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FOSTERING A SUSTAINABLE AGRO-INDUSTRIALISATION AGENDA IN UGANDA



2018

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This Report on Fostering a Sustainable Agro-industrialisation (AGI) Agenda in Uganda was prepared by the Economic Policy Research Centre (EPRC), an independent and Go-To policy think tank. There were a number of events leading to this Report, and therefore this acknowledgement would be incomplete without a narrative of the roadmap towards the compilation of this Report.

In January 2017, a need emerged for Ministry of Finance, Planning and Economic Development (MoFPED) to provide evidence-based practical policy solutions to address the declining performance of the Ugandan economy. EPRC responded to the call from MoFPED by putting together two policy notes; the first of which was titled - *'Transformative Approach to Uganda's Export Strategy'*. This provided critical evidence cited in the Budget Speech for Fiscal Year 2017/18 under the theme *'Industrialisation for Job Creation and Shared Prosperity'* made by the Minister of Finance to the nation.

Subsequently, EPRC was tasked to produce a second policy note on Agro-industrialisation, titled *'Agro-industrialisation for Inclusive Growth and Development'*; which demonstrated that it is feasible to realise inclusive economic growth and development in Uganda through Agro-industrialisation. Strengthened research ties between EPRC and MoFPED led to the establishment of a new initiative, the Strategic Economic Policy and Management (STEPMAN) Forum, in the Office of the Secretary to the Treasury, MoFPED; with EPRC taking the lead in providing well researched policy oriented policy notes. Through the STEPMAN Forum, EPRC was tasked with conducting in-depth policy oriented research to guide Uganda's AGI agenda for the next five years. Thus, EPRC devoted most of its 2017/2018 annual research work plan to AGI activities.

This Report is a synthesis of six background papers and nine case studies conducted by different EPRC researchers and research associates. Their relentless efforts are highly acknowledged for their various contributions to the background papers as follows:

- Guloba Madina, Julius Kiiza and Isaac Shinyekwa, *Global, Continental and Regional Context of Agro-industrialisation in Uganda*.
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- Mwesigye Francis, Mildred Barungi, Florence Nakazi and Madina Guloba, *Improving Agricultural Production and Productivity, and Upgrading Crop Value Chains to Promote Agro-industrialisation*.
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- Rudaheranwa Nichodemus, *Promoting Domestic Trade through Agro-industrial Development in Uganda*.
- Sserunjogi Brian, Miriam Katunze and Ibrahim Kasirye, *Status of Financing Sources for Fostering Agro-industrialisation in Uganda*.

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The draft AGI synthesized Report benefited from numerous presentations and consultations with various stakeholders. Among these was the one-day consultative workshop held at EPRC in February 2018 where stakeholders mapped the institutional, regulatory and policy framework for AGI in Uganda. Key presentations included; one to Directorate of Economic Affairs (MoFPED) in November 2017; the STEPMAN Forum meeting in February 2018; a presentation to Hon. Vincent Ssempija, Minister of Agriculture Animal Industry and Fisheries (MAAIF) in April 2018. In May 2018, further presentations were made to (i) the Top Management of MoFPED, (ii) National Planning Authority (NPA) team, (iii) Members of Parliament, (iv) the Research Advisory Panel (RAP) of EPRC. Presentations were also made to the Top Management of MoFPED and to the Deputy Secretary to Treasury and chair of the STEPMAN forum, in June and July 2018, respectively.

In August 2018, the MoFPED decided to act on some of the ground-breaking recommendations in the AGI Report. At this point, an AGI Top Technical Committee, made up of representatives from the relevant Ministries, Departments and Agencies (MDAs) and private sector players, was formed. The Committee agreed to operationalise some of the recommendations in the AGI draft Report, including to shift from a piecemeal approach to a program approach for Uganda's AGI agenda, and the creation of an AGI Steering Committee to provide effective coordination of the Program. The Steering Committee is chaired by MoFPED, with representation from Private Sector Foundation Uganda (PSFU), Operation Wealth Creation (OWC), Office of the Prime Minister (OPM), and EPRC. The AGI Steering Committee identified actionable policy recommendations in the AGI Report that were translated into Key Result Areas to guide the 2019/2020 programme-based budgeting for Public Investment Management in Agro-Industry (PIMA). The policy messages in the AGI Report were finally presented at the National Budget Conference and Economic Growth Forum FY 2019/2020, held on September 13, 2018.

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FOREWORD

Uganda's long-term goal, as outlined in the Vision 2040, is to industrialize and transform the structure of the economy. Given the dominance of agriculture as a source of livelihood, there is no doubt that Agro-industrialization (AGI) offers a great opportunity for the country to embark on its aspiration of transitioning into a modern industrial economy.

In pursuit of this goal, the Ministry of Finance, Planning and Economic Development (MoFPED) under the auspices of the Strategic Economic Policy and Management (STEPMAN) Forum set out in 2017 to provide evidence-based practical policy solutions to address the slowdown in performance of the Ugandan economy. The Forum accordingly tasked the Economic Policy Research Centre (EPRC) to take lead in conducting an in-depth policy oriented research to guide Uganda's AGI agenda for the next five years. The product of that initiative is this report titled '***Fostering a Sustainable Agro-Industrialization Agenda in Uganda***'.

This development prompted EPRC to devote most of its 2017/2018 research work plan to AGI activities culminating into production of policy notes on *Transformative approach to Uganda's export strategy* and *Agro-Industrialization for Inclusive Growth and Development*' which are a precursor to the final report. The actionable policy recommendations in the AGI Report also translated into Key Result Areas to guide Programme-Based Budgeting for Public Investment Management in Agro-Industry (PIMA) in FY 2019/2020 and the medium term.

I am happy to report that MoFPED through the PIMA Taskforce commenced period engagements in August 2018 with relevant Ministries, Departments and Agencies (MDAs) and private sector players, to act on some of the ground-breaking recommendations in the AGI draft report, including a shift from a piecemeal to a program approach for the AGI agenda. An AGI Steering Committee chaired by the Permanent Secretary/ Secretary to Treasury has also been formed to provide effective coordination of the Program.

I am therefore pleased to present to you this report which identifies the immense benefits of the agriculture sector linked to industry, including adoption of better production technologies, expanding the export and domestic revenue bases of the country and creating necessary preconditions for Uganda's structural transformation into a high value-added manufacturing economy.

I acknowledge the invaluable contribution from all stakeholders including EPRC researchers and the report drafting team, various organizations that shared their data, and the editorial team. I pledge on behalf of the ministry, that government will continue to implement the report recommendations while continuing the engagement with the various stakeholders.

Patrick Ocailap

Deputy Secretary to the Treasury/Chairman, STEPMAN Forum

MINISTRY OF FINANCE, PLANNING AND ECONOMIC DEVELOPMENT

ABBREVIATIONS/ACRONYMS

ACDP	Agriculture Cluster Development Project
ACF	Agricultural Credit Fund
AfDB	African Development Bank
AfCFTA	Africa Continental Free Trade Area
AfrII	African Innovations Institute
AGI	Agro-industrialisation
ASSP	Agriculture Sector Strategic Plan
ASYCUDA	Automated System for Custom Data
ATAAS	Agricultural Technology and Agribusiness Advisory Services
BATs	Bilateral Trade Agreements
BUBU	Buy Uganda Build Uganda
BTVET	Business Technical Vocational Education and Training
CAR	Central African Republic
CARP	Cassava Community Action Research Programme
CDO	Cotton Development Organisation
CET	Common External Tariff
CMB	Coffee Marketing Board
COMESA	Common Market for Eastern and Southern Africa
CPI	Consumer Price Index
CPSP	Cotton Production Support Program
CRS	Creditor Reporting System
CKWs	Community Knowledge Workers
DPs	Development Partners
DRC	Democratic Republic of Congo
DRUGARs	Dry Processed Uganda Arabicas
EAC	East African Community
EPB	Export Promotion Board
EPRC	Economic Policy Research Centre
ERP	Economic Recovery Programme
EU	European Union
FAO	Food and Agriculture Organisation
FAQ	Fair Average Quality
FDIs	Foreign Domestic Investments
FFB	Fresh Fruit Bunches
FMEU	Fisheries Monitoring and Enforcement Unit
FTAs	Free Trade Areas
GCCA	Global Climate Change Alliance
GoU	Government of Uganda
GVC	Global Value Chain
HFCS	High Fructose Cassava Syrup
HQCF	High Quality Cassava Flour
ICT	Information, Communication and Technology

IFAD	International Fund for Agricultural Development
IGC	International Growth Centre
ISIC	International Standard Industrial Classification
LDC	Least Developed Countries
LMB	Lint Marketing Board
LoGs	Local Governments
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MAFAP	Monitoring African Food and Agricultural Policies
MDAs	Ministries, Departments and Agencies
MDIs	Micro Deposit Institutions
MoFPED	Ministry of Finance, Planning and Economic Development
MoGLSD	Ministry of Gender, Labour and Social Development
MoLHUD	Ministry of Lands, Housing and Urban Development
MoWE	Ministry of Water and Environment
MSCL	Microfinance Support Centre Limited
MSMEs	Micro, Small and Medium Enterprise
MSMIs	Micro, Small and Medium Industries
MTIC	Ministry of Trade, Industry and Cooperative
MVA	Manufacturing Value Added
NAADS	National Agricultural Advisory Services
NaCORI	National Coffee Research Institute
NaCRRI	National Crops Resources Research Institute
NaFIRRI	National Fisheries Resources Research Institute
NARL	National Agricultural Research Laboratories
NaSARRI	National Semi-Arid Resources Research Institute
NaLIRRI	National Livestock Resources Research Institute
NAGRIC&DB	National Genetic Resource Information Centre and Data Bank
NARO	National Agriculture Research Organisation
NARS	National Agriculture Research Systems
NDP	National Development Plan
NEDS	National Export Development Strategy
NPA	National Planning Authority
NRM	National Resistance Movement
NTB	Non-trade Barriers
NUCAFE	National Union of Coffee Agribusinesses and Farm Enterprises
NUMA	Northern Uganda Manufacturers Association
ODA	Overseas Development Assistance
OECD	Organisation for Economic Co-operation and Development
OPM	Office of the Prime Minister
OPUL	Oil Palm Uganda Limited
OWC	Operation Wealth Creation
PIBID	Presidential Initiative on Banana Industrial Development
PMA	Plan for Modernisation of Agriculture
PMB	Produce Marketing Board
PPP	Public Private Partnership

PPP	Public Private Producer Partnership
PSFU	Private Sector Foundation Uganda
PVoC	Pre-export Verification of Conformity
R&D	Research and Development
SACCO	Savings and Credit Cooperative Organisation
SDGs	Sustainable Development Goals
SEATINI	Southern and Eastern Trade Information and Negotiations Institute
SGR	Standard Gauge Railway
SPS	Sanitary and phytosanitary
STEPMAN	Strategic Economic Policy and Management
TGCU	The Grain Council of Uganda
TEXDA	Textile Development Agency
UAE	United Arab Emirates
UCEL	Uganda Commodity Exchange Limited
UDB	Uganda Development Bank
UDC	Uganda Development Corporation
UCDA	Uganda Coffee Development Authority
UEB	Uganda Electricity Board
UFZA	Uganda Free Zones Authority
UK	United Kingdom
UGC	Uganda Grain Council
UGCEA	Uganda Ginners Cotton Exporters Association
UGX	Uganda Shilling
UIA	Uganda Investment Authority
UIS	Uganda Industrial Policy
UMA	Uganda Manufacturers' Association
UMPCU	Uganda Meat Producers Cooperative Union
UNAFFE	Uganda National Farmers Federation
UNBS	Uganda National Bureau of Standards
UNCST	Uganda National Council for Science and Technology
UNECA	United Nations Economic Commission for Africa
UNHS	Uganda National Household Survey
UNIDO	United Nations Industrial Development Organisation
UNPS	Uganda National Panel Survey
UPDF	Uganda Peoples Defence Force
URA	Uganda Revenue Authority
USA	United States of America
USD	United States Dollars
USSIA	Uganda Small Scale Industries Association
VAT	Value Added Tax
YLP	Youth Livelihood Project
YCVF	Youth Capital Venture Fund
WBA	Wet Bugisu Arabica
WRS	Warehouse Receipt Systems
WTO	World Trade Organisation
WUGARs	Wet ungraded Uganda Arabicas

EXECUTIVE SUMMARY

This report presents a case for what government must do to attain a transformative Agro-industrialisation agenda through linking agriculture with Agro-manufacturing industries. It proposes a model which anchors Agro-manufacturers as drivers in the expansion of the production base for agricultural raw materials and the upgrading of value chains in selected nine commodities that meet the market requirements. These commodities are curved out of the 15 broad priorities outlined in the Agriculture Sector Strategic Plan (ASSP) 2015/16-2019/20. The report also proposes a program based approach in the planning and implementation of the Agro-industrialisation agenda in Uganda.

The benefits of a transformed agricultural sector linked to industry are immense. They include, but are not limited to, the following:

- a) Adoption of better production technologies (such as irrigation, fertilisers, improved seed, mechanisation and the use of drones to monitor crop pests and diseases) to improve productivity;
- b) Increasing the supply and reliability of agricultural raw materials for the Agro-Manufacturing industries;
- c) Creating off-farm employment opportunities for citizens;
- d) Expanding the export and domestic revenue bases of the country; and
- e) Creating necessary preconditions for Uganda's structural transformation into a high value-added manufacturing economy.

Why does Uganda need to Agro-Industrialise?

Uganda's long-term goal, as outlined in the Vision 2040, is to industrialise and transform the structure of the economy by 2040. Given the dominance of agriculture as a source of livelihood, AGI offers a great opportunity for the country to embark on its long-term aspiration of transitioning into a modern industrial economy. First, AGI has the potential to promote inclusive and equitable growth, especially in rural areas, as well as closing regional income disparities. Second, Uganda has a positive trade balance for agro-industrial products (valued at USD 420 million in 2016). This can be improved by tapping into the growing local market of agro-manufactured products (via import replacement), and by fully exploiting opportunities available in international markets (export promotion). Third, AGI presents an opportunity for the country to tap into the market opportunities that arise from urbanisation (at an annualised growth rate of 5.4 percent) and a growing middle class that demands higher value-added agro-industrial products. Fourth, Uganda should Agro-Industrialise to address the high post-harvest losses which range between 20 to 40 percent of production at crop level. Finally, the backward and forward linkages between agriculture and agro-industries will help Uganda to upgrade agro-value chains and create employment for its citizens.

Agro-industry outlook

The Report recognises that there are several government initiatives supportive of the AGI agenda. Some of these initiatives include:

- a) Support to the production base through input subsidies (for example, coffee seedlings, oil palm, cotton under the National Agricultural Advisory Services (NAADS)/Operation Wealth Creation (OWC) program);
- b) Risk mitigation measures (such as increased public investment in irrigation and piloting of the Uganda Agricultural Insurance Scheme);
- c) Support toward value addition such as:
 - BIDCO Uganda Limited (for oil palm);
 - The Presidential Initiative on Banana Industrial Development (PIBID);

- and Soroti Fruit Factory;
- Nakaseke Tomato processing plant;
- Kisoro Potato Processing Industries (KPPIL); and
- Egypt-Uganda Food Security Company Limited (for beef processing).

d) Agricultural credit facility under Bank of Uganda to support processing and marketing;

e) Financial support to Research and Development (R&D) through national research institutions;

f) Construction of subnational and local markets.

Notwithstanding these initiatives, Uganda's AGI agenda has several shortfalls. The most pressing ones are the following:

- i) **Broad and non-transformative priorities:** Uganda's AGI agenda lacks prioritisation within the many 'priority' commodities. Most of the initiatives seem to be *ad hoc*, are poorly coordinated, unsustainable and have proved non-transformative thus far.
- ii) **Weak and uncoordinated institutions:** Agro-industry cuts across the mandates of several Ministries, Departments and Agencies (MDAs) each with its own policies, laws, and regulations. Legal frameworks are sometimes overlapping and uncoordinated which makes the harmonised implementation of the AGI agenda by these numerous MDAs difficult. Furthermore, response to institutional failures has been the creation of parallel institutions, with detrimental budget implications.
- iii) **Weak and unsustainable production base:** The agricultural production base is driven by fragmented small-scale farmers who are not adequately supported by services (extension, R&D, innovations, insurance, irrigation and infrastructure) to sustain Agro-Manufacturing industries. Overtime, this has resulted in decline in productivity.
- iv) **Non-transformative agro manufacturing industries:** Agro-Manufacturing industries are constrained at two fronts – a weak production base to sustainably supply raw materials, and an unfavourable business operating environment such as high cost of electricity, quality of electricity, cost of capital, and corruption. These have inhibited growth with Agro-Manufacturing industries remaining stunted and operating below installed capacities.
- v) **Limitations in taking advantage of the domestic and international markets:** Uganda has failed to exploit the domestic market and, as such, the country imports substantial amounts of agro-industrial products that can otherwise be produced locally. This is in part due to an unfavourable policy environment that focuses on international markets. On the other hand, Uganda has signed several trade agreements (multilateral, regional, and bilateral) but is yet to fully exploit the available opportunities that the agreements offer.
- vi) **Uncoordinated and unsustainable development financing to spur agro-industry:** Finance is a key support service required at all levels of the agro-industry value chain. Considering the supply side of development finance, public funding for agro-industry remains inadequate, uncoordinated and focused on non-transformative AGI activities. Another key source of development funding is through development partners. However, this is increasingly being channelled through projects rather than programmes.

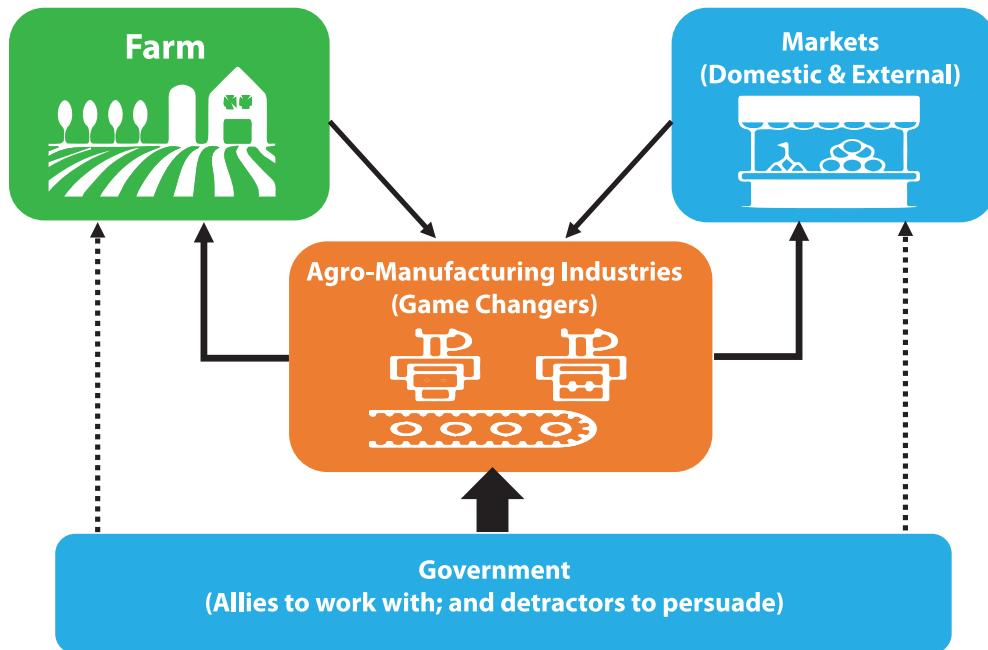
Policy actions for a sustainable and transformative AGI agenda

The Report proposes four interrelated action points to foster a transformative and sustainable AGI path for Uganda. Each of these actions are discussed briefly below:

a) **An Integrated Model:** The Report identifies an integrated model as the best approach for re-organising the production systems for agro-industry as illustrated in Figure A.1. This model identifies Agro-Manufacturing industries, especially high-end manufacturers, as game changers with government playing a key strategic

role in the provision of public services such as R&D and extension services but guided by industry requirements. In addition, the high end manufacturers should build competitiveness through adding value to meet both domestic and global markets.

Figure A.1. Proposed integrated model for agro-industry



- b) **Program approach to AGI:** A program-based approach should be adopted if Uganda is to achieve its AGI agenda on a sustainable basis. The program should start with *fewer* fundable priorities in the short-to-medium term with an integrated planning and budget approach. Given the initial conditions discussed under the agro-industry outlook, the program should be spearheaded by a strong and committed steering committee, preferably chaired by MoFPED. The committee should have clear and measurable performance targets.
- c) **Institutional framework:** There is need to rethink the current institutional framework, especially the role of government. In particular, the government has to take on a developmental state role to ensure the proper coordination and financing of actors. Furthermore, the government has to regulate the activities of Agro-Manufacturing industries to ensure support of inclusive growth. This can be attained through tools such as contractual arrangements, commodity exchange systems, and warehouse receipt system. In addition, local governments have to play a critical role in ensuring availability of the necessary services at the sub county level and monitoring the performance of farmers. For example, tractors for hire can be placed at the sub country level. Finally, the government has to retain the role of providing training and extension services as well as promotion of agricultural research and development.
- d) **Government's role to go beyond an enabling environment:** Uganda, as a late industrial developer, must carefully use strategic state guidance to *induce* wealth creation. This is particularly true for value-added manufacturing, which is difficult but necessary as a precondition for structural economic transformation. Thus, strategic State guidance must go beyond just ensuring an enabling environment to actively support a sustainable AGI agenda.

1. INTRODUCTION

Uganda's industrialisation agenda has been unimpressive despite the political support given to the industrial sector right from the years of colonial rule in the post-World War II era to the first decade of independence in the 1960s. Historically, the British colonial administration mapped out Uganda's industrial towns based on climatic and soil considerations. The colonial State built the Uganda Railway to extract minerals and more industrial raw materials to the coast for export to industries in the United Kingdom (UK). In essence, Jinja was chosen as Uganda's industrial town due to its connectivity to borders and strategic infrastructure (such as electricity). The historical perspective highlights linkages between the raw material base, marginal processing activities and markets; and that the systems were relatively efficient. The economy bequeathed by the colonial State to Uganda had some strong institutions – particularly Uganda Development Corporation (UDC) and Uganda Electricity Board (UEB). Nonetheless, it was predominantly an agrarian economy, without 'successful' industries.

Since 1972, Uganda has struggled with attaining a transformative industrial development agenda. Obwona et al. (2014) argue that many factors have changed. Jinja town as the main agricultural led industrial development has since been replaced by Kampala with little policy guidance. Uganda has also shifted from a centralised system of government to a decentralised one – which is not supportive of organised productive systems.¹

Uganda launched its Vision 2040 and the subsequent National Development Plans (I and II) pushing industrialisation as a key result focus to steer the economy. On the policy front, Uganda's industrial development agenda was articulated in *The Uganda Industrialisation Policy and Framework, 1994-99*, which, like the *Uganda Investment Statute of 1991* placed emphasis on *agro-processing* rather than manufacturing as the main industrial priority for the country. Since then no tangible fruits of industrialisation linked to agricultural transformation have been attained.

From colonial times, Uganda has had four distinctive industrialisation episodes, namely: (a) The phase of developmental state-building: Governor Cohen to Obote I (1962-1971); (b) the Idi Amin phase of the 'economic war' (that witnessed the expulsion of Asians) and industrial stagnation (1971-1980); (c) the phase of pro-market structural adjustment programmes (SAPs) (1980 – 1997) and (d) the current phase which Kiiza (2012) refers to as 'new developmentalism' characterised by

pouring the new wine of State activism into the old wineskins of economic liberalism.

Efforts to link agriculture to industry have been made through several interventions both by Government of Uganda (GoU) and non-state actors since 1986. Initiatives have ranged from ensuring a good business environment through sustained peace and security, policy incentives; signing global, continental and regional trade agreements to ensure markets; access to credit, public investments in infrastructure, extension services and research and development (R&D), to public-private partnerships in setting up agro-industries, among others. Development Partners continue to support these government initiatives either through budget support or off-budget support. There are also other interventions driven by private sector and other non-state actors.

In the 1980s, and more seriously in the 1990s, Uganda also adopted policies of extensive economic liberalisation and less involvement of the State as a business partner in running the economy. The 'pro-market' policies resulted in the institutionalisation of a conservative model of economic governance and industrial development but this in turn led to the failure of industrialisation to take off.

Notwithstanding the above initiatives, Uganda is yet to achieve tangible industrialisation. It is apparent that the initiatives as articulated in the ruling National Resistance Movement (NRM) Manifesto (2016) are intended to see the economy industrialise. However, connecting the

1 Most government programmes are implemented at this level with limited capacities and competencies at Local Government levels; and coordinated planning. To some extent this frustrates investment at this level.

dots at all levels (policy, budget and systemic structural issues) remains a challenge.

Historical evidence shows that effective latecomer industrialisation is attained through *defiance*, not *compliance*. Latecomers have invariably succeeded by defying, not complying with, comparative advantages (Chang, 2002; Kiiza, 2007). For example, the United States of America (USA) which attained industrialised nation-status after Britain's Industrial Revolution *defied* the political economy wisdom of Adam Smith and David Ricardo. Germany and Japan which came after USA; and Korea, Taiwan-China and Mainland China which came after Japan all succeeded by defying the scepticism of more industrialised nation-states, which typically claimed that latecomer industrialisation had no chance of success. The claim was that latecomers would promote economic inefficiencies if they defied their natural advantages in favour of politically constructed competitive advantages privileging state-coordinated industrial transformation over the luxury of market fundamentalism (*ibid*).

This Agro-industrialisation (AGI) Report, therefore, positions industrialisation in a broader context of achieving Uganda's development vision. The central argument is that Uganda's transformative AGI agenda is unlikely to be unlocked unless the country adopts focused policies, budgets and sectoral implementation plans, covering fewer fundable commodities – coffee, tea, maize, cassava, cotton, oil palm, fish, beef, and dairy.

The Report argues that Uganda's chances of achieving transformative AGI will be postponed to an uncertain future unless the country revisits its policy of full economic liberalisation. In addition, Sustainable Development Goal (SDG) 9, calls for infrastructure development, industrialisation and innovation.² Today's agrarian economies (such as Uganda) that are struggling to industrialize must therefore invoke SDG 9 to reclaim the industrial policy space that has suffered erosion under neoliberal globalisation and the associated Free-Trade Agreements (FTAs) and the Bilateral Trade

Agreements (BATs).

This Report comes at a time when GoU is seeking for avenues to invest its scarce resources wisely in terms of identifying opportunities with optimal impact and returns. The aim is to drive a transformative AGI agenda. The Report proposes what government must do to usher a transformative industrialisation agenda that is linked with agriculture (as it is still a dominant sector), with capacity to take advantage of emerging and growing trade opportunities in the domestic, regional and global markets.

The Report thus:

- Examines the extent to which the current global, continental and regional environment as well as the domestic policy, legal and institutional frameworks support AGI in Uganda;
- Examines what needs to be done to sustainably expand the agriculture production base to ensure steady supply of raw materials (of the right variety, quality and quantity) for agro-industrial manufacturing;
- Analyses how the capacities and capabilities of the Agro-Manufacturing industries can be enhanced to leverage on trade opportunities of high value agro-industrial products in the domestic and international markets; and
- Identifies high potential agricultural commodities where investment in value addition is likely to leverage on untapped trade opportunities both in the domestic and international markets.

The strength of the Report lies in its consideration of the entire agro-industry value chain. It proposes that Government shifts away from a generic list of priorities to a new set of strategic, specific, and fundable priorities. Furthermore, the Report proposes a model which anchors agro-manufacturers as drivers in expansion of the production base for agricultural raw materials and the upgrading of value chains in selected nine commodities that meet the market requirements. The Report also makes a case for a program-based approach to AGI and calls for strategic State-guidance of Agro-industrialisation in the short- and medium-terms until the market-based manufacturing enterprises develop their competitiveness.

2 The other SDG is No. 12 on "Ensuring sustainable consumption and production patterns" that yield less carbon print on both national and global economy.

1.1 Macroeconomic and industrial experience insights

Uganda has achieved macroeconomic stability characterised by single digit annual inflation rates and stable exchange rates due to a sound financial sector with a stable and fully convertible currency – though some would argue that the soundness of the financial sector has not been transformative in terms of creation of jobs, among others. The economy is fully liberalised and open to foreign investment, with no restrictions on remittances of dividends. There are also no restrictions on sectors, and foreign investors are allowed to invest in an economic activity with 100 percent foreign ownership, which allows full repatriation of profits. In addition, Uganda operates an open capital account, and exchange rate is freely determined by the market.

Despite the sound macroeconomic environment, Uganda's economic growth has not created enough jobs for its burgeoning labour force. While the economy grew at 4.5 percent in 2016/17, largely driven by services, the services sector contributed less than 15 percent of the total employment. In contrast, the agricultural sector that employs nearly 77 percent of the rural population grew at 2.2 percent (UBoS, 2016). The performance of the agricultural sector has direct implications for the performance of the industry sector and in particular the manufacturing sub-sector. This is due to the fact that nearly 60 percent of Uganda's manufacturing is food and beverage processing. Industrialisation through agriculture would thus facilitate the rate of poverty reduction in Uganda – given the strong relation between income poverty reduction and the performance of the agricultural sector.³

While the current interventions have led to reduction in income poverty, this is yet to translate into wealth creation. The proportion of Ugandans living below the income poverty line decreased from 56 percent in 1992/93 to 19.7 percent in 2012/13 but increased to 21.4 percent in 2016/17. There are growing concerns of persistent inequalities in the distribution of incomes with a Gini coefficient of 0.395 in 2012/13 to 0.417 in 2016/17 (various Uganda National Household Surveys UBoS).

³ Appleton and Ssewanyana (2004).

With regard to industry, historical evidence shows that no country has ever succeeded by embracing a generic list of agro-industrial commodities (Chang, 2002), and successful countries have focused on few strategic commodities. For example, textiles manufacturing, which is a key component of agro-industry, was prioritized by Britain, France, Japan, and China in their early stages of development due to the backward-forward linkages between cotton growing and textile manufacturing. In fact, the British Industrial Revolution was based on textile manufacturing backed by improvements in development infrastructure (canals, roads, railways), energy and State capacity.

1.2 Why Agro-industrialisation?

Evidence shows that no region of the world has ever moved to industrialised economy status without transformation of the agricultural sector (Adesina, 2017). Fatah (2007) suggests that agro-industry is key in pursuing the goals of growth promotion and income equality. Hence, Uganda's heavy reliance on agriculture simply implies that for inclusive industrialisation, employment creation and wealth enhancement to be achieved, transformative manufacturing that builds on the agricultural sector is essential. To achieve transformation, investments in modern farm inputs and production systems must occur to boost sustainable agro-supply chains for industry.

Uganda's long-term vision is to transform the country into a modern industrial economy by 2040 (GoU 2013). As mentioned earlier, GoU has demonstrated political commitment to agro-industrial development as articulated in the 2016-2020 NRM manifesto. The alignment of the ruling Party's philosophy is visible in maintaining in 2017/18 and 2018/19 the Annual Budget theme of: 'Industrialisation for Job Creation and Shared Prosperity'. Focus has been placed on adding value to both agricultural and mineral raw materials in order to increase exports of high value products. However, there is need to move beyond exports to a focus on import replacement given the growing middle class and rising levels of urbanisation at both the national and regional levels.

Uganda has also not achieved the required structural transformation where labour is expected to move from

low-productivity into higher productivity employment and agriculture will remain the biggest employer in the short- and medium-term. Without employing a significant proportion of the labour force in transformative manufacturing activities, few countries have been able to escape poverty (Newman et al. 2016).

It must be emphasised that Uganda's annual urbanisation rate (5.4 percent in 2016⁴) is growing faster than its population growth rate (3.0 percent).⁴ Specifically, the share of the population in urban areas stood at 24.3 percent in 2017 and is projected to grow to more than 40 percent in 2050.⁵ Increasing urbanisation, not only in Uganda but regionally, will increase the demand for agro-industrial products such as processed foods, starch for pharmaceutical industries and bio-fuels. Given that rising urbanisation is bound to happen worldwide, markets for agro-industrial products will expand. Backward and forward linkages will also necessitate that Uganda sustainably transforms agro-value chains to ensure sufficient supplies for domestic industries to undertake transformative manufacturing while creating jobs for its citizens. Therefore, AGI is the best strategy for Uganda to industrialise.

While evidence shows that urbanisation is closely linked to industrialisation, the link is not depicted in developing countries where urbanisation has taken place without meaningful industrialisation (IGC, 2016). Nonetheless, sustainable industrialisation is likely to lead to meaningful urbanisation in Uganda where the middle class is growing and consumption patterns are shifting towards packaged/processed industrial products. Under the right policy framework, anchored in national development planning, African countries can leverage the momentum of urbanisation to accelerate industrialisation for a more prosperous and equitable future (UNECA, 2017).

It follows, therefore, that growing and promising agro-industrial value chains requires sustainable production of high quality raw materials to support Agro-Manufacturing capable of producing quality products

that can penetrate the highly competitive regional and international markets. In the short to medium term, Government should have a deliberate agenda to have AGI as a program for overall socio-economic transformation, as this will lead to poverty reduction, increased macro-economic performance, sustainable employment creation and food security.

1.3 Structure of the Report

Besides this introduction, the Report has seven Chapters. Chapter 2 presents a brief conceptualisation of Agro-industrialisation. It also outlines the analytical framework that guides Uganda's AGI agenda. Chapter 3 examines the adequacy of the current enabling environment to spur Agro-industrialisation in Uganda. The discussion on the enabling environment includes review of a set of policies and legal frameworks, institutions, and political agenda of the ruling NRM Party that collectively improve or create an environment for a sustainable AGI. The Chapter highlights the opportunities and areas that need further attention to generate a common understanding and expectations among the relevant stakeholders.

Chapter 4 analyses what needs to be done to unlock the agro-production base to sustainably supply raw materials for industry. It delves into the critical enablers that need urgent attention, and calls for re-organisation of production systems for industry. Chapter 5, discusses the current capacities and capabilities of Uganda's Agro-Manufacturing industries and the critical enablers that need attention beyond provision of an enabling macro-economic environment.

Chapter 6 focuses on market access for agro-industrial products. The discussion centres around the untapped potential and opportunities in the domestic and international markets. Chapter 7 highlights financing as one of the binding constraints facing agro-industry players at all levels. And, finally, Chapter 8 concludes with proposed policy actions.

4 According to the UNHS (various surveys), roughly 12.4 percent of Uganda was urbanised in 1992/93, a rate that doubled to 24.3 percent in 2016/17 while the population growth rate has remained steadily at 3.0 percent per annum (still high).

5 World Urbanisation Prospects 2018.

2. CONCEPTUALISATION OF AGRO-INDUSTRIALISATION

Understanding what Agro-industrialisation entails is key to proper planning and implementation. In this Chapter we put into context the defining differences between agro-industry, agro-processing and agri-business, and present the analytical framework that can guide a systematic approach to Agro-industrialisation in Uganda. This Report is not on agriculture *per se*, nor does it rule out the need for continuing to promote activities that ensure food security, but it argues for an agenda of transformative industrialisation through agriculture.

2.1 What is Agro-industry?

The literature on agro-industries is characterised by one distinctive flaw: the tendency to present and/or utilise a generic conceptualisation of agro-industries. The most basic definition looks at agro-industry as that part of the economy that deals with farming. This implies that all farming activities, at small or large scale, with or without intensive use of modern agro-technologies, in the formal or informal sector and whether farmers produce for subsistence or for the market, qualify as agro-industrial activities.

Agro-industry is an inclusive term for all ‘postharvest activities involved in the transformation, preservation and preparation of agricultural production for intermediary or final consumption...’ (Wilkinson and Rocha, 2009:46). The problem with this conceptualisation is that industrial ‘transformation’ is mentioned, but is not consistently used in the empirical analysis. Instead, emphasis is placed on the low value-added agro-processing activities. Agro-processing is nevertheless defined generically as ‘a broad area of postharvest activities, comprising artisanal, minimally processed and packaged agricultural raw materials, the industrial and technology-intensive processing of intermediate goods, and the fabrication of final products derived from agriculture’ (*ibid*). These authors concede that ‘The hybrid characteristics and heterogeneous features of the agro-processing sector, ranging from the informal contract relations of poor rural communities to the complex, transnational activities of global players, suggest the need for caution when presenting an empirical overview.’ In other words, empirical specification becomes difficult without greater conceptual specification.

The agri-business conceptual perspective is not helpful either. For one thing, it essentially looks at

farming as a business – that is for the market. While this commercialised agriculture model is important for adopting an agri-entrepreneurship viewpoint (with a broad spectrum of actors – such as the suppliers of credit and agro-inputs), it does not go far enough. da Silva *et al.* (2009) conceptualise agro-industry from the perspective of value chains, supply chains and job creation. From this viewpoint, agro-industry is an inclusive term for both on-farm and off-farm activities. It includes direct farming as well as the ‘handling, packaging, processing, transporting and marketing of food and agricultural products’ (da Silva *et al.*, 2009: 9). Another challenge in the literature is the tendency to confuse agro-processing (defined as low value-added industrial activities) with manufacturing, which, by definition, involves substantial transformation of raw materials into finished products. Henson and Cranfield (2009), for example, define the agro-industrial sector as ‘the subset of the *manufacturing* sector that processes raw materials and intermediate products derived from agriculture, fisheries and forestry. For them, the agro-industrial sector includes ‘manufacturers of food, beverages and tobacco, textiles and clothing, wood products and furniture, paper, paper products and printing, and rubber and rubber products’ (Henson and Cranfield, 2009:11). However, this viewpoint has one key shortfall, the dominant subsector within manufacturing is the low-value added ‘food and beverages’ subsector which cannot propel a country’s manufacturing competitiveness.

The most comprehensive definition of agro-industry is as made by Reardon and Barrett (2000) who defined Agro-industrialisation to comprise three main areas:

- (i) Agro-processing, distribution, provision of farm inputs, and off-farm activities;
- (ii) Institutional and organisational coordination between agro-processing firms and farms; and

(iii) Management of parallel changes in the farm sector, such as changes in product composition, technology, and sectoral and market structures.

This report adopts the above definition. In short, it sees Agro-industrialisation as building an industry based on agricultural raw materials from production and marketing, through manufacturing to distribution in both domestic and international markets.

2.2 Analytical Framework

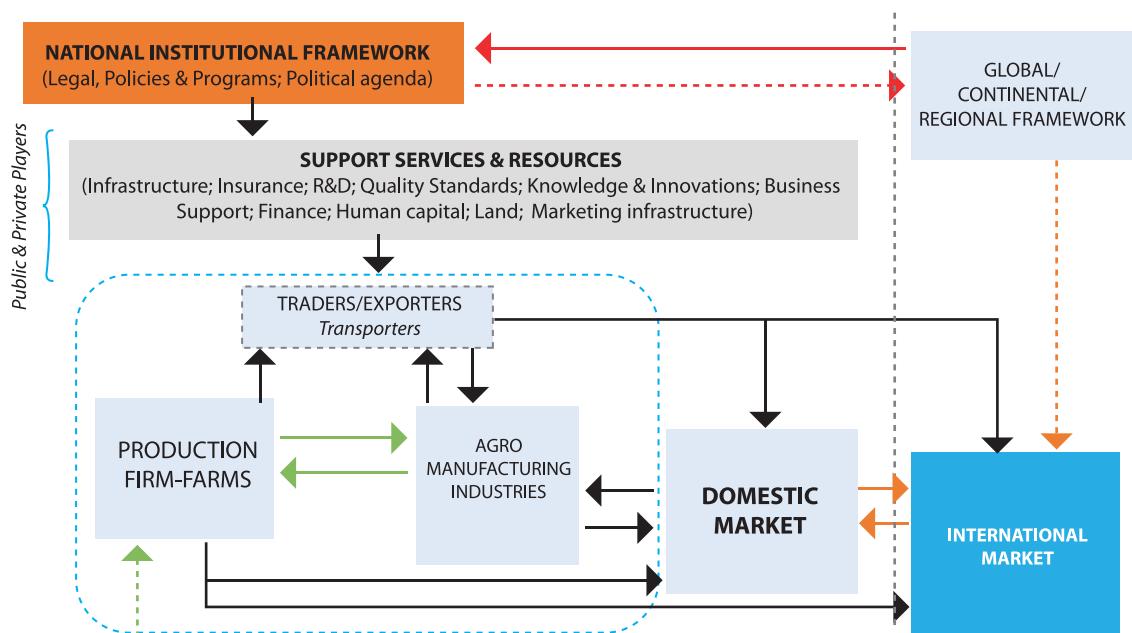
Building on the above definitions of agro-industry, this Report conceptualises the mechanism through which Uganda can deliver a sustainable AGI agenda. Figure 1 illustrates how different players/systems interact to deliver AGI. Specifically, the framework suggests that, to sustain AGI there is need to pay attention to both national and external factors and how their interactions could boost or hinder AGI.

