UGANDA DEVELOPMENT CORPORATION
Driving Industrial Growth

Towards revitalization of the **Uganda National Commodity Exchange**

UDC Working Paper No.3

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Abstract

Efficient marketing systems are essential for increasing commercialization, industrial development, widening markets for commodities, and ultimately increasing incomes both at household and national levels. However, agricultural markets in Uganda remain largely informal and unstructured with no functional commodity exchange (CE). The efforts that started in 1998 with the establishment of the Uganda Commodity Exchange (UCE) and later demutualization to the Uganda National Commodities Exchange (UNCE) in 2015 have so far not been successful. Given the many benefits that accrue from functional commodities exchanges including, price discovery, market formalization, information symmetry, market efficiency, risk management and others, it is imperative that the UNCE is revitalized to take advantage of the numerous government production support initiatives and to introduce market efficiency in commodity markets.

However, for the UNCE to succeed, a number of critical success factors need to be in place including a large volume of quality and standardized commodities, adequate physical marketing infrastructure, efficient market information that ensures transparency and speculation on price movements, and an efficient financial system. The whole UNCE ecosystem will need to work coherently from primary to secondary to tertiary levels with different players both government and private sector playing their roles. For this to happen, the inherent gaps within the ecosystems need to be addressed including (at primary level) low productivity and production, uncoordinated farmers organization, post-harvest losses and limited access to affordable financing; (at secondary level) insufficient certified storage facilities, limited access to adequate financing for off-takers, inadequate transport and logistics facilities and an unstructured markets including lack of a developed WRS; and (at tertiary level) informality in exports and lack of functional trading platforms. Working with other stakeholders, UDC is actively working to create a favorable environment for the revitalization of the UNCE in order to enhance commodity marketing and export promotion. A functional and effective UNCE will comprise well-connected building blocks including a reliable and efficient trading platform, well enforceable standardized contracts, good brokers and speculators, reliable quality and quantity guarantees for the traded commodity, a credible regulator, an efficient user fee payment settlement and clearance mechanism, a well regulated and managed WRS, efficient market information and dispute resolution services.

Considering that Uganda is an agrarian economy, it is expected that UNCE especially in the beginning, will mainly be trading in agricultural commodities starting with maize, beans, cassava, tea, coffee and cotton. Given the intricate work and the expenses needed in operating a CE, there will be need for government (with support from development partners) to support the different elements of the WRS ecosystems, from grassroots, to off-taking, and to the commodity exchange, the total sum of which will lead to a functional, effective, efficient, profitable and sustainable UNCE.

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Acronyms and Abbreviations

AfCFTA	African Continental Free Trade Area
BDS	Business Development Support
CDO	Cotton Development Organisation
CE	Commodities Exchange
CM	Collateral Managers
CMA	Capital Markets Authority
COMESA	Common Market for Eastern and Southern Africa
EAC	East African Community
EU	European Union
ICT	Information and Communication Technology
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MFIs	Micro Finance Institutions
MIS	Market information services
MoLG	Ministry of Local Government
MTIC	Ministry of Trade, Industry and Cooperatives
NAADS	National Agricultural Advisory Services
NARO	National Agricultural Research Organisation
NDPIII	Third National Development Plan
OWC	Operation Wealth Creation
OWC	Operation Wealth Creation
P4P	Purchase for Progress
PDM	Parish Development Model
SACCOs	Savings and Credit Cooperatives
TGCU	The Grain Council of Uganda
UCIFA	Uganda Clearing Industry and Forwarding Association
UCA	Ugandan Cooperative Alliance
UCDA	Uganda Coffee Development Authority
UCE	Uganda Commodity Exchange
UCTF	Ugandan Coffee Trade Federation
UDC	Uganda Development Corporation
UNBS	Uganda National Bureau of Standards
UNCE	Uganda National Commodities Exchange
UNFFE	Uganda National Farmers Federation
USAID	United States Agency for International Development
USE	Uganda Securities Exchange
UTA	Uganda Tea Association
WFP	World Food Program
WRS	Warehouse Receipt System
WRs	Warehouse Receipts
WRSA	Warehouse Receipt System Authority

1. Background

1.1 Introduction

Efficient marketing systems are essential for increasing commercialization, industrial development, widening markets for commodities, and ultimately increasing incomes both at household and national levels. In Uganda, a largely agrarian country, progress has been made in agricultural marketing including developing contractual agreements between farmers and off-takers of agricultural commodities, especially grains and linking farmers to large-scale processors through farmer cooperatives. However, agricultural markets in Uganda remain largely informal, serving low-income consumers in the country and a few international markets. The country is yet to penetrate, to a reasonable degree, the high-value markets which are largely formal because of inability to adhere to the very strict sanitary and phytosanitary standards demanded in such markets (NPA, 2020). Moreover, the global population is increasing and is expected to reach 8.1 billion by 2025, implying the demand for food and food products is and will remain high. Given that Uganda heavily relies on the agriculture sector, it is important to increase its market share in international markets.

Indeed, in the third national development plan (NDP III), Government is pursuing expansion of markets for locally produced goods, partly through export promotion to strategic markets including the EAC [East African Community], COMESA [Common Market for Eastern and Southern Africa] & AfCFTA [African Continental Free Trade Area], Middle East, China and European Union (NPA, 2020). It should be emphasized that expanding access to such markets requires consistency in supply of quality commodities in the demanded quantities. This is possible if there is a functional and vibrant commodity marketing system. This system can either be physical or digital as long as it can efficiently and effectively connect sellers to buyers. A commodities exchange (CE), which in the case of Uganda is non-existent, is one of the most used marketing systems or platforms. The first Uganda Commodity Exchange (UCE) was founded in 1998 which was later demutualized i.e. transformed into a for-profit shareholder-owned company, the Uganda National Commodities Exchange (UNCE) in 2015. As we shall see later, while the UCE failed because of a policy failure in trading and regulation, since its incorporation, the UNCE has remained dormant partly because of undercapitalization.

In the context of Uganda, commodities exchange refers to a market exchange or a place where commodities and derivatives products are offered for sale, purchase or exchange; and includes any clearing or settlement or transfer services connected with the transaction (Capital Markets Authority Act, Cap. 84). Generally, commodities exchanges are important to have because they serve several purposes depending on the type of trading contract. The following are the key advantages of CEs:

1) Provide a platform to competitively match a broad range of potential buyers and sellers (trading partners), and reduce middlemen and transport costs, thus reducing transaction costs and enabling price discovery i.e. setting the proper price of the

traded commodity. By reducing transactions costs, CEs can improve returns to market participants.

2) Reduce inefficiencies in agricultural markets by streamlining trading, delivery and payment systems, and providing accurate price information to all users. Thus, CEs address the problem of asymmetric information between parties of a transaction.

3) Provide industry-approved inspection and quality certification services, and contract enforcement and arbitration services.

4) Trade in warehouse receipts implies immediate title transfer for a specific quality and quantity of a commodity at a location specified on the receipt; thus, warehouse receipts lower transfer costs and facilitate financial transactions including loans. Given that the receipts are evidence of certified and secured goods of a given quantity, they are an acceptable form of loan collateral.

5) Commodity exchanges offer hedging opportunities thus reducing fluctuation in prices. Specifically, future contracts lock up the price of a commodity today (spot market price) even if the commodity will actually be bought or sold in the future at a different price (future market price).

As already alluded to, Uganda lacks a functional commodities exchange. Given the critical role that commodities exchanges play in expanding market access, the time is now to revitalize the UNCE. Against this background, the purpose of this paper is to:

a) Document the history of commodities exchange in Uganda and identify critical success factors for a revitalized UNCE,

b) Articulate the challenges that will be addressed and the opportunities to be harnessed by revitalizing the UNCE (value proposition),

c) Provide insights into the appropriate type of commodities exchange that Uganda needs, and

d) Call upon key stakeholders to take necessary action to operationalize the UNCE profitably and sustainably.

The paper largely draws from existing literature, secondary data sources and consultations with key institutions including UNCE shareholders, regulators such as Warehouse Receipt System Authority (WRSA), Uganda Securities Exchange (USE) and Development Partners.

1.2 History of Commodities Exchanges in Uganda

The Ugandan Commodity Exchange (UCE) was created in December 1998 with a 2.16 million Euros grant from the European Commission, and it was expected to become self-financing within four years. The founder members were; the Ugandan Cooperative Alliance, the Ugandan Coffee Trade Federation, the National Farmers' Association, the Commercial Farmers Association, and two private trading firms.

The incorporation of UCE was not followed by any significant investments, as such the exchange registered slow progress. For example, between March 2002 and June 2002, only 11 contracts were traded. The UCE faced several challenges: the contract volumes were extremely low—less than 1,100 tons of commodities per month; the UCE had only seven licensed warehouses with no brokers, only dealers and some of them represented farmers' groups; while the exchange was supposed to work with at least 315 organized farmers' groups (of 30 farmers each), in reality, the UCE only worked with 50 groups; the quality and quantity verification system was not trusted by urban buyers; sellers sold commodities while they were still on offer on the exchange; the exchange provided a narrow range of products without a system to guarantee payments and dispute settlement procedures, hence, buyers and sellers saw no reasonable benefit in trading on the UCE.

Moreover, there was no warehouse receipt system (WRS) neither a regulator. The WRS was established in 2006 by the Ministry of Trade, Industry and Cooperatives (MTIC) and is governed and regulated through the Warehouse Receipt System Act of 2006 and regulations of 2007 that provided for establishment of the Warehouse Receipt Systems Authority. Until the establishment of Warehouse Receipt Systems Authority in 2014, the UCE exercised dual conflicting responsibilities of regulation and marketing.

Additional to the European Commission grant, the UCE received funding from the World Food Program (WFP) of the United Nations through the "Purchase for Progress" (P4P) programme. The P4P was designed to buy food commodities from smallholder farmers as part of WFP's overall mandate of providing for areas with food deficiency. However, two interim reports one from the Common Fund for Commodities and another from Uganda Commodity Exchange revealed that the warehouse system (WRS) was not feasible at the farm gate level because of very small volumes of produce that could not sustain exchange. Moreover, the "P4P" initiative was open to abuse, because it never revealed prices and little information was known about markets, consequently, the whole process was controlled by few traders.

Having registered very little success, the UCE was demutualized in 2015 to form a for-profit shareholder owned company, the Uganda National Commodities Exchange (UNCE) Ltd that was incorporated as a Public-Private company limited with the following shareholder structure: 80% shares owned by four private sector players namely Uganda Cooperative Alliance (UCA), Uganda National Farmers Federation (UNFFE), The Grain Council of Uganda (TGCU), and Uganda Clearing Industry and Forwarding Association (UCIFA); and 20% shares owned by government through Uganda Development Corporation (UDC). However, the UNCE became and has remained dormant since 2017 largely because of undercapitalisation. Of all the shareholders, only UDC paid up for its shares as shown in Table 1.

Table 1: UNCE Share Allotment and payment status as at December 2022

Shareholder	Share allotment	Paid-Up Capital
Uganda Development Corporation	200,000 shares worth UGX 200,000,000	400,000 shares worth UGX 400,000,000
The Grain Council of Uganda Ltd	160,000 shares worth UGX 160,000,000	122,000 shares worth UGX 122,000,000
Uganda Commercial Farmers Association Ltd	160,000 shares worth UGX 160,000,000	16,000 shares worth UGX 16,000,000
Uganda Coffee Traders Federation Ltd	160,000 shares worth UGX 160,000,000	0 UGX
Uganda Co-operative Alliance Ltd	160,000 shares worth UGX 160,000,000	0 UGX
Uganda National Farmers Federation Ltd	160,000 shares worth UGX 160,000,000	0 UGX
Millie Nkajja	Not originally allocated any shares	50,000 shares worth UGX 50,000,000

Source: UDC Reports on UNCE

Therefore, based on the realities regarding the performance of commodities exchanges in Uganda which are yet to show concrete results for such efforts, coupled with high maintenance costs that were heavily subsidized by donor funds, it is imperative to note that for such exchanges to be effective and sustainable, they must not only be funded by their users, but also by reliable public-private partnerships guided by strict binding contracts with a robust legal framework to enforce commercial transactions. Indeed, working with other stakeholders UDC is actively working to create a favorable environment for the revitalization of the UNCE in order to enhance commodity marketing and export promotion.

2. The Case for Revitalising Uganda's Commodities Exchange

2.1 Challenges the UNCE will solve

The UNCE would be an important addition to the commodity marketing in Uganda because it would help solve the problems inherent in the current system. These include;

i. *Unstructured or informal agricultural commodity markets*: Markets in Uganda are not formal and are largely made up of small players that often trade in an unregulated and unstructured manner. For example, it has become common for farmers in Uganda to sell to traders from Kenya crops that are still growing in the field. Such a practice not only denies farmers the true value of their investment but also exposes them to the risk of becoming food insecure. The UNCE would help to organize markets by linking all the players across the commodity value chains. However, concurrent with plans to revitalize the UNCE, there are other initiatives taking place across public and private sector to organize and structure agricultural markets.

ii. *Poor price discovery due to poor market transparency*: Often farmers do not know where to get the best price for their produce while traders and other commodity users do not know where to source produce, a situation that leads to artificial shortages and low commodity earnings. Information shared through the UNCE will enable players to know where to sell and buy thereby increasing competition and efficiency in the market. The UNCE in this case will be one of the many initiatives that are underway to increase market transparency in agricultural markets including those by private sector players where agritechs that disseminate agricultural information are taking root.

iii. *Inadequate access to financing of agricultural commodity value chain and financial market participants*: Players in the value chain often have difficulties accessing adequate financing mainly because they do not have collateral. A WRS receipt required as part of the UNCE would increase options for financing by acting as a non-fixed collateral. CE support collateralized lending. This will compliment and work together with other ongoing efforts to increase agricultural financing including those by the Uganda National Registration Bureau (URSB) of setting up the Security Interest in Movable Property Registry.

iv. *Price fluctuations for commodity products partly due to seasonality and low price discovery*: Commodity exchanges offer hedging opportunities thus reducing fluctuation in prices.

v. *Post-harvest losses*: A large percentage of agriculture produce is wasted at post-harvest due to poor handling and lack of an efficient delivery mechanism to the market. The market provided by the UNCE expedites the commodity delivery mechanism and reduces the risk of post-harvest losses. This will compliment efforts by government in constructing post-harvest processing infrastructure across various value chains.

vi. *Poor Standards and grading*: There are currently few formal and certified/licensed warehouses and the quality of the produce that is traded is quite poor. Standardization that is part of the UNCE would reduce trade in poor quality and substandard products. The UNCE will build from the work that government through the UWRSA is undertaking to prepare a number of private and public sector warehouses for certification.

vii. *Limited branding for Uganda products*: In most cases, Ugandan commodities are re-branded and sold by others as theirs because the country lacks strong brands. Product branding is expected to increase Uganda's export revenues as well as people's incomes. Indeed, empirical evidence shows that product branding has a long-run positive impact on sales revenue (Yeboah, 2016).

2.2 Value Proposition

Aside from solving the challenges highlighted in section 2.1, a revitalized UNCE is expected to deliver the following benefits to the different categories of participants;

i. Alignment of on-going efforts by state and non-state actors to achieve maximum value. There are many scattered efforts by state (e.g. UDC, NAADS, OWC, PDM, etc) and non-state actors (e.g. USAID, EU, WFP, TGCU, etc) at primary, secondary and tertiary levels of agricultural commodities. The efforts by the different actors need to be integrated and harmonized. There are numerous production promoting initiatives such as the Parish Development Model (PDM) and others by the Ministry of Agriculture which are expected to lead to increased agricultural produce which in turn will need marketing to enable value for the farmers. The WRS ecosystem activities are underway including initiatives by the Uganda National Farmers' Federation in setting up "micro stores" to provide storage at the household and community level. The Uganda Warehouse Receipt Authority is regulating storage warehouses at off-taker level with expectations that dozens will be licensed in the near term. UDC has also heavily invested in value addition of various commodity value chains. The revitalized UNCE will therefore sit at the centre of these efforts to provide market for the expected increased commodity production and delivery under the WRS ecosystem.

ii. The CE will enhance export promotion which is one of the focus areas for the NDPIII. It is envisaged that the UNCE will provide a fair and transparent agricultural market to stakeholders along agricultural value chains.

iii. By reducing transactions costs, the CE has potential for reducing inefficiencies of agricultural marketing by streamlining trading, delivery and payment systems and providing accurate price information to all users, thus stimulating market transparency and competitiveness[1]. Commodity exchanges can also reduce transaction costs by expanding the range of potential trading partners, providing industry-approved inspection and quality certification services, and contract enforcement and arbitration services benchmarked on sound legal framework.

1 *Julian Spencer Roche (2020). Success criteria for commodity exchanges. African Journal of Agricultural and Resource Economics Volume 15 Number 2 pages 127-139*

iv. Warehouse Receipts that are part of the Commodity Exchange/WR ecosystem can benefit farmers and other agricultural producers by facilitating access to credit and allows for the delayed sale of agricultural products until after the harvest season, when price conditions are more favourable. During the period of storage, producers may use the warehouse receipt as collateral to obtain short-term credit to finance working capital requirement or household consumption needs.

v. A warehouse receipt system can enable smallholder farmers to participate in commodity markets by providing them with the possibility to consolidate their crops in a warehouse and sell jointly for higher prices to larger traders or processors further down the value chain.

vi. The warehouse receipt system helps to reduce market transaction costs by allowing for independently enforced commodity standards, in particular that receipts are issued when commodity-specific quality standards are met.

vii. Small holder farmers can also benefit from the warehouse receipt system services such as postharvest handling and storage offered by warehouses, including cleaning, drying, grading, packaging, sorting and preserving the product's quality so that producers can sell it later for a favourable price.

viii. The mandatory storage and handling standards for warehouses can help producers reduce post-harvest losses. Lastly, warehouses that guarantee accurate weighing and quality grading benefit producers by ensuring that their products are accurately valued.

ix. Beyond producers, an effective warehouse receipts system can benefit financiers. The system can reduce the risk of lending to farmers and other agricultural producers by creating secure collateral. By allowing for the simple and quick liquidation of collateral in case of debtor default and the prioritization of the receipt holder's claims vis-à-vis other creditors in liquidation proceedings, the warehouse receipt system can effectively manage risk and loss recovery.

x. Lastly, the overall agricultural sector may benefit from mobilized credit and improved performance of agricultural marketing systems. Increased storage of agricultural commodities after the harvest season may help stabilize commodity prices. Also, a comprehensive warehouse receipt system can improve product quality through setting quality standards, improving storage and handling and overseeing compliance.

