, | **Think tank operational and technical teams** |
| Poor storage systems that affects quality of maize There are many simple stores for business individuals Stores cannot preserve grain for long Stores are small with no capacity to clean and sort maize grain | **Advocacy for warehouse receipt system** | *Prepare a policy paper highlighting regional contextual issues surrounding agriculture, state of infrastructure, status of storage system, farmers organization and showing the importance of a warehouse receipt system to address storage and marketing problems for maize in the region (demand for warehouse and budget allocation for it)* | | | KRC works on paper work (Busiinge Chris), Grace NAADS, David OLwa CARE | **Think tank operational and technical teams** |
| Maize enterprise suffers greatly from market prices fluctuations and farmers have no control over prices which affects the household income | **Diversification** Look for alternatives to reduce on over dependency on maize and risks associated with maize enterprise | **LG /MAAIF, Trade, OPM, WFP** Revival of national food security systems (SILOS)at Regional and District levels | | 2011 | | Think tank operational and technical teams |
| | | Farmers | | | | Think tank operational and technical teams |
| | | CSOs | | | | Think tank operational and technical teams |

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| A lot more information to inform planning is missing especially on how policy and trade agreements affects maize marketing, knowledge on the Rwenzori region market share in relation to other parts of Uganda | Research | Academic institutions **To compare** performance in view of improving our production and marketing performance **Determine the rwenzori share of market** opportunities beyond the region **(Get the presentation)** Research on agric production and productivity Integrate research findings into academic curricula | | Every after 2 years | | Think tank operational and technical teams |

LG: Local Government

CSOs: Cultural and Religious institutions, CBOs, KYEDFA –Mugweri, RIC-NET – Timothy, KRC, CABCS, COSIL, NORRACOL, Disocese of Rwenzori, CARITAS Kasese

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## Disclaimer

The Rwenzori Regional Think Takes full responsibility for the content and errors of fact, omission and interpretation presented in this report.

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