Conceptually, an Agro-industrialisation agenda requires a national institutional framework that provides an enabling business environment that is cognisant of contemporary global, continental and regional dynamics (Figure 1). Specifically, the institutional framework includes the legal, policy and political agendas of

Government. With institutions in place that respond to changing environment, and that are well funded and with clear horizontal and vertical linkages along the entire chain, for AGI to be realised. The effectiveness of institutions is attained through adequate provision of support services and resources by both public and private players. The supportive resources include: finance, infrastructure and land; while the supportive services include insurance, R&D, quality assurance and standards, knowledge and innovations, and business support, among others.

Figure 1 also depicts three major components of agro-industry, namely primary production, industrial manufacturing and market access (domestic and international). The right coordination, backward and forward linkages, between these components is essential. However, their functionality depends on the forces set at the national level and the kind of support services and resources provided therein. The international market is, on the other hand, affected directly through the global dynamics. For instance, penetrating such markets requires adherence to standards and trade requirements set in trade agreements that Uganda endorsed- e.g. through the World Trade Organisation (WTO), Free Trade Agreements (FTAs), and Bilateral Trade Treaties (BATs).

Figure 1: Analytical framework for Agro-industrialisation



Source: Author's own conceptualisation of agro-industry.

2.3 Report Approach

From the analytical framework, the Report traces and analyses the five segments –institutions, support services and resources, production, manufacturing, and markets- through which AGI must be fostered and sustained. To achieve this, the Report first reviews relevant literature and provides a critique of government documents - policies, laws, strategies and institutional set-up. The aim was to assess whether the current national institutional framework can enhance a transformative AGI agenda for Uganda.

Second, the Report critically examines the status-quo and commodity production targets set by the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). It identifies production and Agro-Manufacturing gaps that must be closed for transformative value addition to be attained. The information used were drawn mainly from Government policy documents; various National Household Surveys conducted by the Uganda Bureau of Statistics (UBoS); the World Bank Enterprise Survey of 2013/14; and administrative data from Bank of Uganda (BoU); and relevant ministries, departments and agencies (MDAs). The market analysis focuses on the current markets, untapped market potential, and what Uganda needs to do differently to tap into such opportunities. The data for this aspect were drawn mainly from the international trade databases of TradeMap, COMTRADE and UNIDO.

Third, the Report examines the issue of development financing for AGI. Financing is critical in Uganda's efforts to sustainably expand the production base, to improve the manufacturing capacities, and to increase the competitiveness of Uganda's agro-industrial products both domestically and internationally.

Fourth, a case study approach based on nine selected strategic industries was employed to demonstrate the dynamics around Uganda's agro-industry, and to illustrate the interactions between the major components of agro-industry.

Some of the selected industries received extensive support from Government in form of policy incentives. For instance, the palm oil industry received a lot of

Government support through tax holidays, credit and land subsidies. This case study presents vital information needed for understanding the model for supporting forward and backward linkages between agriculture and industry. The beef industry has also benefited from such policy incentives but with minimal impact. This, too, needs to be understood. At the same time, the dairy industry deserves attention because it is deemed to be one of the success stories with steady increases in milk production and value addition with a broadened product space. Here, consultations with key actors including industrialists, R&D institutions, policymakers and others were made.

Fifth, qualitative methods were employed to complement the above analyses. A stakeholder mapping exercise was undertaken to identify the key players by the kinds of support services and resources (see Figure 1) they provide for the production, manufacturing, and marketing segments. This exercise allowed participants to deliberate on what needs to be done if Uganda is to realise transformative Agro-industrialisation. Key informant interviews were also used to augment the above analyses by engaging with key policy makers, private sector players and Development Partners (DPs). Lastly, validation meetings were held with the lead ministries (MAAIF and MTIC), Ministry of Finance, Planning and Economic Development (MoFPED) Top Policy Management, Top Technical Management and Directorate of Economic Affairs, Private Sector, R&D institutions, industry-specific agencies, Uganda National Farmers Federation (UNFFE), Uganda Cooperative Alliance, Uganda Grain Council (UGC) and other relevant stakeholders. Further consultations were made focusing on programming for public investment for agro-industry (PIMA). The PIMA consultations drew participation from MoFPED, MAAIF, MTIC, Operation Wealth Creation (OWC), Private Sector Foundation Uganda (PSFU), Office of the Prime Minister (OPM), Uganda Development Corporation (UDC), R&D institutions and commodity-specific agencies, among others.

2.4 Scope of the Report

For agro-industry to work, there is need to shift from the *generic* approach to a 'few game-changers' with GoU starting small and picking lessons for future agro-

industries. Accordingly, this Report argues that not all priority commodities as articulated in the Agricultural Sector Strategic Plan (ASSP) should immediately qualify for agro-industrial development at ago. Otherwise, the current *generic* approach to AGI will become a recipe for developmental failure, not economic transformation.

The Report identifies nine high potential and strategic agro enterprises out of 15 priorities - coffee, fisheries, tea, cotton, cassava, vegetable oil, maize, dairy, and beef. The rationale for selecting the commodities stems from the evidence that coffee, tea and fisheries are vital in the strategic transformation of Uganda's exports in the short and medium term (see STEPMAN, 2017a) while cotton and vegetable oil are included by virtue of their high potential for import replacement (see STEPMAN, 2017b). There is also a sizeable domestic market for textile products and vegetable oils. Maize is selected as a food security crop as well as a tradable commodity within the region. Maize and cassava also have potential for bio-ethanol manufacturing and supplying starch to the high value-added pharmaceutical industry.

3. LEVERAGING UGANDA'S INSTITUTIONAL FRAMEWORKS FOR AGRO-INDUSTRIALISATION

In Uganda's push for Agro-industrialisation (AGI), effective national institutions are paramount for fostering transformative linkages between the raw material production base, manufacturing activities and the markets. The relevant institutional frameworks include national laws, regulations, policies, and political agendas of the ruling party; as well as the bye-laws and organisational arrangements of local governments (LoGs) (see Figure 2).

Through the stakeholders' mapping exercise,⁶ the Report observed that agro-industry cuts across the mandates of several Ministries, Departments and Agencies (MDAs). It calls for effective and efficient coordination of different MDAs. For Uganda to realise its AGI aspirations, the key ministries— Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and Ministry of Trade, Industry and Cooperatives (MTIC) – must work together with the MoFPED; the Ministry of Lands, Housing and Urban Development (MoLHUD); Uganda Investment Authority (UIA); President's Office; State House; Office of the Prime Minister (OPM), Uganda Export Promotion Board (UEPB), and Local Governments (LoGs). This Chapter provides a critique of the initial conditions and what needs to be done differently to ensure that the institutional frameworks deliver Uganda's AGI agenda.

3.1 National Commitments

The **1995 Constitution of the Republic of Uganda** objective XI (ii) articulates that 'the state shall stimulate agricultural, industrial, technological and scientific development by adopting appropriate policies and enactment of enabling legislation'. The Constitution also states in its Sixth Schedule that industrial policy, agricultural policy, national research policy, regulation of trade and commerce, foreign relations and external trade, national standards, and control and management of epidemics and disasters are among the key functions and services for which Central Government and local governments are responsible. These commitments were translated into the Vision 2040 where Government of Uganda (GoU) pledges to 'reform and optimise the industrial structure while establishing a modern industrial system that will give impetus on industrialisation' (p.17). Indeed, during the first ten years of implementation of the Vision, Government commits to

establish economic lifeline industries, among which, are agro-based industries.

Vision 2040 is operationalised through five-year National Development Plans. Currently the country is implementing the second National Development Plan (NDP II). The Plan emphasises commercialisation of agriculture to increase production and productivity along the value chains. Specifically, it emphasises agro-processing and marketing as launch pads to industrialisation. It further points to the untapped opportunities of agro-processing, including economic growth promotion, employment creation and poverty reduction. NDP II calls for the development of value added industries in agriculture.

At a political level, the National Resistance Movement (NRM) Government, through its Manifesto (2016-2020), commits to enhancing value addition for traditional and non-traditional exports to increase export earnings through agro-processing and selective manufacturing. Based on the constitutional provisions, government policy and the political commitments of the ruling Party, AGI is not a new aspiration for GoU. Instead, it is the question of *how* these commitments could be translated into practice to make AGI work that forms the basis for this Report.

3.2 Legal and Policy Responses

Since the 2000's, GoU has put in place several institutional, regulatory and policy frameworks (presented in Figure 2) aimed at shaping an enabling environment for AGI to prosper. While this is a positive development, it has created a complex set of policy and regulatory overload for effective implementation. In total, there are over 25 policies and over 20 Acts, developed separately to supposedly improve the investment

⁶ The Stakeholders' Mapping Meeting was held on March 03, 2018.

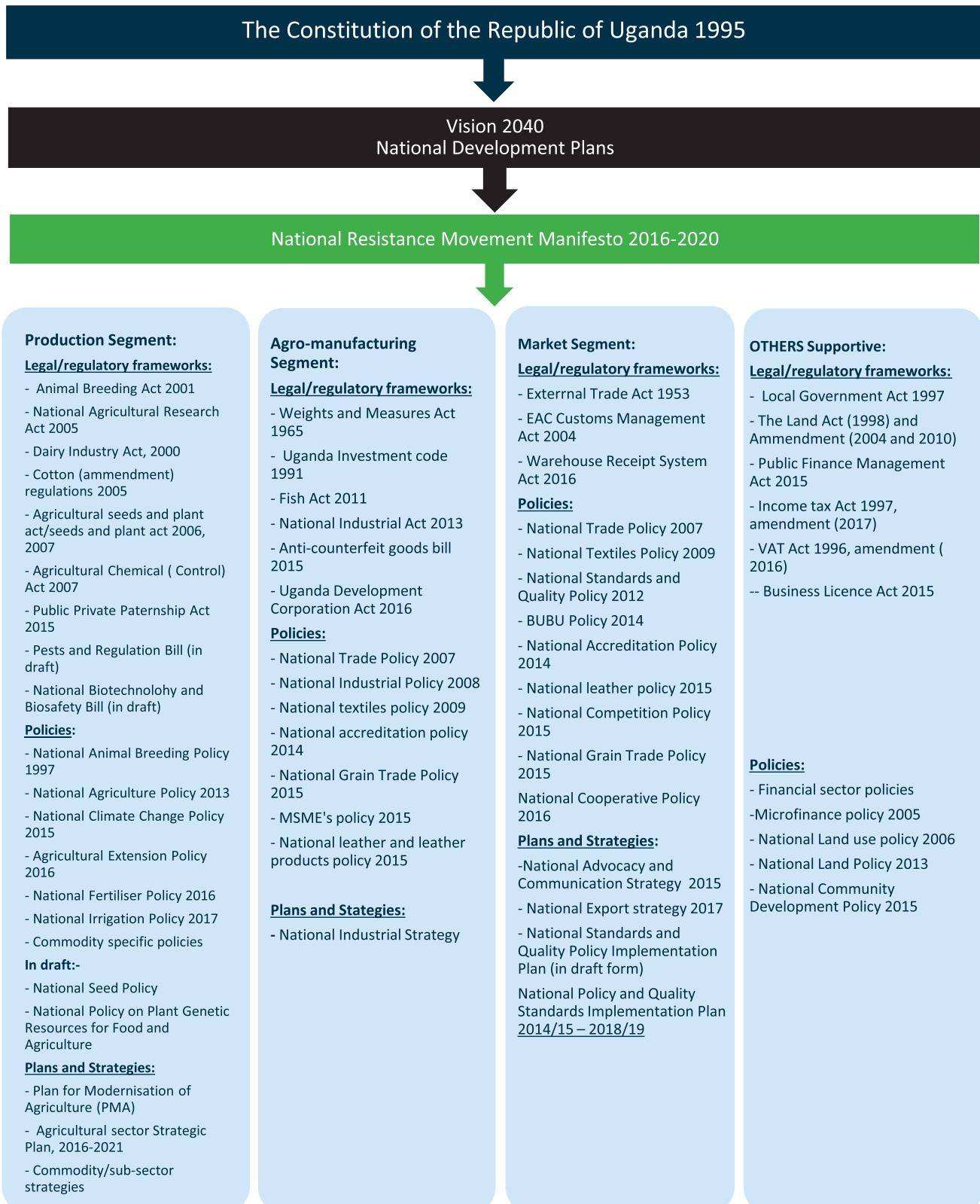
climate for private sector-led development. Participants at the Stakeholders' mapping exercise alluded to the complexities involved in implementing a multitude of policies and Acts to achieve a given outcome, and there was unanimous call for consolidation for effective implementation, monitoring and learning to happen. Another observation was the fact that these many policies and legal frameworks were yet to result into higher competitiveness of agro-industrial products in domestic and international markets (see Chapter 6).

A further interrogation of these policies reveals several gaps. First, some Acts are outdated (such as the Weights and Measures Act 1965 and the Anti-Counterfeit Goods Bill 2015), while others are incomplete (e.g. Pesticides; Fertiliser Regulations; Meat Regulations) or yet to be tabled before Parliament (e.g. proposed amendments to the investment code). Further to note, there are some key policies in place which are not backed by laws to enforce compliance. For example, the 2013 National Agriculture Policy is not backed by any law, and this has complicated its full implementation and enforcement

through different strategies and programmes. At the commodity level, enforcing quality standards in the coffee sector along the entire chain has partly failed due to the absence of an appropriate law. This in turn is impacting Uganda's competitiveness in the global market.

Second, there are several, fragmented but related policies implemented by different uncoordinated institutions. For example, at production level, agriculture is mainly guided by the National Agricultural Policy with several sub-sector policies (such as Extension Policy; National Fertiliser Policy) and other supportive policies under other MDAs (e.g. Water for Production under Ministry of Water and Environment (MoWE); and Land Policy and Land Use Policy under MoLHUD. At Agro-Manufacturing level, for instance, the objectives of the 2015 National Grain Trade Policy are quite close to those of the 2007 National Trade Policy, and having different and uncoordinated implementers is causing duty-bearers to pull in different directions.

Figure 2: Institutional, regulatory and policy framework for Agro-industrialisation



Source: Author's compilation based on review of several public documents.

Third, there is no consistency in sticking to the legal mandate and roles of those agencies that were set up by Acts of Parliament. The situation is exacerbated by policy reversals that are rarely informed by policy evaluation and learning but more by political pronouncements. The policy reversal on extension service delivery system illustrates this point. The 2001 Act that put in place the National Agricultural Advisory Services (NAADS) with statutory mandate on advisory services was never repealed by Parliament at the time of transferring all the roles of extension back to the MAAIF under the Single Spine Extension System. In addition, the changing roles of NAADS from what were enacted (e.g. procurement and distribution of seeds, seedling procurement) were not enacted to be made part of its legal mandate.

Fourth, some policies do not have costed strategies for effective implementation, and where they exist, are oftentimes not aligned to the NDP II (NPA, 2018).

Fifth, there are also duplications across the existing strategies. For instance, both the National Export Promotion Strategy and the Uganda Industrial Strategy in the context of agro-industry are designed to promote Uganda's exports. Yet they have separate budgets, separate offices, and separate employees all of whom must be paid using tax payers' money. In addition, out of the 15 crop specific export strategies planned for development since 2008 – covering crops such as coffee, tea, cotton, livestock among others value chains – only the Coffee Export Strategy was drafted in 2012, leaving the rest of the value chains with no strategic direction.⁷

3.3 Institutional Arrangements

Effectiveness of policies and laws in place is exhibited by the performance of implementing institutions that a country has. This section provides a critique of the current institutional arrangements and what needs to be done to effectively support the AGI drive. It is important to point out that most MDAs are built on foundations of enactment of laws by Parliament with clear mandates.

While there are several MDAs supporting the AGI drive, the two key institutions are MAAIF and MTIC. MAAIF is responsible for production and productivity, while agro manufacturing/value addition and marketing are shared responsibilities of MAAIF and MTIC. However, there is need to streamline and strengthen the coordination at ministerial levels, which is considered to be weak.

Since the early 2000s, Uganda has witnessed the creation of multiple and parallel institutions within these two leading institutions and other relevant ministries to support the various processes along the AGI value chains (see Figure 3). To a great extent, this has resulted in the duplication of mandates and roles. This creates a functionality problem around coordination and in turn constrains implementation and results in wastage of public funds.

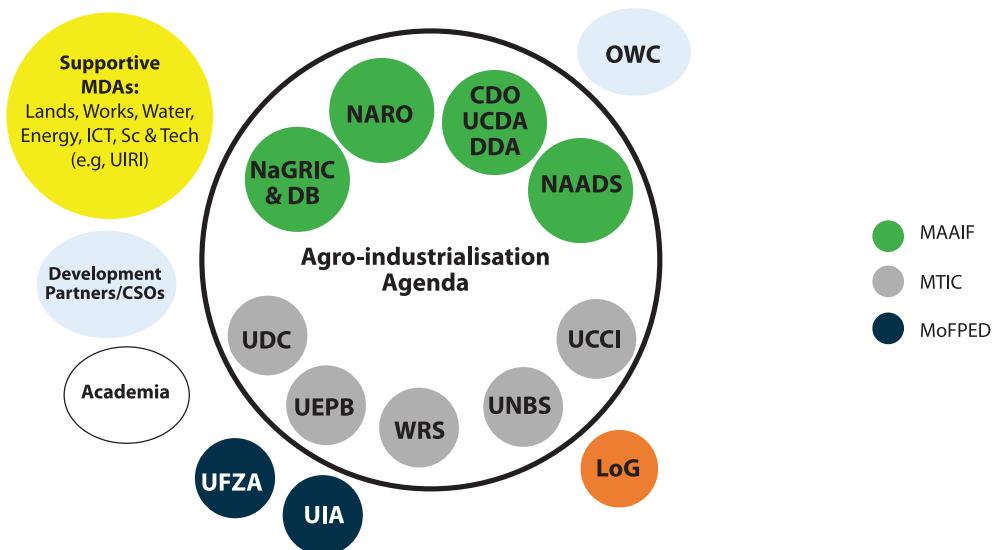
Beyond the creation of new/parallel agencies, new ministries are being created (e.g. Ministry of Science and Technology – which now houses the Uganda Industrial Research Institute (UIRI) – from MTIC) as well as creation of new directorates and departments within existing ministries. These institutions are being created for different reasons such as, failures of existing institutions; external influence; elite capture; rent seeking; and/or patronage politics. The political/policy response to institutional failure has largely been the creation of new institutions, done without due consideration of whether, or to what degree, the new institutions will complement or complicate the functionality of the existing institutions. These institutional issues have created challenges of coordination and harmonisation of the different mandates and roles to support AGI. As a consequence, the meagre financial and human resources are spread too thinly to realise the desirable outcomes across these multiple MDAs.⁸

Some of the above sector agencies e.g. Uganda Coffee Development Authority (UCDA), Cotton Development Organisation (CDO), and National Agricultural Research Organisation (NARO) were set up by Acts of Parliament. Other institutions (such as OWC) are State institutions set up as provided for in the constitution. The irony is that the overtly State institutions (such as OWC) are

⁷ The Coffee Strategy was integrated in the National Coffee Strategy 2015/15-2019/20 and in the revised 2015/16 – 2024/25 Coffee Road Map, targeting 20 million bags.

⁸ There are on-going efforts by the Ministry of Public Service to address this issue.

Figure 3: Complexity of the institutional arrangements guiding Agro-industrialisation agenda



Note: The figure does not include private institutions and associations.

Source: Author's compilation based on the Stakeholder Mapping Meeting, March 03, 2018.

set up as temporary initiatives but command relatively more power and budgetary resources than statutory institutions. While the State institutional initiatives typically lack a long-term strategic direction, they could still deliver on their objectives if well managed.

Across the agencies, the evidence of weak coordination can be demonstrated by the significant failures of the tea planting and expansion programme – where only 30 percent of the seedlings survived.⁹ This is partly attributed to weak coordination amongst MAAIF, NAADS and LoGs in implementation of the programme.

The creation of sector agencies has also opened up more vacuums for the agricultural sector. Sector agencies such as UCDA and CDO, which are commodity-based institutions, have taken up additional functions of product development, e.g. seed multiplication. This is also true for NAADS, whose mandate has significantly changed from 2015 from advisory to input procurement, without the relevant statutory amendments (see section 3.2). The creation of these agencies arose due to the need to provide commodity specific technical support (such as for cotton, coffee, dairy).

Domestically, the focal institution in the trade frameworks and the main Government body tasked with promoting

both internal and external trade in the country is MTIC. As part of its operations, MTIC also oversees institutions along the production value chain including Uganda Commodity Exchange Limited (UCE), UNBS, UIRI, UEPB and Uganda Development Corporation (UDC). In addition to these, there are a number of commodity specific bodies like UCDA, CDO as well as commercial services offices at every district.

While the institutional framework is supportive in facilitating the export of agro-industrial products, there are still numerous challenges. Institutions at the production level are not well linked or coordinated with institutions at the marketing and export level. This critical gap needs to be addressed as discussed in subsection 8.2.1.

Beyond the public institutions, there are umbrella production and business associations that have and continue to play critical roles associated with Agro-industrialisation. Umbrella associations such as UNFFE, Private Sector Foundation Uganda (PSFU) and Uganda Manufacturers Association (UMA) engage Government with the aim of improving the business investment climate for the agro-industry. Specifically, PSFU and UMA engage government on different policies and strategies to support the private sector in manufacturing or agro-processing for regional and international markets. While

⁹ Mbarara University of Science and Technology (2016).

some of these associations (such as UMA) have been quite successful in policy advocacy and in collaborating with Government to improve the business environment to attract more domestic and foreign investments, their uptake of R&D to improve quality and productivity in their industrial activities remains low.

It is not absolutely clear why some institutions fail to deliver on the assigned roles and responsibility. For instance, the National Trade Policy identifies training for business and entrepreneurial skills development and public-private partnerships (PPPs) as their key areas of policy action. At the same time, the policy places responsibility on the private sector. Training and skills development require government investment. Moreover, implementation of PPPs provision of agro-industrial infrastructure (such as cold storage facilities, refrigerated trucks and laboratories) has been difficult to realise in an economy with a weak private sector that is also dominated by external players rather than domestic ones. Furthermore, the participation of the private sector always comes with tax expenditures and other incentives – which in turn impact government's revenue mobilisation efforts. In this regard, there is need to re-examine the role of the State in driving the AGI agenda, particularly in the presence of a weak private sector.

3.4 Programs Supporting Agro-Industry Development

To achieve its AGI aspirations, Uganda has over the past decades implemented a number of programs. This section discusses selected programs including: commodity specific agencies, Plan for Modernisation of Agriculture (PMA); OWC, PPPs for selected Agro-Manufacturing industries, as well as projects directly supported by Development Partners.

3.4.1 Commodity specific agencies/organisations

The first 'pro-market' and 'pro-efficiency' institutional reforms to increase the productivity of Uganda's agricultural sector were undertaken over the period of Economic Recovery Program (ERP) from 1986 to late 1990s. These took the form of market oriented economic policies with major focus on economic liberalisation and privatisation of public enterprises. The key result of these reforms was the abolition of State commodity bodies, such as Produce Marketing Board (PMB); Lint

Marketing Board (LMB); and Coffee Marketing Board (CMB), which played big roles in produce marketing, organising farmers into groups for easy provision of extension services, and in credit provision. The abolition of these key institutions was detrimental to the agricultural sector since the newly created agencies (UCDA, CDO, among others) did not take on all the roles performed by the previous public enterprises (Bategeka et al., 2013).

3.4.2 Plan for Modernisation of Agriculture

The Plan for Modernisation of Agriculture (PMA) was an integral part of the strategies of the Poverty Eradication Action Plan (PEAP). PMA was meant to drive modernisation and not industrialisation of agriculture. The political choices made, to focus only on two pillars (i.e. NAADS and Research and technology development – leading to the establishment of NARO) out of the seven pillars¹⁰, partly explains the failure of PMA to achieve the expected outcomes. This meant that the synergies amongst the pillars were lost.

The NAADS was designed to perform the following core functions:

- Offer advisory and information services to farmers;
- Support technology development¹¹ and linkages to markets;
- Provide quality assurance and technical auditing of service providers;
- Support private sector institutional development; and
- Engage in program management and monitoring.

NAADS operated a public-private extension service delivery approach geared towards increasing market-oriented agricultural production by empowering farmers to demand and control agricultural services. However, from 2006, NAADS shifted its focus towards input distribution, which partly explains the withdrawal of World Bank support to the program. Even under the new

¹⁰ Seven pillars included: Research and technology development; national agricultural advisory services; agricultural education; improving access to rural finance; agro-processing and marketing; sustainable natural resource utilisation and management; physical infrastructure.

¹¹ NARO develops technologies, and NAADS establishes demonstration sites to test the technologies. Thus, NAADS role is to promote the already developed technologies.

focus, NAADS faces a number of challenges to achieving its goal of enhancing production and productivity. Key among these challenges is unregulated contracting of private agents to supply inputs without the involvement of NARO (for technical backstopping and quality control). This is an oversight in technology development and linkage to farmers.

3.4.3 Operation Wealth Creation

The Operation Wealth Creation (OWC) managed by the Uganda Peoples Defence Force (UPDF) was created in 2015 in response to the perceived failure of NAADS to effectively transform the agricultural sector from subsistence to commercial farming. The key roles of OWC (relevant to this Report) include:

- Provision of planting and breeding materials;
- Agricultural mechanisation;
- Provision of water; and
- Provision of microfinance services.

OWC was intended to facilitate growth of household income through agriculture as well as address service delivery challenges in agriculture resulting from the institutional failure of NAADS. Currently, OWC is delivering planting materials to farmers through an input subsidy. UPDF officers fully supervise the subsidy distribution of farm inputs at village level, which inputs are procured by NAADS. The subsidy is meant to target the most vulnerable farmers, though this has not been easy in practice as Uganda lacks the database on farmers. In addition, traceability of the inputs delivered to farmers remains a challenge.

3.4.4 Agricultural Cluster Development Project

The MAAIF is implementing a USD248 million Agriculture Cluster Development Project (ACDP), with the aim of raising on-farm productivity, production, and marketable volumes of selected agricultural commodities in 12 specified geographic clusters.¹² The ACDP Project is co-financed by the World Bank/IDA (with a 60.5 percent contribution), GoU and farmers. The Project, which targets 450,000 smallholder farmers became effective on January 23, 2017 and is expected to end its operations in March 2022. ACDP supports intensification of on-farm production of five priority commodities (maize, cassava, beans, rice, and coffee) through improved access to

¹² Groups of districts where production of priority commodities (maize, cassava, beans, rice and coffee) is highest.

agricultural technologies (seeds¹³, fertilisers, pesticides, farm equipment/materials) and mechanisation services facilitated by the use of the e-Voucher system.¹⁴ Project beneficiaries receive necessary training to ensure inputs are used efficiently and effectively. Additionally, the Project provides technical assistance and matching grants to farmers' associations to improve their capacity for post-harvest handling and marketing of farm produce. Further, the Project finances infrastructure works to eliminate bottlenecks and trouble spots on rural access roads critical for the movement of farm produce to markets.

Given that the Project addresses constraints along value chains of priority commodities, and is to be implemented for at least four years, its successful completion has the potential to significantly contribute to the country's AGI agenda and to promote the export of agro-industrial products.

3.5 Policy Incentives in Support of Agro-industrialisation

GoU has put in place several incentives to promote investment operations, particularly in value-added manufacturing and agro-processing (GoU, 2014). The Uganda Investment Authority (UIA), Uganda's Investment Promotion Agency, was created by the Uganda Investment Code Act (Cap 92) which was promulgated in 1991 as a generic investment promotion Agency. Within its policy framework, attractive incentives to both domestic and foreign investors in manufacturing have been introduced - though these incentives are skewed towards the latter. Under the Uganda Investment Code of 1991 (Section 22), a package of fiscal incentives is given to investors, including those in the manufacturing sector. The incentive structure comprises of the following:

- Capital recovery of plant and machinery costs;
- Capital recovery of significant training-related

¹³ Input distribution under this smart subsidy program begins in November, 2018. At the time of writing this Report, detail of the types of seeds to be distributed apart from knowing the crop types (i.e. maize, cassava, beans, rice and coffee) was not known.

¹⁴ The e-Voucher system is expected to work even in peasant economies with low IT penetration. Farmers who are selected to benefit from the program are registered with the e-Voucher Management Agency. Similarly, credible agro-input dealers who will supply the inputs are registered. The farmer will receive an e-Voucher indicating the value of inputs he/she needs, this is what will be presented to the input supplier to be supplied with the inputs. The input supplier will use the voucher to get paid.

- costs;
- 50 percent of allowances for plants and machinery; and
- 100 percent of training costs being deductible on a one-time basis from a company's income.

A range of annual deductible and depreciation allowances also exist, resulting in investors normally paying substantially less than the 30 percent Corporate Tax rate in the early years of their investment.

Fiscal incentives: At production level, imported inputs (including ploughs, hoes, seeders, fertilisers, chemicals, tractors, among others) are Valued Added Tax (VAT) exempted under the VAT Act of 1996. These inputs are also exempted from all taxes when imported by farmers under the *Fifth Schedule* of the EAC Customs Management Act, 2004 (URA, 2017).

Handling and Packaging: At processing and marketing levels, imported inputs including refrigerated trucks, aluminium cans, heat insulated milk tanks and insulated tankers and packing material of any kind designed for packaging goods for exports, are exempted from all taxes under the *Fifth Schedule* of the EAC Customs Management Act, 2004. Machinery for processing agricultural/dairy products are also VAT exempt and have zero import duty. Agro-processing plants whose outputs are for Ugandan consumption are also zero-rated.

Importation of machinery/equipment, and logistics: In order to promote export-oriented manufacturing investments, the Government, since 2008/9, has continued to introduce additional fiscal incentives in the Budget with a view to attracting foreign direct investment (FDIs) in the manufacturing sector. These include removing the import duty on plant and machinery imports, agro-processors, and heavy truck transporters (UIA, 2016). Import duty on trucks with carrying capacities of at least five tons were reduced from 25 percent to 10 percent, while trucks with minimum capacities of 20 tons have no import duties (UIA, 2017; KPMG, 2017). Taxes on industrial spare parts were also removed, as were duties on insulated milk tanks. The Government further provides tax holidays for durations ranging from one to 25 years, to investors engaged in

export-oriented production and, if the investment is located more than 25 km away from Kampala, for agro-processing investors.¹⁵

In 2008/9, support was extended to agro processing with new investments in rural areas becoming income tax exempt. Exemption cases include: exemption of the supply of unprocessed foodstuffs, unprocessed agricultural products and livestock; supply of feeds for poultry and livestock; supply of salt and the supply of packing materials exclusively used by the milling industry for packing milled products (URA 2013, 2017).

In addition, GoU has implemented more targeted tax exemptions towards the development of agro-industry during 2000 to 2016 period. For instance, the supply of cereals grown and milled in Uganda as a means of supporting the establishment of milling capacity in the country is VAT exempt (URA, 2013). In 2006/7, tax on interest earned by financial institutions on agricultural loans was exempt as a means of making credit more affordable for farmers. However, the share of agricultural loans in total commercial bank lendings only increased from 7.1 to 8.4 percent between 2001 and 2013.¹⁶

Despite the existence of these exemptions, Kasirye (2015) reported several challenges of tax exemptions for the agriculture sector. Notably, first, tax exemptions do not translate into preferential interest rates for borrowers in the agricultural value chain. Second, despite the zero rating of VAT on seeds, fertilisers and pesticides, uptake by farmers remains very low due to existence of counterfeits, the high cost of technologies, and limited knowledge, among others. Thus, discussed in section 4.3.1, only 4 percent utilise a package of productivity enhancing technologies.

Third, due to challenges of tax administration, middlemen were able to exploit the agricultural tax exemptions to evade taxes. In particular, the VAT exemption on

¹⁵ Companies within the agricultural value chain that have benefited from the tax holidays include BIDCO (U) Ltd, Vinci Coffee Company limited, Southern range Nyanza, Lydia home textile and Christex garment industry (Tax Justice Alliance Uganda, 2017).

¹⁶ The same assessment shows that majority of agricultural loans were destined for crop finance with less than 25 percent of the loans earmarked for crop production. Relatedly, the zero-rating of VAT on seeds, fertilisers, and pesticides did not produce a noticeable changes in the use of these specific inputs—use of improved technology remained less than 7 percent during 2001/2-2013/4.

supply of animal feed and poultry encouraged some businesses engaged in other activities to falsely declare their products as feeds. Similarly, the VAT exemption on agricultural machinery was abused by importers declaring other machinery as agricultural equipment.

Overall, the zero-rating of VAT on agricultural products also encouraged importation of inputs—some of which could be procured locally if there was no tax incentive. A case in point is the zero rating of milk, including milk treated in any way to preserve it.

Arguably, tax exemption proposals for financing the agriculture sector in Uganda have been ill-conceived, lacking strong supportive evidence to inform their design and implementation, and have had limited monitoring from the relevant MDAs to mitigate moral hazards. Moreover, the objective of granting and/or removing of exemptions and zero tax rating for the agriculture sector were intended only for the short-term, aimed towards forcing agricultural enterprises to register for VAT or intended to bring economically viable agricultural enterprises into the tax bracket. Attempts to reverse such exemptions have caused protests (Kasirye, 2015).

Infrastructure incentive: To increase investment in manufacturing, the UIA is implementing reforms to ease business transactions through a plan to construct a number of industrial parks in the country (UIA 2016). The aim of these business parks is to create jobs and add value to locally available raw materials (Office of the Auditor General, 2015). Close to 20 of the 21 proposed industrial parks are specifically targeting agro-processing plants tailored to the geographical resource niche of their identified towns (UIA, 2018). This is expected to fundamentally provide market, reduce post-harvest losses, boost production and create jobs, among others (ibid).

According to the UIA, land at these sites is available and applications for development are being accepted. However, there is lack of transparency in the land access process and there seem to be tendencies to favour foreigners instead of Ugandans. This might be addressed through the new amendments to the Investment Code. That said, there is need for UIA to sequence the development of these industrial parks

especially in terms of ensuring the availability of critical services to support the development of Agro-Manufacturing industries.

The UIA also identified agro-processing as a priority sector eligible for fully subsidised land or waiver of lease premium charges in line with Government policy. This waiver is however also applied to exceptional investments or investment plans worth more than USD 25 million to investments intending to create more than 500 jobs in the said land; or to investments that are likely to incur over USD 400,000 on preparation of the land (UIA, 2015). Special consideration in awarding land is given to higher value investors and agro-processors.

Intense debates have taken place on the beneficiaries of Government's incentives in Uganda—even within policy circles. One school of thought is that incentives in Uganda target foreign investors. Evidence from neighbouring countries—notably Kenya and Tanzania—which offer a wider array of tax incentives, shows that tax incentives may not necessarily attract higher foreign investments (SEATINI, 2012).¹⁷ The bias of incentives in Uganda towards foreign investment can be a disincentive to domestic investors especially in agro-manufacturing, and also make them less competitive. Relatedly, the incentives towards the agricultural sector are mainly imports and of mostly high-end products out of reach of small farmers and small-scale processors/manufacturers. The skewed nature of agricultural incentives—benefiting importers - was the reason for the attempted abolition of tax incentives to the agricultural sector in 2014.¹⁸

As discussed earlier, the culture of policy evaluation remains limited within Government. This is also true with evaluation of the impact of policy incentives. Thus, Uganda's policy incentives are hardly reviewed (Kayaga, 2007) or evaluated for impact. If any evaluations are done, the results are not transparently utilised as

¹⁷ Furthermore, evidence from OECD countries indicate that factors other than tax incentives e.g. macroeconomic stability; a supportive legal and regulatory framework; skilled labour and labour market flexibility; well-developed infrastructure; and business opportunities tied to market size, attracts foreign investors (OECD 2007).

¹⁸ The removal of VAT exemptions on agricultural inputs and machinery announced during the 2014/15 budget speech sparked an uproar from MPs and CSOs who rescinded within 3 months of the pronouncements.

evidence for extending or introducing new incentives.¹⁹ It is therefore highly likely that incentives are being added on to old ones with limited proof of additional benefits or safeguards against distortion.

There are other financial incentives aimed at promoting the agricultural value chain through the concerted efforts of Government and DPs. These mainly come in the form of blended financing such as loan guarantees and lines of credit – for example, aBi-Trust (aBi-Trust, 2016) and the Agricultural Credit Facility (ACF) (see Chapter 7) under BoU. Some of the blended support also come in terms of technical skilled experts that support the bankability of agricultural investments to attract private sector investments in agriculture. Notwithstanding the fact that these incentives hugely reduce the risk of agricultural investments across the entire value chain, their combined effect is difficult to estimate since they are provided by different donors without a uniform/combined mechanism to track, monitor, report and share information.

At the East Africa Community (EAC) level, the Common External Tariff (CET) structure supports Agro-industrialisation in the region to some degree, and in particular in Uganda. Partner States apply same tariff for goods originating from outside the region at the following rates:

- a) Zero rates for raw materials, capital goods, agricultural inputs (such as fertilisers), certain medicines and certain medical equipment, imports of relate capital goods (such as processing equipment e.g. rice millers), vegetable oil processors, maize millers;
- b) 10 percent for semi-finished products;
- c) 25 percent for consumer goods; and
- d) 25 to 100 percent for products deemed sensitive (such as milk and milk products, wheat, sugar, rice, cotton products, maize, tobacco and tobacco products).

The sensitive list is meant to protect local industries in line with an infant industry framework in which tariff protection is seen as giving regional firms space to

develop competitiveness and build export capacities. As discussed in Chapter 5, this Report proposes inclusion of cassava industry on the sensitive list.

3.6 What are the Requisite Transformative Shifts on Policy Incentives?

Given the challenges of policy incentives outlined above, there is a clear need for transformative shifts in policy incentives if the AGI is to be realised. Among the transformative shifts proposed are:

- a) Need to target domestic producers and small and medium enterprises with considerable incentives covering crucial areas of the agricultural value chain. Incentives should aim at increasing production and easing access to markets for local producers to favourably compete with foreign investors; Specific thresholds should be set on inputs and outputs to avoid moral hazards such as importing inputs which could be procured locally. To illustrate this point, if Uganda is to promote the local beef industry by inducing beef processing factories to buy more animals from local farmers, then there is a need to establish the intake capacity (demand) of existing meat processors and assess how much of the demand can be met by local farmers. If local farmers can supply 50 percent, then one would consider restricting imports to the tune of 50 percent of total demand. Import quotas can then be allocated to processors on a proportional basis. Firms that use, for example 50 percent, local inputs can be exempted from a given percentage of taxes, or qualify to claim capital returns from Government;
- b) Uganda should develop and enforce a fiscal framework to evaluate and monitor tax incentives so that incentive renewals, withdrawals, or additions are based on cost-benefit evidence;
- c) There is need to further realign the fiscal incentives given to the foreign and domestic investors if the country is to realise rapid agro-industrial sector transformation. However, the fair distribution of fiscal incentives should not disregard capacity deficiency prevalent among domestic investors. The other possibility is to

¹⁹ In a key informant interview on May 05,2018, UDC argued that policies are evaluated but their results are not widely shared for public scrutiny and accountability

use State regulations backed by carrots and sticks to force foreign investors to partner with locals; to have skills building/training programs for citizens; and, over the long term, to have a certain percentage of management occupied by locals. The aim is to transfer technical knowledge to local agro-industrialists as well as ensuring that the country remains competitive; and

e) Fiscal incentives that have potential to create huge fiscal burdens to the National Budget need to be well sequenced and implemented in the medium term to smoothen the fiscal burden and to give better returns to the country. This would require appropriate policy response, policy commitment, and resource allocation from Government.