2.3 Critical Success Factors for a Revitalized Commodities Exchange in Uganda

A commodities exchange requires certain minimum conditions to be functional. The conditions can be broadly categorized into: physical market infrastructure; product quality, standardization and grading; traceability and exchange trading; price transparency and price volatility; the potential for speculative involvement; and banks' involvement in the commodity sectors. The description of each of these conditions is provided in the subsequent paragraphs.

a) Large market size: The volumes of commodities traded should be sufficiently large to support a viable commodities exchange. In the case of Uganda which is largely

agrarian, the volumes can be attained with consorted effort by key stakeholders (MAAIF and its agencies, farmers' associations, input suppliers, banks, aggregators, warehouse operators, etc) to increase production and productivity, organize and facilitate farmers to adopt good agricultural practices and proper post-harvest practices, and establish and/or expand certified aggregations centres and warehouses, and off-take farmers' produce at competitive prices.

b) **Physical market structure:** Functionality of the UNCE will require all-weather road network throughout the country; aggregation centres and warehouses that meet the quality specifications of standards; soft infrastructure such as agreed commodity grades and standards, standard contracts, functional commercial courts and arbitration panels, and supporting customs procedures; ICT technologies; and electronic infrastructure (mobile phones, internet connectivity, electronic payment system, etc). Thus, both state and non-state actors need to invest in the provision of adequate and quality infrastructure needed for the UNCE to become fully functional. A number of public and private sector initiatives are currently ongoing or planned to increase the stock of agricultural infrastructure that would benefit the UNCE operations. The Uganda Cooperative Alliance (UCA) is overseeing a number of warehouses some of which were inherited from the old Cooperative Societies and some recently built by government. Other warehouses are being operated by commodity associations like The Grain Council of Uganda. These warehouses are important in the delivery mechanism to the CE and need to be mapped out in order to streamline the logistics that will be needed for an effective CE.

c) **Product quality, standardization and grading:** Commodity trade all over the world is mostly conducted on the basis of specified quality characteristics. Thus, sellers and buyers are normally guided by quality criteria/specifications established in their contracts. The quality specifications of the standardized contracts which are to be traded on futures markets have to reflect national grades and standards. This implies that on the physical market, these grades and quality characteristics should also be standardized. This is a major challenge. Industry bodies such as the East African Grain Council and the Grain Council of Uganda have developed comprehensive work programmes to meet the challenge, and an exchange should work with such industry bodies in developing its contracts. The UNCE should pay premiums for commodities that exceed the agreed grades and standards, this will encourage producers to continuously improve the quality of their products, and increase the willingness to trade through the CE as opposed to the informal markets.

d) **Traceability of traded commodities:** In today's market place there is a growing demand for identity preservation and the traceability of commodities from producer to consumer. First, it gives the buyer greater control over the quality of the product, in an environment where some consumers are willing to pay high premiums for perceived quality uniqueness. Second, only with traceability is it possible to meet the many other ideals of the modern consumer. These may include; was the commodity produced organically? Was it produced in a way that is good for the environment, e.g., under shade trees that give refuge to birds? For such and other aspects of production, certain consumers are willing to pay a premium price. Therefore, if the UNCE is to enable the producer to get

the best price possible price for the product, it has to make it possible for these invisible characteristics to remain attached to the commodity when it is offered on the exchange.

e) **Price transparency and price volatility:** There are three issues related to prices which affect the viability and usefulness of a CE: the volatility of prices; the transparency of prices and of the price formation process; and the integration of prices with the regional and world markets, and along the marketing chain. The three issues are kept in check by robust and functional price information systems which in the case of Uganda are inadequately developed. Thus, there is need to harmonize existing commodity price information systems and further develop them to sustainably and profitably provide price information upon which trading decisions can be based.

f) **The potential for speculative involvement:** Speculators (short- and long-term) shape price behavior and generate business for a CE, 50-80% of the volume on the commodity futures exchange is attributed to speculations. Short term speculators encourage hedgers (e.g. traders and processors) to place orders at the price that is quoted at a given time. Institutional speculators (such as pension funds, insurance companies and funders of relief programmes) are necessary to invest in commodity futures; therefore, the UNCE would benefit from working with such institutions to develop products that they could trade. Given the importance of speculators, deliberate action will be necessary to stimulate emergence of the speculators sector.

g) **Banks' involvement in the commodity sectors:** Commodity futures markets make loans to producers, traders and processors less risky. The commodities exchange could also offer trade finance-related products. It can develop a compelling business case for banks to be part of exchange initiatives.

3. The Ecosystem for the Uganda National Commodity Exchange

Agricultural market systems are organized at three different levels, namely primary, secondary and tertiary. The levels are defined by nature of activities, types of processes, players and other characteristics that advance as one moves along the value chain. In the subsequent sections, we identify the potential players at each level of the CE ecosystem, their roles, and the gaps that would require redress to make the UNCE functional.

3.1 Primary Level

3.1.1 Target players and their roles

The primary level is where production and aggregation takes place. At this level, there are a number of players who perform different roles as indicated in Table 2:

Table 2: Players at primary level of the commodity exchange ecosystems and their roles

Player	Role
Farmers	In the Uganda context, production is mainly done by smallholder farmers and a few commercial farmers. Commercial framers in addition to production, can also undertake aggregation.
Aggregators	Aggregation is done by small cooperative societies many of which are members of the Uganda National Farmers Federation (UNFFE).
Ministry of Local Government (MoLG) together with the PDM Secretariat	Farmers at Parish level are coordinated through area-based commodity clusters in order to increase production and productivity that will create sustainable agricultural production. The PDM will help farmers to get access to Agricultural extension services, finance, business management training, etc. In addition, under PDM, there will be certification and regulation for standards and safety. PDM will facilitate the construction of commodity storage and aggregation facilities for fresh, wet and dry agricultural produce.
Operation Wealth Creation (OWC)	OWC distributes farm inputs to farmers and coordinates government MDAs for improved service delivery.
National Agricultural Advisory Services (NAADS) Secretariat	Supports and manages agricultural input distribution chains, promote strategic commodity interventions, agricultural chain development and farmer access to agricultural financing.
Uganda National Farmers Federation (UNFFE)	Organize farmers, deliver agriculture advisory services, distribute farm inputs, and provide production and marketing information to farmers.

Player	Role
Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)	Supports sustainable control of crop & animal diseases, and pests & vectors, market oriented agricultural production, food quality and safety for improved food security and household income. Promotes adoption of appropriate information, knowledge, and technological innovations for commercialization of agriculture.
Uganda Coffee Development Authority (UCDA)	Promotes and oversees the coffee industry by supporting research, promoting production, controlling the quality and improving the marketing of coffee in order to optimize foreign exchange earnings for the country and payments to the farmers.
Cotton Development Organisation (CDO)	Promotes and monitors production and marketing of cotton and represent all aspects of the cotton industry in Uganda
National Agricultural Research Organisation (NARO)	Coordinates, oversees and guides agricultural research in Uganda. The goal is "to enhance the contribution of agricultural research to sustainable agricultural productivity, sustained competitiveness, economic growth, food security and poverty eradication."
Uganda Cooperative Alliance (UCA)	UCA is an umbrella organization for all cooperatives in Uganda established in 1961. It provides advisory services and mobilizes resources for the cooperatives to undertake production.
Uganda Development Corporation (UDC)	UDC already invested in the CE.
Financial Institutions	These provide financial services to producers and aggregators.
Other non-state actors such as development partners, private sector players and NGOs.	Support implementation of interventions geared towards enhancing agricultural production, productivity and marketing.

3.1.2 Gaps at Primary Level that need to be addressed for the success of the UNCE

Limited access to quality inputs: Currently, smallholder farmers who have limited capital to invest in quality inputs and appropriate agronomic and postharvest practices handle most of the production; as such, output is of poor quality and cannot compete favourably on both local and international markets. This situation is exacerbated for commodities such as grains, pulses and tea that do not have dedicated regulatory institutions as compared to the coffee and cotton. There are a number of efforts to improve quality such as those by UCDA and other regulators and these need to be scaled up. Even for commodities with no dedicated regulators such as grain, public and private sector efforts are underway to improve quality through regulatory frameworks and construction of quality infrastructure. These efforts need to be scaled up of the level of quality commodities to be traded at the UNCE is to be realized.

Low production capacities: Low capacities of commodities has been evident in the country partly due to the few large-scale farmers and farm institutions such Uganda Prisons and NARO institutes, and private players that have made efforts to increase production. Moreover, large-scale farming is limited a few commodities for domestic use such as maize, beans and cassava. The rest of the key

export commodities such as coffee, cotton and tea have been mainly left to a collection of smallholder farmers that struggle to access inputs and face post-harvest challenges including lack of basic equipment such as dryers, chippers, packaging material and limited or poor quality storage facilities. Government through MAAIF has recently prioritized support to commercial farmers to undertake large scale production which will support the kind of volumes that the UNCE will require for sustainable operations.

Low adoption of research technologies: The increased government investment in research notwithstanding, there is still need for dissemination and adoption of the technologies from research to the intended users (farmers). Adoption rates remain very low, hence, creating a great disparity between actual and potential productivity (yields) and production levels.

The success at secondary level depends on availability of sufficient volumes of commodities; therefore, further efforts are needed to ensure availability and affordability of critical farm inputs, promote large scale commercial farming, and multiply and disseminate productivity-enhancing technologies including improved crop varieties and animal breeds. The government through the National Agricultural Research Organization (NARO) has been intensifying the production of quality inputs which other government agencies such as NAADS and OWC have been distributing. These have led to enhanced production in some sub-sectors such coffee, tea and others, and this needs to be intensified for the benefit of UNCE.

3.2 Secondary Level

3.2.1 Target players and their roles

At the secondary level, the main function performed is bulking which is often accompanied by testing and standardization. Players at this level undertake bulking but also other post-harvest handling services such as testing, sorting and packaging. In the Ugandan context, bulking is done by traders, and cooperatives who own warehouses, silos and other bulking centres. In addition to the warehouse owners, there are a number of umbrella organizations under which these traders are organized and other state and none state actors that play bulking related services. Some of the players at the bulking level include:

The Grain Council of Uganda (TGCU): A non-profit, membership organization registered in 2012 that brings together key stakeholders along the grains value chain. The functions of TGCU include; grain trade and business development services; source, sieve, prepare, package, demystify and disseminate reliable, relevant, timely business information; demystifies policies for its members and gets involved in rolling them out through regional, district and institutional based trainings and policy advocacy and lobbying sessions, and pre-and post-harvest management training and capability development sessions.

Uganda Tea Association (UTA): UTA is the umbrella body of companies and individuals who are in the business of growing, processing and trading in tea. It helps members to discuss common problems affecting the tea industry and find solutions.

Uganda Coffee Development Authority (UCDA): Issues certificates in respect of grade and quantity of coffee. UCDA is responsible for the overall supervision of the coffee sub-sector including related industries and advise government on coffee sub-sector policies. Organizes training for technicians, coffee processors and quality controllers.

Uganda Coffee Federation Ltd: A non-profit company with membership including coffee exporters, coffee processors, farmers, companies that supply equipment and supplies to coffee exporters and processors, clearing and forwarding companies, insurance companies, banks and international coffee trading houses in Europe. They promote coffee production and trade to increase volumes and quality of traded coffee.

NAADS: Provides post-harvest handling equipment and constructs warehouses for commodity storage.

MTIC: They construct border export zones and market infrastructure for bulking, storage and testing. They provide value addition equipment and BDS to farmer cooperatives.

Logistics Firms: They provide transport services to the players in the CE ecosystem

Warehouse Owners: Provide bulking, storage, testing and post-harvest handling services.

Uganda Warehouse Receipt Authority (UWRSA): Profile and inspect storage facilities personnel commodities; License Warehouses, and Warehouse Inspectors and issue warehouse receipts to depositors; Skilling of staff, technical operators—training of commodity handlers, ICT Personnel and certification of handlers; Sensitisation and mobilisation of stock depositors (traders, cooperative societies, associations and individual farmers); and support the development of infrastructure for ICT, quality control and Storage.

Uganda Cooperative Alliance: Some members of the Alliance undertake bulking of commodities for their members.

Uganda National Bureau of Standards (UNBS): The role of UNBS is the formulation and promotion of the use of standards; enforcing standards in protection of the public health and safety and the environment against dangerous, counterfeit and substandard products; ensuring fairness in trade and precision in industry through reliable measurement systems; strengthening Uganda's economy by enhancing competitiveness of local industries and promotion of quality exports through standardization, quality assurance, testing and metrology.

Collateral Managers: These are professional firms that manage inventories and are trusted by banks to offer performance guarantees and ensure that banks are paid before the inventory is released or compensated in cases of fraud.

Insurance Providers: These provide insurance to the bulkers to hedge against losses that may occur in storage and during transit.

Processors: These buy from farmers and small traders and process the commodity.

Financial Institutions: These provide financial services to bulkers and off-takers.

The National Marketing Company: Currently under consideration, it will play a prominent role in aggregation and bulking of produce.

3.2.2 Gaps at Secondary Level that need to be addressed

Bulking and storage challenges- this remains a key challenge to the country as government does not own any warehouses but private actors and member associations such as TGCU own all storage facilities. Whereas there are, ongoing efforts by government through the UWRSA to license the warehouses in the country, preliminary reports show that most of them do not meet the standard requirements and thus the urgent need for government investments to bring them to the required standards in terms of infrastructure, human resource and maintenance, among others.

Further still, the owners of the largest warehouses; mainly for maize and beans are financially constrained and therefore in need of working capital to invest in procurement to stock the warehouses that currently operate at low levels of 30% or less as well as support to expand their facilities for both primary and secondary processing. Government efforts through the UWRSA to handhold a number of warehouses and prepare them to meet certification requirement is an important innervation in addressing quality bulking infrastructure requirements. This needs to be intensified and complimented with efforts geared at formalizing commodity markets in order to improve the operation capacity of the formal bulking infrastructure for the benefit of the UNCE.

3.3 Tertiary Level

3.3.1 Target players and their roles

At tertiary level, there is mainly trading and post trading functions such as export and value addition. In the case of the UNCE, players that would be directly involved at this level include:

- UNCE - This will be the official government trading platform
- Other Trading Platforms – these will be integrated with the UNCE
- Speculators - These are the traders that bet on the movement of the commodities prices, often are a liquidity source for producers and end-users as well.
- Traders - serve as an intermediary between the producers and the end-users.
- Exporters – These will buy from the UNCE and export the commodity to the foreign markets
- End-users - These could be individuals and companies that help build a demand for a commodity e.g. those who use the commodities in their production processes e.g. manufactures.

In addition to the direct players, there are other service providers that will need to play a role at the tertiary level including:

- Clearance Service providers – These ensure that the new receipt owner has been settled after the transaction is finalized at the exchange.
- MTIC - through the Department of External Trade, MTIC is responsible for developing, coordinating, regulating, promoting and facilitating domestic and external trade with particular emphasis on export promotion and access to regional and international markets.
- Capital Markets Authority (CMA) - Is a regulating body charged with the prime responsibility of supervising, licensing and monitoring the activities of market intermediaries, including the stock exchange, commodity exchanges and the central depository and settlement system and all the other persons licensed under the Capital Markets Act.
- Arbitration Services-This role is done by the Judicial Services or through a dedicated arbitration mechanism embedded into the exchange structures. The capacity of the judiciary would need to be built for it to be able to play this role of arbitrating any conflicts arising from the trade on the exchange.

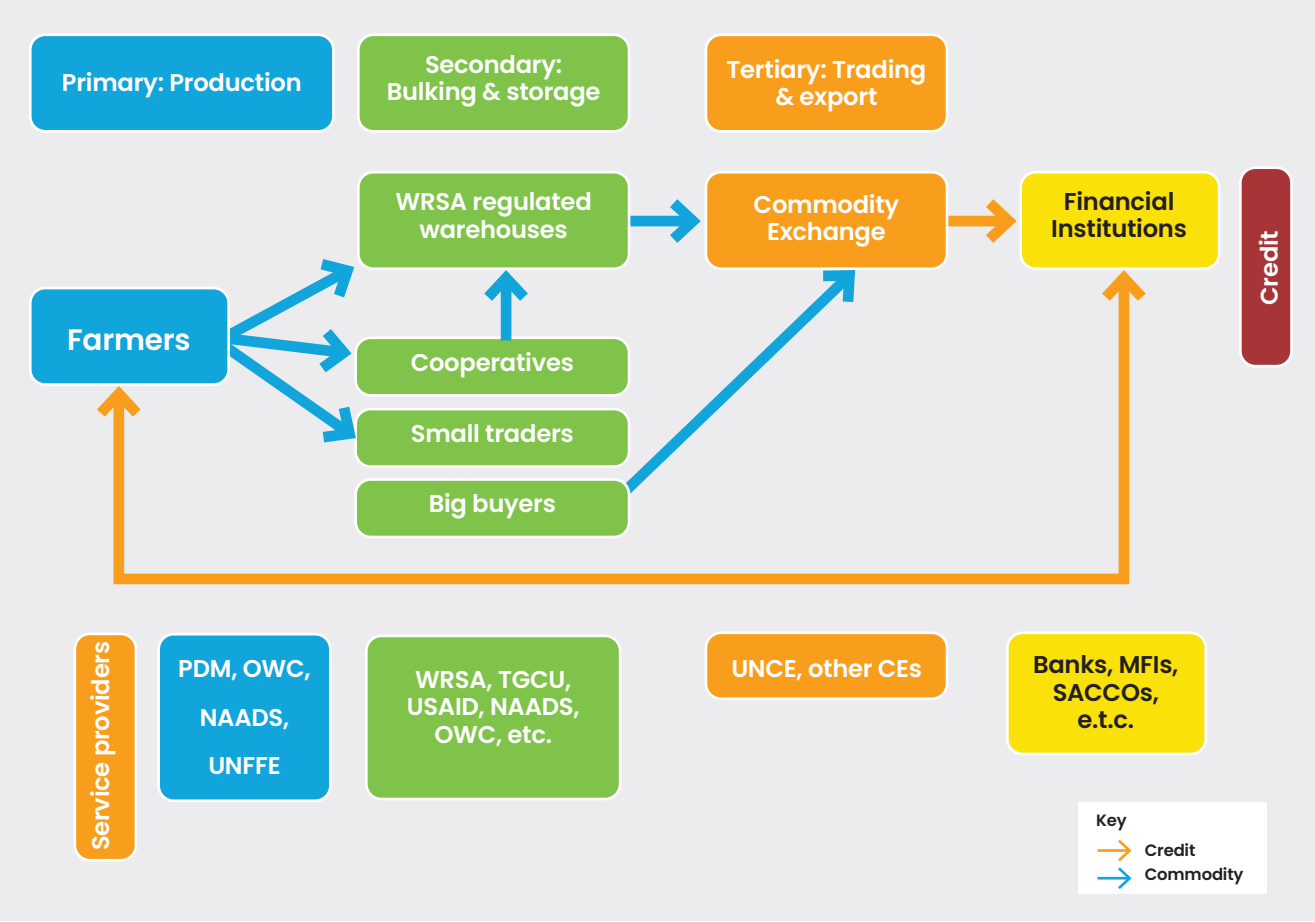
3.3.2 Gaps at tertiary Level that need to be addressed

Limited access to credit by farmers has led to on-farm buyers of produce that include both local and regional traders that take advantage of the farmers' situation to offer low prices for produce

before a farmer realizes the full market potential at maturity. This has been a common case for commodities such as maize. For the case of tea, Uganda made teas have consistently been traded as inferior brands at the Mombasa auction market; a situation which could be addressed largely through timely use of fertilizers.

Limited knowledge on commodity markets and prices which renders the farmers and bulkers vulnerable to trading at low prices. It has also been noted that currently the big traders of maize and beans are dependent on WFP and other humanitarian projects for market due to lack of access to big off takers in and out of the country. Ongoing public and private sector effort to enhance agro-processing is one of the most important intervention to alleviate the problem of limited markets. These efforts are being complimented by plans to set up tertiary digital markets such as those by USE, ALTX and UDC (revitalization of the UNCE).

Figure 1: The Uganda National Commodity Exchange Ecosystem - Stages, Players and Linkages



Source: Modified from Katunze, Miriam & Kuteesa, Annette & Mijumbi, Theresa & Mahebe, Denis, 2017. "Uganda Warehousing Receipt System: Improving Market Competitiveness and Service Delivery," Research Series 260019, Economic Policy Research Centre (EPRC).

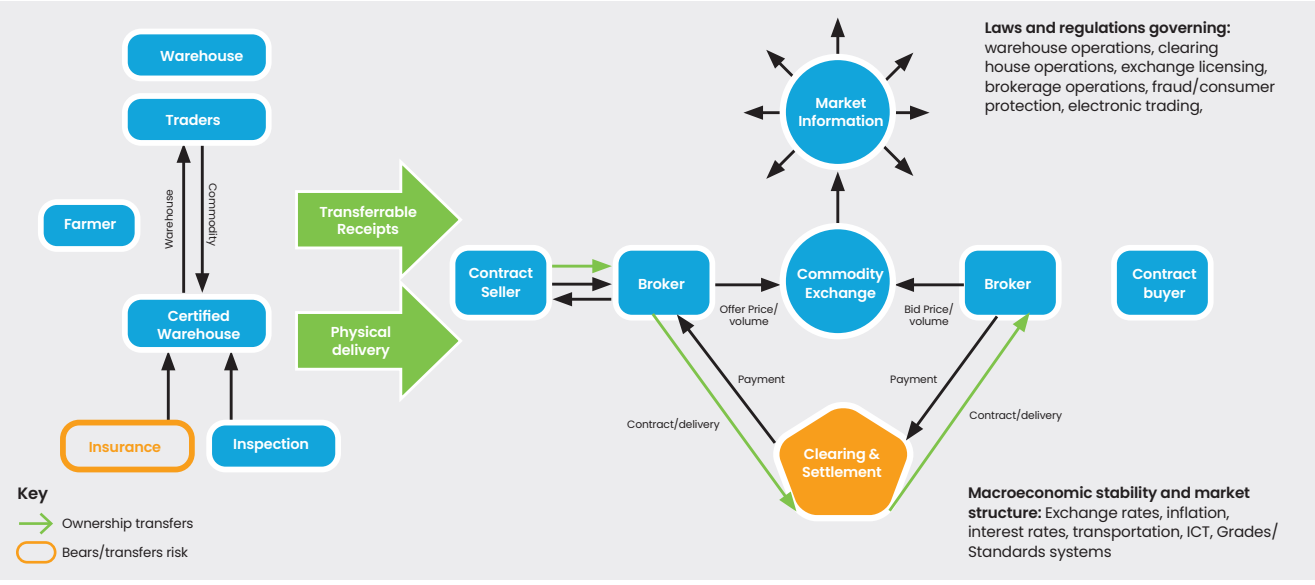
4. Building blocks for the Uganda National Commodity Exchange

As noted earlier, a commodity exchange is an organized marketplace where buyers and sellers come together to trade commodity-related contracts following rules set by the exchange. To achieve this goal there are a range of functions that are performed by various institutions and actors as highlighted in section 3. Therefore, a commodity exchange is a tertiary function that is supported by a delivery mechanism from primary and secondary levels. For Uganda's case this function will be performed by the Uganda National Commodity Exchange (UNCE). The exchange is usually established at national level but with feeding mechanisms of warehouses and farms that are located at regional, district and community levels. These facilities may be owned by the government or the private sector.

Subsequent to meeting storage certification standards, the warehouses are then assessed for suitability to issue warehouse receipts (WRs). These receipts can then be used for trading at the commodity exchange or as collateral to financial institutions for accessing financing.

Robbins (2011) describes the process of trading on a commodity exchange as follows; The largest commercial actors in the industry (traders, producers' representatives, exporters, millers and other processors, large retailers, etc.) buy the right to trade on the exchange, by purchasing a seat or paying a membership fee. These members may then control the exchange. Alternatively, the exchange may appoint brokers to represent the large-scale actors and execute transactions for them across the floor of the exchange. Bargains are struck between the buyers and suppliers or their broker representatives for large quantities of those commodities which the exchange is capable of trading. The price at which these bargains are struck are recorded by the exchange staff, who then make the details public, thereby setting a benchmark market price which can serve, in part, as market information service. Prices which are recorded by the exchange as deals are struck from the basis of a market information service.

Figure 2: How UNCE will Work – Flow structure and Player



Source: Modified from USAID Feed the Future Enabling Environment for Food Security: Assessing the Preconditions for Commodity Exchange Success, A Guidance Document, November 2017

Key features of a commodity exchange with reference to UNCE

A good commodity exchange comprises the following features: trading platform; standardized contracts; use of brokers; security of the commodity traded; credible regulator; user fees; regulated and certified warehouses; warehouse receipts; certified warehouse management including collateral management; insurance services, clearing and settlement services, market information services, and dispute resolution services.

1) Trading platform:

An exchange provides a trading platform, either a physical location (a trading floor) or an electronic trading system, in both cases with an intricate set of trading rules. In Uganda, whereas there are efforts by some private and public sector players to launch trading platforms, none of them has been operationalized. In addition to trading in equities and bonds, the USE recently piloted an e-trading platform focusing on maize with Agroways Uganda. Similarly, ALTX East Africa Ltd, Uganda's second securities market was expected to launch an electronic platform/ marketplace for securities, derivatives, currencies and commodities by the end of 2020 but this too has not been realized. UCDA is in the process of establishing a coffee auction system as an alternative method to the day-to day method of selling coffee, as provided for in Clause 52 of the National Coffee Act 2021. Lastly, UDC as part of the efforts for the revitalization of the UNCE, is in discussions with these players to work out a collaborative arrangement for the establishment of a national e-trading platform.

2) Standardized Contracts:

An exchange provides standards contracts, rather than letting buyers and sellers determine all contract provisions themselves. The extent to which the contracts are standardized in terms of quality, quantity, delivery location, and delivery time can vary. Exchanges set all the contract conditions except for the price. In the case of Uganda, UNCE will originate and manage all contracts in accordance with the laws of Uganda including the Contracts Act, 2010. One of the most important contracts in CEs is the one that deals with the delivery time in which three types of contracts stand out and these are: spot contracts, future contracts and options contracts.

a) **Spot contract -** This is contract for a physical exchange of a specified commodity, quantity, and price. The payment and transfer dates are specified in the contract. Typically, products are due for delivery on the same day as the trade is negotiated, or with in two business days. Spot contracts exist in spot markets (or cash market), a public financial market in which financial instruments or commodities are traded for immediate delivery (Basu, 2020). It contrasts with a futures market, in which delivery is due at a later date. In a spot market, settlement normally happens in T+2 working days, i.e. delivery of cash and commodity must be done after two working days of the trade date. A spot market can transact through an exchange or over the counter. Spot markets can operate wherever the infrastructure exists to conduct the transaction.

b) **Futures contracts-**A futures contract essentially allows an investor to commit now to the purchase or sell an underlying asset at a specified price, with delivery and payment delayed until a specified settlement date. Futures contracts are derivative instruments – that is, they derive their value from some other underlying security or index (Clark et

al, 2013). No money changes hands up front, except for positing initial margin to reduce the risk of non-payment, but a futures contract can be either "bought" or "sold". The buyer of a futures contract has a long position and commits to buy the underlying asset or security at the special price and date. The seller of a futures contract has a short position and commits to sell the underlying asset or security at the specified price and date. The fact that the future price for transacting is negotiated now but delivery and payment are delayed until the settlement date creates an opportunity cost for the seller in receiving payment. As a result, the negotiated price for future delivery of the asset differs from the current cash price by an amount that reflects the cost of waiting to get paid. The futures market is an auction market in which participants buy and sell futures contract on various kinds of commodities (physical, national, as well as financial) for delivery on a specified future date. By design, a futures trade can happen only through an exchange and can be traded through open outcry system or electronically. The existence of futures markets is heavily dependent on regulatory approvals, unlike spot markets, which can exist independently.

c) **Options contracts-**The two types of options are call options and put options. A call option gives the owner the right to buy the underlying security at a specified price within a specified period of time. A put option gives the owner the right to sell the security at a specified price within a particular period of time. The right, rather than the obligation, to buy or sell the underlying security is what differentiates options from futures contracts. Standard contract features allow futures and options to be traded quickly and efficiently on organized exchanges. The exchanges serve as intermediaries to facilitate trading, to transfer daily gains and losses between parties, and to pool resources of the exchange members to guarantee financial stability if a single investor should default. The individual parties to a given trade may never meet and do not need to deal with each other after an exchange has matched their trade. The use of options and futures gives the investor flexibility in managing the risk of an underlying security or index. Such basic business activities such as banking, international trading, and providing retirement benefits may leave an individual investor or corporation exposed to interest rate, foreign exchange, or equity market risk. The use of options and futures allows the investor to hedge or transfer all or some of this risk to others more willing to bear it. Derivatives securities can also be used to speculate (assume risk) rather than hedge risk away.

In the case of Uganda, because of limited sophistication the most obvious type of delivery contract that will be operate at the UNCE will be the spot and forward contracts. However, as the trading progresses, the exchange will introduce more sophisticated contracts such as futures and options.

3) The use of Brokers:

Commodity Exchanges often do not deal with most of its users directly, but through brokers. Brokers act as agents for buyers and sellers, for placing transactions, managing payments, information flows and the delivery process. The UNCE will set standards and manage the registration of providers of brokerage services at the exchange.

4) Quality and Quantity Guarantees for the traded commodity:

An exchange provides guarantee on the quality and quantity of the commodity traded. It sets grades and standards, and license those who are permitted to issue the grading certificates. In the Ugandan context, UWRSA regulates and certifies the storage facilities confirming that they can maintain the quality and quantity of the stored commodities traded at the UNCE. Under the UNCE ecosystem, UNBS will issue and enforce quality standards for the traded commodities. Warehouses will be required to have testing facilities and equipment or seek these services from UNBS certified testing facilities. There will be provisions for common user testing facilities run by the public and private sector. Each parcel of the commodity specified complies with the exchange's standards and carries a certificate of quality to confirm that fact.

5) A credible regulator:

Commodity exchanges are usually regulated by a competent government authority and in some cases a number of different regulatory agencies. The trading rules and procedures are elaborated for all the elements in the ecosystem from the delivery mechanism to trading to the resolution of conflicts between those using the exchange. In the Uganda case, the UWRSA and UNBS regulates the pre-trade elements including storage while the Capital Markets Authority deals with the trading as provided for in their respective acts and regulations.

6) Payment of user fees:

All participants in the exchange pay a fee and/or commission to the exchange for its services, and this fee covers the commodity exchange's costs. Such fees include those for inspecting and certifying the warehouses; inspecting, testing and certifying the quality of the goods, storage and handling. The fees for inspecting and certifying the warehouses are determined and paid to the UWRSA while those for inspecting, testing and certifying the quality of the goods are paid to UNBS. Other fees such as clearance, insurance and others will be paid directly to the providers of these services when trading commences. In line with international standards, the UNCE will earn a commission of about 0.2 - 0.5 percent of the traded quantity.

7) Regulated and certified warehouses

To ensure an efficient and effective delivery mechanism for the UNCE, the commodities to be traded on the trading platform need to be stored in well regulated and certified warehouses. In Uganda, most warehouses are owned by member associations such as the Grain Council of Uganda, the Uganda Tea Association, the Uganda Coffee Federation, Uganda Ginners and Cotton Exporters Association. The Government of Uganda through NAADS/OWC has also constructed a number of warehouses. Others are owned by relief agencies such as the WFP.

As noted earlier, most of these warehouses are managed by the Uganda Cooperative Alliance (UCA). The warehouses are regulated by the Uganda Warehouse Receipt System Authority (UWRSA) which is mandated to undertake the certification to ensure that they comply with certain set harmonized national, regional and international standards. Those that qualify are granted a warehouse license which allows them to operate. The certification process assesses the suitability of the warehouses with regard to receiving, storage, conditioning, shipping and handling of the commodities stored or expected to be received, stored, conditioned, shipped or handled[2]. Currently, there are no certified

2 *The Uganda Gazette (2007). The Warehouse Receipt System Regulations, 2007. Statutory Instruments 2007 No. 33*

warehouses in the country, though there are efforts by UWRSA to handhold and support a number of them to meet the standards so that they can be certified.

8) Warehouse receipts

Warehouse receipts are a key component of the commodity exchange. In Uganda, the Warehouse Receipts System Act (2007) defines a warehouse receipt as a receipt for goods issued by a warehouse keeper duly licensed and bonded under the Act and includes a negotiable and non-negotiable receipt. All the produce available for trade on the exchange has to be made available in one of the warehouses certified by UWRSA. Warehouse receipts serve as a transferable proof of ownership of a certain good. Under certain conditions these could be swapped, traded, or used as collateral. Warehouse receipts are very useful component of the commodity exchange and provide numerous benefits to a variety of actors that includes farmers, traders, processors, importers and exporters. Warehouse receipts can either be transferable or non-transferable. Transferable warehouse receipts allow whoever has access to the title to transfer its ownership to someone else while non-transferable receipts must go through a particular process often controlled by a regulator to transfer ownership. Certified warehouse will be assessed by UWRSA for eligibility to issue warehouse receipts, which guarantee the physical presence and quality of the goods.

9) Certified warehouse management including collateral management and insurance services

Collateral Management is the process of two parties exchanging assets in order to reduce credit risk associated with unsecured financial transactions between them. Such counterparties include banks, broker-dealers, insurance companies, hedge funds, pension funds, asset managers and large corporations. The fundamental idea of collateral management is very simple; cash, securities or other instruments such as bonds and equities are passed from one counterparty to another as security for a credit exposure. Any two parties trading financial instruments that give rise to future cash flows, such as Over-the-Counter (OTC)[3], run the risk that one of the parties to the trade may default on a future payment, leaving the other non-defaulting party with a financial loss. On any given day, the party required to post collateral to the other is determined by calculating the net present value (NPV) of all future cash flows for each open trade or transaction.

A collateral management agreement (CMA) is a three-party agreement between the commodity owner/borrower, the collateral manager, and a bank (although in some cases a fourth party, the buyer, is added). CMAs can be used in countries that do not have a formal WRS, but they can also coexist with a WRS. Under a CMA, the collateral management company issues a certificate of deposit that the borrower can use as collateral to obtain a loan. When the goods are sold, the bank gets paid first and then authorizes the collateral manager to release the inventories to the new owner. For greater security, the certificate of deposit can be registered at a collateral registry.

The key issue in CMAs is the trust between the three parties, and particularly the trust in the collateral management company that ensures the integrity of the warehouse and the quantity (and sometimes quality) of the goods stored and used as collateral. The collateral manager is a professional firm,

3 Over-the-counter (OTC) derivatives market refers to a marketplace that is conducted off-exchange. These derivatives are privately negotiated between two parties, compared to listed derivatives traded through an established exchange or other intermediary.

usually comparatively large and well capitalized, that has the skills to manage inventories and is trusted by the bank. Many collateral management firms offer performance guarantees, or have sufficient skills and capital, to ensure that banks are compensated even in cases of fraud. Some banks have their own fully-owned subsidiary collateral management company so that they can exert better control over its operations.

In Uganda, the public collateral management arrangement is regulated and supervised through a regulatory process by the Uganda Warehouse Receipt Systems Authority that performs the role of independent regulator of warehouse receipt systems. A key observation under the WRS Act, 2006 is that the Act is silent on the warehouse operator / manager not to have any title to the stocks he/she manages especially where the collateral management role can be handled by one person.