3.7 Conclusion

Uganda has the necessary institutional, policy and regulatory framework for AGI, but they require some structural reforms if the agenda is to be realised and sustained. The key take away is that MAAIF, MTIC and

MoFPED must closely work together in pursuit of this agenda, and the complex policy and regulatory overloads should be simplified through a process of review and integration. Coordination for Agro-industrialisation can further be improved through having a one-stop inter-governmental delivery unit, preferably at MoFPED.²⁰ This unit would bring together expertise and resources from MAAIF, MTIC, and MoFPED. Incentives, especially fiscal incentives need also to be targeted better, in ways that do not distort industry market. This requires a case by case assessment of each incentive, including the capacity of targeted beneficiaries to fully exploit the opportunities that come with it. Lastly, policies need to be evaluated for impact through transparent processes and results popularly shared for public scrutiny and accountability purposes. Policy evaluation must also not be just for its sake, but must be utilisation focused. Thus, Government must cultivate the culture of learning and improving from experiences.

20 As suggested by key informants and stakeholder consultation.

4. UNLOCKING AGRICULTURAL PRODUCTION FOR AGRO-INDUSTRIALISATION

Boosting the agricultural raw material base in Uganda is a key basis for fostering a sustainable AGI agenda. This Chapter puts into context and makes a case, that not all crop varieties or animal breeds are suitable for industrial purposes. In turn, this requires effective R&D to develop such commodity specificities that are essential for industry to take off.

4.1 Who are Ugandan Farmers?

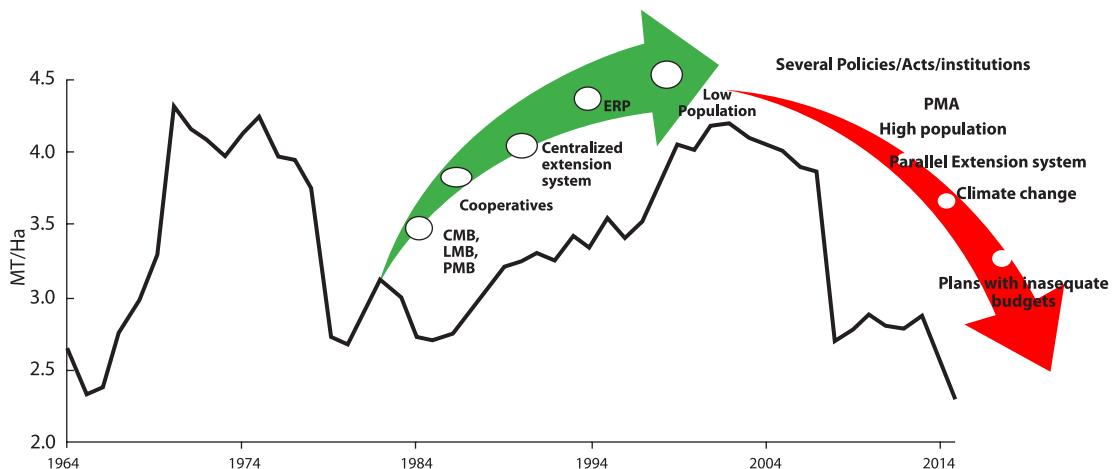
Uganda has 8.9 million subsistence farmers, who have fragmented land parcel holdings and marked with a significant gender dimension in the labour force (see Box 1). In addition, crop intensification remains limited among farmers – with less than one percent using irrigation and 4 percent using a package of productivity enhancing technologies. Most of these farmers (46.7 percent) engage in mixed farming; 24 percent in crop agriculture only; and the rest in animal husbandry only (NPA, 2017). For as long as majority of farming households remain largely subsistence producers, the agriculture sector cannot produce enough food for consumption, and sustainable raw materials to support AGI. With this characterisation of a Ugandan farmer, it is not surprising that productivity remains low, and the production base is inadequate to spur a sustainable agro-industry. This calls for ways of bringing and re-organising the smallholder farmers into commercial structures, of which revitalisation of cooperatives and strengthening of farmer groups will be critical (see section 4.3.6).

Box 1: Characterisation of Ugandan farmers

Characteristic	Status
Land size (hectares per household)	1.4
Number of parcels per household	2
% of farmers using a combination of improved seeds, fertilisers, and extension services	4
Farmers using irrigation (%)	< 1
Share of farmers in subsistence agriculture, %	65
Main source of income- subsistence, %	43
% agricultural land holding under small-scale farming	92
Gender dimension (share of women in the total rural labour force, %)	82

Source: UNPS 2015/16.

Figure 4: Decline in crop productivity is eroding production base



Notes:

- a) Crop productivity computed for all crops as total output per total cultivated land under crops.
- b) The mapping of institution is not necessarily an association between regimes and agricultural performance but an indication of the policy/institutional regime that were existing at a given point in time.

Source: Author's computations using FAOSTAT Data.

Uganda witnessed the creation of multiple institutions that replaced the older and stronger institutions such as cooperatives, and Coffee, Lint and Produce Marketing Boards (CMB, LMB and PMB). These institutions were replaced with comparatively weaker ones, and there is on-going creation of parallel institutions as a response to failure of these reforms.

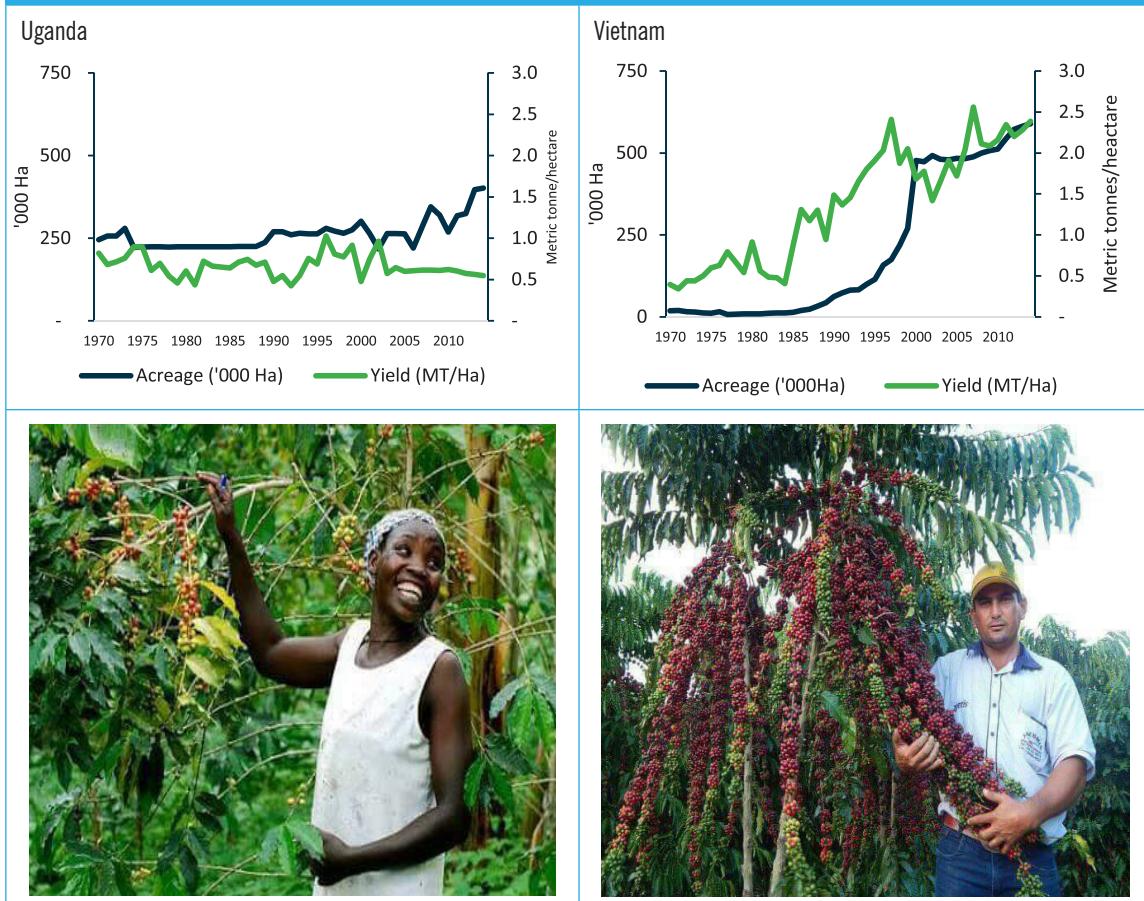
The other plausible explanations for declining crop productivity since 2005, include changes in the extension service provision – from centralised to parallel systems; unfunded plans (see Chapter 7) and uncoordinated development financing; population expansion and its effect on the ecosystems and the on-set of climate variability. In addition, in 2005, Uganda adopted a new political dispensation (multi-party system) that indirectly contributed to the abolition of graduated tax

which hitherto forced farmers to cultivate coffee, cotton and other crops and earn incomes – in turn supporting the production base.

At the crop level, on-farm productivities have remained well below those achievable at the research stations. For instance, maize crop yield stood at 1.65 tonnes per hectare in 2015/16 compared to 5 tonnes achievable at research stations - representing a yield gap of 3.35 tonnes per hectare. The lower than expected yields is linked to the poor characteristics of smallholder farmers (see Box 1). As such, farmers need appropriate institutional support and re-tooling if they are to become competitive and serve the AGI agenda. Box 2 compares the competitiveness of Uganda's coffee sector with that of Vietnam.

Box 2: How Uganda's coffee industry compares with that of Vietnam?

First, the major success factor in the coffee industry of Vietnam has been through acreage expansion by utilising land that was undeveloped and later on used for coffee planting in the central highland region (FAO 2007). Second, Vietnam embraced an aggressive coffee intensification drive. The factors that were instrumental in Vietnam's coffee intensification program included - adopting high performing Robusta coffee varieties; provision of water for irrigation for drier areas, and matching inputs like adequate fertilisers, fungicides and pesticides (World Bank 2011). Embracing coffee intensification strategies by Vietnam delivered the success desired in the coffee industry.



4.2.2 Livestock productivity

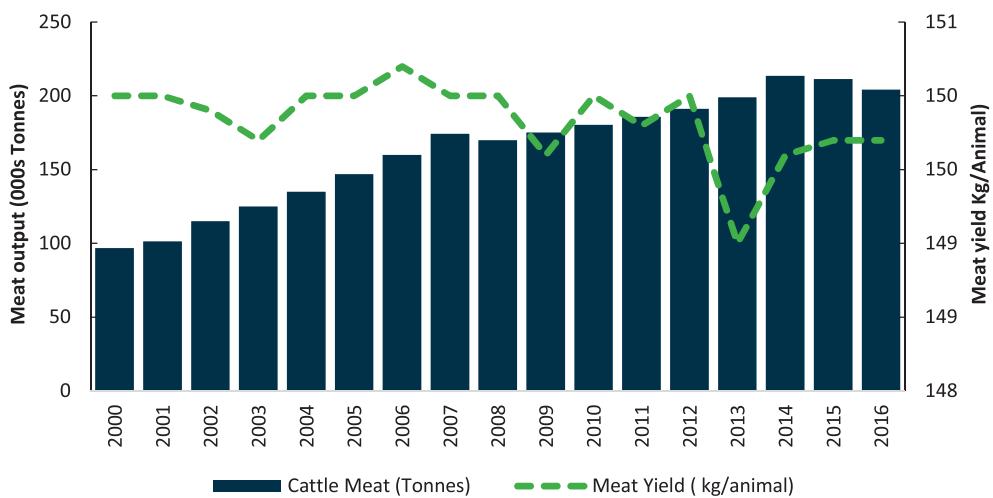
Cattle is the primary source of meat and milk in Uganda – with a share of 61 percent (ACET, 2015).²¹ Cattle rearing is concentrated in the ‘cattle corridor’, which extends from South-Western to North-Eastern Uganda. The cattle population is largely made up of low beef yielding indigenous cows (94 percent), and the most dominant indigenous breed is zebu/Nganda (70 percent), followed by Ankole (30 percent). It is evident that while the number of animals slaughtered for beef

increased by more than two-fold from 645,000 in 2000 to 1,364,947 in 2016,²² the carcass weight at slaughter stagnated at an average of 150 kgs per animal during the same period (Figure 5). This leaves a gap between an industrial processors’ requirements of beef yield of 350kgs at live weight and producers’ capabilities. Essentially, cattle numbers are steadily growing without the commensurate yields in beef. These low productivity levels have greatly impacted MAAIF’s efforts to achieve the 2020 production targets as discussed in the next section.

21 Cattle are the major livestock in Uganda and contribute about 74 percent of the country’s total livestock.

22 <http://www.fao.org/faostat/en/#data/TP>

Figure 5: Uganda's cattle mean production and yield



Source: Author's computations based on FAOSTAT database (2018).

Figure 6 presents trends in Uganda's milk producing cows, milk output and milk yield per cow per year in Triennium moving averages (T.E) – which computed to reduce the effect of seasonal fluctuations on trends of milk output, yield as well as milk producing animals. The milk output more than doubled from 741,536.3 tonnes in 2002 to 1,572,414.7 tonnes in 2016. This growth resulted from increased number of milk producing cattle rather than growth in milk yield per cow. Indeed, while the number of milk producing cows increased more than two-fold from 1,653,333 in 2002 to 3,749,038 in 2016, milk yield per cow declined persistently from 450 litres per animal per year in 2002 to a low of 415 litres per animal per year by 2012. After 2012, milk yield slightly improved to 425 litres per cow per year but stagnated for three consecutive years before again declining to 419 litres per cow per year in 2016.

4.2.3 Production targets of key Agro-industrialisation commodities

Sufficient volumes of agricultural produce are essential to ensure sustainable supply of raw materials to agro-processing/manufacturing industries. Increased agricultural output is a prerequisite for AGI. Uganda's Agriculture Sector Strategic Plan (ASSP) 2015/16 – 2019/20 set production targets for priority and strategic agricultural commodities. The production targets are intended to ensure that the domestic demand is met, export volumes and earnings increase, and import substitution is promoted (MAAIF, 2016).

Two observations emerge from Table 1. First, production has fluctuated over the years, implying that the attainment of the set production targets may not be realised. Volatility is higher for crops than non-crops

Figure 6: Trends in milk producing cows, milk production and yield in Uganda (T.E)



Source: Author's computations based on FAOSTAT database (2018).

(fisheries and livestock). Within crops, cotton appears to have suffered the greatest decline between 2012 and 2016. Significant fluctuations in production also imply unreliability in the required supply of agro-raw materials. Unless effective measures are established to ensure adequate and timely supply of raw materials to meet targets, industrialisation through agriculture will remain a dream.

Second, relative to the 2016 actual production, production levels for most commodities need to more than double so as to meet the set production targets. For instance, on one hand, output of coffee, a leading export earner, has to increase 2.5 fold during the ASSP period, and by five-fold to meet the coffee road map target of 1.2 million tonnes by 2030. On the other hand, production of maize, the leading food security crop, has to increase four-fold to meet the 2020 targets.

The implementation failures in terms of budget and weak coordination mechanisms within and across institutions partly explain these gaps. Cotton experienced a decline in production after 2011 owing to the reduction in the indicative price per kilogramme from UGX 2,300, the highest in the previous one hundred years, to UGX 1,100. This suggests that production of cotton by farmers is a function of the indicative price and is the main incentive

for farmers to either grow or not grow cotton depending on the direction.

There are, however, signs that some of these gaps can be closed. For example, Uganda Prisons Service (Prison Farms Units) have significantly expanded the acreage under cotton and maize. Government has provided Prison Farms with farm implements, particularly tractors to enhance mechanisation.

4.3 Enablers of Agricultural Production

The agricultural production base remains weak to support a strong and sustainable AGI agenda as demonstrated above. This section discusses important enablers to unlock agricultural production in Uganda. Possible interventions are proposed to close the production gaps to ensure sustainable supply of raw materials for Agro-Manufacturing industries.

4.3.1 Research and development

Research and Development (R&D) for production has to ensure that resilient yield enhancing technologies (for crops, fisheries and livestock) are generated. For crop production, these technologies should be supported with sustainable land management practices (e.g. irrigation, fertilisers); and for fisheries sustainable water management practices. The institutions engaged

Table 1: Agricultural commodity production trends, targets and gaps

Commodity	Actual					2020	Gap ^{a, c}
	2012	2013	2014	2015	2016		
Coffee	186,125	222,895	211,872	229,150	243,061	595,890	2.5
Cotton	47,577	18,571	14,594	17,275	20,339	64,750	3.2
Tea	57,939	60,970	65,373	58,588	39,299	112,000	2.8
Maize ('000)	2,734	2,748	2,647	2,813	2,483	10,000	4.0
Oil seeds ^b	572,000	680,797	711,352	613,684	672,588	2,027,000	3.0
Fisheries ('000)	407,119	419,248	461,726	454,860	467,528	674,028	1.4
Beef	191,280	197,019	202,929	209,017	214,033	360,000	1.7
Dairy (million litres)	1,460	1,504	1,549	1,596	1,634	3,350	2.1

Notes: ^a. The Gap is computed by comparing the actual figures of 2016 to 2020 targets.

^b. Includes groundnuts, soya beans, sesame, sunflower and palm oil.

^c. Targets are projected based on previous production trends and future expectations in terms of, e.g. projected increase in area under crop cultivation, expectations on international prices of agricultural commodities, government revealed plans to invest in provision of certified seed, extension services & agro-inputs (fertilisers, pesticides, etc).

Source: UBoS (2017) for the actual production figures; and MAAIF (2015) for the production targets.

in R&D to support the production base are mainly public, but with growing presence of the private sector. The public institutions include NARO and its affiliated institutions, including the National Crops Resources Research Institute (NaCRRI), National Agricultural Research Laboratories (NARL), National Coffee Research Institute (NaCRI), and National Semi-Arid Resources Research Institute (NaSARRI) for crop research; and National Livestock Resources Research Institute (NaLIRRI) for animal related research and NaFIRRI for fisheries research. The country also has the National Gene Bank and National Genetic Resource Information Centre and Data Bank (NAGRIC&DB) which are repositories for genetic diversity in seed and crop agriculture and animals respectively. These institutions are complemented by publicly supported academic institutions such as Makerere University. However, R&D promotion remains fragmented, low outputs and, underfunded by Government, with limited uptake where innovations have been made.

NARO is the body mandated to generate yield enhancing technologies as stipulated in the National Agricultural Research Organisation Act 2005. While it has made substantial progress in R&D technology uptake remains low (Table 2). For instance, NARO generated 40 crop and livestock technologies in 2016/17 but only three were delivered for uptake (MoFPED 2017).

It is important to note that NARO's role is limited to technology generation and not dissemination, and the problem of low uptake is largely beyond the scope of its mandate. However, this could be a clear indication of the weak R&D, extension and farmer linkages, and vertical and horizontal institutional coordination. Other factors highlighted in Government policy documents include limited funds for multiplication of technologies, limited integration of indigenous knowledge (social cultural norms), and low drive for innovation.

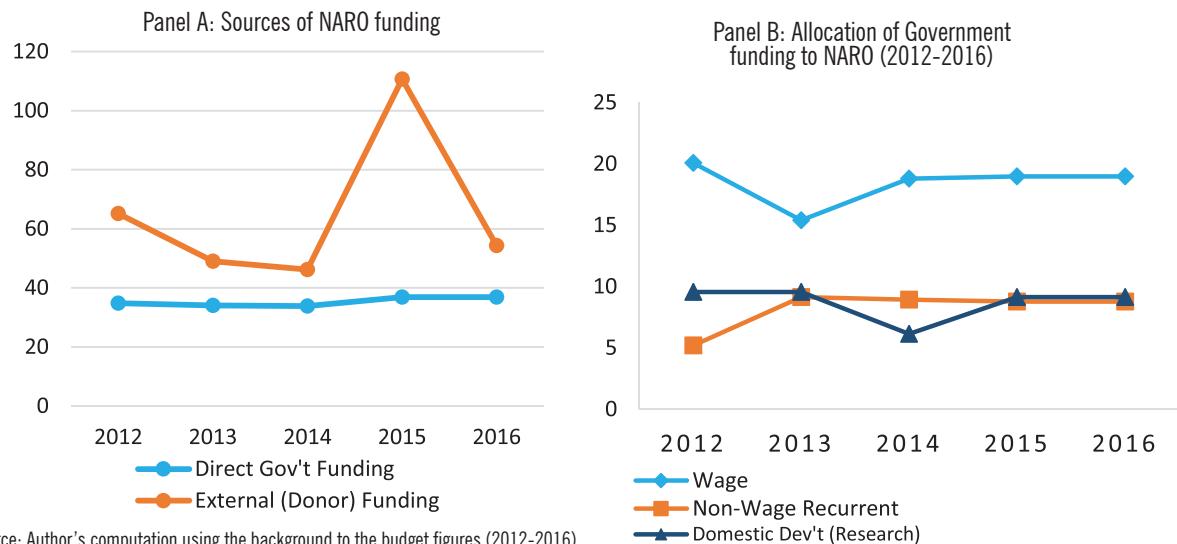
While NARO is critical to supporting a strong and stable production base, it has a rather weak resource base (financial and human) to deliver its mandate. For instance, NARO has a staffing gap of 74 technical staff (GoU 2016), most Government funding to NARO is directed towards recurrent expenditure but less to development (MoFPED) as depicted in Figure 7 (b). This limits NARO's ability to generate new cutting edge technologies. Figure 7 (a) confirms NARO's high dependency on donor funding – which is risky for the sustainability of NARO's research program. One would thus argue that Government does not take R&D as a priority in terms of meeting the set production targets. As the saying goes 'He who holds the purse has the power (DPs)'. It is also worth noting that donors prioritise research funding for food security enhancing technologies but not to those strategic crops that could turn around the Agro-Manufacturing industries.

Table 2: Uptake of productivity enhancing technologies by farmers, (%)

Technology	Maize	Coffee	Cotton
Improved seeds	21.0	8.9	58.6
Organic fertiliser	12.4	34.2	20.0
Inorganic fertiliser	8.0	8.5	1.8
Herbicides	7.7	9.2	1.7
Pesticides	9.0	12.9	51.2
Irrigation	0.0	0.4	0.0

Source: Agricultural Technology and Agribusiness Advisory Services (ATAAS) baseline survey 2014.

Figure 7: Funding research and development for NARO, UGX billion



Source: Author's computation using the background to the budget figures (2012-2016).

Livestock: Similar to crop enterprises, uptake of improved animal related technologies and practices (such as improved breeds, use of supplementary feeds, artificial insemination, and modern milking equipment) remains limited. According to UBoS (2017), only seven percent of cattle keepers rear exotic breed and less than one percent use artificial insemination. While Uganda has registered breed improvements, this comes with increased maintenance costs – improved breeds are highly susceptible to diseases and pests; and need for pasture and dry hay. Thus NAGRIC&DB need to be supported to develop cheaper but effective technologies to support production for industry.

Fisheries: NaFIRRI is mandated to generate and disseminate fisheries technologies for increased and sustainable fish production, conservation of the fisheries genetic resources, water quality and fish habitat. In the Fisheries sub-sector, almost all producers of fish use the conventional hunter-gatherer method to capture fish. A negligible proportion of fish farmers (0.02 percent²³) use the floating fish cage system, an innovation that is 12 times more productive than the capture fishery system (Mbowa et al., 2016). On average, each fisherman using the capture fishery system produces 4 metric tons of fish annually compared to 48 metric tonnes produced with floating cage culture. Clearly, the productivity gains from using floating fish cages are enormous and therefore scaling up the use of this innovation would ensure

stable supply of adequate fish for the fish processing industries in Uganda.

From the analysis, there are six emerging observations on R&D:

- R&D at production level seem to be biased toward boosting food security with less focus on technologies to support Agro-Manufacturing industries. This calls for alignment of public investment to support the relevant R&D for the industry.
- The level of technological advancement vary across the selected commodities. For example, while the available maize varieties can ably serve the Agro-Manufacturing industries, cassava and beef require for AGI specific varieties/breeds that must be developed. The on-going technology development at NAFIRRI are also not supportive of the leading export fish type - the Nile Perch.
- There seems to be weak linkages between R&D and public institutions responsible for technology transfer. This is partly due to limited involvement of R&D institutions in quality assurance of the procured inputs for production.
- Some technologies are presently externally sourced despite the fact that Uganda has local R&D institutions. This is especially true for oil palm and tea. The importation could be left to serve in the short to medium term but in the

23 There are 28 registered cage culture fishing farmers.

long term the local R&D should be in position to sustainably supply these technologies to support AGI.

- e) There should be strong linkage between the farmers and sources of technologies to assure suitable forms of technologies, their application and traceability. This should be attained through an effective extension system.
- f) There is growing private sector participation in the R&D, as illustrated in Box 3 – though this raises concerns of affordability by the smallholder farmers. Also of note is the limited linkages between the public and private R&D institutions that seem to compete rather than complement each other. However, cassava presents a unique example where NGOs like the African Innovations Institute (AfriI) and Cassava Community Action Research Programme (CARP) are also key players developing new varieties in compliment with National Agricultural Research Systems (NARS).

Given the deficiencies identified above, therefore, GoU should fully and sustainably support funding for development research to boost the R&D capacity of NARO so as to respond to the requirements of the Agro-Manufacturing industries. Further, NARO should strengthen its capacity to effectively coordinate and ensure that the quality of the R&D generated matches the requirements of the Agro-Manufacturing industries. The participation of the private sector in technology generation is also an opportunity that should be harnessed by NARO, but the participation has to be monitored and guided to meet minimum international standards.

4.3.2 Land

Land is the most important factor of production in an agrarian economy. This Report take cognisance of the political economy around land in Uganda that has, in turn, resulted in land fragmentation due to population pressure, land insecurity due to tenure systems, undeveloped land market, and weak institutions

Box 3: Illustration of the role of private sector in R&D

AGT Laboratories Tissue Culture, Buloba

Agro Genetic Technologies (AGT) laboratories is a subsidiary private company of AGT group of companies was founded in January 2002. AGT Laboratories is a private company in Uganda that uses biotechnology through tissue culture techniques for micro propagation of different crops on a commercial basis. The company produces tissue cultured plantlets of bananas, pineapples, coffee, tea, cassava, sweet and Irish potatoes, ornamentals, and forest trees. These plantlets are of high quality – uniform, pathogen and pest-free, and grow with vigour. Tissue cultured plantlets are produced in large quantities within a short period of time (it takes 10 months to propagate a plantlet and thousands of plantlets can be propagated at the same time) – the technique allows availability of quality planting materials all year round. AGT Laboratories is currently the biggest tissue culture laboratory in East and Central Africa with the capacity to produce up to 10 million plantlets per year. In addition to producing tissue cultured planting materials, the company offers training and advisory services on general agronomic practices to its customers – thus, the company is complementing MAAIF in provision of extension services. Indeed, tissue culture technology has received good response amongst local farmers in Uganda. Consequently, AGT Laboratories has set up several nurseries (sales points) and demonstration gardens in local farming communities, where farmers can access the plantlets and are trained about the technology, respectively. Thus, AGT Laboratories is contributing to bridging the gap between research, technology generation, dissemination and uptake by farmers. The company is privately funded with occasional support from the government and development partners.

Notes: For more information see, <http://www.agtafrica.com/Laboratories/LabHome.aspx>
Source: EPRC interview with the founder Mr. Erostus W. Nsubuga.

(Mwesigye and Matsumoto, 2016). Furthermore, the fact that arable land available in hectares per capita has significantly declined from 0.49 in 1964 to 0.17 in 2015 due to population pressure is also recognised.

Given the above, the question of how efficiently farmers can be organised to ensure sound production structures arises. First, Government should intervene as an active player in the production process and come in to utilise public land beyond being an enabler. For instance, as much as GoU has already taken advantage of the redundant public institutional land (such as for prisons, cattle ranches under MAAIF and, there is need to expedite as well as to identify and map this land to produce sustainably for Agro-Manufacturing industries. It is also important to note that Government cannot directly engage in active farming as it is not an efficient player in this area. This is demonstrated with the current State ranches that are under the mandate of NAGRIC&DB, which are producing at about 11 percent capacity, measured in terms of total cattle numbers against the total ranch land size. On the public ranches, there is need for NAGRIC&DB to forge partnership with effective and efficient private sector actors to specifically rear breeds that are suitable to support the beef industry.

Second, there are absentee land lords with land that is not under production. There is need to revisit the land-lord tenant clause 32 in the Land (Amendment) Act 2010 ‘A Lawful or bona fide occupant to be evicted only for non-payment of ground rent. This clause might inhibit land lords to rent out their land long term to tenants for fear of losing rights over it. Third, it is also noted that smallholder farmers are inefficiently using the existing land because they are still stuck in extensive low technology farming (including encroaching on marginal lands, wet lands, etc.) rather than intensive high input farming practices. There is need to address the challenges in the supply side of the agro-inputs, especially quality inputs to promote crop intensification.²⁴

Four, there are competing demands on the existing arable land as seen in its use for tree planting against crop agriculture – hence the need to think through re-organisation of farmers around land for production.

These competing demands demonstrate weaknesses in the implementation of the National Land Use Policy.

Fifth, specifically for oil palm production, there is need to address the land deficit of 30,000 hectares for Uganda to gain from *import replacement*. Whereas additional land has already been procured in Buvuma and other areas, there is need to expedite the processes to ensure that land is put under production but with special attention to the environment.

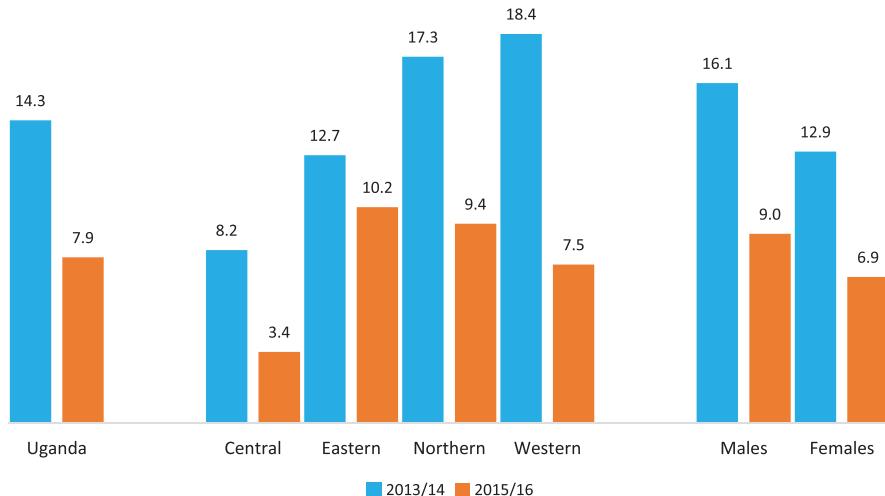
4.3.3 Agricultural knowledge and information systems

Availability of agricultural extension services is crucial for scaling up the use of productivity-enhancing technologies. As discussed in section 3.2, Uganda has had policy shifts around extension from centralised to parallel (NAADS alongside MAAIF) and now back to the centralised single spine extension system. Figure 8 demonstrates how policy reversals, if not well designed, could undermine progress. Following the adoption of the single spine system by MAAIF in 2015/16, access to public extension services almost halved at national level, and the same is mirrored at region level and by gender.

A human resource gap in public extension workers arose when MAAIF adopted the *Single Spine Reform* immediately after Cabinet approval because: (i) contracts of the NAADS coordinators and Agricultural Advisory Service Providers were terminated, (ii) since launch of NAADS in 2002, there had been a donor ban on further recruitment of any more public extension staff at the district level, and extension workers who retired, resigned or died were never replaced (Barungi et al., 2016).

24 . See studies on quality of inputs (Luswata et al., 2015; IGC, 2015).

Figure 8: Percentage of farmers with access to public extension services in 2013/14 and 2015/16



Source: NPA 2017.

In the current reform, Government aims to have in place one extension worker to 1,000 farmers as one of the inhibiting factors has been inadequate staffing. There are efforts by Government to fill the vacant positions of extension officers and nearly 65 percent of the positions have been filled as of March 2018. The share of unfilled positions is lower at the sub county – the level that would transform factors of production into output. Even then, questions that remain unanswered include the appropriateness of the personnel recruited, timely provision of facilitation to enable them undertake effective extension activities, and their connectedness with the smallholder farmers given the above observed decline in the provision of public extension service.

Effective extension services does not necessarily require very educated agents, but rather requires the well trained and skilled. Government should consider skilling young and devoted scientists from LoGs and use them to extend knowledge and information to farmers. In recruitment, the Government could also adopt approaches that train and place field extension workers in their communities of origin, similar to a community knowledge workers (CKWs) model by Grameen Foundation's economic development outreach to rural communities, where the CKWs reside and work in clientele communities. In addition to the standard information given through the traditional extension service, the CKWs could play the role of providing information regarding commodity prices, weather forecasts and other relevant market information to help mitigate risks and uncertainties. All

this is intended to support transition of farmers from subsistence to commercial farming.

Another inhibiting factor is that the extension system involves many uncoordinated players from public (especially through commodity specific authorities such as CDO and UCDA); peer-to-peer information sharing; private sector; and civil society organisations (CSOs). Farmers tend to seek 'extension services' from the closest source of information (8 in every 10 farmers seek information from fellow farmers based on 2014 Agricultural Technology and Agribusiness Advisory Services (ATAAS)).

Notwithstanding the many shortcomings in the national system, there are lessons on what works and what does not work to inform future extension service provision in Uganda (see Box 4). In addition, Government should also leverage the increasing role of the private sector and CSOs in the provision of extension service.

Box 4: Crop specific extension service provision: the case of cotton

The Uganda Ginners and Cotton Exporters Association (UGCEA) in collaboration with and support from CDO adopted in 2011 the Cotton Production Support Program (CPSP) in cotton growing areas. Implementation of the CPSP is realised through pooling resources together under a common fund (Cotton Development Fund). Under this arrangement, an average of UGX 200 (Uganda Shillings Two hundred) is levied per kilogram of cotton sold by the farmers to the ginners (this amount varies depending on indicative price). The ginners remit the collection to CDO which then plans its use and implements by supporting various interventions especially to provide production inputs, such as cotton seeds, pesticides, spray pumps, fertilisers and herbicides at subsidised rates. It is also used to mobilise and sensitise farmers, as well as provide them extension services. The extension system consists of 10 CDO zone coordinators and area coordinators within the zones. This model has been successful and has been recommended for Zimbabwe by a study on developing cotton by-products in the country.

Source: EPRC interview with CDO.

4.3.4 Agricultural risks and mitigation measures

Agricultural production in Uganda remains inherently risky – in terms of its perishability, seasonality, and quality. These problems call for an effective coordination mechanism along the production chain to mitigate these risks. Agricultural production has overtime suffered volatility largely due to various risks that have to be mitigated (Table 3).

It is important to have an understanding of the sources of risks to the agriculture sector. These include: production risks such as adverse weather conditions such as drought, and floods that relate to the possibility that yield will be lower than expected. Other risks include biological, price fluctuation, institutional, labour and health (these relate with individuals and their relationships with each other), and political risks (Table 3). On weather risks, for example, Uganda has experienced climate variability manifested through prolonged and unexpected droughts, changes in the onset of the rainy seasons and floods – for which the farmers have no control. Further, there is notable increase in the warming trends with some models projecting an increase of more than 2°C in temperatures by 2030 (USAID, 2013). Weather risks exacerbate pests and disease outbreaks and livestock epidemics.

The risks facing farmers are enormous and yet there are few mitigation measures. For example, the majority of farmers are not insured. Government efforts through the five year pilot Uganda Agriculture Insurance Scheme (UAIS) that started in July 2016, and interventions by other non-State actors such as Kungula are relatively

new and limited in scale. If these risks are not addressed production fluctuations will persist,²⁵ and it will be difficult to realise adequate and sustainable agricultural production to ensure food security and sustainably support to AGI.

4.3.5 Infrastructure for production

Infrastructure that supports production includes Information and Communication Technology (ICT), roads, energy, storage and irrigation. Government's efforts towards expanding infrastructure for agricultural production has varied. For example, one of the biggest enablers for production is ICT. Here, the private sector has invested heavily especially in mobile phone usage where penetration is high in the country though with an urban bias. Mobile phones have been exploited to provide extension support, and market and climate related information through various social media platforms such as Facebook, WhatsApp, and Twitter. In addition, mobile phones have enhanced financial inclusion of the rural communities through mobile money transfers. Yet, it seems that Government has not factored in these advantages in its policy intervention. It is still unclear the extent to which the introduction of over the top tax (OTT) on social media platforms, and mobile money tax, will impact the use of mobile phones for above stated services to enhance agricultural production.

In the context of information gathering, such as soil fertility, mapping and crop disease forecasting, and even in pesticide application and pest and disease

²⁵ For instance, the significant reduction in cotton production between 2012 and 2013 (see section 4.4) was mainly driven by a price shock.

Table 3: Production risks and mitigation measures

Nature of risks	Description	Status quo	Mitigation measures
Weather	Deficit/excess rainfall, extreme temperature (heat or cold)	<ul style="list-style-type: none"> - Delayed onset of rain - Increased occurrence of droughts - Floods and landslides especially in marginal areas 	<ul style="list-style-type: none"> - Climate Smart agriculture through timely planting, innovative and affordable irrigation such as water harvesting, solar irrigation, drip irrigation, and valley dams
Biological	Pests, disease, contamination, soil degradation	<ul style="list-style-type: none"> - Army worms, Coffee wilt disease, Cassava mosaic, Maize streak virus, cotton bollworm - Foot & mouth, East coast fever, Brucella 	<ul style="list-style-type: none"> - Establish early warning/response systems closer to the farmers - Responsive R&D
Price	Input/ output price volatility, shortage of quality inputs	<ul style="list-style-type: none"> - High input prices/costly inputs - Low and fluctuating output prices - Inadequate market information and information asymmetry - Counterfeits 	<ul style="list-style-type: none"> - Strengthen farmer organisations to encourage bulk purchases of inputs and group produce sales; - Contract farming /out grower schemes - Storage facilities such as silos
Institutional	Credit supply, interest rates, market distortions, support prices	<ul style="list-style-type: none"> - Limited access to credit - Limited access to extension - Limited membership to groups, associations & cooperatives 	<ul style="list-style-type: none"> - Strengthen farmer organisations - Contract farming/out grower schemes - Consolidation of fragmented sources of credit and direct credit to strategic industries - Sustainable commodity supported extension system e.g. CDO - Encourage more elite to engage in agriculture through media, shows, etc.
Labour and health	Illness, death, divorce, injury, availability of labour	<ul style="list-style-type: none"> - Limited use of protective gear and exposure to hazardous chemicals - Some technologies/practices are labour intensive - Ageing farming population 	<ul style="list-style-type: none"> - Create awareness as well as enforcement of regulations to ensure that farmers take the necessary action to protect themselves - Make agriculture attractive for the youthful population
Political	Agricultural policies, fiscal incentives, taxation, input subsidies	<ul style="list-style-type: none"> - Political unpredictability (e.g. South Sudan civil unrest impacting Uganda's agricultural exports) - Policy inconsistencies - Land incentives (e.g. free land for foreign investors and not efficiently utilised) 	<ul style="list-style-type: none"> - Policy coherence - Targeted policy incentives in a manner that such incentives crowd in private sector

Source: Adapted and modified from Chatterjee and Oza (2017).

management, there is also urgent need to explore the opportunities that come with drone technology (essentially ICT enabled robots). Many countries have adopted drone technology in agriculture to great effect. Over the past 10 years, sizable investments have been made in roads to ease market access, and energy which is critical for irrigation and post-harvest management such as running milk coolers and refrigeration. However, public investment in agricultural production enhancement measures has been insufficient to utilise the new available infrastructure. For instance, public

investments in energy have been substantive but the energy used to support production is very limited because of high cost of electricity.