The private collateral management arrangement is operated by collateral managers (CMs). Under this system, the CMs are usually stationed in the warehouse where the commodities are stored, with a responsibility of issuing a warehouse receipt to the commodity depositor as instructed by the financier (bank). In Uganda, the services of collateral managers are for the primary purpose of allowing the depositors to secure bank credit. Contractual obligations and rights under the private WRS system is the norm, are defined in tripartite Collateral Management Agreements (CMAs) between three key players; the borrower (usually the depositor), the lender (usually a bank), and the collateral manager (who manages and takes collateral responsibility for the stock). The CMA spells out the terms and conditions, responsibilities and warranties under which the transaction is secured by the collateral manager.

Collateral managers (CMs) will in some cases be outsourced by banks (lenders) from designated collateral management companies that have been vetted based on their financial strength, experience, and understanding of the WRS industry. These companies will be local subsidiaries of international commodity inspection companies that enjoy competitive advantage over local companies because they can obtain substantial insurance and professional indemnity cover from international insurance companies. Examples of these companies in Uganda are ACE Global Depository Ltd, Collateral Management International Ltd and StarAgri. The CMs will also provide all risks insurance covering fire, floods, earthquake, employee fidelity, and burglary for the warehouse and its contents, and professional indemnity insurance in excess of the value of the loan to cover its professional obligations.

10) Clearing and settlement services

Clearing and settlement are the two most important aspects of commodity exchange trading that ensure smooth functioning of the system. Clearing refers to the process of accounting to update and reconcile obligations/payments of parties involved in the trade while settlement involves matching outstanding buy and sell instructions by transferring ownership of commodities against funds between buyer and seller. The Process of clearing and settlement process entails the following actions: Commodity exchanges transmit trade details to clearing corporations on a real time basis; Upon receipt of trade details, the clearing corporation/clearing house notifies trading members about obligations; Clearing members receive communication regarding obligation and pay-in advice of funds; Clearing banks are instructed to make funds available by pay-in time; Pay-in of funds for executed trades is carried out by clearing banks by debiting the account of clearing members and crediting the account of the clearing corporation account with the amount due to

them; and Pay-out of funds is done based on the instructions of the clearing corporation by clearing banks and credited to the account of clearing members, as applicable. The UNCE will work with a number of intermediaries in the clearing and settling trades to ensure a seamless process namely, clearing firms, clearing banks, custodial services, warehouse service providers and e-registry service providers, etc.

11) Market information services (MIS)

MIS have the function of collecting and processing market data systematically and continuously, and of making it available to market participants in a form relevant to their decision making. Market information services for a commodity exchange help in disseminating mainly information on bid/ask prices, lot sizes, grades, and settlement price. The MIS role will be played by specialised MIS firms and agritech and media firms who are already providing these services across the value chains.

12) Dispute resolution services

Disputes at CE can arise from between buyers and sellers, or brokers and clients, usually out of breach of contracts. Avenues for resolution of such disputes are mediation and arbitration. At the UNCE, bye-laws will be enacted to provide that all claims, differences or disputes between the members or between a member and a client in relation to trades, contracts and transactions executed on exchange shall be resolved by way of conciliation proceedings and in case such conciliation proceedings do not result in a settlement, arbitration as provided in the bye-laws. Such arbitration will be conducted by Arbitrators selected from an arbitration panel of the UNCE. The bye-laws will provide for a time frame in which the arbitral tribunal shall make the arbitral award from the date of entering upon the reference. The time to make the award may, however be extended from time to time by the Managing Director or relevant authority on an application by either of the parties or the arbitral tribunal as the case may be. UNCE shall on receipt of an arbitral award against an exchange member follow such procedure as may be provided in the relevant Rules and Regulations of the Exchange in force, from time to time, with respect to honouring of the award. The process will also be guided by the laws of Uganda including the Arbitration and Conciliation Act, 2000.

13) Commodities to be traded

Considering that Uganda is an agrarian economy, it is expected that UNCE especially in the beginning, will mainly trade in agricultural commodities. For that matter, the six commodities proposed for trading after the revitalization of the UNCE are mainly agricultural including maize, beans, cassava, tea, coffee and cotton. In order to understand the production and marketing characteristics of these commodities in Uganda, their profiles are presented in appendix 1. In appendices 2 and 3, we also present trade statistics of a larger sample of the commodities, which in future might be traded on the UNCE.

5. Call to Action

Operating a CE is an expensive and elaborate undertaking. It would require paying personnel, ICT, office and other operation expenses which the sale volumes would not be able to meet in a short term. CE often charge between 0.2-0.5 percent on the sales through the exchange as operations costs and considering that usually at the beginning of the operations, the sales volumes are too low, the charges would not generate enough revenue to run an exchange. It is therefore envisaged that the UNCE will need the financial support of government and development partners its initial years of operations. The actual cost of the UNCE will be arrived at after a through business plan is developed.

As noted earlier, there are gaps in the WRS/UNCE ecosystem that will need to be addressed for the UNCE to be successful and this will require the combined efforts of many public and private players. A summary of the gaps, ongoing interventions and the work that still needs to be done and what is expected of key stakeholders in revitalizing the UNCE are presented in Appendix 4. There is therefore, need for government (with support from development partners) to support the different elements of the WRS ecosystems, from grassroots, to off-taking to the commodity exchange. Different government and development partner agencies can support separate sections of the ecosystem, the total sum of which will lead to an effective, efficient and sustainable WRS/UNCE ecosystem that creates a market for a number of commodities, leads to export promotion and economic development. There are some countries in Africa and around the world who have vast experience in running CEs and the UNCE revitalization will need to take into consideration these best practices. As noted earlier, there are also ongoing efforts in the country to establish CEs and trading platforms, the UNCE revitalization team will need to work with them to explore synergies that will bring together the diverse technical and managerial skills.

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Appendices

Appendix 1: Profiles for Commodities Proposed to be traded at UNCE

MAIZE

According to the Ministry of Agriculture, Animal Industry and Fisheries, maize was introduced in Uganda in 1861 (MAAIF, 1988) and has since become a major part of the farming system, and has since been traditionally cultivated in Uganda by small-scale farmers both as a source of food and for income generation. Maize is now one of the ten agricultural crops which the Government prioritised value chain for development.

Maize Production

Maize is grown predominantly by peasant farmers land holdings of between 0.2-0.5 ha on a subsistence level, except for a few emerging commercial farmers with 0.8-4.0 ha. Peasant farmers account for up to 75% of maize production and contribute over 70% of marketable surplus. However, due the increased regional demand and structural reforms in the maize international trade the share for large-scale farmers who account for 25% is growing. Maize production in Uganda is characterised by generally low yields standing at 1.0-1.8 MT/ha (4-7 bags [100 kg] per acre), mainly due to limited use of agricultural inputs, which result in high unit costs and low returns. Consequently, maize in Uganda has high unit costs of production, estimated at UShs 120-180/kg [US$ 6-9 cents] per kg and gross margins less than UShs 50,000 [US$ 25.6] per ha. It is estimated that 15 percent of the 500,000 – 750,000 MT maize produced per annum, is lost through post-harvest losses and 20% is retained at household level for consumption and seed (USAID, 2008).

The ideal conditions for maize production in Uganda are fertile soils, ample rainfall of 1,000 mm of which a minimum of 400 mm required in the growing season. A wide range of areas in Uganda meet these conditions and therefore maize is widely grown in most parts of the country. The main production areas include: Western (Kabale, Masindi, Kasese, and Kabarole districts); Central (Mubende, Kasanda, Kiboga, Masaka, Mukono, and Rakai districts); Eastern (Iganga, Kamuli, Bugiri, Mayuge, Sironko, Tororo, Mbale, and Kapchorwa districts); and Northern (Arua, Nebbi, Apac, Lira, Kitgum, and Gulu districts). Countrywide, the area under cultivation varies widely from district to district, although in recent years, there has been a steady increase, from 1,062,960 ha in 2011 to 1,317,321 ha in 2019 before decreasing slightly to 991,056 Ha in 2020 (Table A1). Similarly, yields also vary from district to district depending on the soil and climatic condition with the overall national yield estimated to have slightly increased from 23,999 tonnes per hectare in 2011 to 27,748 tonnes/ha in 2020. Production totals also increased from 2,551,000 MT in 2011 to 2,750,000 MT in 2020.

Table A1: Maize Production in Uganda, 2011-2021

Year	Area Planted (000' Ha)	Volume (MT)	Yields (hg/ha)
2011	1,062,960	2,551,000	23,999
2012	1,093,786	2,734,000	24,996
2013	1,101,453	2,748,000	24,949
2014	1,103,185	2,868,000	25,997
2015	1,125,168	2,812,919	25,000
2016	971,889	2,482,795	25,546
2017	1,078,850	2,814,490	26,088
2018	1,288,045	3,442,430	26,726
2019	1,317,321	3,588,000	27,237
2020	991,056	2,750,000	27,748

Source: FAOSTAT, 2021

Maize Consumption

Maize consumption in Uganda is not as widespread as in neighbouring countries like Kenya, Tanzania, etc While maize has been grown for a long time in Uganda, nonetheless, unlike in neighbouring countries (Kenya, Tanzania, etc), but is grown primarily for income generation, rather than for food security. However, domestic maize consumption has been increasing due to urbanization and the growing cost of traditional staple foods (such as bananas [Matooke]. Domestic maize food consumption has increased from 1.7M MT in 2011 Tonnes to 2.1M MT in 2019 while production going into animal feeds has also increased from 132,000 MT to 148,000 MT in the same period (FAOSTAT, 2022). Maize is consumed in various forms – grilled or whole, as a cake [Posho, or Ugali], or as porridge – especially in urban centres. There is also increasing demand of value-added products (maize flour, poultry feeds, etc) especially in urban centres where maize is gaining importance both as a major food item and for income generation.

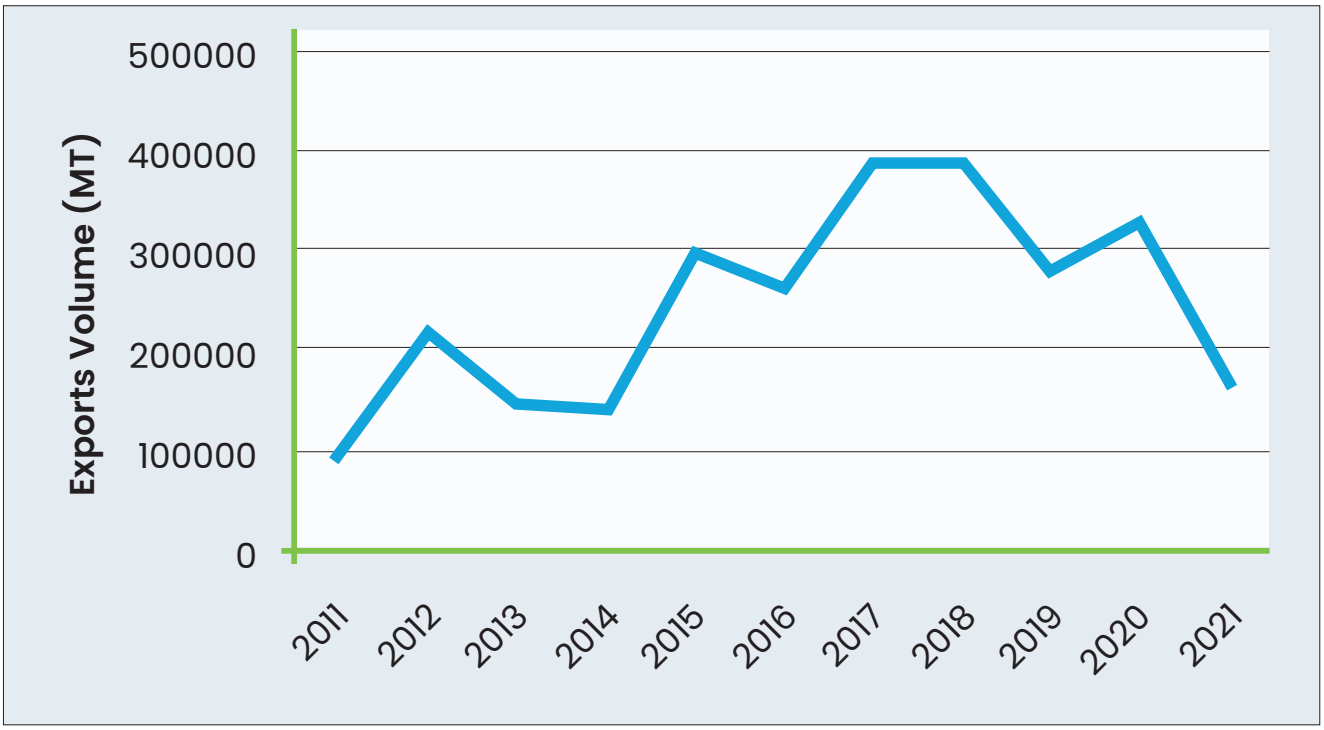
Maize Trade

About 24% (843,564 MT) of maize produced in Uganda is used for commerce (COMTRADE2019). Of the quantity used for commerce, about 34% (285,564 MT) is formally exported mostly (67%) as raw grain – a testament to UG comparative advantage (FAOSTAT 2019; COMTRADE2019). The value of maize formal exports have increased from 93,610 million USD in 2011 to 165,491 million USD in 2021 mainly due to the COVID-19 crisis (Figure A1). A significant amount is exported informally, estimated at 15.6 million USD in 2011 and increasing to 20 million USD in 2020 before reducing to 7.5 million USD (Figure A2).

About 95% of total maize exports supplies the region, with Kenya the largest buyer. The main buying centre is the Kisenyi market which has a concentration of processors while main domestic demand for maize is from institutions (schools, prisons, hospitals, etc). Major institutional buyers of maize include the World Food Programme (WFP), which stocks supplies destined for distressed areas both within Uganda and the region (DRC, Burundi and Rwanda) and the Uganda Council of Uganda (TGCU), which is an association of more than 120 Ugandan major trading companies.

Nonetheless, the country has only managed to export half of this amount, reflecting a low level of penetration. The main constraints to penetration into the regional markets have included non-compliance with EAC maize quality standards, legal and regulatory challenges, logistic and cross-border bottlenecks and low productivity. In March 2021, the Kenyan Agriculture and Food Authority reported that 70% of maize sampled en-route to Kenya was below the US EAC 2: 2017 maize quality standards, prompting a imposed a temporary import ban on Ugandan maize. On the domestic market, many members of the TGCU, indicate about half of the maize grain delivered to their warehouses do not pass visible inspection in line with the EAC maize quality standard and is rejected. This drives more maize trade into informal trade which is a major issue for the viability of maize trading on the UNCE. On the other hand, the reliance on standardized and quality products at the UNCE would enhance the country's transition to a more formal trading system and would increase the amount of produce including maize that is traded through formal channels.

Figure A1: Volume of Maize Formal Exports 2011-2021



Source: Bank of Uganda Statistics, 2022

Figure A2: Value of Maize Formal Export 2011-2021

Source: Bank of Uganda Statistics, 2022

In terms of imports, by and large, however, Uganda has always been self-sufficient in maize production and has not been dependent on imports. Indeed, formal imports of maize have recently been declining falling estimated at only 3,491 thousand US dollars in 2020. However, imports of maize have been high in seasons of low harvest, especially on account of variations in rainfall patterns.

The Maize Value Chain

The maize value chains in Uganda starts with rural smallholder farmers that use low technology inputs to produce the crop on small plots of land. The product is then sold to village aggregators some of which undertake small scale processing for the domestic market or sell to cross-border traders that transport it to regional countries. The actors in the value chain map therefore follow that chain which always ends at domestic consumption or regional cross-border trade (Figure A3). Therefore, the main players in the maize value chain including those who transfer maize (i) form farm (farm gate) to agents/traders store/rural market in rural areas; (ii) from rural market to urban market; (iii) from urban market to major buying centres outside the district; and (iv) the export market. At each of these stages, transactions are undertaken by a number of key players as discussed below.

A. **Rural Agents:** Rural agents are the main buyers of all maize traded in the parish or sub-counties. Their main function is to buy and/or assemble maize from the numerous scattered farmers, often located in inaccessible rural areas. These rural agents traditionally used bicycles to transport the maize from the farmers to their collection points but are now increasing using motorcycles and even vehicles. After accumulating enough stocks,

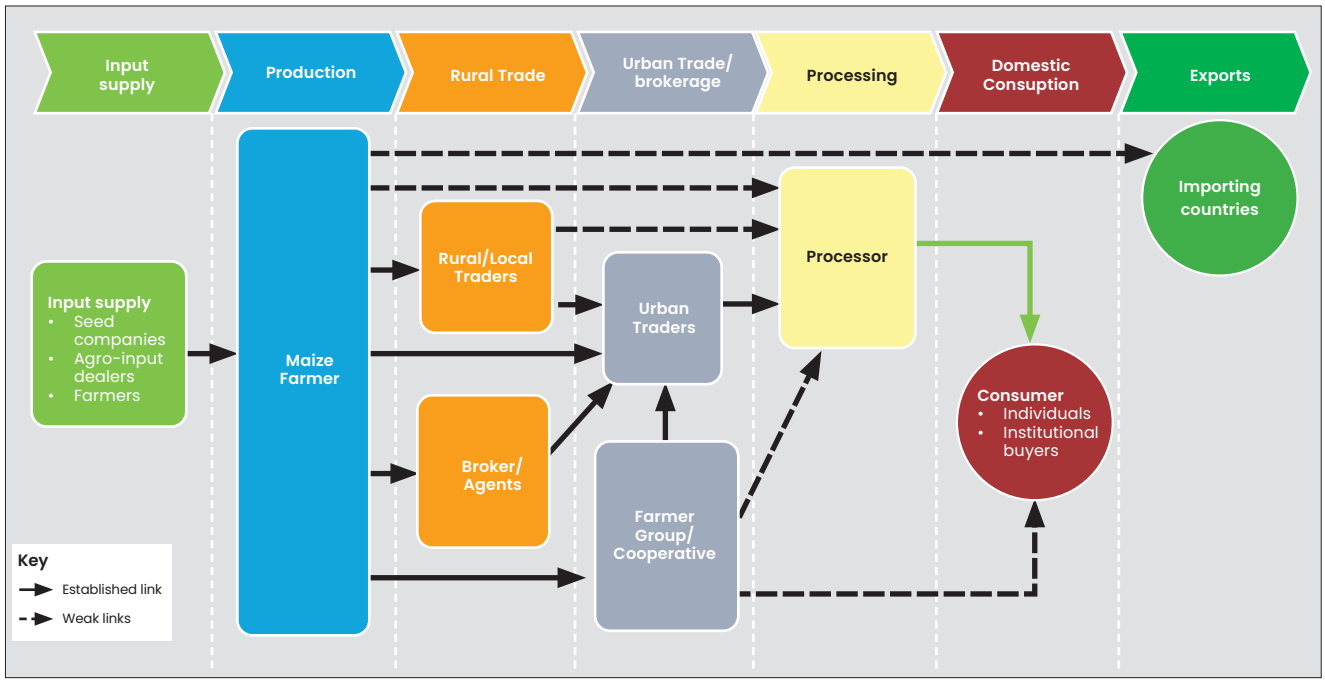
they find market for the maize (often the urban traders and processors). The urban traders and processors arrange transport to collect the maize either directly from the farmers whom they pay on a cash basis, or from the collection points of the agents. Since the agents live in the rural areas, they are a reliable linkage between the farmers and urban traders and processors/millers.

B. **Urban Traders Urban traders:** These are found in major urban centres in the district. Their main activities include networking with rural agents, serving as a market outlet for farmers, and collecting maize grain before selling it to the various clients, including institutions and maize located in the districts. Urban traders are also sources of bagging materials (sacks) used by farmers as well as market (price and volumes) information in their areas of operation. To cover the costs of rural agents and transport, urban traders sell their maize mostly to processors.

C. **Processors/ Millers:** The maize grown and traded undergoes some level of value addition – conversion of maize grain into flour and a variety of other by-products, such as bran and germ. The principle players in this value chain are the processors/ millers, grouped into three categories, namely: small-scale millers, medium-scale millers and large-scale millers. Majority of the processors/millers fall under the small-scale category and they are scattered in various rural trading centres in the districts, carrying out primarily customised milling. They operate hammer mills of less than 10 tonnes per day, mainly on a contract basis. In other words, they mill customers maize on order and at a fee. The mills are generally locally made, except for the motors and engine. These mills are often of poor design and can therefore only produce "whole grain" nutritious maize flour, often referred to as "No.2". Daily production levels vary depending on the consistency of power supply, type of machines and maize grains used. Processing costs range from Shs 50 to 100 per kg, depending on the location. The "No. 2" maize flour is common in the rural areas (a function of processing availability rather than consumer preference) and its price ranges from Shs 600 to Shs 800 per kg. This study found that its price was higher in the border areas and in urban centres and commercial centres. The medium-scale processors are based main in town centres – the district capitals and offer both contract and trade-based milling services to institutions and urban traders. The medium-scale millers first hull the maize to remove bran and then produce "No.1" flour, which is not very nutritious. Maize bran is sold to poultry and livestock farmers, while the "No. 1" flour is mainly bought by urban households. Medium scale millers do not produce "No. 2" maize flour because they are oriented towards the urban markets and the product specification of that market.

D. **Large Scale Traders/ Exporters:** A number of large scale traders and exporters of maize have emerged over the years. The main ones include: (i) the World Food Programme, (ii) The Grain Council of Uganda (TGCU), (iii) the Masindi Seed and Grain Growers Association (MSGGA), and (iv) the Uganda National Farmers Federation (UNFFE).

Figure A3: Maize and Maize Products Value chain map



Problems in the Current Marketing Mechanism that the UNCE might solve

- Lack of cheap source of crop finance to the private sector-members of the TGCU report that formal warehouses are operating at about 30 percent. This is attributed mainly to the lack of liquidity at harvest time to buy produce from the farmers which leads to most of the produce being sold informally especially to trucks coming from Kenya. The introduction of the WR receipting and the UNCE would enable the financing getting lien in the produce stored in the warehouse and provide credit to farmers on the basis of the WR receipt providing them liquidity and dis-incentivising them from selling too early and informally.
- Lack of premium price differential for better quality and grades at farm level.
- Poor infrastructure in terms of storage (drying, cleaning, and handling of produce at all levels due to poor road network and storage facilities especially at the grassroots level
- Shortage of supply with respect of quantity and seasonality which introduces unreliability in the market
- Lack of market which often results from poor price discovery and information asymmetry

The UNCE would eliminate most of these challenges because coupled with the WR system, would provide improved storage of produce which would address the issue post-harvest losses, seasonality of supply and serve to provide marketing credit. By standardising grades, the UNCE will enhance price differentiations for the produce at different levels. Price discovery and information symmetry after the revitalization of the UNCE would especially help lower level players in the chain mostly suppliers, millers and other middlemen who would be assured of supply at all times.

CASSAVA

Cassava is a perennial, woody shrub which grows between one to four metres in height. The root can grow up to 15 cm in diameter and reach 120 cm in length to weigh between one and eight kilograms. The roots of a 1-1.5 year-old have starch content of 20 – 32%. Cassava is an excellent source of carbohydrates but an inferior source of protein, fat and vitamins.

Cassava Production

Cassava is one of the most important staple foods in Uganda. In fact, Uganda is Africa's sixth largest cassava producer with 2020 production records estimated at 6.9 million MT in 2019 and slightly lower at 4.2 million MT in 2020 (Table A2). Area planted has been increasing from 552,214 MT in 2011 to 1.2 million MT in 2020. Yield are also improving but slowly having only increased from 23,999 hg/ha in 2011 to 27,748 hg/ha in 2020. In Uganda, cassava production is second to banana, although it is increasingly facing competition from other crops, such as wheat and maize. Nonetheless, cassava is better than maize in terms of income generation and is more profitable. Cassava production is largely subsistence with 60% going to consumption and 40% to markets.

Table A2: Cassava Production in Uganda, 2011 – 2021

Year	Area Planted (Ha)	Volume (MT)	Yields (hg/ha)
2011	552,214	2,712,000	23,999
2012	851,000	2,806,000	24,996
2013	851,000	2,979,000	24,949
2014	852,000	2,812,721	25,997
2015	852,340	2,727,487	25,000
2016	1,029,409	2,728,988	25,546
2017	818,622	2,729,260	26,088
2018	1,316,819	4,390,231	26,726
2019	2,094,501	6,983,000	27,237
2020	1,262,121	4,207,870	27,748

The main cassava producing area is eastern Uganda, followed by northern and western regions. The smallest amount produced comes from the central districts. On account of its resilience to drought conditions, cassava plays a major role in the farming systems of the north and the east of the country.

Cassava Consumption

Cassava remains one of the staple foods especially in the north and east of the country. Unlike products such as maize, wheat and potatoes, until recently when there have been movements to use it in ethanol production, cassava has not evolved from a subsistence crop to a commercial crop. It is consumed predominantly in rural areas than in urban areas but also plays a major part in urban diets. When

measured on a caloric basis, it is one of cheapest sources of carbohydrate and therefore suitable for the urban poor to match their food budgets. As a consequence, wealthier urban consumers often regard it a "poor man's food" and prefer more expensive food staples, such rice, Matooke (a food staple prepared from banana) and Irish potatoes. More preference is given to the sweet variety of cassava, especially in urban areas, while the bitter-tasting variety is dried and milled into flour. The bulk of the cassava that is not consumed in fresh form (i.e. boiled), is peeled and sliced into pieces, called "chips". These are milled into flour, which can be stored for long periods. The flour is often mixed with millet flour to produce a more nutritious and tasty food staple. Studies conducted in Uganda show that cassava consumption is lowest in the central region, due in particular, to the traditional preference for Matooke. However, urban areas within the region have experienced major migration from the war-affected northern region, where cassava consumption is more common. This alone has tended to increase the consumption of cassava in the central region. In the eastern region, on the other hand, cassava is a major staple foodfact, while it is seen as food-security crop in western and central regions, cassava is an important part of the eastern region's regular diet. Cassava is also a major raw material in agro-industries. Demand as an industrial raw material is estimated at 46,744 tonnes of fresh cassava per annum, or about 2% of total annual production in Uganda. Industries that use cassava include: manufacture of animal feed; plywood, paperboard and textile industries; production of starch, biscuits and bread production, brewing, production of industrial alcohol, industrial chemicals, etc. It is also used for production of animal feed, with total demand estimated at 20,000 tonnes of fresh cassava roots.

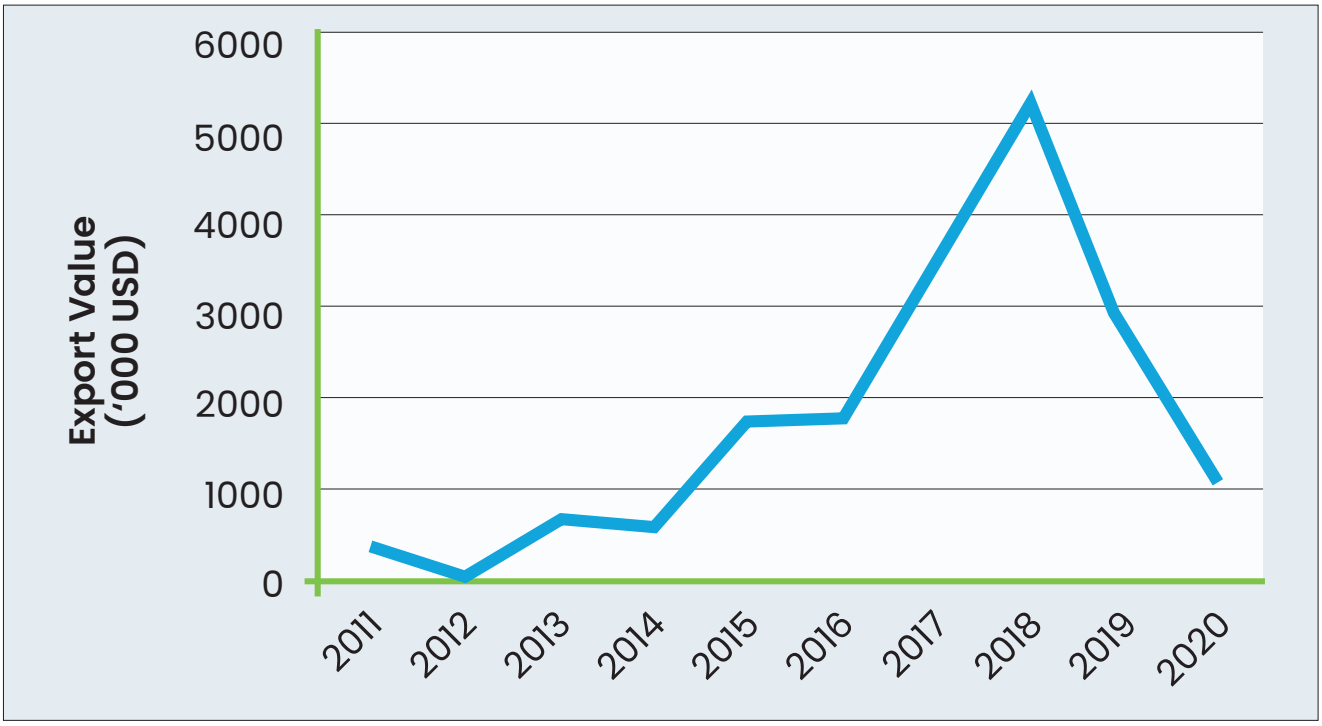
Cassava Trade

Uganda exports of cassava has been on an increasing trend, rising from 5,823 MT worth 311, 000 USD in 2011 to 7,671 MT worth 1.06 million USD in 2020 (Figures A4 and A5). Most of these exports are to the South Sudan and parts of Eastern DRC.

Figure A4: Volume of Cassava Exports 2011-2021

Source: FAOSTAT, 2022

Figure A5: Value of Cassava Export 2011-2021



Source: FAOSTAT, 2022

In terms of imports Uganda produces enough cassava for internal consumption and for export. Therefore, imports of cassava have been quite minimal. In year 2011, imports of cassava into the country stood at 877 metric tonnes worth US$ 41,000 increasing to 30,636 metric tonnes worth US$ 1.4 million in 2019 before dropping to 9,888 MT worth US$ 969,000 in 2020 (FAOSTAT, 2022).

Cassava Value Chain Mapping

The main players in the cassava value chain include the following as shown in Figure A6:

A: Farmers: Farmers harvest, peel and dry cassava roots. They have several marketing options. Using hired transport, they sell directly to rural retailers, rural consumers or, if they are near a town to wholesalers. They also transport cassava (fresh or dried chips) and sell it directly to urban market or through commission agents. Some of the large-scale farmers with big volumes of the crop sell direct to big traders at farm gate. They also sell to traders (who provide links with major consumer markets). Farmers rarely sell on credit terms except with traders with whom they have built a long standing business relationship.

B: Village assemblers: These are individuals who have access to more capital than their village neighbours. They use these financial resources and their knowledge of the local environment, to bulk cassava chips from the surrounding areas. Customers (usually wholesalers from local towns or travelling traders) are willing to pay for their services to reduce on the time and money spent on assembling sufficient quantities of cassava chips. The assemblers also help in relieving their customers the burden of having to check the quality of the small quantities of chips typically offered by the farmers.

C: District level wholesalers: These operate in towns in their local areas and to a limited extent also supply chips and flour to wholesalers in major urban centres. Their primary role is to arrange the transformation of chips into flour (usually using the services of specialised millers), and to stock and sell the flour to their various customers. In a lesser role, district level wholesalers provide another level of bulking between the farmer and the major consumer markets. Few district wholesalers specialize in dry cassava. Typically, they also deal in other food products such as maize, millet and oil seeds. The stronger wholesalers concentrate on cassava chips and flour in the wet season, when sourcing quality chips is a problem yet profits are highest. The less ambitious traders sell more cassava flour during the dry season, when supplies are abundant. Few district wholesalers secure credit from their sellers. Instead, they provide assembly traders with cash advances when supply is short. This practice is less common when there is ample supply of dried cassava.

D: Travelling traders: These traders supply the majority of cassava flour to large urban consumer markets. They turn over their capital rapidly by minimising the length of time between purchase and sale. By avoiding storage, they both limit the risk that prices will move against them and avoid significant overhead costs. Most commonly, such traders buy from several village assemblers in one trip, and hire vehicles to transport the chips to urban centres, where they pay for milling and sell flour to wholesalers. Travelling traders tend to specialise in just one food product.

E: Urban wholesalers: Urban wholesalers share most of the characteristics of their district level counterparts. The major differences are location and scale. The former distinction is obvious, yet it is the urban wholesalers' location within major markets that allow them to operate on large scale. Whereas district level wholesalers may trade between five and fifteen 100 kg sacks of cassava flour in one week, urban wholesalers commonly sell between 50 and 100 sacks of the same.

F: Miller/Wholesalers: In towns such as Jinja, Lira, Kampala, etc, there are a number of specialist businesses who combine cassava flour milling with wholesaling. These are efficiently run operations, purchasing either directly from village assemblers (via agents) or from travelling traders. Their average weekly turnover is usually in the region of 10-15 tonnes and milling losses do not exceed 2%

G: Service Millers: Such businesses do not engage in trade, but merely provide milling services. In rural areas and the smaller district towns, millers use small petrol or diesel-powered mills and don not specialise in milling any one commodity. In larger towns, millers are often specialised and use electricity powered mills.

H: Urban Retailers: Most food retailing in urban areas is dominated by a large number of small, non-specialised stores, selling small quantities of numerous products – often food alongside manufactured goods (e.g. stationery, hardware, etc). In some urban centres, some retail traders have managed to expand their businesses often stocking 10 or more bags of flour, (i.e. of maize, cassava or peas.

I: Industry Processors: These are new players including breweries and ethanol producers who use cassava to produce alcohol and ethanol.

BEANS

Beans are a traditional staple food and a major source of affordable protein, complex carbohydrates, essential micronutrients, dietary fibre, vitamin B and antioxidants in the nutritionally challenged diets of both the rural and urban poor. The common bean (Phaseolus vulgaris) is a basic constituent to the traditional diet of most Ugandans and is therefore found in varied cropping systems in the country. The beans grown in Uganda originated in Latin America and were introduced into East Africa by Portuguese traders in the sixteenth century.

Beans Production

The area under beans production increased from 653,889 Ha in 2011 to 405,987 Ha in 2020, with quantity produced averaging 881, 596 tonnes over the same period (Table A3).

Table A3: Beans Production in Uganda, 2011 – 2021

Year	Area Planted (Ha)	Volume (MT)	Yields (hg/ha)
2011	653,889	915,445	14,000
2012	669,000	869,607	12,999
2013	672,273	941,182	14,000
2014	674,290	1,011,435	15,000
2015	674,964	1,079,943	16,000
2016	483,337	809,640	16,751
2017	606,165	1,012,406	16,702
2018	540,269	940,323	17,405
2019	350,214	627,000	17,903
2020	405,987	608,980	15,000

Source: FAOSTAT, 2022

A large part of the bean production in Uganda takes place on dispersed small farms ranging from 1 to 10 ha in size making it difficult to define the main production areas. Fertilizers and other inputs are rarely used making the crop average yields low, averaging at only 15,576 hg/ha between 2011 and 2020 (Table xx). This is often aggravated high crop losses due to diseases as well as insect pests or drought, low soil fertility and other factors. Beans are produced in all the districts of Uganda with outputs ranging from a lowly 1,000 tonnes a year to as much as 30,000 tonnes in some districts. High yields occur in areas with well distributed rainfall and fertile soils. According to a survey by UBOS, 81% of all Ugandan households cultivate beans, with the western region leading in terms of numbers of households growing beans, followed by central, eastern and northern regions in that order. The main districts growing beans include: Kabale, Kapchorwa, Mbale, Apac, Lira, Hoima, and Busoga region; Masindi, Mubende and Gulu (USAID, 2010).