An added problem is that the investments in roads and energy have not been matched with comparable investments in irrigation and storage. Government, in collaboration with the Development Partners, has undertaken key investments to enhance access to water for production. As part of Global Climate Change Alliance (GCCA) project, for instance, FAO and European Union

(EU) funded, to a tune of €4 million, the construction of 15 new valley tanks and rehabilitation of five old valley tanks, each with a capacity of ten million litres in the central cattle corridor districts of Mubende, Sembabule, Kiboga, Luwero, Nakaseke and Nakasongola. Notwithstanding these efforts, large gaps still remain in access and use of water for production.

In the absence of proper storage facilities, post-harvest handling is still poor among Ugandan farmers. According to the 2015/16 UNPS survey, majority (54 percent) of farmers pile their harvests on the floor and 43 percent store their produce in sacks and only 10 percent use modern stores. This has implications on price stability, quality, and crop loss. Due to lack of good storage, farmers sell shortly after harvest which forces prices to fall significantly. And when most of the produce is sold, prices rise especially during the dry seasons hence causing inflation and food insecurity. Poor storage facilities also compromise the quality of agricultural raw materials for agro-processing.

4.3.6 Re-organising agricultural production for industry

Efficient production systems are key to enhancing production and productivity for industrial growth. As highlighted in section 4.1, a Ugandan farmer is producing on fragmented small areas of land. In addition, there are very weak farmer groups that are not strategically organised with limited focus on specific crop enterprises. In other words, most of the existing farmer groups were formed in an *ad hoc* manner in response to resource availability and program demands by Government. Thus, to ensure supply for industry, the farmer cannot deliver in the current state.

Vorley et al. (2009) and Sjaauw-Koem-Fa (2012) suggest four models that can be used to re-organise farmers for a sustainable agro industrialisation agenda (see Table 4). Briefly, the salient features of these models are: under the producer driven model, the drivers of production organisation are small farmers, farmer's organisations and cooperatives, as well as large scale farmers. Their focus is on selling. This includes identifying attractive markets, achieving higher market prices and stabilising market position. The aims of large-scale farmers include extra supply volumes.

Under the buyer-driven model, the commercial chain intermediaries (traders, wholesalers etc.) are added as the actors. The strategic focus in this model is on buying-sourcing, i.e. ensuring the procurement of sufficient supplies in set deadlines and with the required quality. The rationale for this model is to assure supply, enhancing supply volumes, as well as to supply more discerning customers (meeting market niches and different needs). With the facilitation model, governmental agencies and non-governmental organisations are clearly distinguished as the drivers of organisation. This is expressed in situations with dual agricultural systems where, beside agribusiness players, there are smallholders to whom agriculture means rather a survival with a little surplus for sale or trade, than commercial production. Lastly, the integrated model is a special type of vertical integration that integrates numerous stakeholders into a value chain through the ownership and/or contractual relations. The drivers of organisation are lead firms, supermarkets or multinational companies. Their goals refer to new and higher market values, low prices for good quality or market monopoly.

In light of the four models discussed above, this Report proposes an integrated model for the AGI agenda in Uganda,²⁶ characterised by a working partnership between public and private sector stakeholders (including farmers and agro-manufacturers). The private sector player has the resources to invest, while the public sector can offer the necessary R&D (driven by industry) and environment necessary for industry survival and this can be passed on to the farmer (through contractual arrangements). Here, the kind of extension support provided is specific to industrial needs and it allows effective coordination of the players. Sub-section 8.2.1 provides examples of how a typical integrated model would work (see, Figure 40).

Currently, the proposed model to some extent, mirrors that employed by Mukwano Industries for Sunflower, NUCAFE for coffee and BIDCO for oil palm. Nonetheless, the Mukwano arrangement has some weaknesses

²⁶ This model is a special type of vertical integration that integrates numerous stakeholders into a value chain through the ownership and/or contractual relations. The drivers of organisation are lead firms, supermarkets or multinational companies. Their goals refer to new and higher market values, low prices for good quality or market monopoly.

Table 4: Organisational models for agricultural production in value chains

Sjau_Koem-Fa (2012)	Driver of organisation	Vorley et al. (2009)	Crops
Producer-driven	Smallholder farmers themselves, cooperatives, farmer organisations	Producer-driven	Coffee, Cotton, Maize, Beef and dairy
	Large-scale farmers		
Buyer-driven	Processors	Buyer-driven	Maize, tea, coffee
	Exporters		
	Retailers		
	Traders (local), wholesalers		
Facilitator-driven	NGOs and other support agencies	Intermediary-driven	
	National and local governments		
Integrated	Lead firms		Sunflower, Palm Oil, Sugarcane
	Supermarket chains		
	Multinational companies		

Source: Adapted from Vorley et al. (2009) and Sjauw-Koem-Fa (2012).

Box 5: Examples of integrated models of production

Sunflower

Mukwano Industries Limited (A.K. Oils and Fats Limited division) began the sunflower contract farming scheme in 2003 with the main objective of obtaining assured supply of sunflower for the production of edible oil through the introduction of a high yielding sunflower variety known as PAN 7351. Before the scheme, Mukwano Industries Limited used to procure sunflower from the spot market. However, with the entry of new players into edible oil processing, competition for the sunflower seed increased.

The sunflower contract farming scheme followed a multipartite model in which Mukwano Industries Limited collaborates with Government organisations (NAADS and NARO), international aid agencies, and about 32,000 smallholder farmers located in four districts of Lira, Apac, Oyam, and Masindi to massively and sustainably produce sunflower for processing.

Mukwano set up two additional cooking oil processing factories, one in Lira and the other in Dar es Salaam, Tanzania. With these local and regional expansion programmes, the company's demand for sunflower seed for processing was expected to increase. To meet the oil mill annual capacity, Mukwano required 100,000 metric tonnes of sunflower seed, of which only 30 percent (i.e. 30,000 metric tonnes) was supplied by contracted farmers. As a result, the company raised the number of contracted farmers to about 150,000.

Source: Elepu and Nalukenge (2009).

Coffee

Given the devastating effects of climate change on coffee (i.e. decreasing arable land, low survival rate of seedlings, and low grades), farmers need to undertake additional farm investments required to adapt to climate change. One of the avenues is the institutional mechanism dubbed 'farmer ownership model' piloted by National Union of Coffee Agribusinesses and Farm Enterprises (NUCAFE), which allows farmers to benefit from additional profits associated with value addition along each node of the entire value chain. For example, if a farmer were to sell ungraded coffee, she/he earns USD1, but with further value addition (through grading), a farmer earns USD2 for graded AA coffee. The additional income from value addition will enable farmers to invest in small adaptation strategies like drip irrigation, manure application, mulching and shade tree inter-planting. UCDA in partnership with NUCAFE should widely replicate such institutionalised best practices to promote sustainability in reinvestment in climate smart technologies by farmers.

Source: Mbowa et al. (2017).

because it does not lock in farmers to ensure sustainable supply. For farmers to stay committed, an agro-processor/manufacturer must provide attractive incentives (primary payment at the delivery of raw materials and secondary payments after value addition), and even shares in the final product or profit margins, for farmers to feel a certain level of ownership with the final product (Box 5). This will encourage farmers to stay since they have a stake in the value chain.

Such arrangements also allow easy adoption of new crop varieties, specificity in extension provision, and easy involvement of specific stakeholders which will address the challenge of having many uncoordinated actors along the value chain. Furthermore, as insights into the sunflower and coffee value chain show (Box 5), farmers ultimately form farmer groups and cooperatives that bargain for better deals on their behalf. Cooperatives/farmer groups, where they exist, need to be strengthened; and where they do not exist, could pick lessons from successful ones such as the Kalangala Oil Palm Growers Association. Nonetheless, a single production model for all commodities may not be the ideal solution. Choosing between either a producer, buyer, or an integrated model has to be guided by the structure of farmer organisation and how they can easily be linked to support services, and to manufacturers. There is also need to develop a comprehensive farmer database to guide interventions.

4.4 Conclusion

Ugandan farmers are small, subsistent, and fragmented. In addition, it has been noted that the production base is weak, erratic and on the decline. If the status quo prevails, a sustainable and sound Agro-Manufacturing sub-sector will not be feasible. There is, however, still room to reform and transform the production base by re-organising farmers around agro-industries using specific models that ensure attractive incentive systems. This will ensure that the key enablers for production are integrated in the value chain, and will also strengthen the farm-firm-government synergies.

To unlock the role agriculture plays in promoting a transformative Agro-industrialisation, the following must happen:

- a) Given that it will be challenging to change the status quo of smallholder farmers to independently produce for industry, these can self-organise around markets that will be ensured by the close proximity of a guaranteed buyer (manufacturer).
- b) Selective R&D that responds to industrial needs and whose outputs are distributed systematically with extension support. There is need to also ensure that developed crop varieties and animal breeds are suitable for the changing climate patterns in different agricultural production zones.
- c) Contractual arrangements be made that give farmers a stake in the quality, quantity, and product outcome of crop or good they are involved in. This will lead to sustainable wealth creation and incomes for household.
- d) Government should support established linkages between production and manufacturers. This can be through promoting R&D and extension tailored to the demands of agro-manufacturers. In addition, where there are no established linkages, public investment should be directed towards creating effective and sustainable linkages between farmers and agro-manufacturers.

5. TRANSFORMATIVE MANUFACTURING FOR AGRO-INDUSTRIALISATION

The previous Chapter demonstrated the gaps in agro-raw material base that need to be filled to support transformative Agro-Manufacturing industries in Uganda, and argued for the best model to address the challenges of a weak production base. This Chapter, on the other hand, provides outlook of Agro-Manufacturing for nine commodities given the current environment, and examines their nature, where they are located, the levels of processing capacity utilisation, installed capacities and gaps. It then makes the case for strengthening Agro-Manufacturing for these commodities through a transformative lens.

5.1 Agro-industry as a Driver of the Manufacturing Sector

Uganda's manufacturing sector is driven by Agro-Manufacturing industries which constitute 679 in the total weight of manufacturing index (Table 5). Given the very large weight of food processing (400) in Agro-Manufacturing, any shock to the sub sector has an impact to total manufacturing in the country. Whereas the weight of Agro-Manufacturing is high, the value of agro-manufactured products remains low.

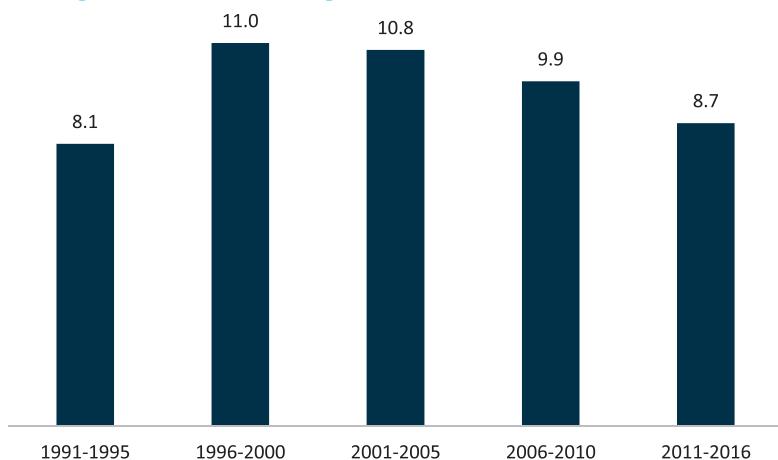
The manufacturing sector grew faster during the 1990s but later started to decline as measured by its share in GDP (Figure 9). The performance during the period 2011 to 2016 is almost at the same level as that observed in the 1991-1995 period. The decline is partly explained by the dismal performance of the agricultural sector given the fact that Agro-Manufacturing drives the manufacturing sector (Table 5). In comparison with other EAC Partner States, Table 6 reveals that the performance of Uganda's manufacturing sector is lower than that of Kenya and Tanzania on most indicators.

Table 5: Trends in manufacturing index of production (2002=100)

Description	Weight	Year					Annual %change	
		2011	2012	2013	2014	2015	2014	2015
Total Manufacturing	1,000	186.7	193.4	199	219.7	222.9	10.4	1.4
PANEL A: Agro-Manufacturing								
Food Processing	400	145	158	175	211	190	20.4	-10.1
Beverages & Tobacco	201	251	266	261	288	289	10.3	0.3
Textiles, Clothing & Footwear	43	188	192	139	116	126	-16.2	8.6
Sawmilling, Paper & Printing	35	212	234	249	222	246	-10.9	11.1
PANEL B: OTHER MANUFACTURING								
Chemicals, Paint, Soap & Foam Products	97	219	209	205	214	267	4.8	24.7
Bricks & Cement	75	244	240	251	244	291	-3.0	19.5
Metal Products	83	151	140	149	156	167	4.8	7.2
Miscellaneous	66	157	153	161	191	200	18.1	4.9

Source: UBOS (2016)

Figure 9: Uganda's manufacturing value added as share of GDP, 1991-2016, %



Source: Author's computation based on UNIDO 2016 statistics.

Table 6: Indicators of Manufacturing Value Added for the EAC Partner States, 2016

Country	MVA (constant 2010 USD), Bn	MVA per capita (Constant 2010 USD)	MVA share in GDP	Annual growth in MVA (%)	Manufacturing employment as a proportion of total employment (%)
Kenya	5.7	121	10.3	4.3	-
Tanzania	3.18	58	6.9	8.4	3.0
Uganda	2.25	56	8.7	5.1	4.4
Rwanda	0.41	35	4.9	4.7	2.7
Burundi	0.24	21	8.8	-1.6	-

Source: Author's compilation based on UNIDO 2016 statistics.

UNIDO (2016) indicates that the proportion of medium and high value added in total value added products stood at 11.1 percent compared to that of Kenya and Tanzania, which were 13.1 percent and 6.8 percent, respectively. The low performance, in per capita terms, is largely explained by the high population growth.

Relatedly, Uganda's ranking in industrial competitiveness remains low. It ranked 126th out of 148 countries, putting

Uganda in a worst performing position after Tanzania (see Table 7). For Uganda to improve on this measure, it is important that the manufacturing sector (which is heavily agro-based) must be boosted and developed with employment of innovative and high-tech activities in production of quality manufactured agro-based outputs for both domestic consumption and export. Innovations and R&D are paramount in driving high-tech manufacturing activities.

Table 7: EAC partner states Competitive Industrial Performance Index, 2016

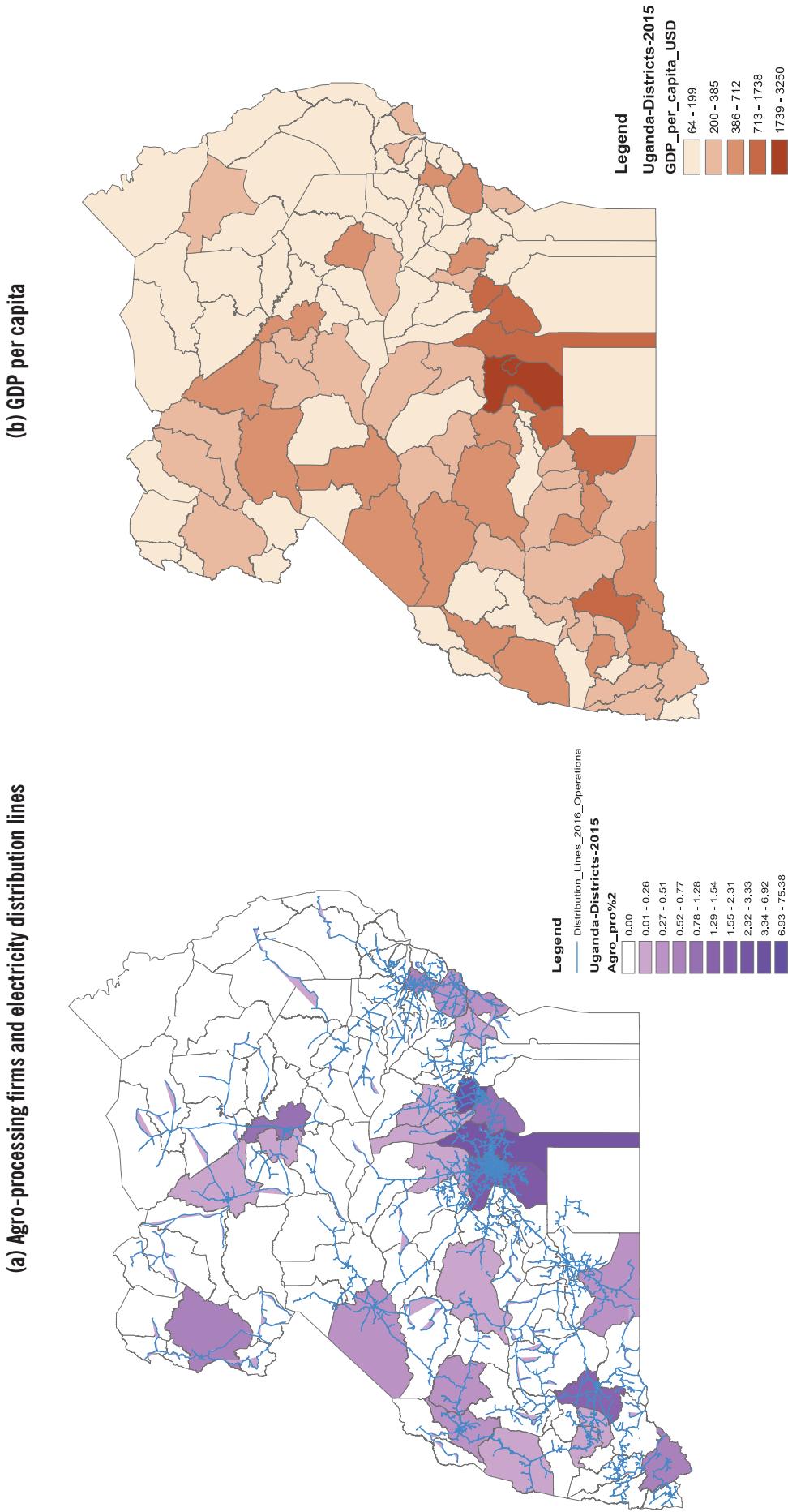
	Kenya	Tanzania	Uganda
CIP rank (out of 148)	102	120	126
CIP quintile	Lower middle	Bottom	Bottom
Manufactured exports per capita (USD)	58.93	47.28	16.1
Share of manufactured exports in total exports	0.5	0.44	0.37
Share of medium and high-tech activities in manufacturing export index	0.23	0.22	0.18
Industrialisation intensity	0.22	0.13	0.18
Proportion of small-scale industries with a loan or line of credit (%)	44.1	11.1	6.3

Source: UNIDO's CIP database 2017.

In terms of geographical location, Figure 10 shows the distribution of Agro-Manufacturing industries linked to the network of national grid power line as well as by district GDP per capita. The darker the colour in each of the maps, the higher the concentration of Agro-Manufacturing industries and the higher the GDP per capita. Figure 10 (a) further reveals unbalanced distribution of processing firms. The likelihood of having higher GDP per capita increases with the concentration of manufacturing industries.

The districts of Kampala, Wakiso, Mukono and Jinja are among the most urbanised and developed, with higher purchasing powers – illustrative of the urbanisation and industrialisation nexus. The concentration of agro-processing firms seem to follow the national electricity grid. The high concentration in one region and dominance of small scale Agro-Manufacturing industries raises issues of capacity to foster inclusive agro industry development in the country.

Figure 10: Distribution of agro-processing firms and GDP per capita by district²⁷



Source: Author's computation using ArcMap (GIS) – based on UMA database (2018) and Uganda Energy Sector GIS working Group data (2018)

²⁷ Notes: Electricity distribution lines (blue lines) are operational lines as of 2018, and the darker the purple shading, the higher the concentration of agro-processing firms.

5.2 An Outlook of Strategic Agro-Manufacturing Industries

This Section deliberates on the current status, and the level and capacity of Agro-Manufacturing activities in the country focusing on nine strategic industries extracting value and products from coffee, tea, cotton, cassava, maize, oil palm, fish, dairy and beef. Specifically, the Section analyses the potential product space for each commodity and capacity utilisation. Proposals are then made of interventions that would bring about transformative shifts leading to a dynamic, adaptive and flexible Agro-Manufacturing sector in the country.

5.2.1 Coffee industry

Uganda aims to earn about USD2.5 billion (about UGX 9.4 trillion) by 2030 from exporting 20 million bags of coffee per annum. The country produces two types of coffee – Robusta and Arabica. Coffee exports in financial year 2017/18 fetched a total of USD 483 million from the exports of 3.34 million bags of Robusta (worth USD 346 million) and 1.08 million bags of Arabica (worth USD 138 million).²⁸

Figure 11 is an illustration of the coffee industry value chain for the two coffee types grown in Uganda. The coffee industry is supported by a network of 1.7 million coffee producing households, 506 buying stores, 454 processing factories and 22 washing stations (primary processing facilities), 21 exporting grading plants (secondary processing), 49 exporters, and 16 roasters (tertiary processing) as the major value chain players.

Robusta Coffee: Value is added to dry cherries of Robusta sold by farmers and aggregated at the buying stores by hulling unprocessed coffee to ungraded *Fair Average Quality Clean Coffee (FAQ)*. Majority of the coffee primary processing factories are in South Western Uganda (34 percent), followed by Central Uganda (27 percent), and Eastern (20 percent). Coffee remains a new crop in Northern Region and is still grown on a small scale. This partly explains the lack of coffee factories in the Region.²⁹ Most of the existing primary and export grading plants operate at about 40 percent of installed capacities. FAQ is sold to exporters by either farmers

or owners of the primary processing factories (hullers). Exporters grade FAQ (a secondary processing level) and export it as *graded green Robusta* beans to conventional markets – which account for 98 percent of buyers.

Arabica Coffee: For Arabica coffee, two unique on-farm processing methods (dry and wet processing) characterise the final coffee product space. About 60 percent of Arabica coffee is from the Rwenzori sub-region. Wet processing is common in Mbale (Mt. Elgon) and in Zombo and Nebbi districts. Arabica coffee from these districts is sold as *graded Wet Bugisu Arabica (WBA)* and *Okoro Wet Un-Graded Uganda Arabicas (WUGARS)*, respectively. There are only two washing stations (pulperies) in West Nile due to predominance of Arabica coffee which is wet processed. The dry processed Arabica originates from Kasere, and is sold as *Rwenzori dry processed Uganda Arabicas (DRUGARS)*. The bulk of these coffees are sold in conventional markets, with only seven percent of WBA sold in the specialty and domestic markets; with domestic market accounting for only about three percent of sales (Figure 10).

Product space in coffee industry: There are four (4) core categories of industrial products in the coffee sector: (i) the ungraded FAQ Coffee (ii) graded clean green Robusta and Arabica coffees; (iii) un-graded Dry Uganda Arabicas; and (iv) the roasted and grounded coffee. Grading at secondary processing of FAQ (into *graded clean green Robusta coffee*³⁰) and Arabica parchment (*graded wet processed Arabica*) expands the product space and innately increases the unit value per kilogram in the international coffee market (Figure 11).

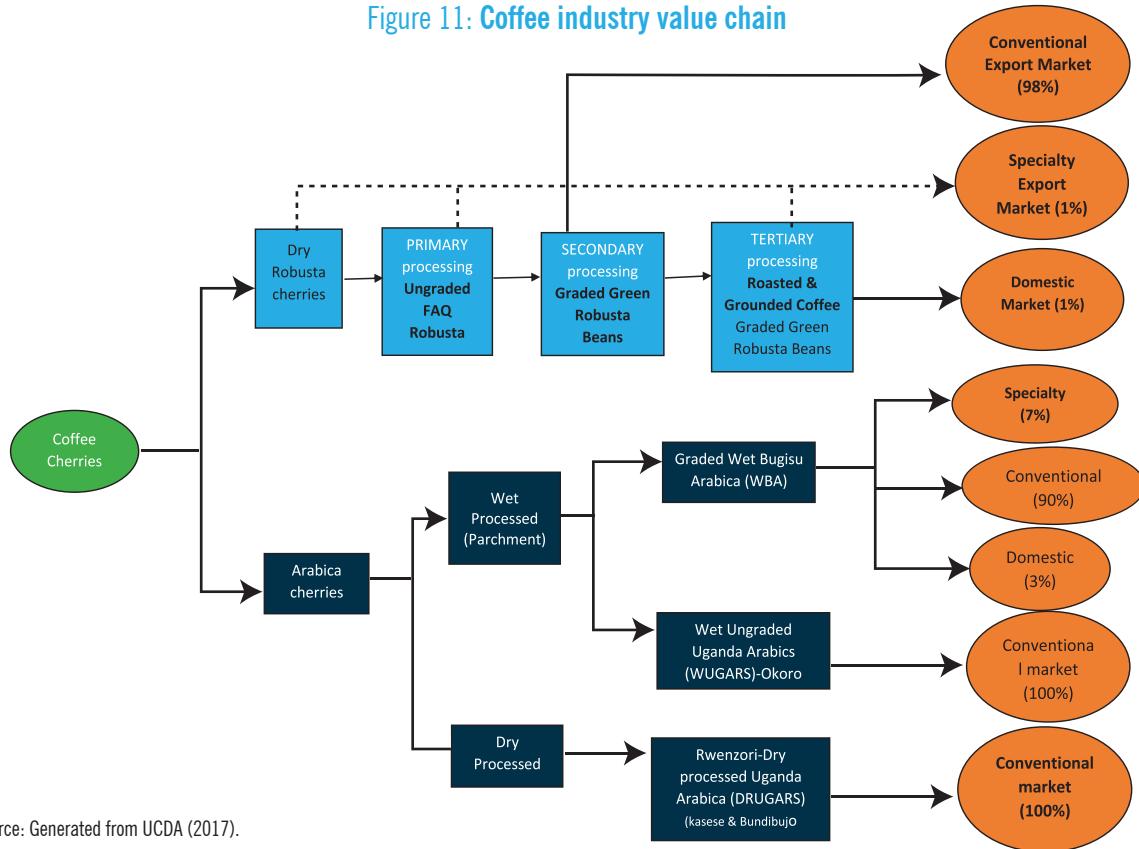
In financial year 2016/17, Uganda exported over 10 grades of Robusta coffee, with prices ranging between USD1.3 and USD2.4 per kg – driven by the coffee grade. However, Uganda's bulk coffee exports are low grade Robusta (mainly screen 15 and 12).

28 Bags are in 60kilograms and for further details refer to UCDA (2018).

29 see Mbowa et al. (2017) 'Does Coffee production reduce poverty? Evidence from Uganda', Journal of Agribusiness in Developing and Emerging Economies, 7(3): 260-274.

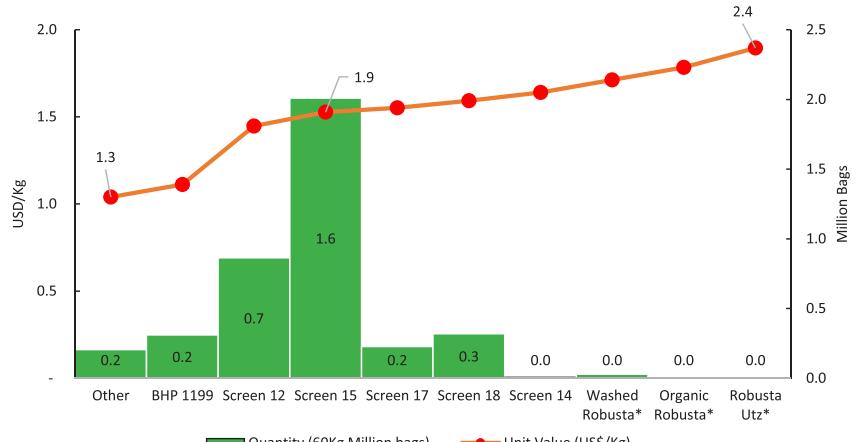
30 A kilogram of dry coffee cherries (kiboko) gives an outturn of 0.55-0.6 kg of FAQ. A farmer selling a Kg of kiboko earns UGX 2,200/-. The equivalent to FAQ (0.6kg) earns a farmer UGX 2,640, giving a price margin of UGX 440 per kg.

Figure 11: Coffee industry value chain



Source: Generated from UCDA (2017).

Figure 12: Robusta coffee exports (million bags) and unit price (USD) by grade, FY2016/17



Source: UCDA (2017).

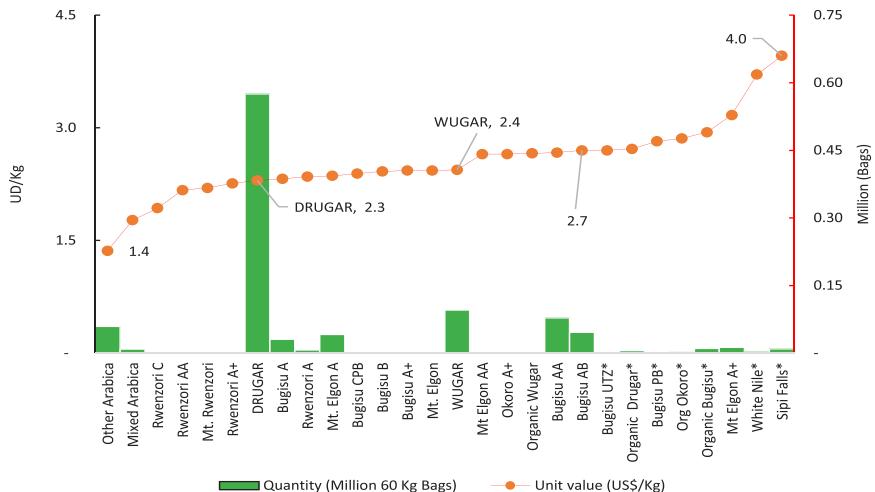
Arabica coffee is assorted into 28 different grades³¹ (Figure 12). The international prices range from USD 1.4 to USD 4.0 per kilogram depending on the grade. Arabica coffee can be both wet and dry processed as earlier mentioned. However, dry processing diminishes the quality and lowers the grade in the international

market. The bulk of Arabica coffee (58 percent) is sold as DRUGARS.

Generally, with the exception of specialty markets, Arabica coffee grades (e.g. 'sip Falls, White Nile, Mt Elgon A+', 'Organic Okoro, Bugisu PB, and Organic Drugar'), earn premium prices if they are wet processed and graded. For example, the Bugisu Arabica coffee is wet processed, graded and sold in the international

³¹ Arabica coffee is graded/classified along four (4) main criteria: (i) the specialty coffee – with traceable intrinsic attributes e.g. aroma, cup taste, organic etc.; (ii) the wet processed and graded Arabica; (iii) wet processed and un- graded, and (iv) dry processed without grading.

Figure 13: Arabica coffee exports (million bags) and unit prices (USD), FY2016/17



Source: UCDA (2017).

markets as WBAS. Grading creates grades such as *Bugisu AA*, '*Mt Elgon AA*' that fetch high premium prices about USD 2.4 on the international market (Figure 3). On the other hand, Arabica coffee from West Nile called (Okoro) is exported as *WUGARS*.

The level of tertiary processing of *roasted and grounded coffee* remains minimal. At the moment, there are inelastic responses to domestic and regional consumption of high value manufactured coffee by-products. National output of roasted and grounded coffee currently constitutes about 1 percent (0.041 million 60-kilo bags) sold in specialty markets; and 1 percent (0.041 million 60 kilo bags) consumed in the domestic market. The prospects for further upgrading and integration in the coffee Global Value Chain (GVC) lies at this stage. However, it is quite apparent that this opportunity is yet to be exploited to the fullest potential.

Exporting graded green coffee beans to the conventional export markets (see Section 6.2 for details) implies that Uganda remains integrated at the lower level of the coffee GVC. Nevertheless, this remains a sure market for most of the Uganda coffee produced, and is where Uganda has a comparative advantage in the medium term. Experts³² report that '*the global coffee consumption has for the past five decades been growing at a rate of more than 2 percent per annum, and it is projected that by 2030 the market will require an addition 50 million bags*'. In

the long-run therefore, there is huge potential that waits exploitation.

What are the required transformative shifts?

The discussion above shows that, in the short and medium term, the coffee industrial activities will require strategic transformative shifts to foster effective and sustainable linkages between production and marketing segments of the value chain. This can be achieved by focusing on increasing both production and productivity (see Chapter 4), and developing the soft and hard infrastructure to uphold high quality standards of coffee produced and exported. There are dividends of maximising value by concentrating on improving the grade of coffee produced and exported. As such, some of the pathways to unlock the coffee value-adding opportunities are outlined below:

- Promote public and private investments to improve the grade of coffee produced and exported. However, leveraging the grading outcomes is highly dependent on farm level crop husbandry practices (i.e. irrigation, use of fertiliser, disease control and other appropriate farming methods, rehabilitation of old coffee trees) as discussed in Chapter 4. Addressing these binding constraints require long-term financing as will be discussed in Chapter 7. As an option, there is need to review the cess tax – which is now at 1 percent – in order to raise more funds to support: (i) the industry specific extension

32 Joshua Kato (August 2018). Coffee: 'How black gold can drive Vision 2040'. Reported in New Vision, Monday, August 27, 2018, page 34.

Table 8: Tea factory gap by geography in 2015

Region	Ideal Number of Factory lines	Actual Number of Factory Lines	Gap
Kabalore/Kyenjojo	32	24	8
Kanungu	8	4	4
Bushenyi/Buhweju	14	14	0
Hoima/Kibaale	5	4	1
Masaka	1	0	1
Mukono/Buikwe	6	4	2
Mubende/ Mityana	5	5	0
Kabale	-	1	-
Kisoro	-	1	-
Total	71	57	16

Source: Author's computations based on data from the Uganda Tea Association.

- services; (ii) the NACORI to strengthen capacity to develop high yielding, drought and disease resistant coffee varieties targeting Screen 18 and above grades; (iii) and probably raise more revenue to effect a nation-wide secondary form of payment to farmers as done by *NUCAFE*, to incentivise farmers for quality;
- b) Expedite passing of the Coffee Bill to help in streamlining the enforcement of quality and standards;
- c) Develop a National Coffee Traceability Platform or Geographical Indicator System³³ as Coffee destined for specialty markets require traceability right from farmers, hullers, intermediaries to brewers (roaster). The *specialty coffee market* involves further differentiation and grading based on aroma and intrinsic quality values of a coffee cup, which involves meticulous and appropriate intersection of cultivar, microclimate, soil chemistry, and crop and plant husbandry that are all essential to the preservation of quality attributes in specialty coffee³⁴; and
- d) Promote wet processing to improve the grade of Arabica coffee for the export market. This can be achieved by leasing equipment for wet processing stations, and by commercial asset financing to facilitate wet processing stations.

33 Goes hand in hand with tracing coffee farm management practices, and cup taste and aroma.

34 Ric Rhinehart (March 17, 2017). What is Specialty Coffee? Specialty Coffee Association News <http://www.scanews.coffee/2017/03/17/what-is-specialty-coffee/>.

The medium plan could also involve looking for investors to set up local soluble coffee plant to process the broken half pieces (BHP) as well as supporting local or existing coffee processors to expand their product space.

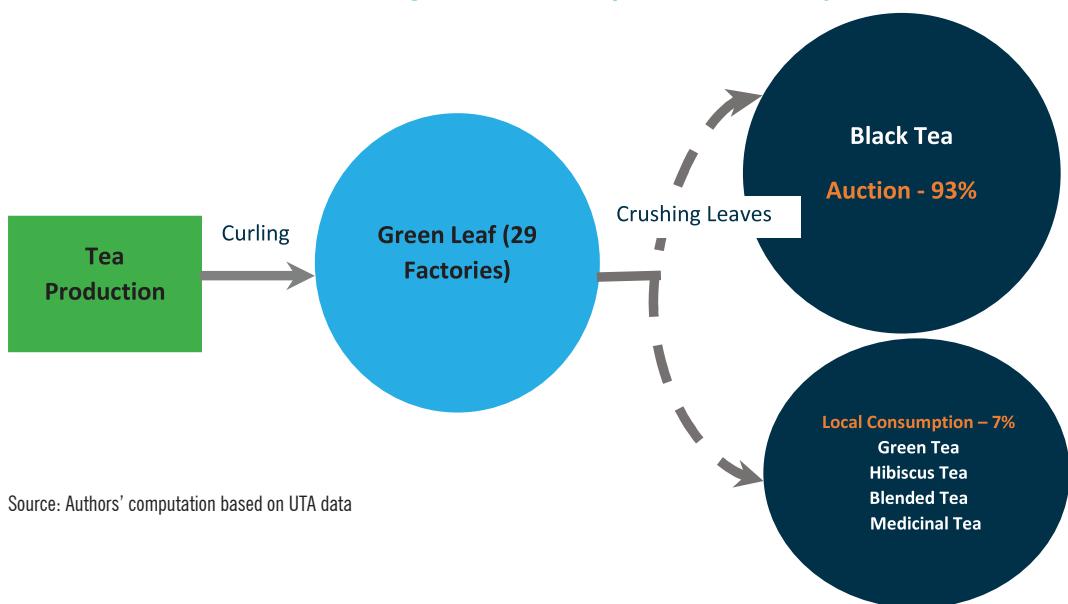
5.2.2 Tea industry

Tea factories provide an opportune business institutional infrastructure to organise farmers, and a platform for R&D initiatives to stimulate farm productivity. There is a requirement for a tea processing line for every 670 ha of tea (UTGA, 2018). Table 8 shows that by 2015, there were 29 tea processing plants in Uganda, with 57 factory lines. However, it is evident that there are processing gaps—with a deficit of 16 processing lines (Table 8). To some extent, the distribution of the processing facilities is reflective of the regional spread in tea production with a higher concentration in the western region.

Product space: Tea is processed by smallholder managed 'Cut, Tear and Curl' factories. The quality and quantity of factory output is, to a large extent, determined by the quality and quantity of farm output, which consequently determines what is passed out to the market in terms of quality and quantity. Market prices, among other variables, are determined by the quality of green leaf tea produced and processed.

An estimated 93 percent of Uganda's tea is processed as Black tea and auctioned at the Mombasa tea auction, while 7 percent is consumed locally in different assortments. Black tea dominates the processed tea

Figure 14: Product space in tea industry



because of its market demand. The product space for other tea types is limited for various reasons, but most crucially because their international markets (e.g. for Hibiscus) are dominated by other players like China. In the short to medium term, Uganda should work towards meeting the black tea export target (at auction) of 400,000 tonnes as discussed earlier. Local consumption could still also be increased from the current 7 percent through boosting local brands.

What are the required transformative shifts?

Uganda's tea industry is in dire need for key reforms and interventions to attain an integrated agro-industry tea value chain. The enablers for transformation will include:

- a) Support R&D to generate new tea varieties that are high yielding –that fetch higher unit value in the international market, and, at the same time help the country broaden and deepen the product space.
- b) Public investment to establish more processing plants within tea production zones to improve efficiency in tea processing by way of reducing post-harvest losses,
- c) Expand off-farm market that will incentivise farmers to grow more tea, hence expand the tea industry; and
- d) There is also urgent need to put in place a regulatory framework for the tea industry, to

aid government in dispensing its regulatory mandate across the tea value chain. Currently the tea industry remains unregulated which is constraining Government to take lead in directing the industry's to the desired growth path to fullest potential.

5.2.3 Fisheries industry

Scale of operation and distribution: The fishery industry value chain heavily relies on fish processing (drying, cleaning, smoking, and packaging of fresh or frozen fish). The existing six fish processing plants³⁵ mainly process Nile perch, but Nile perch production through catch is low due to its declining stock. The processing of high value Nile perch based fish products has been constrained by weak supply base, and high cost of investing in relevant fishing equipment.