Beans Consumption

Uganda, beans are a major staple and a key source of food security for both rural and urban population. Consumer preferences for beans differ, depending on seed types, colour, shape, and brilliance or seed coat lustre. However, many consumers prefer beans with the sweet taste and fast cooking attributes. There is higher demand for bean varieties with these attributes than those which have very attractive seed appearance. Beans are often combined with such energy sources as maize, plantains (matooke), or root crops (sweet potatoes, cassava, yams, etc). Most beans produced are consumed locally but the proportion that is exported has been increasing with the share of domestic consumption decreasing from 88 percent in 2011 to 67 percent in 2020 (FAO Food Balance, 2020). National annual consumption of beans has been reducing, from 24 kg per capita in 2011 to 9 kg per capita in 2020. Apart from the World Food Programme, the main buyers of beans are institutions (schools, hospitals, police, prisons, restaurants, etc), buying either from village stores or large urban traders. Volumes purchased differ according to the size of the institution. Small institutions buy between 2 and 5 100-kg bags of beans every week, while large institutions procure big volumes of between 5-10 100-kg bags of beans per week.

Beans Trade

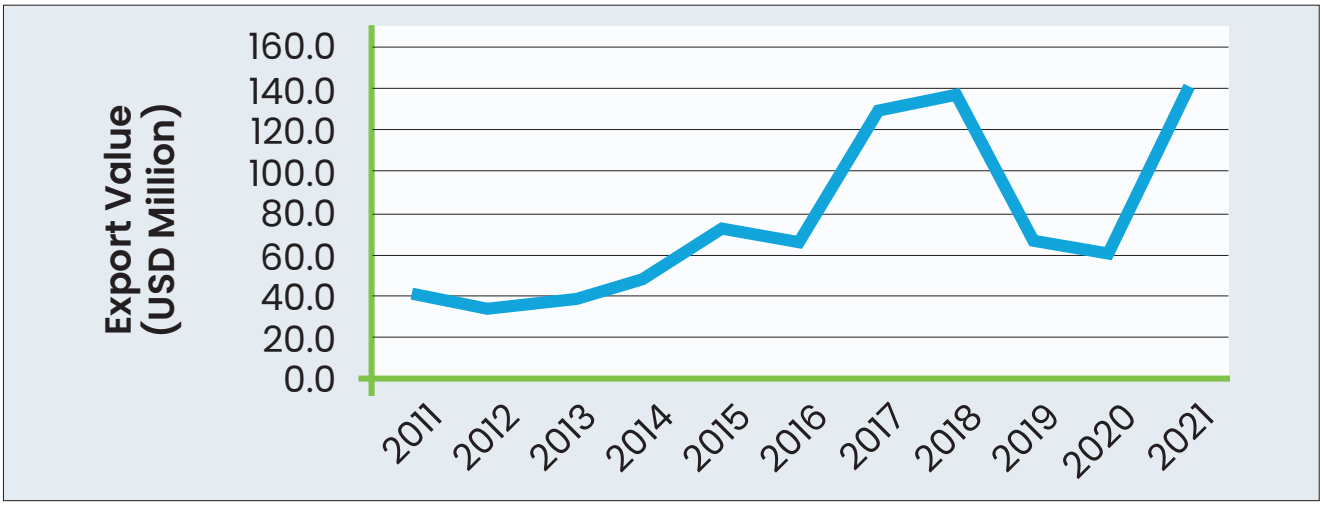
There is a significant market for Ugandan beans within the region, but as noted earlier, most of the beans produced are consumed domestically. In spite of this, however, some amounts are exported to the region and increasing. Exports are primarily in unprocessed form with little value added. Over 90% of Uganda's bean market is formal and informal cross-border trade at the border points of Uganda and Kenya, Sudan, DRC, Tanzania, and Rwanda. The major participants in this trade are the youth who either carry their commodities on bicycles or cross the border points on foot. Beans are carried in small quantities of up to 5 kilogrammes. Two groups of market participants are involved in this trade: The first group comprises foreign buyers who travel from neighbouring countries into Uganda to purchase the beans. This group of participant handles a sizeable volume of beans trade. However, the biggest size of this trade is informal.

The second group of participants is made up of Ugandan exporters, who include large scale producers, traders/ and companies who mainly export their beans formally through the border points. They buy the beans from Kampala, Mbale, Kapchorwa, Kasese, Kabale, Kisoro, Mubende, Rakai, Arua, Lira, etc. It is, however, noted that formal bean trade to these countries is still very small.

Uganda exports of beans increased from 33,169 MT worth 40.1 million USD in 2011 to 194,619 MT worth 140.3 million USD in 2021 (Figures A7 and A8). Most of these are informal regional cross-border exports. However, bean exports are increasingly being formalized with the share of informal exports reducing from 53 percent in 2011 to 28 percent in 2021 (Bank of Uganda Statistics, 2022).

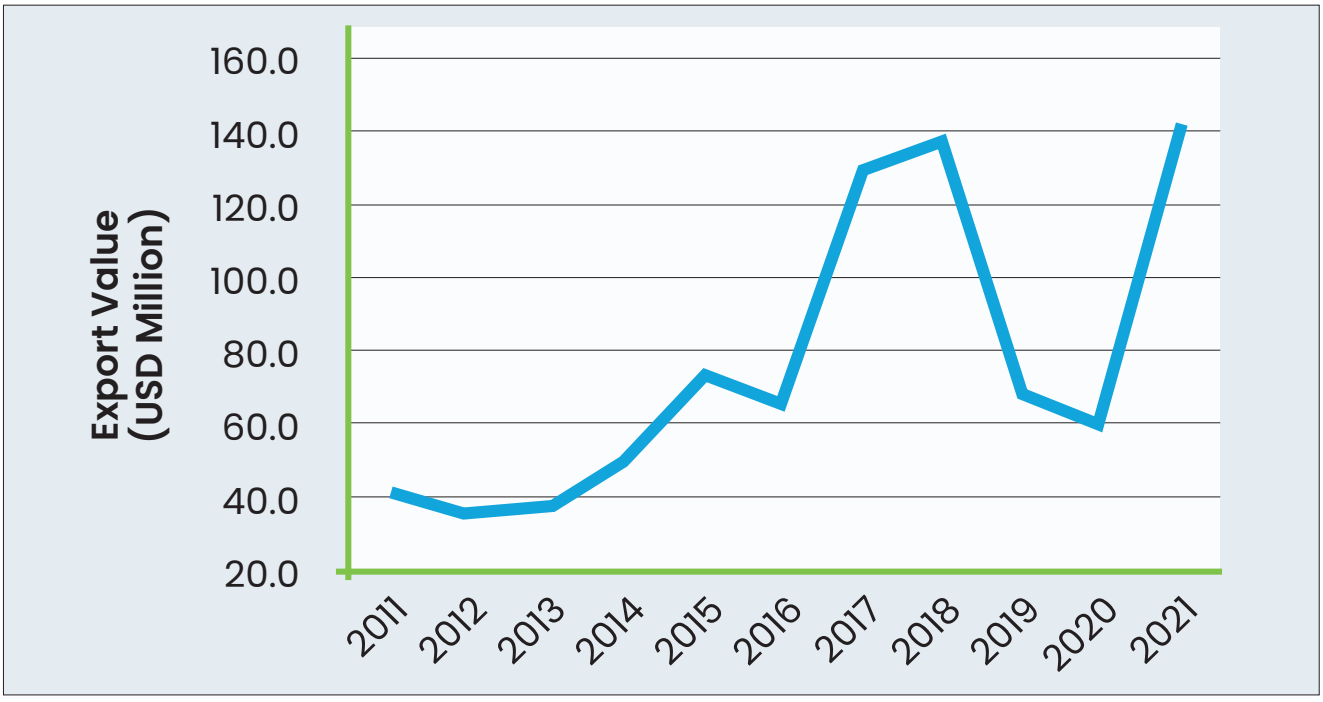
The World Food Programme (WFP) is the largest exporter of beans from Uganda. These are exported to the neighbouring countries of Rwanda, Burundi, the Democratic Republic of Congo, Kenya and Sudan and purchased mainly from the TGCU members through the hubs and other farmer groups who can supply at least 40 MT and by other community based organizations. The WFP also purchases from traders who can stock bulk and/or supply at least 200 MT of beans.

Figure A7: Volume of Beans Exports (MT) 2011-2021



Source: Bank of Uganda Statistics, 2022

Figure A8: Value of Beans Export (USD Millions) 2011-2021



Source: Bank of Uganda Statistics, 2022

Beans Imports

Some beans enter into the Uganda market from the region through the Katuna, Mahagi, Karagwe region usually cross from the Mutukula and Busia border points from Rwanda, DRC, Tanzania and Kenya respectively. However, overall, the country has been dependent on its own internal production. In year 2011, imports of beans into the country stood at 886 metric tonnes worth US$ 147,000 increasing to 13,655 metric tonnes worth US$ 3.1 Million in 2020 (FAOSTAT, 2022).

Beans Value Chain Mapping

The main players in the bean value chain include:

Farmers: These are distributed across the country where they undertake production on mainly small plots. After harvesting, the beans are either consumed at the household or sold.

Middlemen/Traders: The middlemen (traders) include rural (informal) collectors, rural retailers, urban retailers and wholesalers. Rural collectors buy from the farmers and sell to medium and small scale processors and wholesalers, whereas wholesalers sell at the local and regional markets, and to urban retailers and rural retailers, and the latter (rural retailers) sell the beans to end consumers including rural consumers and farmers who buy beans as seed (although majority of farmers try to save their own seed from the previous harvest, some may need to purchase from the market for various reasons). Finally, urban retailers directly sell to the urban consumers. There are large scale traders mainly WFP and TGCU members who bulk and export the beans.

Challenges in the Bean Value Chain that UNCE might solve

- Poor storage facilities –storage facilities at farm level are inadequate with most beans stored on the ground with no regard to phyto-sanitary measures and whereas at the regional level and in urban areas bulkers such as the TGCU have adequate storage facilities, they are grossly underutilized. Connecting farm and community storage facilities to the WRS system and the UNCE would solve this problem and ensure more quality storage processes.
- Shortage of supply with respect to quantity, quality, grades and seasonality -Farmers and traders often mix their beans yet the international market prefers single coloured beans. In addition, quick sales during seasons of plenty coupled with post-harvest losses lead to shortages of beans in off-season times.
- Lack of market credit - this problem cuts across almost all commodities especially grains and as explained earlier, often leads to informal selling as farmers look for quick money formal buyers might to be able to provide
- Inadequate market information which creates unfair competition and exploitation of producers by traders and exporters –UNCE improvement to price discovery would solve this problem.
- Poor communication systems (transport and road network) lead to increased transport costs and overall transaction costs to the market players. By removing information asymmetry, the UNCE would help solve these problems.

The UNCE would help to eliminate most of these challenges since it will improve on the quality and amount of market information, storage, encourage quality enhancement and ensure a good grading mechanism. It would also facilitate credit provision especially to buyers which is a major impediment to formal selling. Players in the bean value chain would find the UNCE useful as outlined above but there is need to increase awareness of these benefits for all the players in the chain.

TEA

Tea was introduced in Uganda in 1900 and by mid-1950's it had become Uganda's Estate crop, owned by mainly Asians and Europeans, with a very Small number of African Growers. At the time of Uganda's independence in 1962, the country was still a long way from realizing the full potential in the development of its Tea industry (UGATEA, 2011). Tea is one of the traditional country's export crops with the potential to boost the country's forex earnings and improve people's social-economic conditions.

The first major post-independence government support to the tea sector was in 1988 in form of the EU supported Smallholder Tea Rehabilitation Project (STRP) which led to an increase of tea exports from 500 metric tons in 1980 to 10,971 metric tons in 1994. With the privatization of tea marketing that followed the 1990s liberalization of the economy, production hit record highs. This was also partly due to the smallholder tea rehabilitation and development programs that assisted smallholders to rehabilitate their tea gardens and factories prior to the sale of 4 smallholder factories to farmers in 1995.

Other policy reforms that were impactful include the removal of the Uganda Tea Authority monopoly on exports, valuation of export proceeds at the market exchange rate, liberalization of export marketing, and permission for foreign exchange retention accounts (MTTI, 2006).

To consolidate the achievements of the STRP, EU extended another grant (1994 to 1999) to support the Smallholder Tea Development Programme that saw the rehabilitation of the tea factories in the country and eventually privatized with ownership passing to smallholder tea farmers. Another important government intervention was the Strategic Intervention Programme to promote, production, processing and marketing of selected strategic exports of which tea is one.

Tea Production

The tea crop in Uganda is grown by large estates (46 percent of production) and small growers organized as either small estates affiliated with particular tea factory or small scale out-growers producing 54 percent of the tea. Approximately the out growers produce 28 percent of the total production of tea with the remaining 72 percent produced by the tea estates. The favourable areas for tea growing requires temperatures between 200 C- 250 C, annual average rainfall of between 1000mm and 1500mm for at least 150 days a year and altitude of over 1500m above the sea (MAAIF, 2007). Some of the areas identified are in the districts of Kabarole, Bushenyi, Kanungu,Rukungiri, Mityana, Kibaale, Hoima, Kisoro, Wakiso, Mbarara, and Nebbi /Zewu. Tea is largely grown along the Lake Victoria Crescent and lower slopes of the Rwenzori Mountains as well as above the Western Rift Valley. The area planted with tea has been increasing over the years from 17,000 Ha in 2011 to 35,023 Ha in 2018 before decreasing to 29, 573 Ha in 2020 (Table A4). Similarly, tea leaves production volumes increased from 35,194 MT in 2011 to 74,247 MT in 2018 before decreasing to 63,411 in 2020. Tea yields have remained almost stagnant over the years, increasing only slightly from 20,630 Hg/Ha in 2011 to 21,442 Hg/Ha in 2020.

Table A4: Tea Production in Uganda, 2011 – 2021

Year	Area Planted (Ha)	Volume (MT)	Yields (hg/ha)
2011	17,060	35,194	20,630
2012	28,341	58	20,444
2013	29,586	60,969	20,607
2014	31,575	65,373	20,704
2015	28,423	58,588	20,613
2016	19,135	39,299	20,538
2017	23,535	50,055	21,268
2018	35,023	74,247	21,199
2019	28,300	60,337	21,320
2020	29,573	63,411	21,442

Source: FAOSTAT, 2022

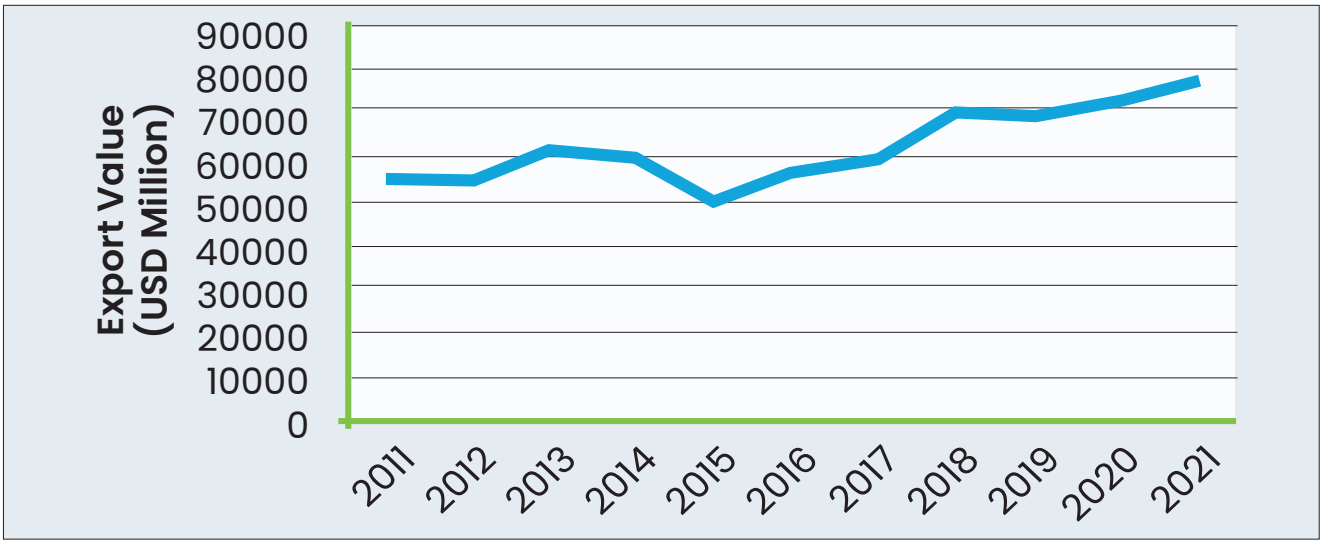
Consumption Tea

Tea is consumed by the majority of Ugandan population as hot beverage alone or with milk. The tea consumed domestically is either branded by the respective processing factories or by private buyers who purchase the made tea and brand it for local consumption. Small quantity of mostly branded imported specialty tea is also sold in supermarkets and shops. Estimates by FAO shows that domestic consumption is only small fraction of total production or actually negligible. On average (2011-2019), Ugandans consumed about 3,000 tons of tea annually which represents 0.5 percent of the average production (FAOSTAT Food Balance, 2020).