Historically, fish industry processors had a strong membership under the umbrella association, the *Uganda Fish Processors and Exporters Association (UFPEA)*, established in 1993. The UPFEA member factories are located in Kampala, Entebbe, Rakai, and Jinja districts. The association had up to 14 member factories by 2013. However, when fish stocks especially Nile perch declined, eight of the member factories closed down, partly because their fish production was far below the installed capacities of most of the processing factories. To keep in business some processors got engaged

³⁵ Functional plants under UFPEA.

in Tilapia processing (e.g. One To Fish) but they were also constrained by the limited supply of Tilapia for processing. In other words, those that survived in the fish processing industry were hedged by investments in other sectors.

In Uganda typically, the critical institutional linkage between fishermen, middlemen and processors is weak. Fish vendors or suppliers organised under an Association of Fishers and Lake Users in Uganda (AFALU) - meant to act as the link between fishermen and processors apparently plays only the role of regulating activities of vendors without fostering direct trade relations between factories and fishermen. AFALU influences the amount of fish accessible by processors – because processors have no control over what happens at the landing sites. The dynamics at the landing sites under AFALU control also reduce the ability to have access to fish by processors, which contributes to processors operating below 30 percent processing capacity on average, yet overheads like energy and transport costs remain high.

Product space: Ugandan fish processors produce a limited range of fish products which include: fish fillets, fish meat (minced or not, and fresh or chilled), and salted or dried/smoked fish (Table 9). The majority of dried, salted or smoked fish, is locally preserved without undergoing significant industrial processes. The limited scope of processed fish products demonstrates that primary processing activities predominate fish processing in the country. This is another critical area that needs to be revisited targeting investments in

processing technologies that are capable of widening processed fish product space through high level value addition or manufacturing, rather than depending on primary fish processing.

Other potential fish products that require high or secondary level processing are not produced in Uganda. These include; fish soluble, fish silage, fish meal (fertiliser or animal feed), fish oils, and cutlery fishbone products. While processors are aware of the benefits of higher value products, venturing into these options is constrained by the high capital requirement as well as the limitation in quantities of the raw materials. One high value product which is not presented in detail due to unavailability of data is the 'Gas Bladder' or fish maw. This product is on high demand from the Chinese. Processors need to understudy this market to fully exploit the high value associated with it.

What are the required transformative shifts?

This Report proposes to increase and sustain fish production as a priority intervention in the fisheries sector. This will involve both public and private investment in cutting edge technologies like cage culture, in order to complement fish catch for industrial processing. Such a transformative investment pathway will necessitate having in place, (i) adequate and quality fish feeds, (ii) functioning fry centres meant for fish seed (fingerling) production, (iii) adequate fishery extension services; and (iv) strengthening grassroots organisation of fishing communities to enhance aquaculture production.

Table 9: Trends in Uganda's fisheries product space (tonnes)

Product	2010	2011	2012	2013	2014	2015
Fish fillets (frozen)	5,397	5,246	4,924	3,046	2,855	4,526
Fish meat, (whether or not minced, and fillets fresh or chilled)	11,301	12,086	13,325	13,752	13,181	12,325
Fish (dried, salted or smoked)	13,800	13,128	12,455	15,501	14,097	12,896
Fish soluble (by-product of fish meal manufacture)	0	0	0	0	0	0
Fish silage (used as animal feed or fish meal)	0	0	0	0	0	0
Fish meal (fertiliser or animal feed)	0	0	0	0	0	0
Fish oils (Omega-3-fats for general health supplement & skin care)	0	0	0	0	0	0
Cutlery fishbone products (powder for health & beauty, rings, etc.)	0	0	0	0	0	0

Source: Author's compilation based on FAO fishery database. (2010-2015)

Additionally, investments in R&D for Nile perch domestication is vital as a strategy to seek for alternative Nile Perch production avenues in order to complement catch fish production. UDC should support investment in appropriate technology through partnerships or initiatives that will subsidise cost of investing in aquaculture and reduce operating costs particularly energy (fuel and electricity). There will also be need to support manufacturing of local fish feeds through incentives (e.g. tax holiday) to support cage farming initiatives and aquaculture in general.

Further, UDC needs to workout business feasibility plans for value addition infrastructure in partnership with the existing processing plants to deepen the fishery product space focusing on high value products like the fish gas bladder (fish maw), oils, soluble and fishbone products among others. It should also put to use Government facilities (e.g abandoned fish-fry centre in Laroo Division in Gulu Municipality).

The adoption of new technologies should complement proper management of the aquatic ecosystem to ensure sustainable fish production from natural water bodies. Fish stocks are regenerating as a result of control of illegal fishing activities by the Fisheries Monitoring and Enforcement Unit (FMEU). Membership of the unit is drawn from the Uganda Peoples Defence Forces (UPDF) to manage the landing sites, as fishers and vendors seldom complied with MAAIF standards for fish to harvest. However, the FMEU does not present a panacea for management of fisheries resources. As a solution, the GoU should strengthen public institutions that govern fisheries, since proper management of fishing sites would curb the use of illegal fishing methods, harvesting and marketing of small/immature fish, and mismanagement of beaches. In addition, the development of aquaculture parks is an enabling infrastructure in the fisheries industry which UIA should prioritise in its future programs.

5.2.4 Cotton industry

The cotton and textile industry in Uganda remains under developed in spite of recent efforts to revamp it. Industrial cotton textile activities linked to cotton ginneries are concentrated near cotton growing areas in Northern Uganda (in the districts of Lira, Apach, Oyam, Kitgum and Gulu), West Nile (Arua, Nebbi and Pakwach), Western Uganda (Kasese) and Eastern

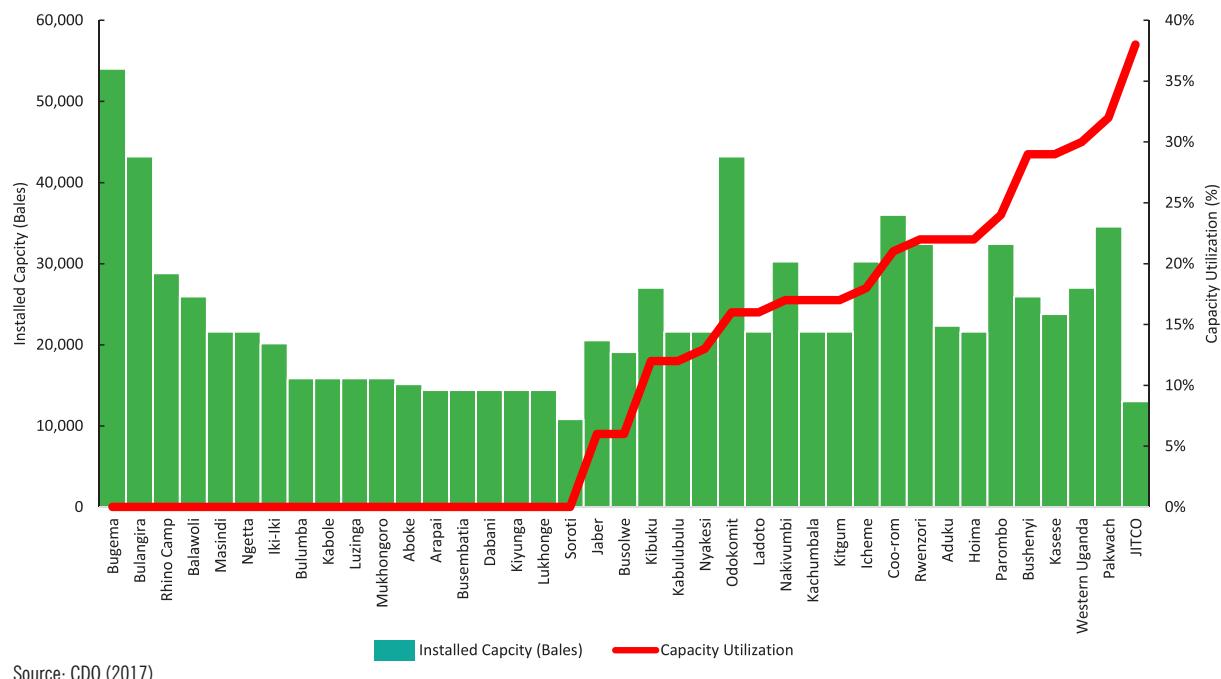
Uganda (Iganga, Bugiri, Kibuku, Bukedea etc). There are 39 cotton processing industries in Uganda, of which 18 are non-operational. Among the non-operational ginneries include the ones with the largest installed capacities—Bugema and Bulangira. The ginneries that are functioning only operate at less than 40 percent of the installed capacities (Figure 15).

The two high end textile manufacturing industries that use cotton lint are concentrated in Jinja and Kampala - Southern Range Nyanza Ltd and Fine Spinners (U) Ltd respectively. The limited high end manufacturing is due to inadequate investment in spinning and weaving. There is also a weak linkage between the key value chain players in the cotton textile industry. Unlike ginners who work closely with farmers and middlemen along the value chain, textile industries are not directly linked to other value chain players. The ginners, who would have provided this link export most of their lint (95 percent).

Ideally, the cotton textile industry needs a strong upstream and midstream activities (ginning and oil extraction) linked to the downstream activities (spinning, weaving and knitting). Therefore addressing spinning and weaving issues would go a long way in developing the textile industry to relieve the country of huge and rising bill in the importation of second hand clothes, and boost employment and income opportunities for the country's labour force.

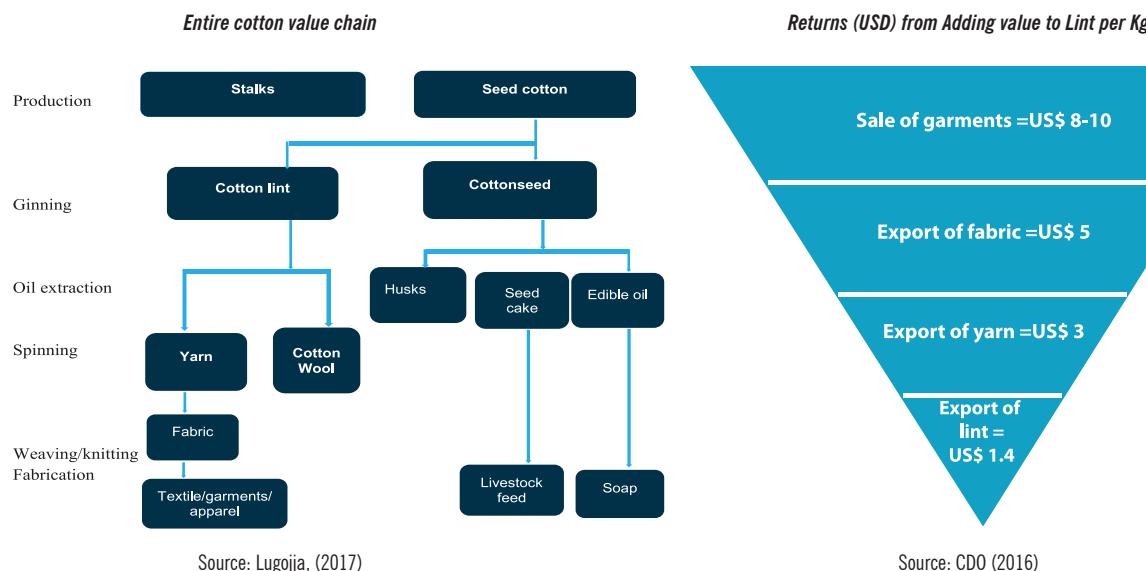
Product space: The cotton and textile value chain in Uganda (illustrated in Figure 16), has many industrial products, that include cotton lint and cottonseed, and by-products (i.e. oil, soap, livestock feeds); and high end manufacturing products like (yarn, garments, apparel textiles). These lines of products reveal an untapped potential for growth. However, cotton textile industry remains underdeveloped at the spinning and weaving/knitting stage, and much of the entire textile value chain remains driven by the production of cotton lint and cottonseed by products. This is problematic because spinning, weaving/knitting, and fabrication are the most profitable stages in the textile industry value chain revelling the returns from adding value to lint. This undermines the opportunities for increased earnings from upgrading in the value chain. Increasing local demand for cloth (schools, hospitals, security agencies) would, to some extent, spur growth in lint production.

Figure 15: Trends in operating capacity of cotton ginneries



Source: CDO (2017).

Figure 16: Cotton value chain



What are the required transformative shifts?

Four key transformation shifts are identified to spur the cotton sub-sector.

- a) Upgrade the cotton textile industry in Uganda through strengthening linkages between the ginneries and spinners/textile manufacturers. Growth in spinning and weaving to manufacture high end textile products (yarn, fabrics and garments) will stimulate demand for cotton and hence create incentives for increased cotton production to resuscitate capacity utilisation of silent ginneries in the country;
- b) Attract more high level manufacturing industries. Currently, there are only two known textile industries i.e. Southern Range Nyanza Ltd and Fine Spinners (U) Ltd. Therefore UIA needs to identify investors and provide the right incentives (e.g. tax holidays) conditional on clear performance targets to develop the local textile industry as this would address the missing link in the value chain i.e. the making of yarn, which will attract fabric manufacturing;
- c) Strengthen the role of the Textile Development Agency (TEXDA) in promoting handloom spinning by SMEs. This can be through enhancement of technical and financial capacity, as well as streamlining the operations of the Uganda Giners and Cotton Exporters Association (UGCEA) to support spinning and fabrics manufacturing; and
- d) Develop high yielding, disease and pest resistant cotton varieties that will enhance household cotton earnings and attract farmers to cotton growing as a business.

5.2.5 Maize industry

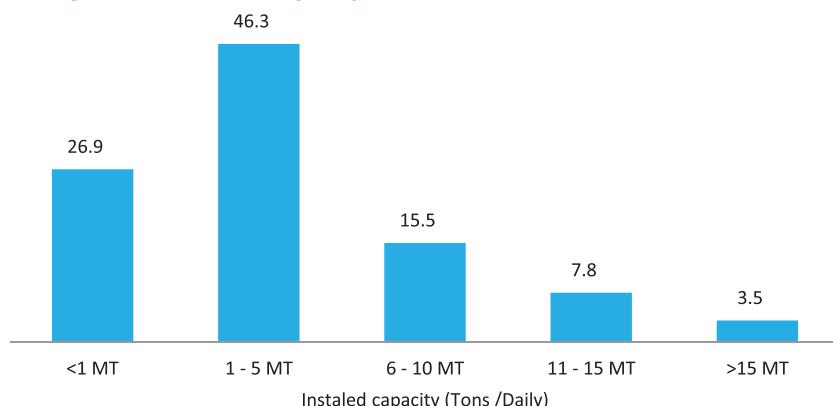
The maize industry in Uganda is supported by several small and medium scale millers in all maize growing areas. There are at least 780 maize milling plants in Uganda with a higher concentration in Central Region (38 percent) and least presence in the western region (18 percent). Large-scale maize millers are few and concentrated in big urban centres.

Most maize mills (46.3 percent) have production capacity of 1-5 tons of flour per day (Figure 17), but many operate far below installed capacities with a seasonal dimension. On average, maize mills across the country produce far less than one tome of flour per day. Maganjo Grain Millers Ltd is one of the largest maize manufacturing industry in the country with capacity to produce 20 tons of maize flour per day. However, when the growing season has been unfavourable (mainly due to drought) the company processes 10 – 15 tons per day. This underscores the fact that seasonality in the supply of grain is a contributing factor to limited capacity utilisation in the maize industry, a finding consistent to factors limiting full capacity utilisation in cassava processing by factories based in Northern Uganda.

The geographical spread in this industrial capacity reveals that, the average daily flour production per mill is 104.7 tons in Eastern region, 74.5 tons (Central), about 56 tons (Western), and 20.5 tons in the Northern region (SPRING, 2017).

Product space: Apparently, maize flour is the main product of the maize industry. The other processed

Figure 17: Installed capacity of millers in terms of maize flour (%)



Source: SPRING 2017.

maize based products produced for the domestic market include cornflakes, dog feed, and blended flours (e.g. maize blended with millet or soy bean). While there are EAC harmonised standards for maize industrial products, local industrialists are unable to meet these standards because of poor post-harvest handling technologies, limited use of quality processing equipment, and limited fortification. This partly explains the preference for focusing on primary level processing (maize grain), where standards are not very restrictive. In addition, a report by SPRING (2017) reveals that maize millers mostly target the local market and that, on average, 83 percent of the flour is sold within the country.

At the regional level, Uganda mainly exports maize grain to EAC Partner States, where it is used as raw material for their industries. This is because, available domestic demand aside, the biggest buyer of Uganda's maize in the EAC (i.e. Kenya) prefers to buy grain since it has a more advanced milling industry that is able to produce more nutritious (fortified) composite flour types compared to what is currently produced in Uganda. The product space for maize in Uganda is limited, but can be expanded by focusing on processing quality grain into high-end value products like fortified maize flour and oil that meet the EAC harmonised standards. According to the Chairperson of the Grain Council of Uganda (TGCU), there are processors who would be willing to do a lot of value addition (e.g. cornflakes) but currently, domestic demand remains low in Uganda. There is, therefore, need to invest in understanding the domestic market dynamics and to tailor value added products to suit the demand.

What are the required transformative shifts?

As stated above, the maize value chain can be revamped in a number of ways:

- a) It is apparent that expansion in product space in the maize industry needs to be given high priority. This requires investment in equipment/machinery that can produce high quality and fortified maize products. Otherwise, with the current status where most maize mills lack machinery for fortification, Uganda remains better placed to majorly trade in grain.
- b) There is also need to invest in grain storage infrastructure to stabilise grain prices through-

out the year. This could be achieved through: (i) extending credit guarantee to TGCU to expand its national grain storage from the current 0.75 million tonnes to 1.25 million tonnes; and (ii) organise farmer groups or cooperatives to set-up and manage a network of farm level/ community storage infrastructure to cut post-harvest losses. The conglomeration of storage infrastructure will support and strengthen the operations of the Warehouse Receipt System (WRS), as well as reinvigorate the National Commodity Exchange operations to meet the EAC harmonised maize industry processing standards. This will improve Uganda's competitiveness and ensure safe storage of excess grain as it awaits further processing.

Government also needs to expedite implementation of the strategic interventions in National Grain Trade Policy, 2015. This policy aims at promoting agro-processing and value addition, information sharing and marketing, storage and post-harvest handling services. Harmonisation of a national regulatory framework is critical in the efforts of Uganda to secure and safeguard regional grain market among EAC member countries.

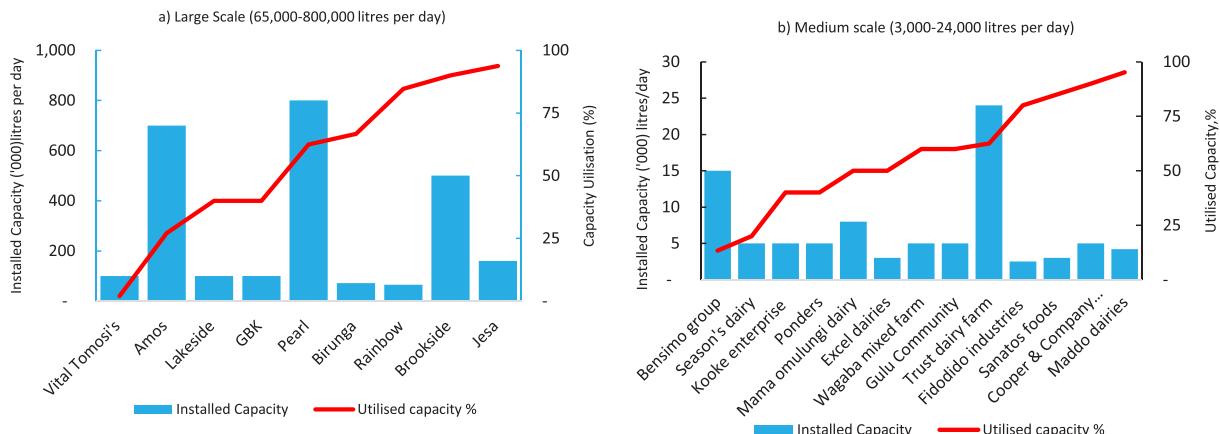
Introduction of drought and pest tolerant and high yielding varieties; farmer productivity and quality enhancement support, climate change responsive maize, breeding techniques; weather and market forecasting; crop insurance and credit for production.

5.2.6 Dairy industry

A sizeable number of local dairy firms (currently 100 in total) are engaged in manufacturing of diversified lines of dairy products in Uganda. Nine large-scale firms out of the 100 dairy firms in the country have installed capacities ranging from 65,000 to 800,000 litres per day. Installed capacity utilisation, however, ranges from 2 percent to 94 percent (Figure 18). Six of the nine important large dairy industries are located in the South-Western Region – a region with a higher concentration of dairy cow population (DDA, 2018). With regard to those operating at medium scale (13 in total), the installed capacities ranges from 3,000 to 24,000 litres per day,

with an average utilisation capacity at 3,500 litres per day (Figure 18). Both the large and medium scale processors largely operate below capacity, implying that there is room to absorb more milk from farmers to manufacture high value dairy products. There is therefore, need to organise farmers to exploit this opportunity.

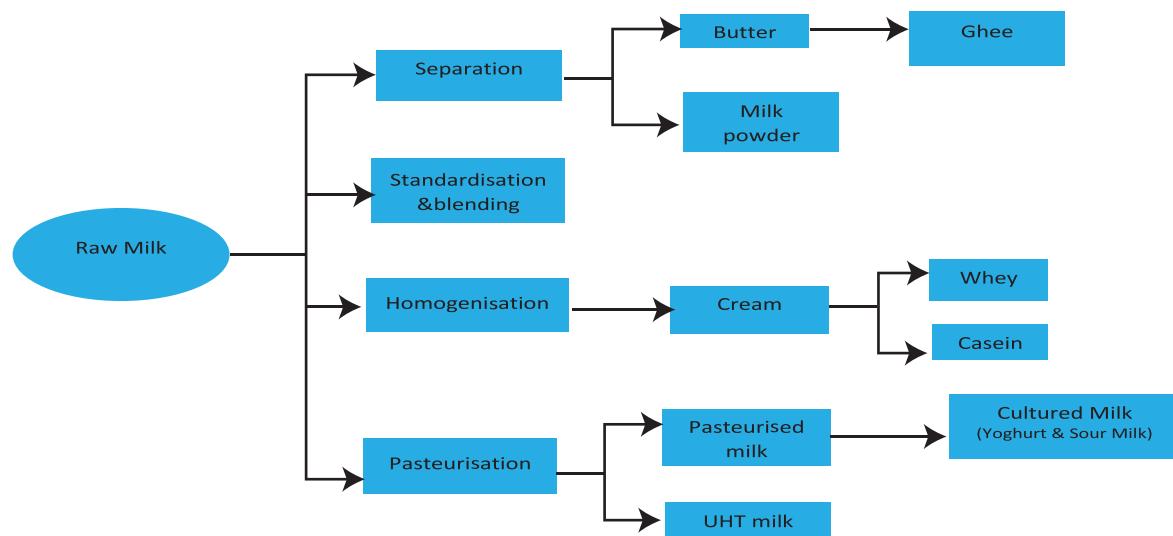
Figure 18: Dairy sector processing capacity for large scale firms



Source: DDA, 2018

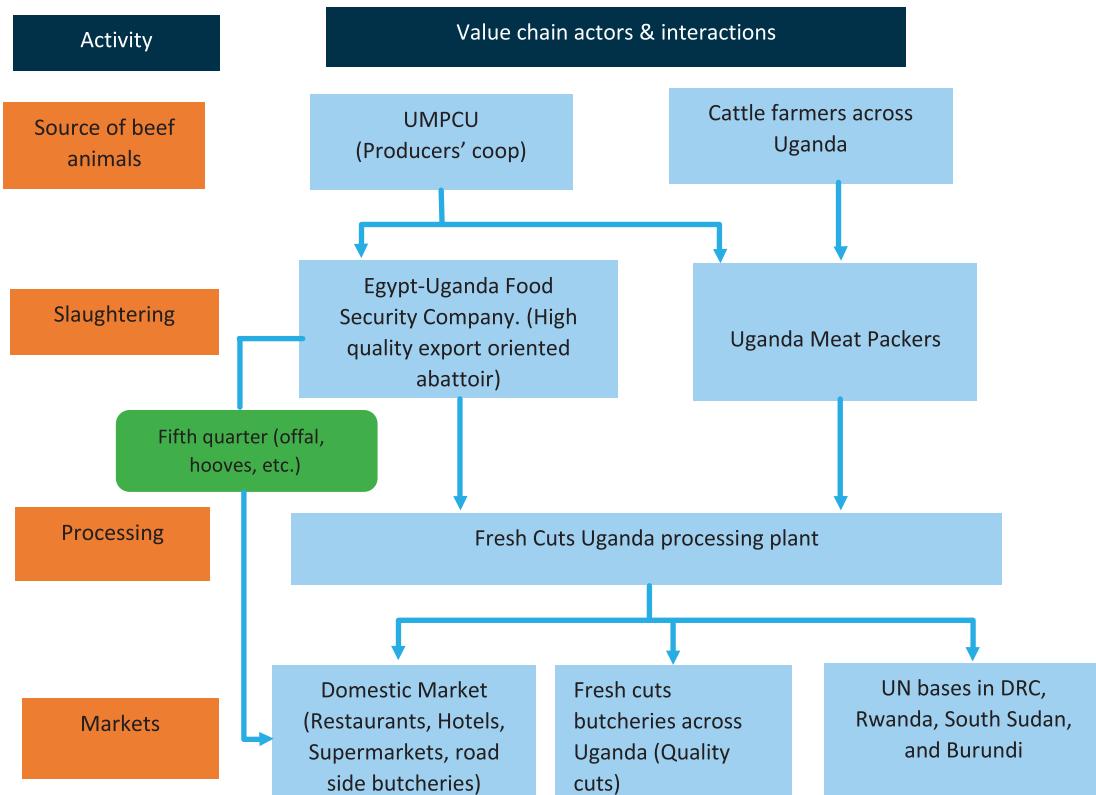
Product space: Industrial capacity has been developed in Uganda to produce a wide range of high value dairy products i.e. powdered milk, ghee, butter oil, UHT milk, casein/whey, pasteurised milk, yoghurt, cream, fermented milk, and cheese (Figure 19). Product diversification in the dairy industry is sustained by large scale manufacturers (see Table 11 cc). However, much need to be done to spur growth in the industry to benefit the country.

Figure 19: Product space in the dairy value chain



Source: Author's Compilation, 2018.

Figure 20: Fresh Cuts Uganda beef supply chain



Source: Author's compilation based on key informant interviews, 2018.

What are the required transformative shifts?

The immediate limiting factor in the dairy industry is the low capacity in the supply of raw milk in relation to processing capacity. Efforts should be geared towards improving milk yield per cow through R&D for breed improvements, and for testing and verification of veterinary vaccines and acaricides. Extension service provision through cooperatives to train farmers on dry season feeds including forage and hay, among others, is also crucial.

There is also a concomitant need to scale up the manufacture of powdered milk through investment incentives to absorb excess milk produced during the rainy season. This might require investment in sophisticated processing technologies.

5.2.7 Beef industry

Uganda has four major players in the beef supply chain (i) Uganda Meat Producers Cooperative Union (UMPCU); (ii) Uganda Meat Packers Limited (highly challenged by issues of poor meat hygiene and quality); (iii) Fresh Cuts; and (iv) Egypt Uganda Food Security Company in

Bombo District (Figure 20). The installed capacities of these companies are however grossly underutilised.

Fresh Cuts—the largest meat processor in Uganda—for example, processes 70 tons of meat (approximately 150-200 carcasses) per week, but has a beef processing installed capacity of 400 carcasses per week. Hence it operates below capacity which increases operational costs. The company employs 130 people and consumes power worth UGX 50 million per month. It is reported that planned efforts by Fresh Cuts to establish a high quality slaughter house in Nakaseke Industrial Park to export beef to high value markets such as UAE, and elsewhere in the region suffered setback due to lack of sufficient beef processing services in the Nakaseke Industrial Park.³⁶ Despite the huge market potential for Uganda's beef products in the Middle Eastern countries, Fresh Cuts has also not been successful in penetrating these markets due to strict sanitary and phytosanitary requirements demanded in these markets. Fresh Cuts

³⁶ Government has not put in place sufficient water, power and tarmac roads. Carcass cleaning alone requires 1000 litres of water per carcass. Transporting of animals for slaughter on marram roads reduces meat quality.

stated that penetration of high value international markets requires stringent enforcement of quality and hygiene standards right from the farm to processing; investment in grading facilities, such as weighing machines, at primary and tertiary markets; as well as investment in slaughter infrastructure, such as cold storage facilities at slaughter houses. Indeed, as indicated in Figure 20, Fresh Cuts is still using other processor facilities (e.g. Egypt Uganda Food Security Company) to slaughter export grade animals. Furthermore, export of beef in the less restrictive regional market is inhibited by the lengthy export bureaucracy,³⁷ while export of live animals reduce the quantity of animals available for slaughter to process beef.

Product space: Uganda's manufactured beef product space is narrow, and is dominated by live cattle and 'cattle' meat with bones (see Table 11 in section 6.2.1). Other processed beef products include beef preparations, meat meal, and boneless veal and beef. However, the processing of high value beef products is restricted since Uganda's beef products are banned from most international markets due to high prevalence of diseases and lack of quality control systems right throughout the production and processing cycle.

With growing middle class, there is likely to be increased demand for quality meat products as articulated in the 218 World Bank Report titled 'Developing the Agri-food systems for Inclusive Growth', Uganda Economic Update. 12th Edition.

What are the required transformative shifts?

To revamp the beef value chain, the following are recommended:

- a) There is urgent need to support the National Animal Genetic Resources Centre and Data Bank (NAGRC &DB) to conduct R&D to build capacity in breeding high beef-yielding cattle in order to increase production of high grade beef for export. In this regard, there is need to fully operationalise the Animal Breeding Act, 2001. In addition, institutional linkages between NAGRC&DB, cattle farmers, and beef

- b) agro-manufacturers must be established; UDC needs to revisit the possibility of rehabilitating the Soroti meat packers industry to tap into existing domestic market opportunities for canned beef, starting with institutional³⁸ demand within the security forces (army and police). Growth in cattle slaughter capacity is also important as it is likely to create room to develop an expanded product space for beef by-products (e.g. leather industry); and
- c) Support to primary producers in terms of credit, acaricides, veterinary extension services, disease control and livestock insurance.

5.2.8 Cassava industry

Cassava is one of the agro-enterprises with high industrial potential. Uganda produces 2.8 million metric tons of cassava. A sizeable (53.5 percent) proportion of farming households grow cassava across the country with a higher share in the Northern Region (where 65.4 percent of farmers grow cassava) and least share in the Western Region (40 percent of farmers grow cassava).³⁹ Primary processed cassava for both domestic and industrial use is mainly supplied as cassava grits or flour by small-scale industrialists and household cottage operatives. There are 5 to 10 good solar dryers for cassava in Uganda, and two flash dryers stationed in Lira and Apac. Flash drying is the most efficient drying technique as it can dry a kilo of cassava in seconds. Some of the notable cassava processing centres in Uganda include Windwood Millers in Lira and Adyaka Wholesalers in Apac (Box 6).

The end users in the cassava value chain are rural and urban bakeries, the biscuit industry, ethanol manufacturers, composite flour millers, animal feed manufacturers, the paper board industry and breweries (Figure 21). Preference for cassava as an intermediary raw material is mainly due to the high costs of substitutes like maize bran for feed, and imported corn starch for paperboard, and the need to utilise more local resource for the breweries.

³⁷ Veterinary inspection and certification takes too long. URA takes 3 days to grant an export permit to the processor at the border point which increases the cost of preservation of beef

³⁸ NEC could take using current funding for canned beef importation.
³⁹ Computations based on UNPS 2013/14.

Box 6: A snapshot of cassava Agro-Manufacturing efforts in Lira and Apac districts

Two cassava agro-industry firms - Windwood Millers in Lira and Adyaka Wholesalers Ltd in Apac - demonstrate the opportunities and challenges to build agro-industries in Northern Uganda. The factories operate at 50 percent and 20 percent capacity respectively. This is the capacity for processing of raw cassava into High Quality Cassava Flour (HQCF), using the flash drier that shortens the drying of cassava in a day, run by electricity and diesel fuel.

Opportunities

- *Product space:* Products from cassava include; High Quality Cassava Flour-HQCF (i.e. Organic Cassava Flour, Cassava Cake Flour, Classic Baking Flour); Starch; Charcoal briquettes from cassava peelings; local brew from cassava off-cuts.
- *Markets:* Potential market from large scale and high-end manufacturers such as; Uganda Breweries, Nile Breweries, and Britania Allied Industries Limited (Biscuit manufacturers). Availability of local market for HQCF e.g. local consumption in homes, bread and cake making, etc.
- *Source of raw materials:* Many farmers in the North (especially Lango sub-region) are engaged in cassava production. The most preferred cassava varieties are NASE 14, 15 and NARO CASS 1- with shorter maturity period of eight months.
- *Institutional linkages between technology development and transfer.* The key players include NARO, manufacturers and farmers.

Challenges

- Under capacity utilisation (50 percent) of the Lira based factory is attributed to; unstable supply of raw materials (cassava); high cost of energy/electricity.
- The Apac based factory has the lowest capacity utilisation of only 20 percent, and this is attributed to: inadequate market because Apac is a remote district with a small local market; high cost of fuel, given the cost of industrial connection required for a step-up transformer to enable access by factory (see Pic 1).

Financing

- Favourable financing terms from Africa Innovation Institute (AFRII). Processing machines were installed by AFRII as a loan, on condition that the industrialists invest in constructing factory premises. The loan is patient and is only serviced when the processing plants are operational.

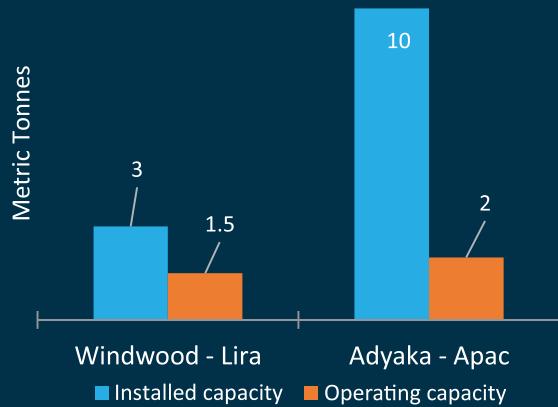


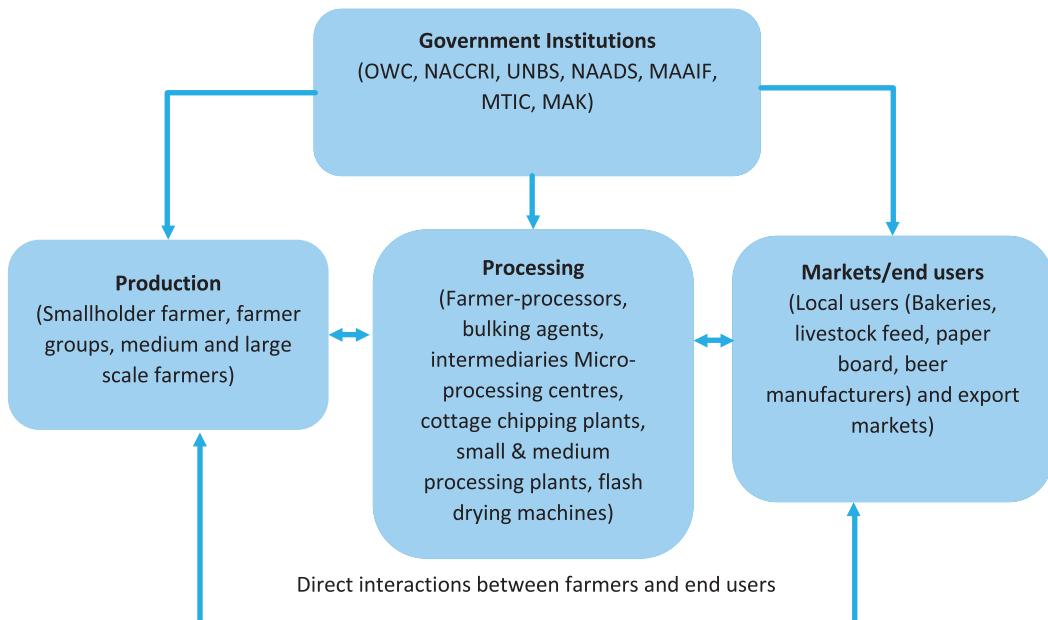
Plate 1: Inaccessible power to Factory in Apac



Plate 2: Flash drier that is run by electricity and diesel fuel

Source: Author's compilations based on field visit to the factories, 2018.

Figure 21: Cassava value chain



Source: Author's compilation, 2018.

Product space: Uganda has a high potential to manufacture five products from cassava, including Ethanol, High Fructose Cassava Syrup (HFCS), High-Quality Cassava Flour (HQCF), Starch, and biodegradable bags.

Ethanol: Uganda imports one million litres of ethanol annually according to data from URA. In 2014, an ethanol plant - Kamtech Logistics Uganda Limited - worth USD 1.8 million was established in Adekowok, Lira District.⁴⁰ The plant's annual ethanol production has been 100,000 litres which is about 10 percent of what Uganda imports. This presents an area of import replacement, if similar ethanol plants could be established in other cassava producing districts. Currently, however, the ethanol plant in Lira is non-functional due to financial limitations. KII reveals that the plant closed down because it failed to service the loan acquired from DfCU Bank, and the bank has confiscated the factory.

High Fructose Cassava Syrup (HFCS): Uganda imports High Fructose Cassava Syrup (HFCS) worth USD 1.75

⁴⁰ As of 2016, Kamtech logistics Uganda limited employed 85 people producing 4,000 litres of ethanol daily with an input of 15,000 metric tons. The plant was reported to have a capacity to utilise 15,000 tonnes of cassava daily to produce 4,000 litres of ethanol. This has large and positive ripple effects on the communities around the ethanol plant as farmers get better prices for their cassava produce (from UGX 300 per kilo of chips to UGX 800 per kilo of chips or 20,000shs/sack of fresh tubers to UGX 80,000 per sack of fresh tubers).

million on average per annum (Figure 22). To meet the demand for HFCS, it would be necessary that Uganda⁴¹ establishes a 100,000 metric tonnes (HFCS) plant utilising 0.5 million metric tons of fresh tubers annually i.e. 18 percent of annual cassava output can be absorbed as raw supply material to the HFCS plant. Such a venture would provide numerous advantages ranging from lowering Uganda's sugar imports by USD1.75 million,⁴² to providing employment and increasing household incomes due to increased prices of cassava.

High Quality Cassava Flour (HQCF): The production of High Quality Cassava Flour (HQCF) can reduce the import bill from wheat flour. The current demand for HQCF is 45,000 tonnes⁴³ but growing at a high rate due to increasing awareness about the value of cassava. For Uganda to be self-sufficient in HQCF, it requires to process 0.18 million metric tons (6.4 percent of national total output) of fresh cassava per annum.⁴⁴ Uganda's import bill of wheat in 2014 was USD1.97;

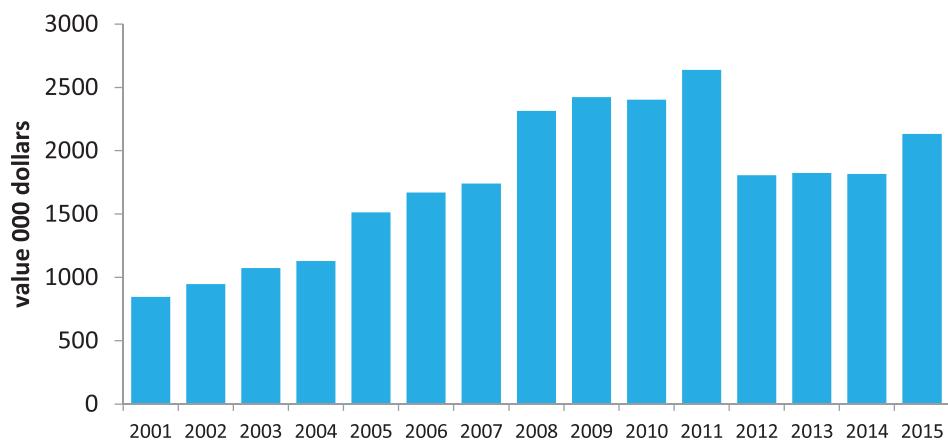
⁴¹ Trade map statistics

⁴² Uganda's import bill of sugar and other sugar products averaging USD73.4 million between 2001 and 2015.