Tea Marketing and Trade

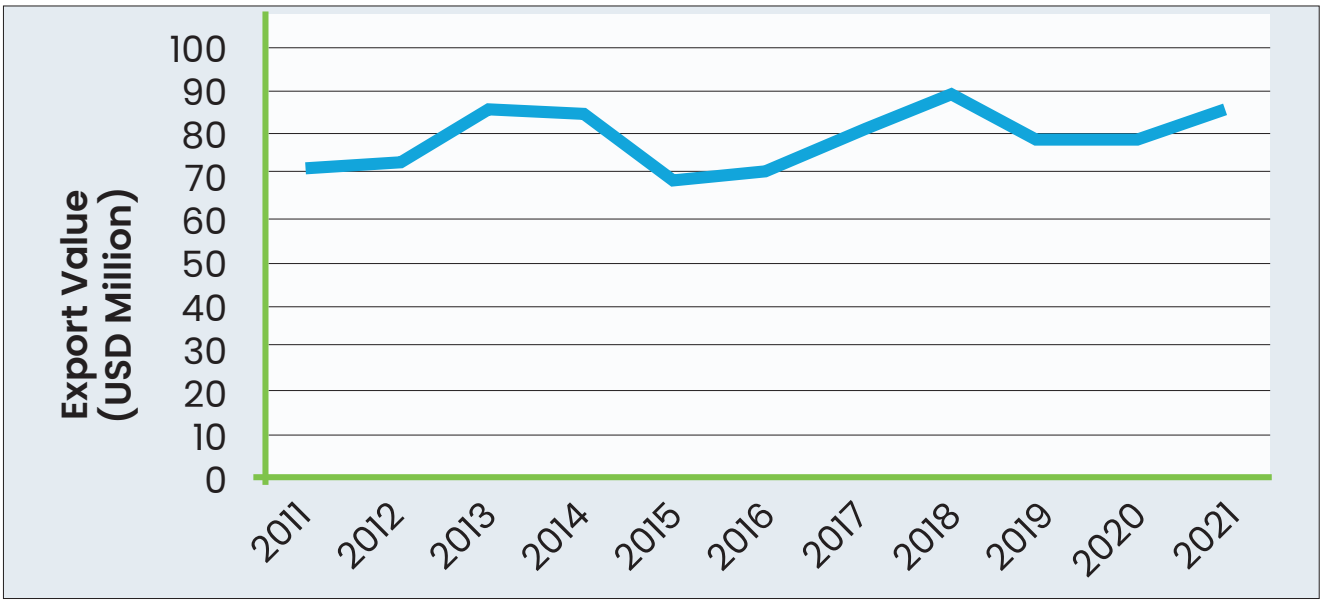
Tea is the third foreign exchange earner after coffee and fish and is one of the crops under the strategic export program started in 2001/2. Uganda is the third leading producer and exporter of tea in Africa after Kenya and Malawi. Uganda exports of tea increased from 55,378 MT worth 71.8 million USD in 2011 to 77,012 MT worth 84.8 million USD in 2021 (Figures A9 and A10).

Figure A9: Volume of Beans Exports (MT) 2011-021



Source: Bank of Uganda Statistics, 2022

Figure A10: Value of Beans Export (USD Millions) 2011-2021



Source: Bank of Uganda Statistics, 2022

This growth trend is apparently stimulated by the implementation of the liberalization policy reforms including the removal of the Uganda Tea Authority monopoly on exports, valuation of export proceeds at the market exchange rate and liberalization of export marketing. Ugandan tea is exported through the Mombasa auction, which markets to worldwide destinations. According to stakeholders in the tea industry, Ugandan tea auctioned through Mombasa is branded and re-exported as Kenyan tea according. In fact, the dependency of Uganda on the Mombasa auction is cited by many as one of the factors constraining the development of the tea sector. Whereas Uganda tea is one of Uganda major export commodities, offering a less premium price because of the indirect exports through Kenyan middlemen denies Uganda a brand name in the foreign market. However, for Uganda to create its own brand and reach the international market directly, stakeholders in the industry have to work to improve the tea quality right throughout the value chain.

Tea Value Chain and Processing

The tea chain is a vertically integrated production chain, in which direct links between manufacturers and producers are common, most obvious in the plantation sector (Figure A11). It is also a buyer-driven value chains where tea producers have few options for selling their goods or services. These chains typically have locational/logistics limitations to whom the producer can sell, e.g. tea producers for a tea estate or a factory.

Figure A10 depicts the typical commodity flow from producers to consumers. The tea value chain is characterized by many producers but few downstream players. The tea supply chain begins in a smallholder farm or a plantation, where the tea leaves are grown and plucked. Small farmers sell their crop to middlemen, plantations and or to 'bought leaf' factories i.e. factories that buy up the raw tea (Oxfam 2002).

Once tea leaves are harvested, they are then either transported to a bought-leaf factory, in the case of smallholders, or processed in the factory on-site in the case of large plantations as delays in processing lowers quality or lead to spoilage. In most cases it is the factory that collects the leaf directly from the smallholder, with whom there is usually a contract. Middlemen have also recently come into the chain collecting the tea from designated leaf collection sheds.

Most tea factories in Uganda are owned by the estates owners or farmers' cooperatives. The processing starts with oxidization or fermentation of the green leaves. After fermentation the leaves are taken into a drying process to lower the moisture content between 3.0 and 3.3 percent. Tea is then sorted into the four primary grades and three secondary grades according to size and fiber content. Teas are then taken for tasting which marks the end of the processing in the factory.

An estimated 70 per cent of Uganda's tea is sold through auction in Mombasa, and 20 per cent through direct sales, while the remainder is sold locally. Mombasa auction, the major tea auction in Africa, was initiated in 1956 in Nairobi on a very small scale under the auspices of the East African Tea Trade Association (EATTA) and moved to Mombasa in 1969[4]. The auction system is still the main price discovery point for tea trade, however, significantly, there are few future markets for tea[5]. At the auction, the selling broker announces the line of tea on sale, and invites bids in US Dollars per kilogram. The buyers announce their bid, which advances by at least one US cent per kg. Through ports in Kenya, tea is shipped to various tea consuming countries where it is blended and packed into various brands. In addition to the conventional tea value chain described above, tea is also marketed through a fair trade value chain by some tea factories in Uganda namely Kayonza, Mabale, Mpanga and Igara Growers Tea Factories. The fair trade terms of trading consist of a price that cover the cost of production, social premium to be used by producers to improve their living and working condition an advanced payment and contracts that allow long term sustainable production practices.

COFFEE

Uganda is one of the world's major coffee producers with the commodity grown throughout the country but especially in the different highland areas of the country such as the slopes of Mount Elgon on the border with Kenya and the slopes of the Mount Rwenzori, on the border with the DR Congo and traditionally in central regions. Some coffee is also increasingly being cultivated in the West Nile region in the north western part of the country. Uganda produces excellent wet-processed Arabica, mainly grown by smallholder farmers. Coffees marketed as 'Wugar' (Washed Uganda Arabica) or 'Drugar' (Dry Uganda Arabica) are grown on mountains which border the Democratic Republic of Congo, along the Uganda's western border. Coffee is mainly cultivated in the central and southern districts (57%), Eastern Uganda (23%) and Western Kasese (10%) and to a lesser extent, in non-traditional areas like Mpigi, Wakiso, and Rakai (10%).

Coffee if well developed, it may improve smallholders' productivity and regional development in the producing countries (Bradford et al., 2011; Dicum and Luttinger, 1999). More so, the coffee

4 *EATTA, 2012*
5 *Foodnet, 2002*

production plays a crucial role in the socioeconomic development of Uganda. The Ugandan coffee sub-sector employs over 5 million people, both in the farms and post-harvesting processes. It remains a primary source of income for the poor rural inhabitants in the country. The commodity plays a leading role in the economy, contributing substantial foreign exchange earnings over the decades. Following several decades of total state control of the coffee sector, the industry was fully liberalized during the period 1991-1992. Presently, the sector is entirely controlled by the private sector. Nonetheless, export quality control remains the responsibility of the Uganda Coffee Development Authority (UCDA) that grades, liquors and classifies all export shipments. The government of Uganda was successful in regulating the Coffee sector to produce and trade competitively through the successive policy measures in the early 1990's. Business activity in the agricultural sector, in particular, increased enormously as the number of vigorous exporters increased significantly. The number of small traders entering the agricultural sector has considerably increased healthy competition in the markets.

Coffee Production

Uganda is among top major coffee producers in the world. The size of coffee area harvested increased from 317, 080 Ha in 2011 to 536,372 Ha in 2020 (FAOSTAT, 2022). Similarly, the volumes of production of coffee increased from 191, 371 MT in 2011 to 290,668 MT in 2020. Of concern, however, is that coffee yields have been decreasing, falling from 6, 035 hg/Ha in 2011 to 5, 419 hg/Ha in 2020 (Faostat, 2022). This is a reflection of soil exhaustion, aging of the coffee plants and inadequate use of improved technologies and inputs, climate change and prolonged droughts, shortage of labour force.

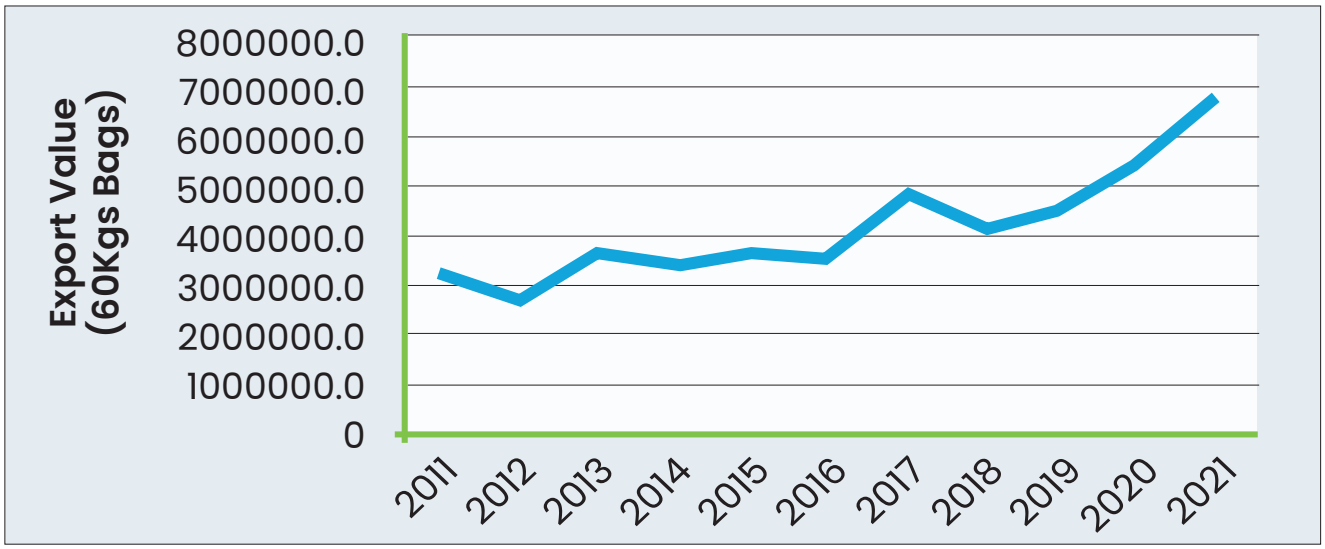
Coffee Consumption

Coffee is consumed by the majority of Ugandan population as hot beverage alone or with milk. However, in spite of the country being a major producer, domestic coffee consumption is not high. Coffee is therefore not a major beverage in the country. Estimates by FAO shows that domestic consumption is only small fraction of total production or actually negligible. On average (2011-2019), Ugandans consumed about 17,000 tons of coffee annually which represents about 7.2 percent of the average production of 243,000 MT (FAOSTAT Food Balance, 2020).

Coffee Marketing and Trade

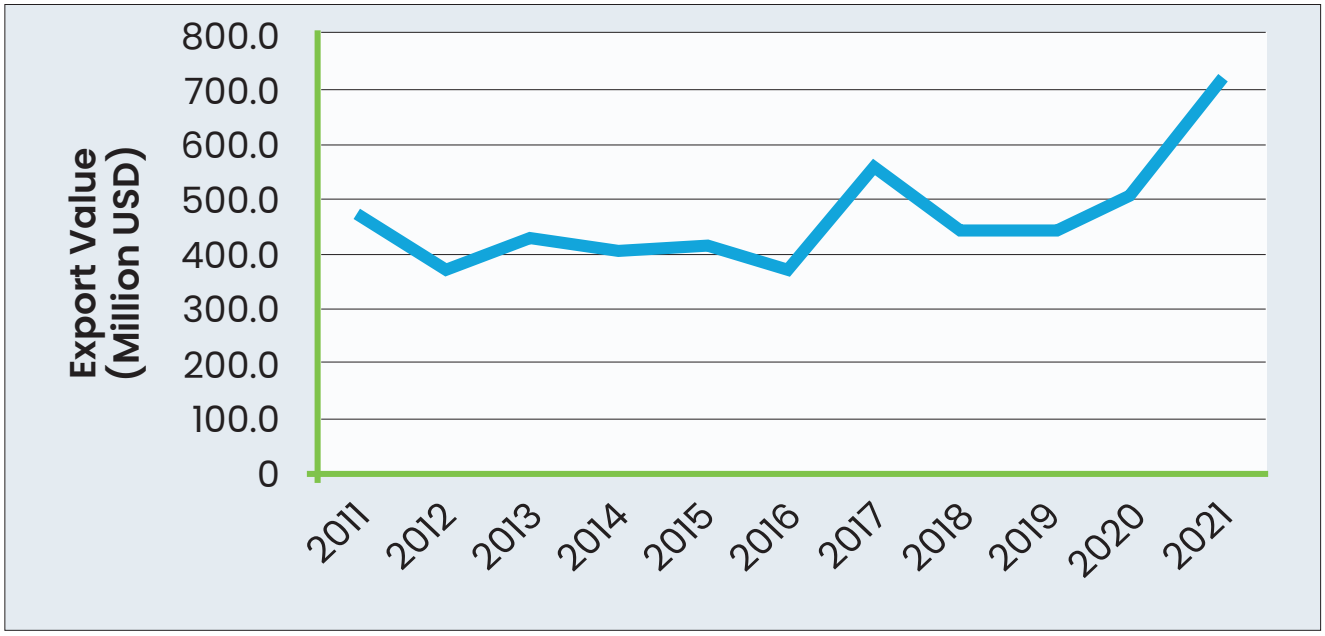
Coffee has for decades been the top foreign exchange earner only recently surpassed by gold. Uganda is the second leading exporter of coffee in Africa after Ethiopia. Uganda exports of coffee increased from 3,143,386 60KGS Bags worth 466.7 million USD in 2011 to 6,767,064 60KGS Bags worth 719.0 million USD in 2021 (Figures A12 and A13).

Figure A12: Uganda's Volume of Coffee Exports (60 KGS Bags) 2011-021



Source: Bank of Uganda Statistics, 2022

Figure A13: Uganda's Value of Coffee Export (USD Millions) 2011-2021



Source: Bank of Uganda Statistics, 2022

The present coffee marketing structure is under a liberalized marketing system and is characterised by a large number of actors and the positioning of export firms closer to the primary buying stage to source coffee directly from or close to farmers. This arrangement has made market entry easier and bred competition and, in turn, increased the proportion of the international price paid to farmers (75% in Uganda compared to 70% in Kenya and 60% in Ethiopia)[6]

6 *UCDA, 2015: Uganda National Coffee Strategy 2040 Plan for 2015/16 - 2019/20*

Challenges in the Coffee Value Chain that UNCE might solve

UCDA identifies the following challenges in the marketing structure:

- Deterioration of coffee quality at primary levels and an increase of malpractices. This is attributed to fact that buyers and processors tend to focus more on quantities that will enable them to financially break even, putting quality issues in a secondary position.
- Lacks of better price for quality differentiation making farmers less concerned about quality.
- Loss of farmer's collective identity through parallel move by coffee peddlers ('ddebe boys') who buy coffee in small quantities before selling to processors.
- Limited capacity of smallholder farmers to functionally upgrade, add value and earn higher incomes from their coffee. Functional upgrading is difficult in the current market structure because smallholder farmers lack capital, coherence and business management skills.
- Inadequate infrastructure: Poor rural community access roads, electricity and storage facilities
- Poor marketing promotion and branding - Uganda exports mainly green coffee with limited branding. Ugandan Robusta is normally blended with other origins making it difficult to isolate Ugandan Robusta as an origin in the finished product. The challenge is to use the intrinsic quality characteristics of Ugandan Robusta to market it as an origin.

The UNCE would help to address these issues especially if coupled with the WRS system. However, given that the coffee marketing system is already dominated by strong international brands, it would be important to bring these on-board by creating incentives for them to abandon their already established channels in favour of the UNCE.

COTTON

Cotton has been one of Uganda's major cash crops since its introduction in 1903 by the British. Over the years, cotton gained much significance because it served the dual purpose of providing raw materials to the growing textile industry as well as introducing cash to the economy. During the 1960s, Uganda was Sub-Saharan Africa's largest cotton producer. However, political instability and poor policy choices of the 1970s led the sector to its demise. Attempts to revive the sector with lending operations during the 1980s failed, but policy reforms combined with a lending operation and the high cotton prices of the 1990s revitalized the sector. The reforms liberalized the sector and also created the Cotton Development Organization (CDO) to monitor the production, processing and marketing of cotton in Uganda, promote the distribution of high quality cotton seed and to facilitate the development of the cotton industry.

Cotton is one Uganda's largest export crops and the main source of income for some 250,000 households. From 1970 until 1986 the country went through economic difficulties resulting in disruptions of cotton research, long delays in paying farmers for their crop among other

numerous challenges. The liberalization of the sector came with renewed efforts such as provision of high quality planting seed to farmers, support to extension and farmer mobilization, support to farmer training, provision of inputs and extension services4 have been devoted towards increasing yields with gradual introduction of modern farming techniques coupled with other reforms including appropriate institutional building.

The reforms introduced in the cotton sector in 1993 coupled with high prices of the mid-1990s led to considerable supply response with cotton production reaching 20,000 tons in 1996. The surge in supply prompted the founding of a well-functioning research program. Growers began receiving payments promptly while entrepreneurial activity increased enormously following the entrance of many private entities at all levels of primary processing, marketing, and trade[7]. Under the Cotton Development Statute of 1994, the Lint Marketing Board was liquidated and a new regulatory agency was established, the Cotton Development Organization (CDO). Its mandate includes: to enhance the quality of lint and cotton products, both for export and domestic consumption; to promote the distribution of high quality planting seed; and generally to facilitate the development of the cotton industry. CDO began to issue ginning and export licenses and manage a fund for the collection, processing, and distribution of cotton seed for planting. Often, CDO's functions are now carried out in collaboration with other institutions with broader mandates including the Uganda Ginners and Cotton Exporters Association (UGCEA), the Cotton Research Institute, and various ministries.

Cotton Production

Most areas of Uganda have the potential to produce cotton. Currently, the main production areas include the North, East and South East of Lake Kyoga, and in the Kasese area in the West. Different varieties re produced in the country, which yield finer fibre of medium to long staple length, with excellent characteristics, being silky and well suited for spinning. Cotton production has fluctuated over the years due to various factors, including weather conditions, price expectations and the provision of farm inputs but have recently decreased from 47,577 MT in 2011 to 33,600 MT in 2020 (Table A5).

Table A5: Production Volumes for Cotton (Tonnes), 2013- 2019

Year	2012	2013	2014	2015	2016	2017	2018	2019
Production Volume (MT)	47,577	18,571	14,594	17,275	20,399	31,808	34,790	33,600

UBOS Statistical Abstract, 2020

According to CDO, cotton yields between 2013 and 2017 varied between 700 and 850 kg/ha of seed cotton. Despite a long tradition of growing cotton in Uganda, productivity is low, with an average yield of about 780 kg/ha compared to the international average of 900 kg/ha[8]. This average yield is far below that of the main cotton producing countries, such as China with 1,270 kg/ha, Israel with 1,700 kg/ha as computed by the Index Mundi, 2017. This low productivity for Uganda is largely due to weak adoption of agronomic farm practices including the over reliance on rain-fed production low usage of inputs like pesticides and fertilizers, coupled with

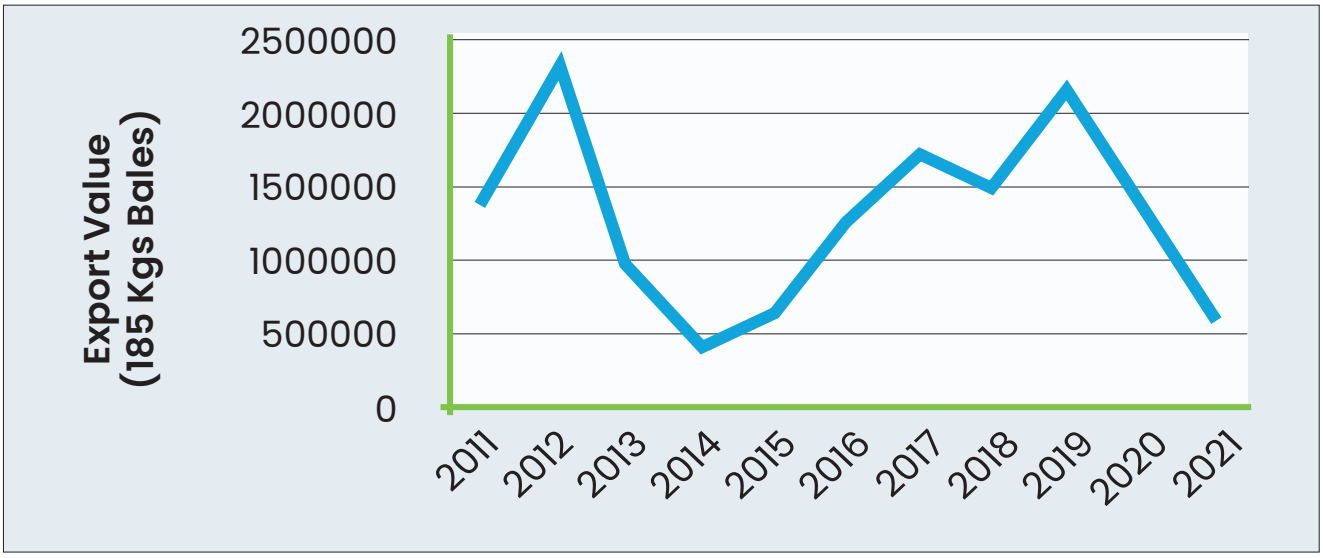
7 *Baffes 2001.*
8 *Horna, Kyotalimye, & Falck-Zepeda, 2009*

declining soil fertility, constrained extension services, limited or lack of credit for purchasing inputs. CDO has encouraged the formation of associations to support the development of cotton byproducts in Uganda. The three key associations are: the U Association (UGCEA), formed in 1997, Uganda Oilseed Producers and Proces (UOSPA), formed in 2007 and Textile Manufacturers Association of Uganda (TEMAU).

Cotton Marketing and Trade

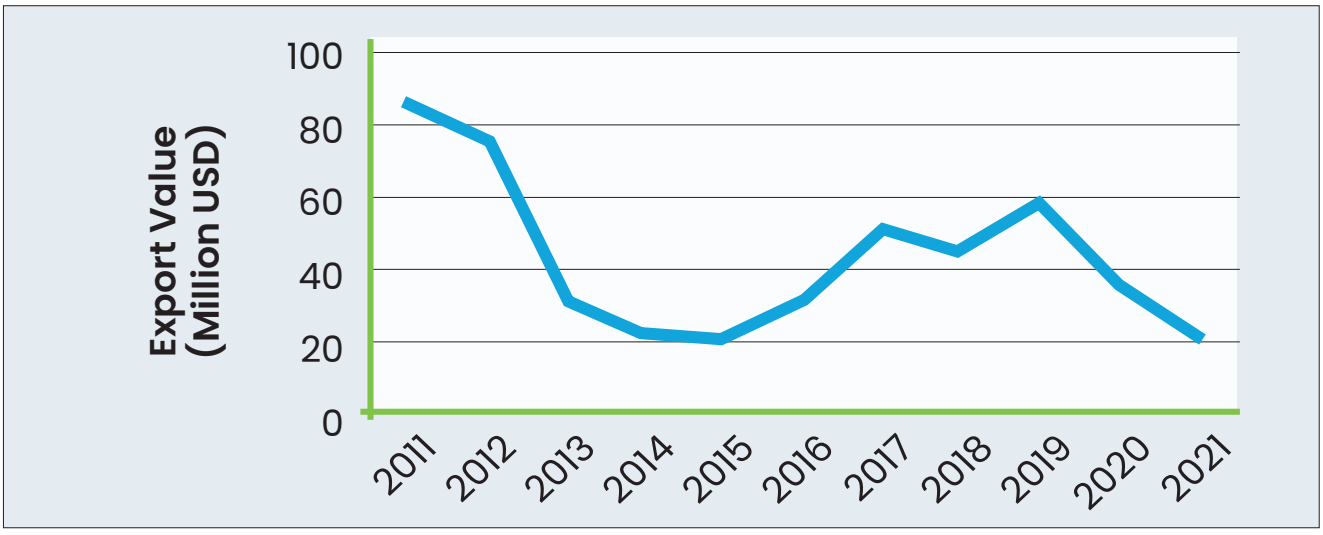
Coffee has for decades been the top foreign exchange earner only recently surpassed by gold. Uganda is the second leading exporter of coffee in Africa after Ethiopia. Uganda exports of coffee increased from 3,143,386 60KGS Bags worth 466.7 million USD in 2011 to 6,767,064 60KGS Bags worth 719.0 million USD in 2021 (Figures A14 and A15).

Figure A14: Uganda's Volume of Cotton Exports (185 KGS Bales) 2011-021



Source: Bank of Uganda Statistics, 2022

Figure A15: Uganda's Value of Cotton Export (USD Millions) 2011-2021



Source: Bank of Uganda Statistics, 2022

Cotton Value Chain and Processing Map

Farmers: Cotton is harvested from the plant in the form of seed cotton and requires processing (ginning) to separate seeds from the fibre (lint). The cotton fibre is the more valuable component, representing 85-90% of the farm value of cotton. Sometimes the producers sell and deliver their cotton directly to the ginnery, and at other times, agents contracted by the ginneries work as middlemen and coordinators of transportation between the production site and the ginnery. At other times, independent middlemen carry out the same operation in a more informal way.

Cotton ginneries: In Uganda cotton ginneries are purely dependent on the production and sale of cotton to them by the producers. Ginning is a highly specialized process whereby the seed is separated from the cotton; the cotton is cleaned, and finally pressed into bales of lint. The purpose of the ginning process is to separate lint from the seed.

Even though Uganda has a high number of ginneries, it is estimated that a few large companies account for 50-60% of the cotton ginned. Ginneries are required to sell 20% of all their seed to CDO for replanting, and the rest, totalling about 32,000 tons, is sold to oil mills for crushing. The crushed seed yields 16% crude oil.

Exporters: Most of the local ginners participate in cotton export trade. Currently there are a number of international firms/merchants involved in cotton export.

Challenges in the Cotton Value Chain that UNCE might solve

- Cotton being mainly rain fed still limits production and sure estimates of production which is important in CE and forward sales
- Poor quality seeds supplied to millers
- Fluctuation of international cotton prices
- Lack of access to cheap marketing credit which limits cash sales to farmers at delivery
- Limited lint supplies leads to purchase of low grade cotton
- Many ginners are inexperienced and disorganized leading to poor cotton lint exports

The UNCE can play an important role in providing access to information to players especially exporters on where to source quality and standard lint through warehousing contracts. The UNCE would also be key to mobilizing cotton crop finance.

Appendix 2: Uganda Formal Exports of merchandise in values (US$ millions) 2011-2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total	**2,163.3**	**2,356.8**	**2,407.5**	**2,310.2**	**2,268.1**	**2,502.0**	**2,900.9**	**3,089.6**	**3,563.8**	**4,148.6**	**3,965.0**
Coffee	466.7	372.5	425.4	407.4	402.6	371.6	555.4	436.4	438.5	515.5	719.0
Electricity	16.3	15.6	17.3	34.2	17.0	21.3	56.1	36.4	44.6	20.1	36.5
Gold	7.5	7.8	3.2	0.2	35.7	339.5	417.9	514.9	1257.8	1819.3	1033.4
Cotton	85.9	76.0	31.4	21.8	20.6	31.4	50.7	44.3	58.2	34.8	20.4
Tea	71.8	73.9	85.6	84.7	69.9	71.6	79.7	88.9	78.0	78.7	84.8
Tobacco	54.5	61.6	114.9	65.3	73.1	61.7	46.2	78.5	67.2	38.8	59.7
Fish & its prod. (excl. regional)	142.5	121.3	107.0	134.1	117.6	121.8	137.1	171.5	176.5	127.6	118.5
Hides & skins	33.1	41.4	63.7	73.3	62.7	51.7	53.2	46.3	21.3	8.8	14.0
Simsim	17.3	11.6	28.6	55.1	52.2	14.5	17.3	26.6	32.7	35.6	30.6
Maize	27.3	59.2	42.1	47.3	91.0	70.2	95.9	106.8	78.1	92.4	52.7
Beans	18.9	12.7	16.0	25.1	53.9	38.3	84.2	99.1	35.7	45.0	101.3
Flowers	52.5	52.7	56.8	57.5	51.4	51.6	57.7	60.9	54.5	54.4	69.1
Oil re-exports	106.9	133.0	136.8	149.1	131.2	119.9	129.4	132.5	132.1	77.1	99.5
Cobalt	17.6	14.2	10.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Baker's wares	16.1	17.7	15.2	12.4	12.7	8.1	9.8	9.4	8.5	8.2	9.5
Base Metals & Products	122.0	133.7	137.6	132.0	120.0	99.8	98.8	128.2	103.1	105.6	148.8
Beer	23.0	25.4	23.7	13.3	10.0	11.0	11.1	13.4	21.8	24.4	30.5
Cellular Phones	128.5	147.8	49.3	8.3	21.1	4.6	2.9	3.6	2.4	1.0	2.0
Cement	94.2	107.0	102.9	89.4	80.1	60.8	41.6	56.4	57.0	69.4	85.6
Cocoa Beans	44.1	38.6	54.8	59.4	55.7	75.0	54.2	64.7	77.5	99.1	105.8
Cotton Liners	2.6	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crude oil	46.3	61.4	51.0	43.9	40.2	44.1	51.1	63.9	63.6	56.4	80.9
Edible Fats and Oils	54.5	48.9	48.6	58.5	38.7	18.0	18.9	15.3	8.8	13.5	24.2
Fruits & Vegetables	11.7	11.9	16.6	20.8	32.1	43.2	38.5	40.6	36.1	45.2	44.5

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Groundnuts	0.2	0.7	0.0	0.8	7.8	1.5	2.0	3.9	1.6	1.2	1.4
Other Pulses	1.2	3.8	25.4	37.4	41.0	62.7	55.7	76.3	40.4	29.3	26.6
Papain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plastic Products	20.7	28.4	34.6	37.2	34.5	24.2	24.9	32.3	33.2	28.4	48.4
Rice	18.3	39.0	36.9	28.7	24.5	20.4	27.0	26.9	25.8	18.6	4.9
Soap	26.3	33.3	32.6	32.1	26.6	25.2	24.9	27.8	16.4	16.7	20.2
Sugar	81.1	122.5	84.6	69.3	66.4	100.5	91.7	108.2	83.4	76.0	100.3
Textiles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanilla	3.0	1.9	0.1	2.7	3.5	3.2	12.7	8.2	4.5	2.9	8.7
Water	5.6	22.9	26.4	20.2	13.5	8.1	9.7	14.6	16.0	19.8	26.8
Other Exports	345.2	458.3	527.7	488.5	460.6	526.4	544.6	553.0	488.5	584.7	756.1

Source: Bank of Uganda Statistics

Appendix 3: Uganda Informal Exports of merchandise in values (US$ millions) 2011-2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total	**355.8**	**453.7**	**421.3**	**414.6**	**399.1**	**419.2**	**549.0**	**546.6**	**531.9**	**312.7**	**528.8**
Maize	15.6	44.1	36.9	32.8	22.9	14.8	48.5	11.3	16.3	20.0	7.5
Beans	21.2	22.0	22.3	24.2	18.6	27.6	45.7	38.4	32.2	15.2	39.2
Sugar	3.1	3.6	2.5	3.8	3.3	2.0	1.6	2.7	1.7	1.1	13.4
Other grains	7.4	8.5	6.1	5.5	4.1	3.7	8.2	9.4	5.8	4.7	7.9
Bananas	4.6	6.1	4.9	4.8	4.4	4.3	5.4	5.7	6.8	3.5	6.8
Other agric. commodities	46.6	66.1	64.2	70.3	51.8	43.0	49.2	68.3	83.7	46.9	74.5
Fish	27.5	37.9	34.0	37.3	44.4	42.1	40.4	39.8	50.5	23.7	29.0
Industrial products	228.1	263.4	249.3	234.2	248.5	280.5	349.3	370.2	334.2	197.1	349.3
Other products	1.5	1.9	1.0	1.6	1.1	1.4	0.8	0.8	0.7	0.4	1.2

Source: Bank of Uganda Statistics

Appendix 4: Requirements for a functional commodity exchange, gaps and redress measures

Level	Critical Success Factors	Problem/Gaps	Ongoing Interventions	Further efforts Required for a Functional CE in UG
Primary-Production and Aggregation	High productivity Quality produce Organized Production Quality aggregation centres Agricultural Financing	Low productivity and production Poorly organized farmers Limited aggregation centres Poor post-harvest handling Poor quality inputs Climate change effects Limited access to affordable financing	PDM-increased smallholder production MAAIF Food production strategy-large mechanized production and aggregation, solar pumps OWC/NAADS-quality inputs, solar pumps ACF by BOU Youth and Women Enterprise Fund UNFFE-Micro-stores UDC –tumpline production for storage and drying Agriculture Culture Development Project-E-Voucher for inputs	Access and availability of quality agro-inputs Increasing capacity and quality of aggregation centres Networks/groups strengthening
Secondary-Bulking	Certified Storage Facilities (Warehouses, Silos) -Testing facilities -Qualified HR -Processes and Procedures Access to warehouse receipt financing Organized networks such as cooperatives Supporting infrastructure eg roads, energy, water Transport Logistics Assured insurance for stock & credit	Insufficient certified storage facilities Limited Access to adequate financing for off-takers Seasonal and unreliable road network Inadequate transport logistics like trucks etc. Lack adequate data on farms and firms. Unstructured markets including lack of a developed WRS	UWRSA certifying of warehouses NAADS - warehouses UDC prospective collaboration with key grain off-takers (Agroways, Aponye, Afrokai) for construction & expansion of existing warehouses. UDC and private sector investments in tea, coffee and cassava processing Financing initiatives through ACF by BoU, UDB, etc. The National Marketing Company-will be running collection centres around the country	Scale up certification of storage facilities Liquidity, empowerment & low-cost funding Providers of capital (financial institutions & donors) should expand the available funds for lending, ease eligibility criteria, provide long term financing & further reduce the cost of lending. Regular maintenance of district and community road networks Mandate through regulations all exports to go through formal storage facilities Develop and extend the WRS to all storage centres

Level	Critical Success Factors	Problem/Gaps	Ongoing Interventions	Further efforts Required for a Functional CE in UG
Tertiary (processing, value addition, trading (including institutional buyers & exporters)	An integrated commodity exchange (exchange trading system, exchange clearing system, electronic warehouse receipt system, brokers & collateral managers) Distribution centres Payment guarantees Handling & logistics	Inadequate Urban and Border markets Informal exports through the borders Lack of a robust ICT system No functioning commodity exchange	UWRSA – WRS & e-receipt system Private & Government players (UNCE, USE, UCDA, StarAgri, ALTX) – established platforms for trading Initiatives by MTIC and other Government mandate holders to develop urban and border markets	Coordination of private & Government initiatives in establishing CEs Integration with other regional efforts in developing trading platforms Ensure market information accessibility Government and DPs funding to the WRS and CE development
Legal and Regulatory	Enabling legislation such as capital rules, internal procedures and controls, qualifications of key staff, inspections& audits, consumer protection	Inadequate enabling legislation Weak enforcement of existing legislation	Review of UWRSA Act, Capital Markets Authority Act and other relevant legislation by Uganda Law Reform Commission so as to determine an appropriate legal framework. The National Marketing Company-will be running collection centres around the country	Completion of relevant regulation. Strengthen and operationalise the regulations required to operate a commodity exchange.

UGANDA DEVELOPMENT CORPORATION
Driving Industrial Growth

5th Floor Soliz House, Plot 23, Lumumba Avenue, P.O. Box 7042, Kampala, (U)
T +256 414 258 204
E ed@udc.go.ug
E info@udc.go.ug