⁴³ Otim-Nape and Bua (nd.). A country case study towards a global cassava development strategy, Namulonge Agricultural and Animal Production Research Institute NARI (Uganda)

⁴⁴ Based on figures in Box 1, 0.6 Million metric tons of HQCF requires a fresh tuber equivalent of 2.4 million metric tons of fresh tuber equivalent which is almost equal to Uganda's 2008/9 production (2.8 million in 2008/9)

Figure 22: Value of imports of pure lactose, maltose, glucose and fructose (USD'000)



Source: Author's computation based on data from Trademap, 2016.

replacing 20 percent of this with HQCF would save the country USD 0.398 million. Better still, this figure would increase to USD1.159 million if all products that use wheat are required to use HQCF only.⁴⁵ Therefore, promoting production of HQCF will not only lead to improvement in the wheat trade balance, but would also constitute a viable avenue for increasing exports, providing employment, boosting farmers' incomes, and expanding the production of confectionary products and beer brewing industries. This is critical as these are not only some of the largest employers but also among the highest tax payers.⁴⁶

Bio-degradable bags: Potential also exists to make biodegradable plastics from cassava through a method known as bioprocessing (see caption below). This is another product that scientists at NaCRRI have added to the list of industrial products that can be manufactured from processing of bitter cassava. This product is an alternative for improved human safety and minimised environment impact.⁴⁷

What are the required transformative shifts?

Against the demonstrated potential for cassava-based AGI development, the following are recommended:

a) A cassava industrial master plan needs to be developed, placing specific focus on funding

Pic 1: Sample bio-degradable plastics



the development of cassava varieties for specific industrial use, including beverage-breweries, confectionary, composite starch and ethanol as targeted products. These should be supported by product space deepening incubation centres (where entrepreneurs can learn how to develop different products) run by regionalised UIRI units to ensure that the cassava R&D for industry is accessible to farmers; UIA should attract investors into high-end cassava manufacturing products including ethanol, starch, flour (wheat substitute) and bio-degradable packaging bag (*Import replacement*). Due attention should be given to including cassava on the sensitive list on CET-crosscutting intervention; and Financial support is needed in the form of patient credit to off-set the constraints of the large initial capital investments required to acquire flash dryers and other modern, large-

45 http://www.newvision.co.ug/new_vision/news/1333457/cassava-commercialisation-save-uganda-usd300m

46 <http://www.ofuganda.co.ug/articles/20160228/president-museveni-names-100-multi-million-companies-paying-billions-taxes-ura>

47 Lominda Afedraru (Wednesday August 27 2014) Making plastic bags out of bitter cassava. Daily Monitor Newspaper.

scale cassava production machinery and techniques, which few SME industrial firms can afford on their own.

5.2.9 Oil Palm industry

Uganda has a trade deficit from imports of vegetable oil agro-products to the tune of over USD 170 million⁴⁸ per annum. This is an opportunity for developing the domestic capacity to manufacture a wide range of oil palm⁴⁹ based agro-products to reduce the import bill. Three critical interlinked agro-industry value chain players are involved in the oil palm industry under a 4P-Public Private Producer Partnership (PPP) arrangement. These are: (i) the government of Uganda (public) - providing all necessary investment incentives (land, tax holidays, credit financing); (ii) a combination of both smallholder farmers (about 1,810 in number), reinforced by a nucleus oil palm estate that form a relatively reliable source of raw materials; (iii) a private company Oil Palm Uganda Limited (OPUL) that operates a nucleus oil palm estate, as well as midstream crude oil processing mills; and (iv) BIDCO (U) Ltd, based in Jinja, that refines crude palm oil to manufacture a wide range of products (cooking oil, bull soap, cosmetics, washing detergents etc.). The synergistic workings of the 4P oil palm industry value chain players have led to a relatively steady and sizeable growth in oil palm production (Figure 23).

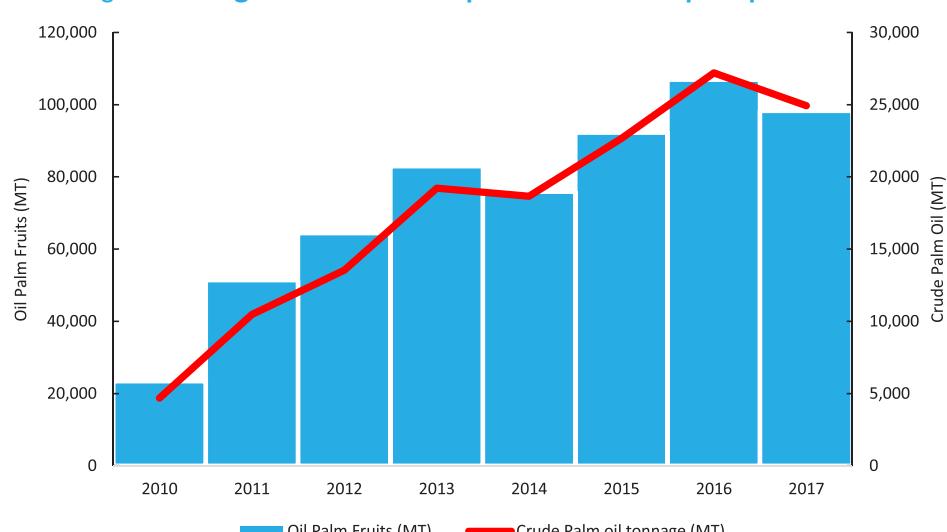
Source: Vegetable Oil Development Project-VODP (2018).

Scale of operation and capacity: Oil Palm Uganda Limited (OPUL) is the private player that is responsible for managing a nucleus oil palm plantation, and production of crude oil that is sold to BIDCO (U) Ltd for further refining. As part of the arrangement, OPUL buys fresh fruit bunches (FFB) from smallholder farmers to complement their own harvest from the nucleus plantation, and processes it into crude oil. OPUL operates two mills on Bugala Island for crushing oil palm into crude oil and other products.

There is under capacity utilisation of the two palm oil processing mills in Kalangala. This is because of low production due to limited land. As part of the agreement, GoU committed to provide 40,000 ha of land to OPUL and smallholder farmers. However, only about 10,000 ha of land have been provided, producing 98,268 MT of FFB which is processed into about 25,000 MT of crude oil (Figure 21). As a result, due to limited supply of crude oil, BIDCO (U) Ltd still imports more than 80 percent of crude oil from Malaysia and Indonesia.

Product space: The product space for oil palm includes: crude oil and kernel nuts, which are sold to BIDCO (U)

Figure 23: Progressive trend in oil palm and crude oil palm production

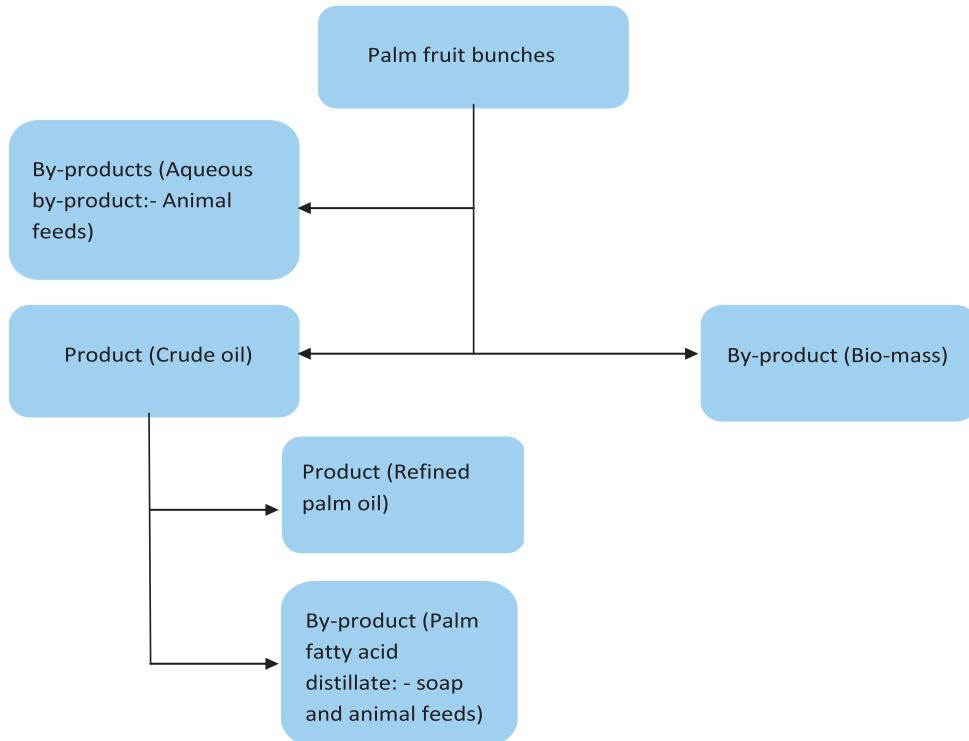


Source: Vegetable Oil Development Project-VODP (2018).

48 UNSTATS.UN.ORG (2017). United Nations Statistics Division

49 Oil palm is currently grown on 3 islands (Bugala, Bunyama and Bubembe) out of 84 islands of Kalangala district.

Figure 24: Oil palm value chain



Source: Yew-Ai Tan, 2006

Ltd; manure that is used to fertilise plantations; and fibre which is used for power generation. At BIDCO, crude oil is further refined to manufacture a wide range of products (cooking oil, soap, cosmetics, washing detergents etc.).

What are the required transformative shifts?

Two key recommendations are made to transform the oil palm value chain:

- At present the oil palm industry is faced with a challenge of limited production due to under capacity utilisation of the two crude palm oil mills in Kalangala. This is having a knock on effect in that BIDCO still has to import over 80 percent of the crude oil it requires to meet the high end industry refinery demands. The solution lies in the mobilisation of additional land to close the 30,000 ha land deficit⁵⁰ to produce enough oil palm fruits as per the oil palm project development implementation plan; and
- NARO needs to develop supportive oil palm R&D capacity. Currently, Oil Palm Uganda Lim-

ited (OPUL) sends samples to Indonesia or Malaysia because NARO has not yet developed capacity for oil palm research. Importation of research services rises R&D costs, and creates long time gaps between information generation and application.

In conclusion, this Section revealed that Agro-Manufacturing industries have limited product space and are operating at sub-optimal levels (under capacity utilisation). Seven out of the nine agro-industrial priority commodities (i.e. coffee, tea, fisheries, cotton, cassava, beef, and maize) have limited product space to ably respond to opportunities in both domestic and external market. Dairy and oil palm industries have a wider product space with respect to production of high-end manufactured products. The weaker agro-raw material production base largely explains the observed under capacity. Other factors contributing to under capacity utilisation include; high cost of energy and irregular supply of electricity. These limiting factors have to be urgently addressed to ensure a transformative shift in AGI development.

⁵⁰ GoU is responsible for providing 40,000 ha of land to OPUL and out growers. However, only 10,000 ha have been mobilised.

5.3 Enablers of Agro-Manufacturing Industries

This Section discusses important enablers for capacity enhancement to develop a dynamic, adaptive and flexible Agro-Manufacturing sector in Uganda. Possible interventions are proposed to unlock the broader (cross-cutting) constraints to agro-industrial development. The enablers include how to streamline access to finance to facilitate sustainable agro-industrial development; issues around critical infrastructure investment; quality, standards and certifications; and R&D and innovations.

5.3.1 Access to finance

AfDB (2009) identifies inadequate financial resources as one of the core constraints to agro-industrial development. A highly constrained financing environment limits innovations, use of high-tech interventions, and industrial expansion to support further development of AGI. For Uganda, the current financing sources have not been supportive of sustainable agro-industrial development. For instance, 83 and 78 percent of firms use retained earnings to finance operations and fixed assets acquisition respectively (Figure 25). Such financing structure constrains firms' ability to expand operations from small to large scale.

Transformative financing options, such as bank borrowing and equity financing, are inadequately utilised by Agro-Manufacturing industries. In Uganda, the proportion of small-scale industries with loans or lines of credit is 6.3 percent compared to 44.1 percent and 11.1 percent for those in Kenya and Tanzania, respectively (UNIDO, 2016). This is partly explained by high interest rates (30.3 percent); perceived low creditworthiness of firms (12.2 percent); complex loan

application procedures (9.7 percent), and collateral requirements (9.8 percent), as reported by the industrial firms. There is thus significant room for improvement..

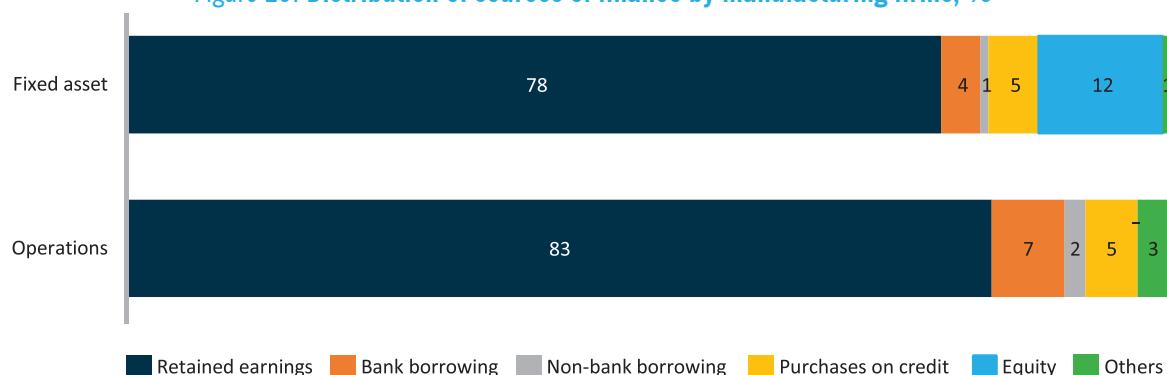
5.3.2 Infrastructure investment

Evidence shows that adequate investments in infrastructure is central to driving the growth and development of competitive agro-industries (Woldemichael et al., 2017). Integrated infrastructure planning around AGI and the supportive services by all the key players, such as MoE, UIA, UDC and MoT, is critical in promoting optimal utilisation of public investment. The Uganda Investment Authority (UIA) should undertake pre-feasibility studies and reviews to support the development of accompanying AGI specific infrastructure plans.

Furthermore, there is need to re-organise Agro-Manufacturing industries in such a way that it is easy to provide all the necessary infrastructure (such as roads, water, sewerage system, energy, safe and standard systems) in a cost-effective and efficient manner. However, re-organisation of industries might vary for the selected nine commodities. For instance, beef industry (beef and its by-products) can be organised in industrial clusters to support backward and forward linkages.

While electricity generation capacity has increased, the challenge of transmission and distribution remains. In addition, even where electricity is accessible, the cost of energy has remained high. For example, high energy cost is the top most binding constraint for the cassava processing plants in Lira and Apac districts. Energy subsidy toward Agro-Manufacturing should be linked to

Figure 25: Distribution of sources of finance by manufacturing firms, %



Source: Author's computations WBES data 2013/14.

an agreed upon clear performance indicators – which must be followed to ensure compliance.

UDC should also invest in setting up processing plants for those industries where processing capacities are still limited. For instance, tea factories should be established in districts of Zombo, Nebbi, Kyenjojo and Kabarole; as well as spinning and weaving factories in cotton growing areas.

5.3.3 Quality and standards certification

Certification of quality and standards is a factor that can greatly hinder or spur the performance and competitiveness of the Agro-Manufacturing industries. On average, about 76 percent of the agro-processors do not have internationally recognised quality and standards certification.⁵¹ Information from agro-industry case studies reveals that firms are not certified due to the high costs of meeting the International Standards Organisation (ISO) benchmarks. This implies that most of their agro-industrial products do not conform to internationally acceptable quality standards. This calls for a need for a stronger, effective and adaptive regulatory system backed by policies, and appropriate infrastructure (such as regional hubs, industry specific traceability platforms).

5.3.4 Research, Development and Innovation

In Uganda, the level of innovations in manufacturing remains low, with most of the firms engaged in light manufacturing rather than high end manufacturing. The critical strategic transformative shifts to spur AGI includes promoting R&D that spurs innovations to enable manufacturers produce high-end products. In the case of fish, for instance, there is need to explore technologies that could support Nile perch domestication and value addition to gas bladder and other high-end processed fish products.

Promoting the use of appropriate technologies to make processing cheaper and generate industrial products of higher value is vital. For instance, supporting fortification technologies in the maize industry, and sophisticated processing technologies to produce powdered milk, will result in more efficient and cost-effective processing. However, there is need to create awareness of the

existing incentive systems (as discussed in section 3.5) that promote adaptation of appropriate technologies. In addition, given that the Uganda Cleaner Production Centre (UCPC) is mandated to support industries to adopt efficient eco-friendly technologies, with high turnover in the long run, support should also be extended to Agro-Manufacturing industries to increase this uptake.

Regionalisation of UIRI⁵² and UNBS can promote knowledge sharing within and across R&D institutions both nationally and internationally. Supporting incubation centres and other business knowledge development efforts would create an industry responsive R&D program with expanded product and enterprise development inertia.

To track progress under the auspices of UIRI, there is a need for a centralised knowledge management database with detailed registration and profiling of the strategic Agro-Manufacturing industries, and with details such as identity, location, capacity, level of innovation and product concentration among others. Profiling of Agro-Manufacturing industries (product space, level of innovation and tech sophistication) is an essential aspect in tracking progress.

5.4 Conclusion

There is no blue print to promote AGI for the selected nine industries. Different industries are at different levels of development and some are producing high-value products while others remain in light manufacturing. For example, coffee has low grade beans. For the textile industry, it is important to invest in spinning which is holding back the growth of high-end manufacturing activities. For cassava, maize, tea, beef, and fish there is need to upgrade their industrial value chains through expansion of their manufacturing capacities (up-stream and mid-stream activities). On the other hand, dairy and oil palm need to mainly strengthen the raw material production base given that substantive manufacturing investment capacity is in place.

The product space remains limited to take advantage of the growing level of urbanisation and growing middle

51 Computed from 2013/14 WBES.

52 The Uganda Industrial Research Institute (UIRI) was set up by an Act of Parliament in 2001 to support the development of a strong, effective and competitive industrial sector including AGI.

class as well as leveraging on the opportunities that exist in the global markets as discussed in the next chapter. Yet there is significant under capacity utilisation, largely explained by a weak raw material production base for industry. In addition, there are significant gaps in installed capacities in some geographical areas where the raw materials are available but without processing plants (such as in tea, coffee).

Evidently, therefore, the enabling environment to drive AGI agenda could be realised through re-organisation of the Agro-Manufacturing industries into clusters to attain economies of scale; closing major crosscutting infrastructure gaps (such as utilities, physical infrastructure including cost of energy, and security systems); as well as optimising public investment in infrastructure and strengthening R&D to widen and deepen the product space. These are issues that the country must urgently address if it is to truly tap into its huge agro-industrial potential.

6. MARKET ACCESS FOR AGRO-INDUSTRIAL PRODUCTS

Against the earlier identified challenges in the value chains of the nine commodities and what needs to be done to revamp their AGI development, this Chapter now explores the domestic and international market opportunities that Uganda can target. The Chapter underscores the case for starting with the domestic market (where Uganda has control), and gradually shifting to the more competitive international markets as the country builds its competitive capacity.

Table 10: Uganda textile and apparel trade balance (USD '000)

	2001	2005	2010	2015	2016
<i>Overall trade balance</i>	-554,952	-1,241,327	-3,045,735	-3,261,108	-2,347,146
All textile products	-43,446	-49,777	-144,437	-160,871	-188,470
Cotton	12,775	25,522	13,360	12,785	23,914
Apparel and clothing products	-8,241	-12,364	-22,636	-20,131	-20,411
Man-made staple fibres	-8,573	-12,329	-17,023	-19,169	-20,599
Worn clothing & worn textile	-27,434	-36,341	-86,887	-102,326	-137,838
Other textiles	-11,973	-14,265	-31,251	-32,030	-33,536
Overall Textile Trade bill	-56,221	-75,299	-157,797	-173,656	-212,384

Notes: Positive and negative values refers to trade surplus and deficits respectively
Source: Author's computation using ITC Trademap database (2018)

6.1 Potential and Untapped Domestic Market

There is growing demand for high end agro-industrial products due to population growth (3 percent per annum),⁵³ growing urbanisation (5.4 percent in 2015/16),⁵⁴ and a growing middle class. This presents opportunities that need to be harnessed through setting up of industries that produce high-end value goods to meet the domestic demand. In spite of this, Uganda has placed little emphasis on the domestic market and has focused more on external markets. Some of the binding constraints include uncoordinated and unorganised domestic market, inefficient production, low competitive index of Uganda's industries, and poor infrastructure. In addition, quality and high standards must be ensured at all levels of production and manufacturing in order for goods to meet the standards in both domestic and international, markets.

To tap into the domestic market potential there is need to deepen specific product value chains. Quick wins in this case include cotton and textile products, vegetable oil products, and maize products. These can be achieved

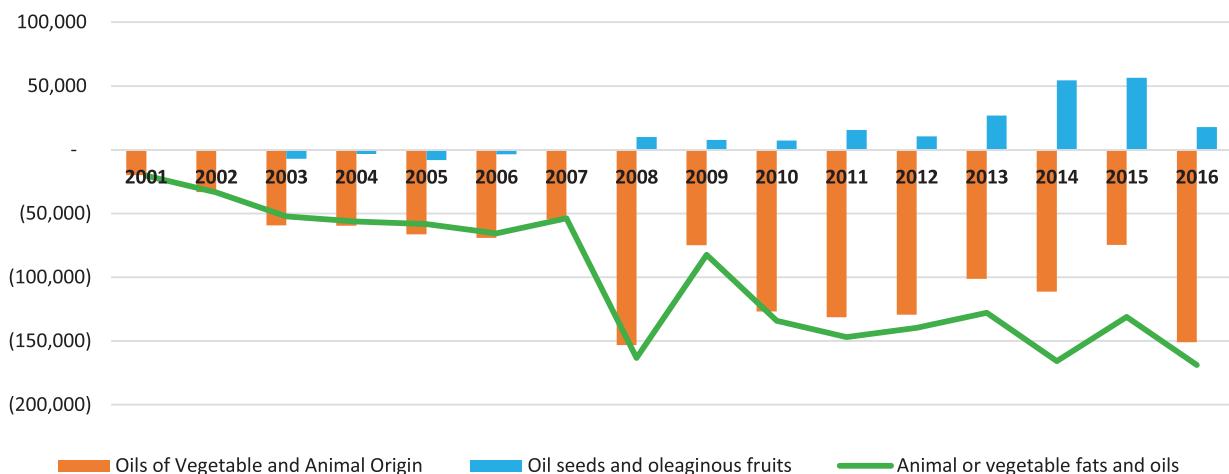
through increased Agro-Manufacturing; strengthening and integrating the products into national value chains, and increasing the competitiveness of products to increase share in the domestic market. The discussion that follow provides insights into how this can be done by industry.

Cotton agro-industrial products: Nearly 95 percent of Uganda's cotton is exported as lint, hence undermining the opportunities for increased earnings from upgrading in the value chain. Of concern is the huge overall trade deficit in textiles and apparel (Table 10). According to the ITC Trademap database, Uganda's import bill on textile clothing steadily rose from USD 56.3 million in 2001 to over USD 210 million in 2016, while earnings from the country's cotton exports (lint) rose from 12.8 million to only just USD 30 million over the period. Of critical significance to note is that the worn textile products and clothing (second hand clothes) is a major component of Uganda's import of textile products, accounting for USD 27.4 million in 2001 and USD 137.8 million in 2016. Such an import level indicates the size of the domestic market that is potentially available and untapped by the domestically produced textile and apparel products. The growth in imports is partly explained by high population growth, and limited local capacity for apparel production.

53 UBoS (2016).

54 UNDP (2018).

Figure 26: Uganda's trade balance in edible oils and fats (USD '000)



Source: Author's computation based on ITC *Macmap* database (2018).

High exports of lint cotton in unprocessed form is largely because of lack of adequate spinning and weaving to transform the cotton lint into the yarn and textiles for inputting into apparel production (see 5.2.4). Hence the challenge for the Uganda cotton-textile-apparel industry is not the lack of market whether domestic and export) but lack of capacity to competitively produce quality and sufficient quantities for increased share in the domestic market. The immediate potential domestic market include: schools, police, prisons, army, hotels and hospitals.

As discussed in the previous Chapter, there is urgent need to address the spinning and weaving component of the cotton industry. This will go a long way in relieving the country of huge and rising bill in the importation of second hand clothes, and will boost employment and income opportunities for the country's labour force.

Edible oils and fats: There is high demand for edible oil in Uganda, which currently stands at 120,000 MT against a production capacity of 40,000 metric tonnes, leaving a deficit of 80,000 metric tonnes annually (Shinyekwa, 2018). Figure 26 suggest that oil palm and other seed oils have a potential market in the country and can contribute to narrowing or eliminating the trade deficit in edible oils. Uganda's high and rising edible oil trade deficits are a strong indicator of unmet demand in the domestic market, representing an opportunity for investment. The country imports about 80 percent

of its vegetable oil, mainly oil palm from Malaysia, and quantities available domestically can easily be absorbed locally. Imports of palm oil increased from USD 18 million in 2001 to USD 247 million in 2014. This is explained by the need for crude palm oil use in purifying other vegetable oils like sunflower oil and cotton seed oil – also explained by the 80 percent continued importation of crude palm oil by BIDCO (U) Ltd to meet its processing requirements which cannot be fully achieved through local raw material sources (see 5.2.9). The incentives given to BIDCO (U) Ltd to address the balance of trade for oil palm is yet to achieve the intended goal of reducing the imports of oil palm (see discussion in Chapter 4).

6.2 Potential External Market

6.2.1 Market analysis

Uganda's share of manufactured exports to total exports was 25 percent in 2016 compared to an average of 35 percent for Kenya and 25 percent for Tanzania (WDI, 2017). In addition, its share of medium-high technical activities in the manufacturing export index stood at 18 percent compared to 23 percent for Kenya in the same period. This confirms that the country still largely exports primary commodities. This export has adverse effects on Agro-industrialisation in the country.

In 2015 Uganda exported USD 1,493 million and imported USD 1,072 million of agro-products giving a positive trade balance of USD 420 million (UN STAT, 2017).

However, the country could improve its trade balance further through import replacement for goods such as edible oil, paper products, foot wear and textiles, and export promotion of coffee, tea and fisheries.

Thus, this Section discusses Uganda's export markets for agro-industrial products in terms of overall values, major destinations, competitors in those markets, and the country's global market share based on the selected nine commodities in the Report (see Appendix 2). The analysis is based on 2015 ITC & COMTRADE.⁵⁵ Understanding these markets is of strategic importance to Uganda especially on how to streamline and strengthen its production and manufacturing bases to tap into the global markets.

Available statistics suggest that the major destinations for Uganda's agro-industrial products (for the selected industries) are within the EAC region (48.9 percent) followed by EU countries (39.9 percent) in 2015. Uganda trades more with the EU than Asian countries when it comes to export trade. The share of Uganda's agro-industrial products in the global market was only 0.17 percent, largely explained by the high concentration of low value agro-industrial products. A brief discussion of the markets for products derived from the selected nine commodities follows.

Coffee and coffee products: Uganda exported coffee valued at USD 401 million in 2015 and the most important markets are Italy, Sudan, Germany, Belgium, Spain and India, in that order - constituting 75 percent of the export value. The major competitors in these markets are Brazil, Vietnam, Honduras, Ethiopia, Kenya, and Central African Republic. To gain more from global coffee trade, Uganda should understudy its competitors to increase its market shares in the global markets, especially through quality and standards improvements. Given historical trends, the biggest competitor Uganda can learn from is Vietnam (see Chapter 4). Lessons from Vietnam (see 5.2.1) would enable Uganda accelerate its 2025-2030 roadmap to export 20 million bags of quality coffee.

⁵⁵ The analysis is based on UNIDO data of 2015. The Report could not use the latest data as it was not readily available at the time of writing.

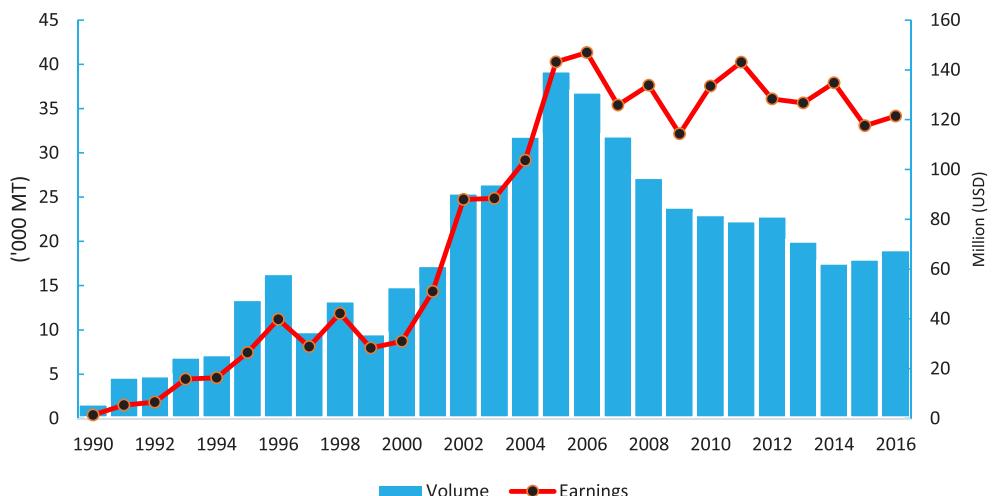
Tea and tea products: Uganda's tea export trade process is complex since it is undertaken indirectly through Kenya under the regional tea auction in Mombasa. One would then argue that Kenya is one of Uganda's major importers of green tea – 97 percent. The major importers of Kenya tea are Pakistan, Egypt, United Kingdom (UK) and United Arab Emirates (UAE). The remaining 3 percent goes to other regional markets including South Sudan, Rwanda, DRC, in that order. Other regional markets should be explored, which can then be used as a base for targeting the lucrative international markets.

Fish and fish products: The fish industry in Uganda registered declining exports from 22,928 tonnes in 2012 to 19,112 tonnes in 2016, primarily due to declining fish stocks (UBoS, 2017). However, it is important to note that although fish export share of total production is as low as 3 percent, these relatively small export volumes, in absolute terms, however continue to generate considerable foreign exchange earnings of more than USD125 million per annum which demonstrates the high economic potential of fishery. Exports are dominated by chilled or frozen fish in various forms (whole gutted, headed and gutted, skin on and skinless fillet, fish maws, portions, steaks and loins).

Global fish exports (fresh and salt waters) was the most valuable agricultural GVC worth USD 100 billion in 2015 among the strategic industries selected in this Report. Ugandan exports only amount to USD 117 million, accounting for as low as 0.1 percent of global trade. Although the EU⁵⁶ has been the main destination for Uganda's fish exports, other emerging markets are increasingly becoming important. The major competing countries in those markets include Vietnam, Thailand, India, Tanzania, and Kenya. There is huge demand for Nile perch (which market is also serviced by Kenya and Tanzania), however, Uganda can still gain further benefits from boosting its productivity. Uganda should also venture into canned fish which has a longer shelf life and fetches more money but is currently dominated by European and Asian producers.

⁵⁶ In 2015, fish exports were majorly destined for Netherlands (USD 13 million), Belgium (USD 14 million), Italy (USD 6 million), and Portugal (USD 3 million), others outside the EU include to Hong Kong China (USD 35 million) and UAE (USD 8 million).

Figure 27: Volume of Fish exports and earnings (USD 'million)



Source: FAO Stat Fisheries database and UBoS (2017).

Cotton and textile products: Uganda's trade in cotton and textile products is dominated by the export of cotton lint (95 per cent of lint produced) valued at an average of USD 36 million in the last ten years. However, the most valuable part of the GVC is for cotton yarn where Uganda exported only USD 0.21 million in 2015, translating into less than 0.1 of the global cotton trade. Exports of yarn and woven fabrics are minimal following the collapse of the textile industry in Uganda.

Most of Uganda's cotton lint exports (USD 7.9 million) go to Singapore, dominated by Olam Uganda Limited - a company with origin in Singapore. UK, due to historical ties, also still imports substantial quantities of lint cotton from Uganda valued at USD 6.8 million, which constitutes 39 percent of the market share. Kenya also imports more than half of its cotton lint from Uganda.

Uganda's global competitors for cotton lint, yarn and textiles include China, India, USA, Pakistan, Vietnam, Hong Kong, Turkey, Italy and Brazil. Cotton lint is one of the upstream activities which presents low value addition, with low global trade valued as USD11.7 billion. To foster sustainable AGI, Uganda should therefore invest more in the manufacture of cotton yarn (see 5.2.4) where global trade is valued at USD 29 billion, and woven fabric with a global trade value of USD 15 billion.

Considering the countries with which Uganda has BTAs and market preference, their GVC's indices⁵⁷ for footwear, final apparel and final textiles markets are far above that of Uganda, indicating that they are more competitive (Figure 28). Specifically, previous efforts to revamp the textile industry demonstrates that the country is not realising its AGI agenda in the sector. Despite Uganda's poor integration in global trade, there are opportunities to upgrade the cotton GVC through BATs with China, India and Turkey who are already big players in this GVC. Through these ties, there are opportunities for knowledge and technological diffusion, through partnerships in setting up manufacturing plants, supply chain linkages and vertical as well as horizontal integration with local firms. Uganda should therefore seek to upgrade in the GVCs, especially to have a bigger role in the final apparel and footwear and textiles production, where there is large demand both domestically (as seen in the huge import bill) and in the international markets.

57 GVC index which is computed as ratio of a country's exports to global market value of a product.

Figure 28: Uganda's share in the textile GVCs in comparison with its key competitors, 2012-2016

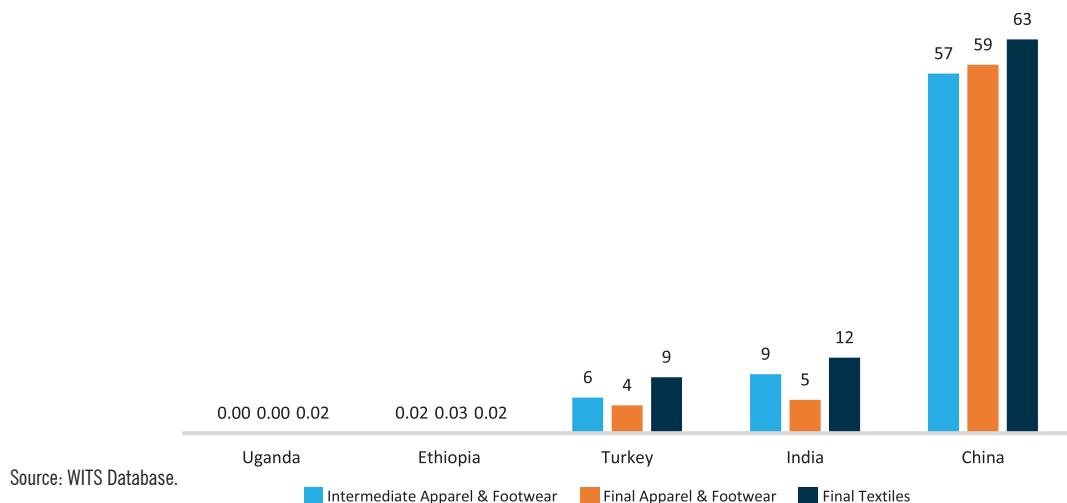


Table 11: Value of exports of cattle and beef products (USD '000)

Product	2007	2008	2009	2010	2011	2012	2013	2014	2015
Live cattle	1,474	1,667	3,835	3,938	1,374	798	1,583	1504	1302
Cattle Meat	61	49	39	819	149	4	123	142	33
Beef & Veal (Boneless)	32	35	0	0	0	50	233	31	27
Beef preparation	6	0	0	0	0	3	1	6	0
Meal , meat	0	0	0	0	0	0	0	0	0

Notes: **Meat preparations:** Includes meat & offal that is boiled, grilled, fried or cooked. It includes meals that contain more than 20% meat by weight. **Cattle meat:** includes cattle meat that is either frozen, chilled or fresh but containing bones. **Beef & Veal:** are preparations of meat or offal, whether chopped, minced or of blood. They may be smoked, cooked or raw and then enclosed in natural or artificial casings. **Dried meat:** Includes salted, in brine or smoked meat.

Beef products⁵⁸ : Uganda's processed beef products target regional markets (in DRC, South Sudan, Kenya, Rwanda, and Burundi), that have less stringent restrictions on quality standards. The meat export market is mainly continental, led by DRC at nearly 72 percent, followed by South Sudan and Somalia. Meat exports to the DRC is a result of its proximity to the Ugandan cattle corridor, and its meat presence in other markets remains limited – e.g. Vietnam valued at USD 0.18 million. This is partly explained by the complexities of standards and certification requirements for meat products and the storage challenges for fresh meat. On a positive note, Uganda recently started exporting beef to Egypt through the Egypt-Uganda Food Security Company based in Luweero.

Uganda exports livestock in addition to meat and the value is almost the same for the two categories. The export value for bovine animal meat was USD 1.5 million

in 2015, while the value for bovine live animals was USD 1.52 million. These are very insignificant amounts when compared to the USD 114 billion global value of meat exports. Processing meat is thus potential entry point into AGI, with additional forward linkage to the leather industry (skin and hides). Export volumes of other processed beef products such as beef preparations and dried cattle meat, also remain meagre while exports of high value processed meat products, such as meat meal and boneless, veal and beef is non-existent (Table 11).

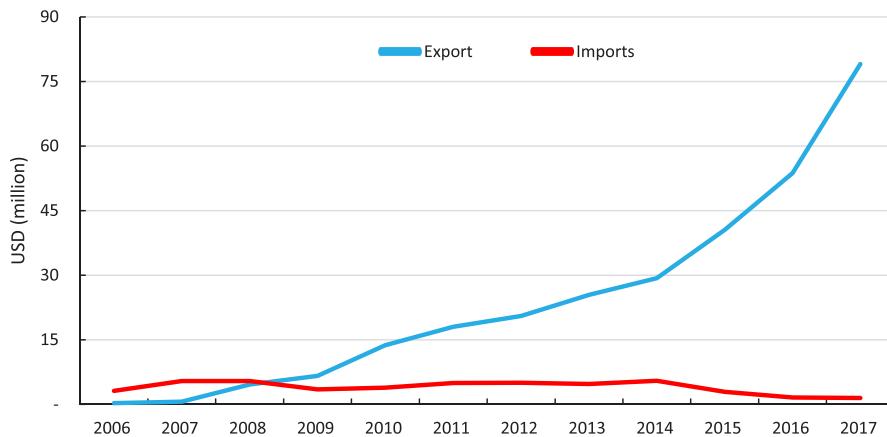
Key informant interviews with Fresh Cuts, a meat processing plant in Uganda indicated that while Uganda is a member of the World Organisation for Animal Health (OIE), the country is not listed as a risk free or a risk control country⁵⁹ for any of the high priority diseases⁶⁰

58 Includes meat and edible meat offal.

59 To be listed, MAAIF must submit an annual report for tracking diseases with requisite fees to an international committee to decide if the country is risk free or not. Fresh cuts reported that MAAIF tracks disease but has not been submitting reports to the committee.

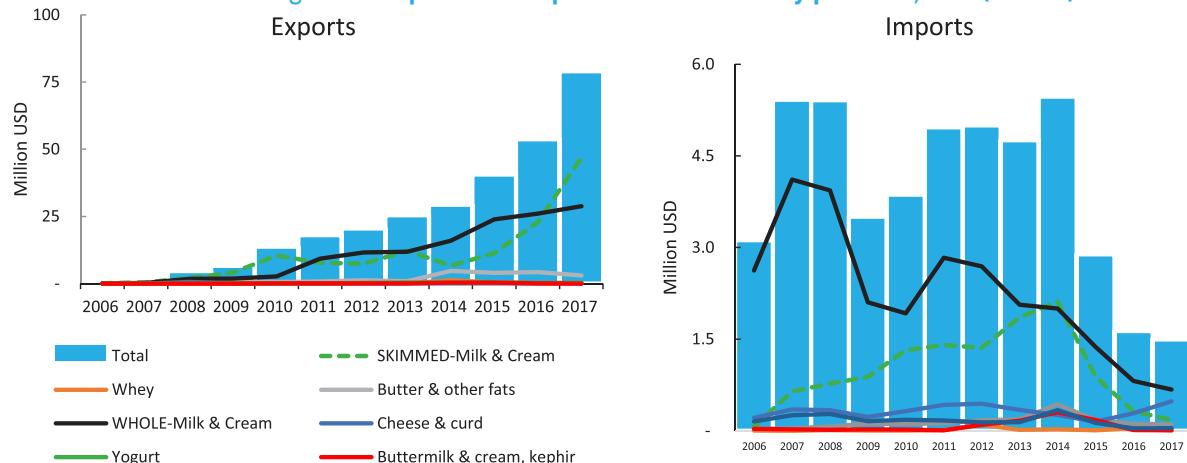
60 These include Foot and Mouth Disease, rinderpest, contagious bovine pleuropneumonia, African horse sickness, bovine spongiform encephalopathy etc.

Figure 29: Exports and imports of dairy products (USD 'million)



Source: Trade Map, 2018

Figure 30: Exports and imports of different dairy products, USD (million)



for international trade. Moreover, the international beef industry is increasingly demanding for effective traceability⁶¹ systems of individual animals from farmer to consumers. This leaves little room for rapidly building capacity for AGI development in this sector.

Dairy products: Dairy industry is one of the most developed among the nine selected commodities (see section 5.2.6). Figure 29 reveals that the Dairy sector's trade balance has significantly improved over time. The level of exports surpassed imports in 2008, and there has been declining trends in imports since 2014. The success story is partially attributed to the privatisation of the sector in the mid-1990s and the interventions by Government and Development Partners in developing the dairy value chain that attracted private investments.

61 This is the ability of a company to track the development of a particular product from the raw material form (livestock in chain upto its delivery to the final consumer

Uganda has also made headway in dairy product space deepening which has resulted in increased exports of both skimmed (not concentrated) and whole milk (concentrated) and cream dairy products valued at over USD 79 million by 2017, compared to USD 200,000 in 2006. Since 2006, exports of high value products (i.e. powdered milk, ghee, butter oil, UHT milk, casein/whey, pasteurised milk, yoghurt, cream, fermented milk, and cheese) have been growing while imports have declined (Figure 29).

Oil palm: Similar to meat exports, the DRC was the most popular destination for Ugandan refined and purified oil palm exports. The Eastern Africa region was once again the main export destination while other key destinations for Ugandan oil palm included Sudan. Oil palm exports to DRC and South Sudan made up 46.1 and 32.2 percent

of total oil palm exports. Ugandan oil palm accounted for 100 percent of South Sudanese oil palm imports and 35.2 and 23 percent of DRC and Rwandese imports respectively. The main competitors for Ugandan exports into these markets were neighbours Kenya as well as Malaysia, Zambia, Singapore, South Africa, Spain, and Indonesia. There is need to establish foothold in the markets where Uganda is dominating; with a mind of expanding exports and maintaining those markets.

Maize: Maize grain exports are mainly within the EAC region, with Kenya as the main importer for the grain. However, Uganda faces higher competition with fellow EAC Partner States. Additionally, the global value for maize flour is lower than that of maize grain (see Appendix 2). Uganda exported maize flour worth USD 25 million which made up 7.8 percent of the global market. Here, the main destination market was South Sudan to whom Uganda exported USD 22.3 million accounting for 87.7 percent of flour exports. Exports to Rwanda, Burundi, DRC and Tanzania were worth only USD 1.73 million; USD 731,000; USD 431,000 and USD 83,000, respectively. The maize export performance is partly explained by maize grain being used as input to support industries in other markets. For the promotion of agro-industry, focus should be on increasing the market share of value added Ugandan maize products like fortified flour, corn flakes, and by-products for livestock feeds.

Cassava: Uganda largely exports tubers and a bit of flour and very limited starch to Kenya, Rwanda, Burundi, South Sudan and the DRC. There is a huge opportunity for the country to increase cassava production since the market is still available both domestically and among her trading partners and since global export shares is less than one percent. The need for deepening the product space especially for starch, cannot be over emphasised. In summary, Uganda is competing with countries in highly integrated GVC. This presents an opportunity for Uganda, especially in countries with which it has BATs and market preferences, but constitutes a challenge in terms of market expansion. Second, there are regional market opportunities Uganda should strategically focus more on to boost export of agro-industrial products as a stepping stone to penetrating international markets. Regional markets are nearer and easier to access due to less stringent standards which can be capitalised on.

6.2.2 Market opportunities

Three opportunities are identified through trade agreements, urbanisation and population and the Global Value Chains. A description of each is provided below.

a) Trade agreements

Trade agreements fall under different categories. These include: WTO at the multilateral level, and BTAs at the bilateral level. These offer Uganda opportunities to access freer and bigger continental and regional markets. The agreements also promote diffusion of innovations and accessing lessons for good practice; facilitating infrastructure development, industry and innovation; and creating space for predictable trade policy environment among trading partners. As a party to these trade agreements, Uganda is under obligation to open up its markets, thus driving the country to develop competitiveness.

Global markets under WTO multilateral trade agreements: The WTO agreements, and indeed all trade agreements, have exceptions where members may derogate from implementing particular clauses to protect an industry, protect balance of payment, and to address issues related to security, among others. These all present opportunities for promoting AGI.

A major milestone achieved by the WTO during the 2015 Ministerial Meeting in Nairobi was on the provision of Duty Free Quota Free market access for cotton. Effective implementation of this agreement would therefore enable Ugandan cotton producers to get more money as international cotton prices are expected to increase with drop in production among the highly subsidising and exporting economies, notably the USA.

However, the changes in the global dynamics need close monitoring. For instance, WTO negotiations have reached a crucial point where members are failing to agree on the Doha Round of Trade negotiations which promised to take into consideration the development needs of poor countries. Changes in the US trade policies, the expected withdrawal of UK, known as Brexit from the European Union and the overall rise of nationalism further complicates multilateralism and commercial diplomacy as a whole.

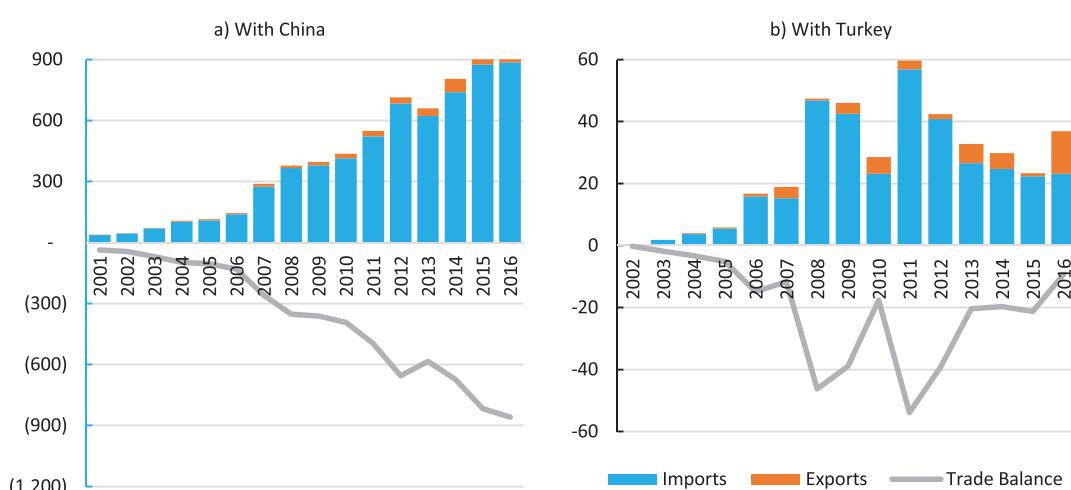
Market opportunities under bilateral trade agreements: To enable access of external markets for its goods, Uganda signed several trade agreements both as a bloc (COMESA, EU, EAC) and through BATs (such as with China, USA, Turkey, Egypt). These have ensured the biggest opportunity for Uganda of free external open markets for its goods. Such markets also offer opportunity for Uganda to learn good practices, copy innovations for replication, and to promote growth of local industries to meet the product requirements in these markets. However, the agreements are not necessarily free, as Ugandan goods must meet the sanitary and phytosanitary (SPS) measures in place. Thus, entering into the BATs and Free Trade Agreements (FTAs) must be done with caution to ensure that the opportunity cost is not high, given the liberalised Ugandan economy. Otherwise, agreements made often turn out to be unequal (often attributed to Uganda's negotiation power, size of the economy, competitiveness, etc.) which, in turn, hinder industrial growth. This is partly due to Uganda's failure to align external agreements to domestic policies, thus getting what it negotiates for but not what it deserves.

In 2006, for example, Uganda signed six agreements with China in a wide range of fields including economy, trade, agriculture, education, and technology (Xinhua 2006). As such, China was instrumental in establishing and supporting the operation of UIRI. Nonetheless, in Figure 31, the trade balance between these two economies has

continued to widen putting doubt on the impact of the BATs for Uganda's industrial growth.

On the other hand, the agreement with Turkey was intended to promote industrialisation through technical support and facilitation of the transfer of technology to support Uganda's textile industry as well as goods standardisation. In addition, Turkey agreed to provide training programmes to Ugandan farmers on the issue of modern irrigation systems, agricultural extension, and the use of agricultural equipment and machines (Oketch, 2010). Turkey has also of late expressed interest to invest in the textile industry and the latest discussions have been on the guarantees for raw materials as well as allow importation of Turkish raw materials during initial stages when Uganda still has limited capacity to supply the required raw materials. In signing such bilateral agreements, Uganda should be cautious of contentious issues like investment such that impede its industrialisation agenda, and public procurements that entail (e.g. external sourcing of raw materials). Where possible, Uganda should focus more on multilateral agreements where it has better bargaining power in terms of building coalitions with similar countries like the African Group and the Least Development Countries (LDC) Group.

Figure 31: Uganda's trade with China and Turkey, 2001-2016 (USD Million)



Source: Trade Map 2017.

Africa-wide market opportunities: At the continental level, the Africa Continental Free Trade Area (AfCFTA) was agreed to in March 2018 to cover a market of 1.2 billion people and GDP of USD2.5 trillion, across all 55 member States of the African Union. This in effect makes AfCFTA the biggest FTA since the establishment of the WTO. Upon ratification by at least 22 member States (including Uganda), the AfCFTA provides increased market access for Uganda's agro-industrial products across the continent. However, the productive capacity of the Agro-Manufacturing sector needs to greatly improve if the country is to meaningfully benefit from increased continental trade. On the other hand, Uganda's local industry might be at risk of being less competitive within the AfCFTA arrangement as imports from other African countries will flood Uganda.

b) Urbanisation and population boom

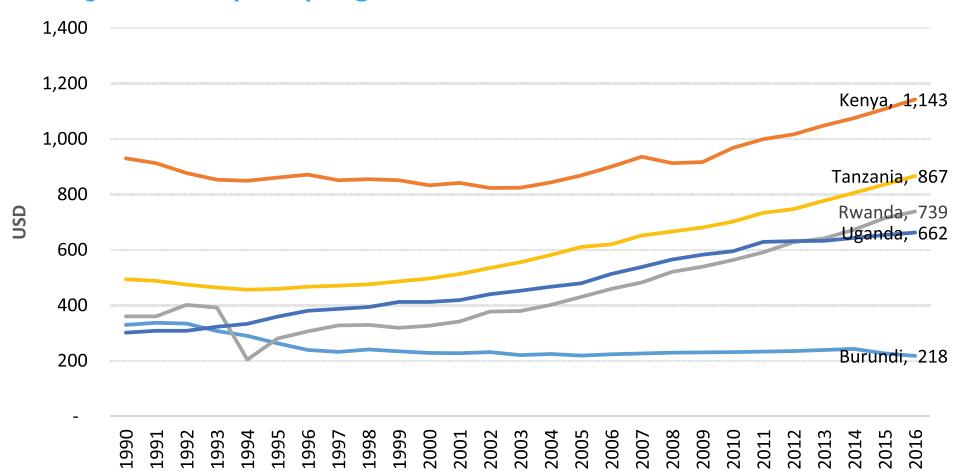
Urbanisation coupled with growing GDP per capita (Figure 32) in the EAC region provides market opportunities for Uganda's agro-industrial products. The region has population of 188.6 million as of mid-2018 with a combined GDP of USD 74.5 billion, with huge market potentials. Growing urbanisation also presents market opportunities for agro-industrial products. Within the region, Tanzania is the most urbanised country followed by Rwanda while Burundi is the least urbanised. The level of urbanisation for Uganda stood at 26 percent in 2016.

Uganda's growing middle class also provides effective demand for agro-industrial products such as processed coffee, dairy and fish products, and increased opportunities for investment in AGI.

c) Global Value Chains

Global Value Chains (GVCs) are usually understood as encompassing all activities of production and goods and services and supply in the international (global) markets as well as its attendant supply chain. For Uganda, exports are at the lower end of the GVCs (see section 6.2), mostly orientated to low cost and less stringent market requirements. This is because high end markets like in the US and EU have a comprehensive and demanding technical regulations regime for most agro-industrial products in terms of quality and packaging (Oboth et al., 2012). To penetrate these markets, Uganda needs to upgrade in the GVCs, which would enable the country to maximise the opportunities provided by trade agreements as well as minimise the challenges these markets present. In the medium term, for the commodities selected in this Report, it is important to upgrade and accredit Government analytical laboratories to qualify for different high level tests like for mycotoxins, agrochemicals and SPS requirements, antibiotics, acaricides, heavy metals and environmental pollutants based on AOAC standard test methods, among others.

Figure 32: GDP per capita growth rates in the EAC (constant 2010 USD)



Source: World Development Indicators.

6.3 Enablers to tap into market opportunities

Uganda's exports are primarily commodities and low-value manufactured products. Although the country has trade frameworks through institutions, policies and trade agreements which provide market access, the full potential of these opportunities is yet to be realised. The discussion below focuses on important enablers for Uganda to get traction for its agro-industrial products in domestic and international markets.

6.3.1 Capacities and capabilities

While Uganda's trade negotiation capacity has significantly improved overtime, gaps still remain in regard to trade policy and trade law. Trade negotiation process as are tedious and complex, often taking several days and nights to reach an agreement. With so few negotiators, the country's ability to negotiate deals that are supportive of AGI is compromised. In addition, political considerations rather than economic and industrial development considerations sometimes take precedence in setting negotiating positions.

It is also important that the BATs negotiations are guided by Uganda's interest to develop its agro-industries. The country should also negotiate structured demand deals with countries with which it has large trade balances and debt service obligations, as well as those where bilateral trade agreements exist. This would safeguard access to external markets, e.g. China for coffee and gas-bladder (fish).

Uganda needs also to do more to increase its presence in the global market for agro-industrial products. First, there is need to promote commercial diplomacy at the Ugandan Embassies in strategic trading countries as well as building capacities of commercial attachés to undertake market intelligence. Where these attachés exist, they experience challenges in terms of prioritisation of political diplomacy over commercial diplomacy.⁶² Uganda's foreign policy should therefore embrace and prioritise commercial diplomacy as a key strategy for promoting export of agro-industrial products.

⁶² For example, MTIC recruited six Commercial attachés but they were never deployed due to funding challenges as Ministry of Foreign Affairs declined to support these officers using its budget. Moreover, Ministry of Foreign Affairs see such as move as extending MTICs mandate to Foreign Service, which in effect conflicts with its own mandate.

Second, there is need to identify the capacity needs of the national institutions that are responsible for export promotion (such as UEPB, UFZA), and to strengthen them accordingly. At the domestic level – which is used as a launch pad for promoting regional and international export markets - effective implementation of the BUBU policy could also build capacity for competitiveness in the export markets in the long run.

6.3.2 Liberalised markets

Uganda's trade and industrial development agenda follows free market principles of liberalisation and hence reduced Government involvement in the economy. This influences trade negotiations where too much focus is put on reduction or elimination of tariffs rather than industrial development aspirations. These principles cut across negotiations at regional, multilateral and bilateral levels, presenting potentially negative implications on AGI agenda. For Uganda to foster sustainable AGI, it is important for trade negotiating positions to be informed by the need to protect domestic industries (especially at infancy), and to enable them to access capital goods and benefit from technological diffusion/transfer.

In addition, Uganda has typically opened up the economy more than is required by the WTO. BATs, whether regional (EAC) or individual (country level) are usually reciprocal in order to be WTO complaint. This also presents a danger to AGI potentials because Ugandan producers supported by a weak production base are exposed to more efficient producers from trading partners who enjoy economies of scale and face fewer production constraints [see Vietnam example]. The stalling of Doha Round of talks has led to a proliferation of bilateral trade agreements (Heine and Turcotte 2014), as developed and newly industrialised countries seek to realise the market access opportunities at bilateral levels that they failed to realise multilaterally. This explains why issues of investment, competition policy, and government procurement, rejected at the WTO are being introduced under BATs – e.g. EU EAC EPAs (see also sub-section 6.2.2 (a)).

Regional integration commitments have seen Uganda further remove tariff barriers on regional imports. This liberalisation has engendered the influx of agro-industrial products from Kenya - the most industrialised EAC

Partner State - which provides extensive competition to Ugandan producers, particularly in dairy products and maize.

At the WTO, the issue of market access remains a big challenge especially for agricultural products which are highly protected by developed countries. Non-tariff barriers (NTBs) such as the rules of origin and rules relating to traceability, labelling schemes such as fair trade and organics, and environmental standards (such as those relating to palm oil exports) among others, also pose significant challenges to the export of agro-processed goods (Mohan et al., 2012). Implementation and enforcement of NTBs remains weak. This continues to undermine the market penetration of Ugandan agro-industrial products and it largely explains why the country has failed to take advantage of preferential market access granted by EU under the Lome convention agreement and the US under AGOA.

6.3.3 Quality, standards and certification

Over the last few years, the impact of standards and quality requirements/regulations on trade has risen considerably. For instance, food safety concerns have precipitated regulatory actions hindering trade flows in food and animal products from Uganda to other countries (UNBS 2015). In line with this, the market penetration of agro-manufactured products is undermined by substandard quality (Oboth et al., 2012). With limited capabilities, capacity and resources to fulfil stringent standards requirements (Mohan et al., 2012), Uganda has struggled to regularly meet the requisite SPS measures.

The current legislative framework within which UNBS operates is still weak and has vulnerabilities that may have negative impact on production. Outdated laws and regulations, like the Weights and Measures Act and the lack of an anti-counterfeit goods law (see section 3.2) are equally detrimental to the legitimacy of standards in the country. This shortfall is exacerbated by limited resources of UNBS (staffing, finance, and equipment) and overlapping mandates with other MDAs to enforce such standards (UNBS, 2015).

The issue of standards is also persistent throughout the Agro-Manufacturing value-chains and starts at the farm

level. A lack of awareness, incentivised systems (e.g. through prices) for quality produce, poor transportation equipment and hygiene challenges often work to the detriment of Ugandan agro-industrial products in the export markets. In the domestic market, liberalisation means that Ugandan firms have to compete with price, quality, safety and standards of imported products. The responsible parties should therefore address gaps in product quality and standards to secure and safeguard the regional and international market access. In particular, there is need to support the development of food safety standards (Food Safety Management System ISO 22000 and Hazard Analysis Critical Control System).

UNBS has been implementing two different regimes for the enforcement of standards i.e. voluntary standards, which is at the discretion of industrialists to implement as good practices; and mandatory standards which are enforced due to the effect of such products on health and safety. As such, voluntary standards were not widely adhered to by industrialists. Coupled with limited resources which enables UNBS to operate at only 50 percent capacity, a lot of gaps remained in the enforcement of standards in Uganda. Other countries, particularly Kenya, on the other hand, made all standards mandatory which facilitated their capacity development to dominate regional markets for agro-industrial products. UNBS is adopting the similar approach and has so far developed around one thousand standards. Recent efforts for standards enforcement like Pre-export Verification of Conformity (PVoC) have, however, seen more improvements in standards enforcement for imported products than for domestic products. The implication here is that it is important to develop and implement standards at the domestic level in order to be competitive both domestically, regionally and internationally.

6.3.4 Regional political stability

It is in Uganda's interest to promote and maintain regional peace to secure the regional markets for its agro-industrial products (see section 6.2.1). In South Sudan, for example, since violence broke out in 2013, trade has been disrupted and a number of Ugandan traders lost business opportunities. Annual exports from Uganda to South Sudan reduced by 29.7 percent between 2014 and 2016 specifically from USD399.8

million in 2014 to USD281.2 million in 2016 (UBoS 2017) because of conflict. Similarly, DR Congo, to which Uganda exports a number of agro-industrial products has remained fragile, posing a threat to trade. Since South Sudan and DRC are Uganda's main export destinations, the unstable political environments on the two countries undermines prospects for increased agro-exports. Uganda should thus endeavour to diversify its export markets beyond the EAC region.

6.4 Conclusion

In addition to exploring the domestic market potential, there is need to leverage the export opportunities presented by the various trade agreements. Ensuring adoption of uniform and consistent quality, standards and certification will be a vital pathway to deepening the domestic market as well as making Uganda's products competitive in international markets. While liberalisation has benefitted Uganda, there is need for some degree of protectionism to nurture the growth of domestic Agro-Manufacturing industries.

7. FINANCING FOR THE AGRO-INDUSTRIALISATION AGENDA

Finance is a key support service required at all levels of the entire agro-industry value chain (see Figure 2). Access to finance remains a constraint that needs to be addressed in order to expand the production base, improve Agro-Manufacturing capacities, and improve Uganda's domestic and international competitiveness. This Chapter examines the key financing sources and modalities that both State and non-State actors have tapped to spur the AGI agenda, and proposes alternative long-term development financing sources.

7.1 Financing Targets

The current ASSP 2015/16-2019/20 has detailed Medium-Term Expenditure Framework (MTEF) budget allocations for the agricultural sector, as well as for some of the nine priority commodities identified in this Report. Table 12, which shows excerpts from the current ASSP, demonstrates that MAAIF is constrained when budgeting resources for most of the priority commodities. The plan presents both the optimal resources required to develop agriculture as well as the constrained budget as dictated by MTEF. Table 12 also indicates that the commodities

selected in this Report are underfunded—from the start to the expected end of the ASSP period. For the selected commodities, the total financing deficit is estimated to be UGX 1,052 billion over the five-year period. Most notable among the underfunded commodities is meat and livestock, where the financing gap will be equivalent to UGX 432 billion during implementation of ASSP, followed by tea with a gap of approximately UGX299 billion. Overall, such deficits have implications for unlocking the supply of agricultural raw materials to sustainably support the AGI agenda.

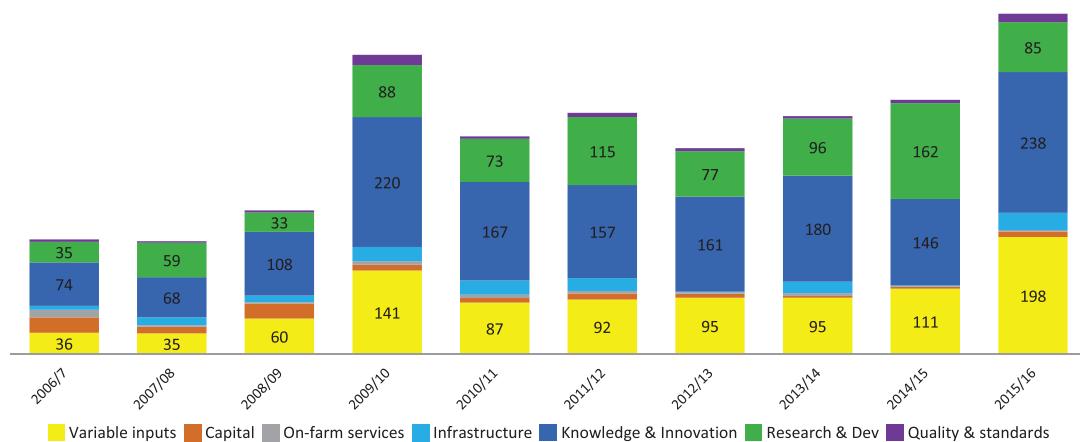
Table 12: Financing gap for some of the selected priority commodities (UGX billion)

Commodity	2015/16	2016/17	2017/18	2018/19 ^p	2019/20 ^p	Total
Panel A: MTEF Ceiling						
Vegetable Oil (Oil seed/Oil Palm)	20.0	21.0	22.0	23.0	24.2	110.2
Tea	41.4	44.3	45.6	47.4	54.6	233.2
Coffee	38.3	38.6	39.8	50.8	63.4	230.9
Cotton	7.4	6.2	6.2	7.6	9.6	37.0
Meat and Livestock ^b	40.0	61.5	69.6	81.4	108.9	361.4
Panel B: Required by the sector						
Vegetable Oil (Oil seed/Oil Palm)	22.5	41.7	36.6	48.6	50.9	200.3
Tea	41.9	103.2	125.5	127.4	134.2	532.2
Coffee	14.2	67.6	83.7	100.8	109.4	402.7
Cotton	7.0	19.2	20.4	23.7	25.7	96.0
Meat and Livestock	57.8	181.9	176.3	178.7	198.9	793.6
Panel C: Financing Gap (A-B)						
Vegetable Oil (Oil seed/Oil Palm)	-2.5	-20.7	-14.6	-25.6	-26.7	-90.1
Tea	-0.5	-58.9	-79.9	-80.0	-79.6	-299.0
Coffee	-2.9	-29.0	-44.0	-50.0	-46.0	-171.8
Cotton	0.4	-13.0	-14.2	-16.2	-16.1	-59.0
Meat and Livestock	-17.8	-120.4	-106.7	-97.3	-90.0	-432.2

Notes: ^p means projected values; ^b meat and livestock includes both dairy and beef.

Source: Author's compilations based on ASSP and MTEF.

Figure 33: Distribution of actual public expenditure towards the production base (UGX billion)



Notes: Variable input includes seeds, fertilisers energy, credit, etc; Capital includes machinery and equipment, on-farm irrigation, other basic on-farm infrastructure; on-farm services includes pest & disease control/veterinary services; on-farm training, technical assistance etc; knowledge and innovations includes extension/technology transfer, training and technical assistance; and quality and standards includes inspection for both veterinary and plants.

Source: Authors computations based on MAFAP database, FAO.

7.2 Sources of Finances

7.2.1 Direct Government Funding

The Uganda Government funds agro-industrial development mostly through the following channels – direct Budget allocation to the key ministries (MAAIF and MTIC) as well as to supportive ministries (such as Ministry of Works; Ministry of Energy; Ministry of Information; and Ministry of Local Government, among others). There are also other channels (such as ACF) that focus mainly on reducing lending risk to agriculture – through partnerships with the private sector.

Development finance to support the production base
 Figure 33 presents the composition of development expenditure to support the agricultural production base. Variable inputs (such as seeds, planting materials, fertilisers, etc.) and knowledge and innovation services (such as agricultural extension, training and technical assistance) account for the largest share of development finance – the share is growing over time. However, there is need to explore how this package is delivered to the farmers, since the impact of this funding cannot be traced on the ground as observed from the production trends presented in sub-section 4.2.2. Figure 33 also reveals low Government support, through low allocations, to farm capital (machinery and equipment, on-farm irrigation, and other basic on-farm infrastructure), quality and standards, as well as

to farm services (veterinary services, on farm training, plant pest and disease control).⁶³

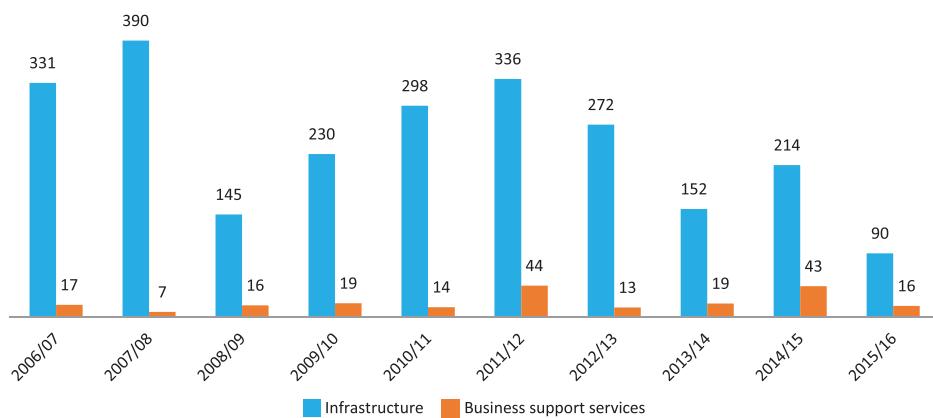
Overall, public support towards agricultural production has not been sufficient to adequately fund all the key support services (such as irrigation infrastructure, R&D, and quality and standards) required to transform the agricultural production base. As much as the resource envelope is limited, there is need to revisit the current Budget allocation within and across the selected commodities to ensure a sustainable production base. As discussed in Section 4.1, farmers are not currently using the full package of productivity enhancing technologies. Therefore, there is need to shift the public expenditure towards delivery of such packages.

Development finance to support market access

Government support to market access has focused construction of road networks including feeder roads across the country; construction of sub-national

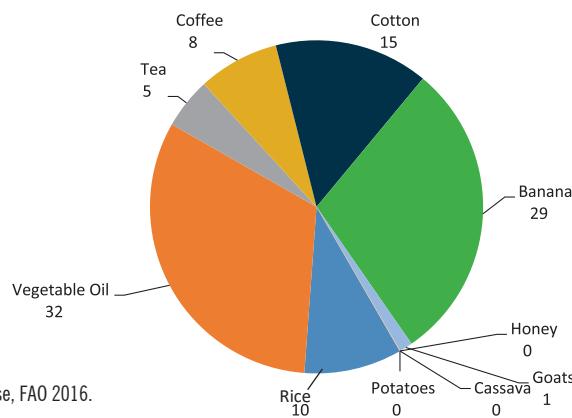
⁶³ With respect to infrastructure (storage and off-farm irrigation), public spending expenditure towards off-farm irrigation is still meagre and unstable. Between 2006/07 and 2013/14, the allocation was less than UGX 100 million, it increased to UGX 500 million in 2014/15 but decreased thereafter. This above scenario is partly because the government has left investments in storage infrastructure to mainly the private sector. Katunze et al. (2017) reported that limited investment in storage infrastructure exacerbates instability of agricultural prices and further distorts supply of agricultural raw materials to agro-processors. Furthermore, Hodges et al. (2011) reported that postharvest losses under mechanized postharvest mechanism-involving sealed storage, were approximately 1-2 percent compared to 5-10 percent at the open storage stage in the traditional postharvest chain.

Figure 34: Public expenditure towards marketing (UGX billion)



Source: Author's computations based on MAFAP database (FAO 2017).

Figure 35: Distribution of public support to selected commodities (%)



Source: Author's computation based on MAFAP database, FAO 2016.

and local markets (at LC one level); support to the development of warehouses; one-stop border posts; and soft infrastructure such as Automated System for Customs Data (ASYCUDA 3) to ease clearances of goods.

Figure 34 shows public expenditures on infrastructure (rural and feeder roads) targeting marketing aspects of the agricultural value chain. The focus on rural infrastructure is commendable. Previous studies such as Balat et al. (2008) show that high marketing costs caused by poor rural infrastructure had forced many Ugandan farmers to produce staple food crops for household consumption rather than venturing into commercial agriculture. Nonetheless, public expenditure towards other key support services to support agricultural marketing remains abysmally small and highly erratic. Limited investment in marketing support services is likely to derail collective marketing, bulking, and improvement of quality and standards improvement

needed for smallholders to raise volumes of raw materials to sustainably supply Agro-Manufacturing industries.

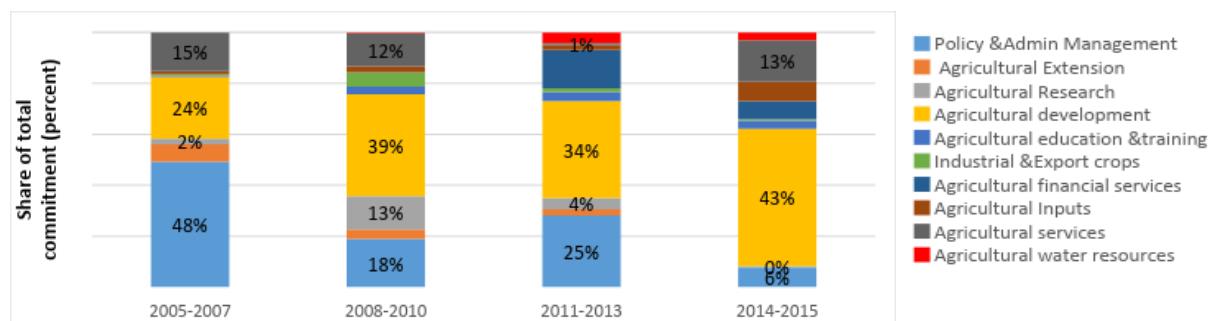
Where is information on development finance towards processing?

Crop specific development finance

Apart from public spending on critical stages of the agricultural value chains, allocations to specific agricultural commodities is important as well.⁶⁴ Figure 35 shows that vegetable oil and banana account for over 60 percent of total public spending for agricultural commodity. The focus on vegetable oil is attributed to development partner interest—notably IFAD in vegetable oil. Moreover, there has been strong public commitment in establishing an

⁶⁴ Despite the variety of agricultural commodities produced in Uganda, both cash crops and food crops are concentrated in a few products. For example, in 2016, coffee exports of USD 371 million accounted for more than one-third of all Uganda's agricultural exports of USD 1,096 million (MoFPED, 2017).

Figure 36: Agriculture ODA sub-sector allocations to Uganda (%)



Note: Commitments based on a 3 years moving average.

Source: Author's computations based on OECD 2017.

oil palm plantation and associated out grower scheme through the Vegetable Oil Development Project. A review of literature indicates that Government's prioritisation of oil palm was in the interest of export diversification and import replacement. On the other hand, the continued spending on banana production could be justified from Government's effort to develop banana flour as a way of value addition to increase household incomes. Nonetheless, the limited public expenditure on the nine commodities selected in this Report could undermine national effort to Agro-Industrialise.

7.2.2 Development Partners

Overseas Development Assistance (ODA) composition: During the last two decades, annual ODA commitments to Uganda's agriculture sector increased fivefold from USD 52 million in 1997 to USD 259 in 2016.⁶⁵ However, at times, commitments do not match disbursements. For example, ODA commitments to the sector increased consistently from USD 156 million in 2013 to USD 259 in 2016, but only USD 144 million was disbursed in 2013 and USD 117 million in 2016. This trend is partly attributed to delays by Government to provide counterpart funds, low project implementation capacity in MAAIF, as well as low absorption capacity of donor funds (Interview with World Bank and MoFPED).

Considering the ODA allocations within the agricultural sector, Figure 36 reveals a substantial amount going to agricultural policy and administrative management⁶⁶ although declining over time. There is also a growing focus

towards agricultural development - which encompasses financing of integrated projects and general farm development. However, less than 10 percent of the funds was committed to agricultural extension, R&D of industrial/export crops, agricultural inputs, agricultural water resources, and to key support services needed for agricultural production and Agro-Manufacturing.

Channels of aid delivery: ODA is channelled through budget support and off-Budget support. Figure 37 shows that ODA funding through Budget support, declined from USD 32 million in 2007 to USD 18.3 million in 2008. In addition, ODA commitments through project type interventions increased ten-fold from USD 22 million in 2007 to USD 228 million in 2016. The rising importance of project type intervention by donors could be explained from the standpoint of expediting implementation and minimising of risks of aid misuse through corruption.

Previous research (such as Bandstein, 2007; Brown et al., 2009; Hearn et al., 2009), reported that aid through project support is ineffective. This is because project supported interventions tend to run parallel to government programs and in turn undermine rather than support them. Moreover, project based funding is short term and hence generally fails to consider longer-term investments in the agriculture sector. In this regard, development partners should instead commit to strengthening the capacity of Government institutions to manage donor funds. There is also need for Development Partners to harmonise their activities and funding with those of Government, in particular the proposed program approach to AGI as discussed in Chapter 8.

65 OECD Credit Reporting database accessed at <https://stats.oecd.org/Index.aspx?DataSetCode=CRS1#> on 21/June/2018.

66 Brown et al. (2009) reported that most donor funding allocated to agricultural policy, management and administration activities includes projects whose specific focus is unknown.

Figure 37: ODA commitments to agriculture sector by type of aid (USD millions)



Source: Author's computation using data from OECD, credit reporting system database, 2017

7.2.3 Private financing

The share of agriculture in total private sector credit in Uganda increased from 12 percent in 2008 to 18 percent by the end of 2017. The low share of agricultural sector in total commercial lending is a signal of the high perceived risk (see sub-section 4.3.4 that financial institutions have towards the sector). Commercial banks, who account for 90 percent of private sector credit to the economy (UBA, 2018) tend to hold back from lending to the agriculture sector. Apart from trading in Government bonds and Treasury Bills, commercial bank credit to the private sector over the past 10 years to 2017 has been dominated by building, mortgage and construction; trade; personal and house loans, and manufacturing.

Table 13 presents overall trends of private sector credit to agriculture as well as allocation of credit within the sector. Overall, private credit to the agriculture sector increased three fold from UGX 785 billion in 2010 to UGX 2,317 billion in 2017. Considering credit allocation within the sector, financial institutions are increasingly focusing on the low risk, high cash flow and well collateralised segment of the value chain i.e. agro-processing and manufacturing, leaving the high risk agricultural production the same way (Table 13). Specifically, the share of loans to processing more than doubled, from 14.4 percent in 2008 to 32 percent by 2017.

Table 13: Outstanding loans to agriculture (UGX Bn) and shares (%) of different sub-sectors

	2010	2011	2012	2013	2014	2015	2016	2017
Outstanding loans (UGX, billions)	785	1,068	1,257	1,336	1,531	1,986	2,063	2,317
Share of outstanding agricultural loans (%)								
Agricultural production	26.4	24.8	25.4	25.3	26.5	24.3	24.7	25.8
Agricultural processing	14.4	12.0	13.8	18.4	24.6	21.8	23.1	32.0
Marketing	10.7	12.0	9.5	10.5	12.5	11.4	12.6	11.2
Manufacturing based on agro-products	48.6	51.2	51.4	45.8	36.3	42.6	39.6	31.0
<i>Sub Total</i>	100	100	100	100	100	100	100	100

Notes: Financial institutions considered are: commercial banks, credit institutions, and micro-finance deposit institutions (MDIs).; BoU presents information as on agriculture which almost covers the entire AGI chain players.

Source: Bank of Uganda (2018).

Table 14: Channel of private sector finance to the Agriculture sector (%)

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Commercial Banks	98.4	97.8	96.2	95.8	95.1	94.4	94.4	94.2	94.8
Credit Institutions	0.4	0.5	0.7	0.9	1.5	2.0	2.1	2.2	2.4
MDIs	1.1	1.8	3.1	3.3	3.4	3.6	3.5	3.6	2.9
<i>Sub Total</i>	<i>100</i>								

Source: Bank of Uganda (2018).

Channels of private credit towards AGI: Private sector credit towards Uganda's agricultural sector is largely supplied by commercial banks (Table 14), and commercial banks account for about 95 percent of all outstanding loans to agriculture. Nonetheless, the share of loans by both Micro Deposit Institutions (MDIs) and credit institutions increased from 1.5 percent in 2009 to 5.3 percent in 2017.

Disaggregated analysis⁶⁷ reveals that MDIs lend mainly for agricultural production and, to a limited extent, marketing. The share of loans to agricultural production by MDIs increased from 52 percent in 2010 to 74 percent by the end of 2017, while the share allocated to marketing reduced from 39 percent to 22 percent during the same period. The share allocated to agro-processing and manufacturing by MDIs is very small (less than 5 percent). Credit institutions, also predominantly lend for agricultural production (74 percent by the end of 2017) and marketing account for a relatively lower share—15.4 percent by the end of 2017.

In sum, these findings demonstrate the fact that credit application requirements through MDIs and credit institutions are not cumbersome for farmers. Even though these institutions attempt to serve a segment largely neglected by commercial banks, they lack long-term savings to fund a stable supply of funds needed to provide long-term loans. Moreover, loan transactions with MDIs and credit institutions are grossly small and these institutions depend on donor finance for on-lending (Meyer et al., 2014).

7.3 Financing mechanisms

There are four main mechanisms for delivering public credit to the agricultural sector, namely - PPPs, group

lending, medium to long term financing, and SACCO/cooperative. A description of each mechanism below.

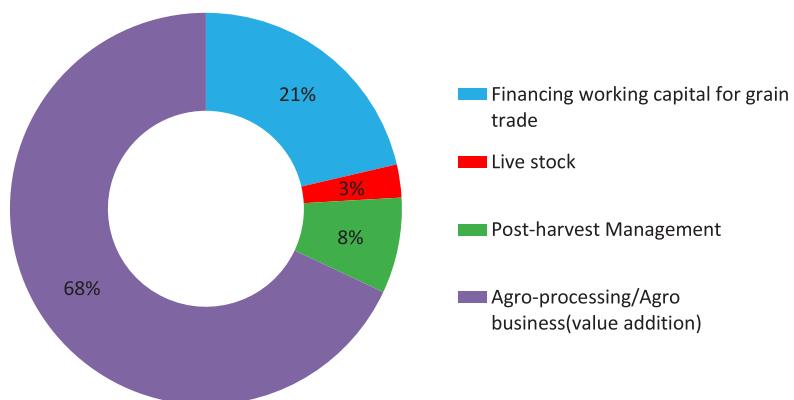
7.3.1 Public Private Partnerships

The Public Private Partnerships (PPPs) are a potential source of finance to the AGI agenda. In the past, the donor community has largely adopted PPPs as a way of providing extension services and credit. Key lessons for upscale could be learnt from the 2005 Credit Guarantee Scheme under Centenary Rural Development Bank (CERUDEB). Following a loan guarantee support of USD 0.5 million by the Rockefeller Foundation from 2005-2008, CERUDEB was able to provide credit to various new farmers in rural areas that were not previously reached. The Scheme was so successful that the Africa Green Revolution Alliance (AGRA) drew upon this success story and negotiated further loan guarantee deals Kenya and Tanzania (Poulton and Macartney, 2011).

The Agricultural Credit Facility (ACF) is another good example of a PPP, and was set up to promote agro-processing and marketing. The scheme involves participating financial institutions (PFIs) (such as commercial banks and UDB), contributing 50 percent of the required funding and the rest is contributed by GoU. Through this scheme, GoU through BoU avails up to UGX30 billion annually for on-ward lending to agribusiness. While several activities have been funded, 68 percent of funds have gone to agro-processing (for farm machinery, plants and equipment) (Figure 38) mainly accessed by large firms. However, previous evaluation of the scheme cites unwillingness of some PFIs to contribute to the scheme; and some degree of abuse where preferential interest rates charged were higher than the agreed interest rate. There is also need to re-orient the portfolio of the ACF to close the financing gaps along the entire AGI chain (e.g. include production).

⁶⁷ Analysis available upon request.

Figure 38: Activity funded under the ACF as at December 2017



Source: Author's computation based on Bank of Uganda (2017).

7.3.2 Group lending

Government also extends venture financing to citizens through the Youth Livelihood Program (YLP) (UGX 265 billion for five years) and Uganda Women Entrepreneurship Program (UWEP). The programmes are implemented by MoGLSD and provide support in form of a revolving start-up credit for projects and income generating activities initiated by youth and women groups. The finances are interest free but the groups are expected to pay back. As much as a high share of YLP funds go to support agricultural projects (42.4 percent), these projects are not transformative. In addition to YLP, the MoFPED as well as MoGLSD and Centenary Bank have since 2012 operated the Youth Venture Capital Fund (YVCF). This scheme offers individual loans to the youth at a fixed interest rate of 15 percent per annum.⁶⁸ None of these group lending initiatives have however, been transformative.

7.3.3 Medium to long-term financing

a) Equity financing

Equity financing remains significantly unexplored in the Ugandan market, but it could provide an alternative form of financing either independently or as a mix to debt to lower the cost of debt sources and optimise capital mix of agro-industrial businesses. Under equity financing, capital is raised through the sale of shares in an enterprise for business purposes. This can happen through stock exchange where companies can be publically listed, or through private equity where individuals or private companies directly buy shares in a

business. The latter would be more practical in Uganda where the securities exchange is yet to gain prominence. The advantage with equity finance is that some of the key obstacles to debt financing are waived. This is because most equity investors are willing to take relatively higher risks than debt financiers, and there is no interest to pay. Equity finance also does not require collateral, provide long term financing, and usually comes with experienced business managers who provide technical support for business growth.

However, besides a good macroeconomic environment, there are specific enablers that need to be in place for equity financing to work. These include a developed capital market, formal businesses with good corporate governance, supportive regulatory environment, and a pipeline of bankable projects. These are qualities our economy and the businesses in it lack. It is also important to note that by buying shares, equity investors acquire ownership stake in the business (usually minority ownership), meaning business owners must be open to the idea of joint ownership of a business they most likely started solely. This is something many Ugandan SME owners may find uncomfortable.

What can we do to attract equity financing for Agro-industrialisation? There are key demand and supply side factors that need to be in place for equity financing to thrive in the agricultural sector. At production level, people need to have a business approach to agriculture. For example, instead of just owning farms, people need to own farms as registered businesses with shares,

68 Between 2012 and 2017, at least 26,944 youths across Uganda benefited from the YVCF with a loan disbursed amounting to UGX 95.7 billion (MoGLSD, 2018).

so that an interested equity investor can find it easy to make an entry and exit through buying and selling shares respectively. In an economy which is at least 50 percent⁶⁹ informal and about 92 percent⁷⁰ of businesses are not registered, there is much work to be done in incentivising agri-businesses to get incorporated.

The general mind-set of sole ownership of businesses also needs to change. It is a good thing to start a business for the family's future, but families must know that they can still exploit more growth opportunities through sharing their business without losing control of it. There is, therefore, a need for a shift in norms surrounding ownership.

There is also need to have a strong regulatory environment and a more developed capital market. Equity capital will not go to a market that is not secure. For example, rational investors will not put their money in a business if they are not sure the business will stay. In Uganda, a number of unsecured companies have in the past been used to defraud people of their money in the name of equity investment. In such circumstances there is no safeguard to people's equity investments unlike the debt market that often has safeguards like collateral. This calls for a strengthening of the capital market to enhance security of venture financing. Further, Uganda's existing tax regime is not competitive for equity investors. Compared to Kenya, for instance, while Uganda has the same rate of corporate income tax on private equity firms, its withholding tax on dividends, withholding tax on management fees and capital gains tax are all more than three times higher (Deloitte, 2016).

Equity financiers scout for bankable businesses. Unlike established companies who have public track record and can usually go for initial public offers, private equity financiers usually go through a thorough due diligence process to establish bankability. This requires agri-businesses to have a track record of corporate information (especially credit history), with which their worth and potential can be determined. Unfortunately, many SMEs in Uganda lack corporate records⁷¹. There is need for businesses to cultivate a habit of

keeping corporate records. The United Nations Capital Development Fund (UNCDF) in Uganda believes that digital finance can help improve this and is piloting a project to incentivise SMEs to digitise their financial transactions.⁷²

Can equity financing work for Agro-industrialisation?

There is credible evidence that equity finance can work for agro-industry in Uganda. Pearl Capital Partners (PCP), Uganda's only investment company licensed by Capital Markets Authority,⁷³ has been instrumental in financing the growth of several agro-business ventures, one being Biyinzika Poultry Limited. In addition to the cheap funding given, PCP secured a seat in Biyinzika's Board and was able to provide technical support. PCP has also partnered with the EU, International Fund for Agricultural Development (IFAD) and the National Social Security Fund to implement the Yield Uganda Investment Fund to finance agri-business, where PCP is the fund manager. Using a similar arrangement, initiatives like building tea and coffee processing plants do not need to be solely funded using public funds or from debt sources. However, Government will not only have to work closely with development agencies to de-risk agriculture, but must also innovate its own blended facilities so that more private investors are attracted to put equity in to agro-industrial investments.

b) Development banks

The Uganda Development Bank (UDB) provides good insights for development financing in the country. UDB is mandated to finance key priority growth sectors comprising primary agriculture, agro-processing, and manufacturing as well as trade services, and extends credit to formal enterprises. A review of the bank's loan portfolio during 2015-2017 presented in Figure 39 reveals that loan advances towards primary sector (which include agriculture production) is growing but remains considerably low compared to the secondary sector (agro-processing and manufacturing), as well as the services sectors (educational, finance services, health and hotels). Finances for promotion of trade services also remains fundamentally low. It must be noted that UDB remains severely undercapitalised, with the loan

69 URA estimates

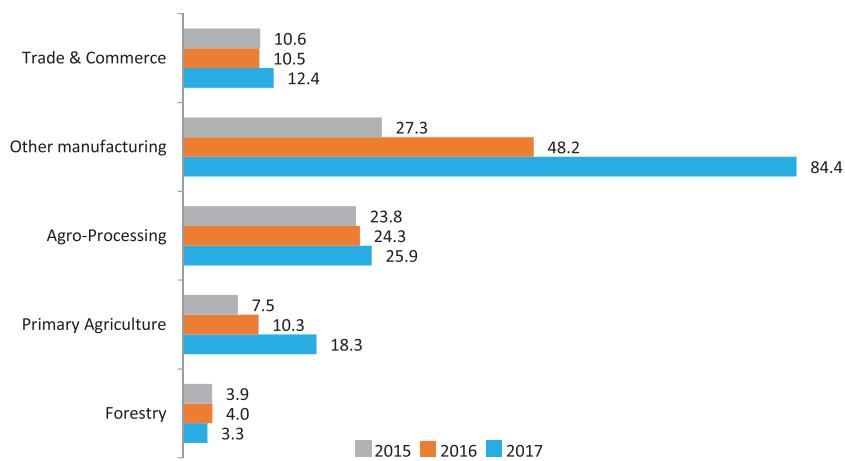
70 Data from World Bank enterprise survey 2013.

71 Interview with USAID

72 Interview with UNCDF in Uganda

73 According to interview with Pearl Capital Ventures

Figure 39: Trends in UDB loan portfolio by key sectors (UGX billion)



Source: Uganda Development Bank data (2018).

portfolio standing at only UGX 241.6 billion at the end of 2017. Recapitalisation of the bank requires Government to consolidate all scattered Government financing schemes⁷⁴ into the UDB as South Africa and Rwanda did to revamp their development banks. In addition, Government could introduce a development levy on all imports, as was the case in Brazil, to raise sufficient resources for lending. Furthermore, UDB needs to be re-linked to BoU to enable faster mobilisation of long-term financing.

7.3.4 SACCO/Cooperatives

The Microfinance Support Centre Limited (MSCL) was established to provide financial support to SACCOs that meet minimum requirements such as having at least 300 members for on-lending to viable sectors (Munyambonera et al., 2014). The objective of this financing mechanism was to provide finance to the agriculture and commercial sectors at preferential rates of 9 and 13 percent respectively, to SACCOs for onward-lending to individuals (ibid). Revamping cooperatives is an avenue for raising financing for AGI (e.g. adopting models similar to the Kalangala Oil Palm Growers Association and the Uganda Ginners and Cotton Exporters Association).

7.4 Alternative Financing Models

7.4.1 Agricultural loan guarantees

Development partners have come up with trust funds that offer innovative financing to the agricultural sector. For

example, since 2010, the Danish supported trust fund, aBi Trust, has offered an agricultural loan guarantee scheme (ALGS) to financial institutions to boost private investment.⁷⁵ The scheme provides a maximum cover of 50 percent of the outstanding principal. The volume of loans disbursed under the agricultural loan guarantee scheme has grown significantly, rising from 4,000 in 2010 to over 21,680 by 2016. The total amount of outstanding loans underwritten by the programme increased from UGX 8.3 billion in 2010 to UGX 111 billion at end of 2016 (aBi Trust, 2017).⁷⁶ This demonstrates considerable impact in the sector.

7.4.2 Contract farming

Contract farming is a forward contractual agreement between farmers and processing/ marketing firms with the objective of meeting specified production supply targets set at predetermined prices (Eaton and Shepherd, 2001). Contract farming is a unique and innovative financing modality because it allows farmers access to production inputs, output markets and other benefits (Masakure and Henson, 2005). While only a few cash crops such as barley (Nishiura, 2014), sorghum, rice (Epelu and Nalukenge, 2009), sugarcane (Okumu, 2015), and sunflower have exploited this mode, nonetheless, there are possibilities that contract farming can be utilised in addition to other financing modalities even for competitive value chains (e.g. new NUCAFE farmer ownership model, oil palm production model in Kalangala).

75 The participating partner institutions include: Centenary Bank, Stanbic Bank, Housing Finance Bank, Finance Trust, Opportunity Uganda, PRIDE, and FINCA.

76 aBi-Trust Annual Report (2016).

74 ACF, YLP, Micro finance Support Centre, NAADS etc.

7.4.3 Warehouse receipt systems

Warehouse Receipt Systems (WRS) are an innovative financing mechanism that permits farmers/agro-traders and processors to access financial services using their commodity as collateral. Key specific benefits include improving rural commodity trade infrastructure and the quality of stock (Katonze et al., 2017) which are equally beneficial to spur and sustain AGI. WRS is not new to Uganda as indicated by Katunze et al. (2017). It was very prominent for coffee and cotton value chains under the 2008 public WRS Project, and presently largely covers the maize value chain under a private arrangement. Commercial banks such as Stanbic Bank and Housing Finance Bank are providing credit through this mechanism. Despite its benefits, the public WRS face a number of challenges such as awareness creation, funding and storage infrastructure, among others (see Katunze et al., 2017). These challenges need to be addressed and, where possible, the system should be opened up for other commodities to enable sustainable provision of raw materials for AGI.

7.5 Conclusion

Current financing towards AGI remains scattered, short term and inadequate. There is need to harmonise development financing between Government and Development Partners and to reorganise farmers into groups or cooperatives (see Chapter 4) to ease access to credit through commercial banks. Government also should scale up the crop insurance support so as to mitigate risks which have over time hindered commercial banks from lending to farmers.

Fostering and sustaining the AGI agenda requires long-term financing, which can be achieved through re-organisation of the scattered public resources. The funds now under group lendings and Micro-Finance Support Centre should be consolidated and channelled through UDB for greater impact. Furthermore, there is a need to recapitalise UDB and promote equity financing. In addition, ACF should adjust the funding mechanisms to target AGI, e.g. lend to cooperatives.

Different financing arrangements are required at different segments of the agro-industrial value chain. Funding of some segments is of public nature requiring

direct investment from Government (such as R&D), while others are of a private nature. Within the AGI framework, there are areas (such as establishing industries, storage infrastructure, etc.) that require some degree of initial government investment to attract private players.

Furthermore, suppliers of finance seem to favour Agro-Manufacturing over production, partly based on the degree of risks involved. In other words, there is need to leverage on the goodwill of Agro-Manufacturing industries among private financiers for a sustainable AGI agenda. There is also need to re-orient UDC to raise development financing from the capital markets, as well as establishment of a unit under UIA that promotes equity financing.

Overall, the evidence is that there exists a myriad of fragmented financing mechanisms, each with different legal and regulatory frameworks, delivering small amounts of finances to the agriculture sector. Despite their success, these channels are still riddled with a number of inefficiencies which present barriers for effective delivery of finances to transform the sector. There is therefore need to coordinate all existing financial initiatives into an integrated legal framework for effective delivery of finances to the sector.

8. KEY MESSAGES AND PROPOSED POLICY ACTIONS

This Chapter summarises the key policy messages arising from the entire report. In addition, the Chapter proposes policy actions that state and non-State actors may use to advance the AGI agenda.

8.1 Key Messages

- i) **The current enabling environment presents a supportive foundation to propel investment along the AGI value chain.** However, challenges remain with respect to fragmented and uncoordinated institutions with overlapping mandates, in addition to gaps in the policy and regulatory frameworks. There is also limited integrated planning and budgeting to work towards a common goal (in this case, AGI). Accordingly, there is need to strengthen the vertical and horizontal linkages between different players across segments of the AGI value chain.
- ii) **Broad and non-transformative priorities.** No country has ever attained structural economic transformation via a generic regime of *agro*-industries. All successful performers, such as Chile, Malaysia and others, historically selected a few game changers for state support. The Report recommends initially focusing on nine strategic commodities out of 15 priority crops under ASSP, with clear monitoring, evaluation and learning for scaling up to other commodities. Start small with few *game changers* (commodities) and clear fundable priorities.
- iii) **Uganda needs to transform Government into a key strategic player in the economy.** The ultimate goal is to attain the three-pronged objective of economic nationalism – strengthening the state, transforming the economy into a high-tech manufacturer, and enriching the citizens. This is certainly a challenge, but is possible.
- iv) **Uganda needs to adopt smart industrial policies in the domestic political economy.** Neither the WTO rules nor the FTAs can uproot creative industrial policies. The struggle for late industrialisation now needs to be launched more shrewdly in the domestic economy

through the following tools of smart industrial policy:

- a) High quality education and Skilling Ugandans (at all levels);
- b) Scientific and technological innovation – guided by expenditure of at least 2% of the GDP on R&D as the African Union advises. The aim is to build a culture of STEM (science, technology, engineering and mathematics) disciplines;
- c) Establishment, revival and/or activation of development-enhancing institutions beyond the current model of SACCOs (such as Export Processing Zones, UDC, and producer cooperatives).
- d) Local content requirements, performance contracts for firms or farms that get state favours (such as tax holidays; land for investment, and cheap, state-guaranteed credit) and monitoring their performance;
- e) A strategy of *smart* procurement through which Government becomes the largest market for domestic manufacturers. For example, under Uganda's strategy of BUBU, the budgets for procurement of uniforms for Defence, Police and Prison services should be strictly used to purchase Ugandan textiles, manufactured from Ugandan cotton, procured from Ugandan farmers, increasingly using Ugandan investment capital.

Weak and unsustainable agricultural production base. The current production base is driven by fragmented small-scale farmers who are not adequately supported by services (such as extension, R&D, innovations, insurance, irrigation, and production infrastructure) to sustainably support Agro-Manufacturing industries. This has resulted in decline in productivity over time.

vi) **Non-transformative Agro-Manufacturing industries.** Agro-Manufacturing industries are constrained at two fronts – a weak production base to sustainably supply raw materials, and an unfavourable business operating environment (such as high cost of electricity, cost of capital, and corruption). These have inhibited the growth of Agro-Manufacturing industries. As such the industries have remained small-scale, operating below installed capacities. For example, cotton ginneries are operating at about 20 percent with almost one product, cotton lint. This impacts the extent to which Uganda is integrated in the global cotton value chains; as well as taking advantage of the domestic market opportunities. In addition, these industries are characterised by low innovation and R&D capabilities which impact their product space, resulting in low value products. The Report also notes the limited linkages of the upstream, midstream and downstream activities.

vii) **Limitations in taking advantage of the domestic and international markets.** On one hand, Uganda has failed to exploit the domestic market, and the country imports substantial amounts of agro-products that can be produced locally. This is in part due to an unfavourable policy environment that focuses on the international markets. On the other hand, Uganda has signed several trade agreements (multilateral, regional, and bilateral) but is yet to fully exploit the opportunities that the agreements offer.

a) The practice of full liberalisation is not ideal in an environment where competitive and free trade is to be nurtured. In the real world, trade is hardly, if ever, free. Moreover, no successful late industrialisation has ever taken place via free-trade.

b) The restrictive WTO rules, the widespread FTAs, and the unequal BATs have undoubtedly complicated late industrialisation. The alternative to market fundamentalism is strategic state guidance of capitalist development.

c) This is invariably propelled by economic nationalism, not liberalism.

viii) **Uncoordinated and unsustainable development financing to spur agro-industry:** Finance is a key support service required at all levels of the entire agro-industry value chain. Considering the supply side of development finance, public funding for agro-industry remains inadequate. The available funding initiatives are scattered among different agencies in uncoordinated and non-transformative manner. Another key source of development funding is through Development Partners. However, increasingly, the support is channelled through projects rather than programmes which is unsustainable.

ix) **Recruit the best and most patriotic national skills to take charge of national developmental affairs.** Uganda must master the unwritten, unalterable law of global political economy relations. In the competitive international realm, nation-states get what they negotiate, not what they deserve. Uganda must, therefore, strengthen the team that negotiates with foreign actors on our behalf.

8.2 Policy Actions

This Report proposes four interrelated action points to foster a transformative and sustainable AGI path for Uganda: (i) integrated model for agro-industry; (ii) Program-based approach; (iii) revisiting the current institutional framework; and (vi) strategic role of government beyond provision of an enabling environment. Each of these policy actions is discussed in detail below.

8.2.1 Integrated model for agro-industry

The Report proposes an institutional framework to ensure that the entire agro-industry chain is functioning effectively. First, it identifies an integrated model as the best model of re-organising production systems for agro-industry. This model identifies Agro-Manufacturing industries (especially high-end manufacturers) to be the game changers with Government playing a key strategic role in the provision of public services such as R&D and extension services but guided by the industrial requirements. In addition, the high-end manufacturer should have the capacity to build competitiveness through adding value to meet both domestic and global markets. It was evident that the different agro-industry segments (i.e. production, manufacturing and markets) are not integrated. The enablers have been addressed in a piecemeal and uncoordinated manner to achieve the shared expectations. The proposed model addresses these shortcomings more coherently.

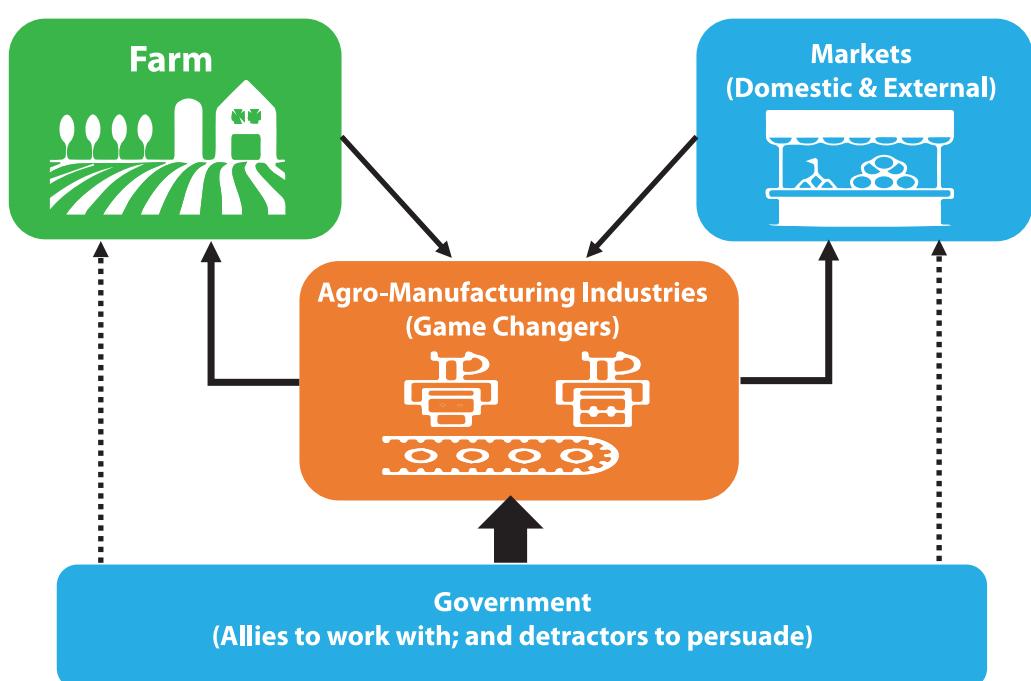
For a sustainable agro-industry foundation, the model should develop and fulfil the following attributes: (i) the ability to organise production and procurement from small-scale farmers; (ii) the extent to which modern technologies and practices are adopted by small-scale farmers; (iii) the ability to mobilise financial and

other support services; (iv) the capacity for building competitiveness through adding value to meet both domestic and global markets; and (v) the structure and sustainability of the model in the long term.

For transformative AGI to be realised in Uganda, Government, in partnership with Agro-Manufacturing industries and other institutional actors such as Development Partners, must seek to realise the following:

- i) Improve the organisation of agricultural production (by coordinating the procurement of agro-inputs such as improved seed for (small-scale farmers);
- ii) Increase the adoption of modern technologies and practices (e.g seeds, tractor hire services, drones, solar-powered irrigation technologies, etc.) by:
 - (a) Reviving people's producer cooperatives;
 - (b) Restoring the (district) demonstration farms, and/or
 - (c) Activating sub counties as instruments of rural agricultural transformation;
- iii) Mobilise patient capital to meet the unique financing needs of agriculture and related

Figure 40 Proposed integrated model for Agro-industrialisation for Uganda



- iv) support services; and Rethink the issue of market creation by following a cautious approach to the competitive external markets (which are outside our control) in favour of a creative approach to domestic market creation (for example, by causing all MDAs to prioritise procurements from local manufacturers). Activating the MTIC policy of BUBU would contribute significantly in realising the goal of domestic market creation, if only Government (represented by MDAs) could actively and effectively implement policies.

To make the integrated model work over the long term, there is need for Uganda to observe the 3Cs – that is commitment, coordination and cooperation of the key players along the AGI value chain.

Specifically, Government is urged to shift from what is currently being done, that is, creating a minimalistic, pro-market ‘enabling’ environment to a new dispensation under which Government performs the following strategic roles:

Provide effective coordination of all actors in the AGI program across relevant MDAs and non-state actors

- Ensure that the relevant MDAs embrace this approach;
- Create awareness to ensure a sense of ownership;
- Direct non-state actors to work within this common action.

Ensure integrated planning and budgeting are aligned to a transformative AGI agenda

- Start with fewer and fundable priorities in the short-to-medium term, including:
 - a) Identify critical areas of public and private investment for these fewer priorities;
 - b) Identify and forge partnerships with high-end manufacturers that are transformative, and not based on patronage and politicking. These partnerships should be guided by well thought-out performance contracts. After the initial start-up, support

from Government must be subject to satisfactory performance. For instance, the manufacturers should be tasked to continuously deepen the value chain (moving from light to high-end manufacturing); and finally,

- c) Identify niches for direct public investment support.

Re-organise and strengthen production and productivity to sustainably support Agro-Manufacturing industries

- Re-organise production for Agro-Manufacturing industries
 - a) Revive people’s cooperatives and encourage them, where possible, to control the full spectrum of Agro-Manufacturing value-chains for the benefit of members (and national development);
 - b) Facilitate the formation of effective farmer groups/associations/cooperatives to smoothen information flow between farmers and the Agro-Manufacturing industries to ensure sustainable supply of raw materials;
 - c) Revive the agro-input system that will enable producers to access improved seeds technologies, fertilisers, drones, tractor-hire services and other inputs without having to pay upfront. These costs could be subsidised by the State or recovered when farmers/ cooperatives bring their produce for sale;
 - d) Re-organise the current input subsidy to be demand driven and owned by farmers by contributing a *small* proportion on the prices set by implementing agencies to increase the survival rate of crop seedlings; and
 - e) Develop and maintain a comprehensive farmer registration database to guide interventions.
- Re-organise the management and use of public institutional land (such as land for the prisons, Government ranches etc) as a quick response to kick start AGI e.g. for nuclear farms/farmers

- as out-growers
- a) Identify, map and gazette public land; and
- b) Support private sector to gain access to this land for commercial production conditional on set guidelines and performance targets.
- Support R&D that is tailored to specific Agro-Manufacturing industries (timely delivery of appropriate varieties, quantities, and quality) in the short- to medium-term. In the long term, support public-private partnerships to promote a national innovation system
 - a) Support the multiplication and scaling up of relevant R&D products and innovations. Support can be in form of financial, human resource, among others;
 - b) Identify and forge partnerships between the public and private sector institutions involved in R&D and innovation;
 - c) Effectively coordinate the traceability, procurement, and distribution of R&D by public institutions;
 - d) Intensify disease control through veterinary cordon fences and increase traceability of individual animals to support Agro-industrialisation around beef, dairy and the leather industries; and
 - e) Revisit the current input supply subsidy to be demand driven, in order to promote ownership by farmers through farmers making a small contribution towards the cost of the inputs.
- Promote knowledge sharing and extension system relevant for specific agro-industry
- a) Effective provision of crop-specific extension services with clear performance guidelines and accountability mechanisms;
- b) Identify the knowledge gaps to be filled by the extension services for each by commodity;
- c) Targeted sensitisation mind-set change programs at all levels - e.g. change from traditional to improved technologies; and
- d) Policy experimentation with systems that have proven successful, e.g. BRAC's Community Knowledge Workers (CKWs) model.

Improve market access for agro-industrial products

- Protect infant Agro-Manufacturing industries;
- Promote the use of locally produced Agro-Manufacturing industries products;
- Upgrade value chains through expansion of the manufacturing capacities (up-stream, mid-stream activities). The deeper the value chain, the greater the opportunities for value addition, job creation and expansion of domestic revenue mobilisation;
- Increase funding to critical institutions e.g. UEPB to facilitate market access intelligence, UDC, UDB; and finally,
- Gather timely feedback through market intelligence e.g. by the game changers, embassies.

Mobilise long-term and affordable development financing to meet the unique finances for AGI

- Consolidate fragmented sources of credit and direct credit, and the various public interventions (e.g. ACF, YLP, UWEP, OWC) to strategic crops for greater impacts.
 - a) Channel such support to boost capitalisation of UDB to be the game changers to support the entire value chain, e.g. in form of credit guarantees, credit, and in-kind advances.
- Provide patient and affordable capital, i.e. at low interest and for a longer repayment period of 5-10 years (for farmers, cooperatives)
 - a) Must be timely and not bureaucratic;
 - b) Must ensure transparency in transactions; and
 - c) Must be free of corruption or politicking.
- Promote uptake of equity financing
- Enhance existing legal framework of financial sector to support financing of the AGI value chains

Consolidate and strengthen the policy and regulatory functions

- Regulate the manufacturers in support of inclusive development, with a view to ensuring that farmers who supply agro-industrial raw materials are not exploited (to ensure quality breeding and planting materials);

- a) Through such tools as contractual arrangements, commodity exchange systems, and warehouse receipt systems; and
- b) Promote a more proactive participation of Local Governments to ensure that the required services are available at sub-county levels.
- Oversee regulation and certification to ensure that products are competitive in the national, regional and, eventually, the global markets;
- Ensure that safety and quality standards are adhered to at all levels;
- Develop and enforce patents and property rights among scientists to promote innovations and knowledge sharing;
- Create awareness as well as enforcement of regulations to ensure that farmers take the necessary action to protect themselves;
- Fast track pending regulations such as for fertiliser and pesticides; develop missing regulatory framework, such as for the tea and meat industries; and
- Ensure policy consolidation and coherence to eliminate contradictions, overlaps, and promote complementarity to support AGI.

a) Ensure that there is only one working document with measurable indicators monitored by the program steering committee and not at respective MDA level; and

b) Formulate or identify the policies that will support AGI program.

- *Human capital*
- a) Identify and close human capacity gaps of the relevant institutions;
- b) Deliberately link training institutions (e.g. BTVETs) to high-end manufacturers to enable them equip trainees with the necessary skills required for transformative AGI through internships, incubation programs and placements; and
- c) Promote knowledge sharing within and across R&D institutions both national and international.

There is need to ensure effective implementation of the aforementioned tasks. It will be important for Government to objectively identify the champions within various MDAs to drive the process as well as working closely with possible detractors to gain their buy-in and commitment.

The identified high-end manufacturers should work closely with the farmers as follows:

- a) Facilitate the formation of effective farmer groups, associations, or cooperatives to smoothen information flow between farmers and the manufacturers in order to ensure sustainable supply of raw materials;
- b) Advance agro-inputs in appropriate quantities, quality, and in time to farmers. This requires manufacturers to work closely with OWC and NAADS;
- c) Identify the knowledge gaps to be filled by the extension services for a given commodity;
- d) Create an incentive system that motivates farmers to keep supplying raw materials of the right qualities and quantities for industry;
- e) Understand market dynamics (domestic and external), and use such information to guide the institutions in R&D and in turn identify what farmers should focus on;
- f) Ensure that safety and quality standards are adhered to at all levels and at all times;
- g) Upgrade value chains through expansion of manufacturing capacities (up-stream, mid-stream activities). The deeper the value chain, the greater the opportunities for value addition, job creation and expansion of domestic revenue

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- mobilisation; and
- h) Mobilise development finance and other resources to support the entire chain.

8.2.2 Programme approach to Agro-industrialisation

The program approach is critical if Uganda is to achieve its AGI agenda on a sustainable basis. This should start with fewer fundable priorities in the short to medium term, and follow an integrated planning and budget approach. In order for this programme to achieve its set objectives and outcomes, it should be spearheaded by a strong and committed steering committee, preferably chaired by MoFPED. The committee should have clear and measurable performance targets.

8.2.3 Unified institutional framework

There is also need to rethink the current institutional framework—especially the role of government. In particular, Government has to take on a developmental State role to ensure the proper coordination of actors. Furthermore, the government has to regulate the activities of agro-manufacturers to ensure inclusive growth, e.g. locking in farmers through a clear price incentive system. In addition, Local Governments have to play critical roles in ensuring that the necessary services are available at the sub county level and to monitor the performance of producers. Finally, Government has to retain provision of training and extension services, as well as promotion of agricultural research and development.

8.2.4 Government role to go beyond an enabling environment

Uganda, as a late industrial developer, must carefully use strategic State guidance to *induce* wealth creation. This is particularly true for value-added manufacturing, which is difficult but necessary as a precondition for structural economic transformation. Thus, strategic state guidance must go beyond ensuring an enabling environment to actively engage in supporting a sustainable AGI agenda.

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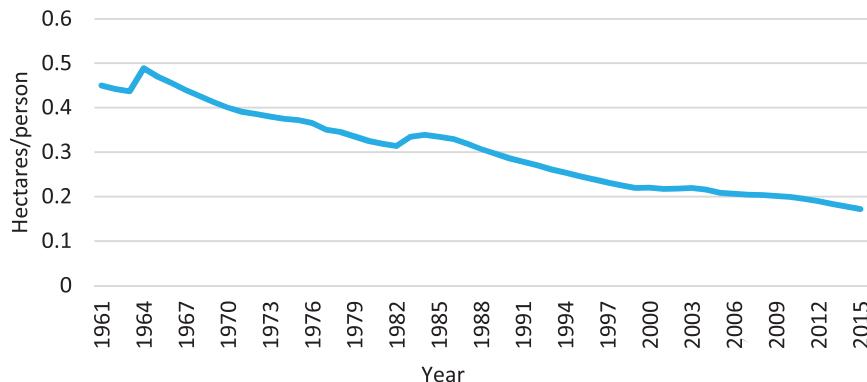
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APPENDICES

Appendix 1: Trends in arable land per capita (hectares per person)



Source: Author's computation based on the several population censuses and World Bank World Indicators.

Appendix 2: Destinations of Uganda's agro-industrial products in 2015

Product	Export value	Destination	Export value for Uganda destination	Import value in destination country	Share in destination market	Main competitors in destination market	Global value	Uganda's global share
Coffee, whether or not roasted or decaffeinated; coffee husks and skins; coffee substitutes	401,204	Italy	78,629	1,778,548	4.4	Brazil, Vietnam, Honduras, Ethiopia, Kenya and CAR	30,498,863	2.1
Spain		Germany	54,720	3,407,083	1.6			
		Sudan	74,634	0	0			
		Belgium	52,100	845,355	6.2			
		India	13,535	654,580	3.6			
Tea, whether or not flavoured	70,317	Kenya	68,095	119,943	11.3			
		South Sudan	1,725	0	0	China, India Kenya and Sri Lanka	7,304,724	1* Kenya 16.7
		DRC	162	583	28			
		Rwanda	251	446	56			
Fish and crustaceans, molluscs and other aquatic invertebrates	117,597	HK China	35,181	3,139,739	1.1	Vietnam, Thailand, India, Tanzania , Kenya	100,845,272	0.1
		Netherlands	13,595	1,976,001	0.7			
		Belgium	14,411	1,523,266	0.9			
		UAE	8,898	514,124	1.7			
		Italy	6,380	4,271,969	0.1			
		Portugal	3,671	1,777,208	0.2			
Cotton yarn	209					China, India, USA, Pakistan, Vietnam, Hong Kong, Turkey, Italy and Brazil	29,187,748	0.001
Woven fabric	482						15,328,660	0.003
Cotton lint	20,571	Singapore	7,967				11,780,933	0.17
		United Kingdom	6885	17,648	39			
		Switzerland	136	1,497	9.1			
		Kenya	2285	4,372	52.3			

Product	Export value	Destination	Export value for Uganda destination country	Import value in destination market	Share in destination market	Main competitors in destination market	Global value	Uganda's global share
Meat and edible meat offal	1,521	DRC	1,090	149,680	0.7	US, Brazil, Netherlands, Germany	113,517,003	0
		Viet Nam	179	301,534	0.1			
		Kenya	70	1,317	5.3			
		South Sudan	76	1,367	5.6			
		Rwanda	49	259	18.9			
		Somalia	55	5,865	0.9			
Palm oil and its fractions, whether or not refined (excluding chemically modified)	32,091	DRC	14,795	42,047	35.2	Malaysia, Zambia, Singapore, S. Africa, Spain, Kenya and Indonesia	86,107,471	0.04
		South Sudan	10,321	10,322	100			
		Rwanda	5,536	24,031	23			
		Tanzania	565	230,494	0.2			
		Burundi	728	4,042	18			
		Sudan	145	6,414	2.3			
Sunflower-seed, safflower or cotton-seed oil and fractions thereof, whether or not refined, but not chemically modified	6,867	Switzerland	2,105	78,294	27	Mozambique, Tanzania, Hungary, Austria, Netherlands, Germany, Ukraine, Argentina, Malaysia	8,595,025	0.08
		Kenya	2,171	9,541	22.8			
		Rwanda	1,955	2,903	67.3			
		DRC	343	309,561	0.1			
		Burundi	84	188	44.7			
		South Sudan	207	1,219	17			
Maize or corn (seed for sowing and excluding seed for sowing)	63,110	Kenya	44,835	105,374	42.5	Tanzania, Rwanda, Kenya, Zambia, South Africa, Malawi, Thailand	28,712,495	0.22
		Rwanda	10,632	14,569	73			
		South Sudan	6,122	6,143	99.7			
		Burundi	377	2,541	14.8			
		Tanzania	80	30,000	2.9			
		DRC	243	8,453	2.9			
Maize "corn" flour	25,432	South Sudan	22,312	22,119	100.9	Kenya, Tanzania, Burundi, DRC, Zambia, Brazil and S. Africa	326,525	7.79

Appendix 3: Lessons from China's Township and Village Enterprises

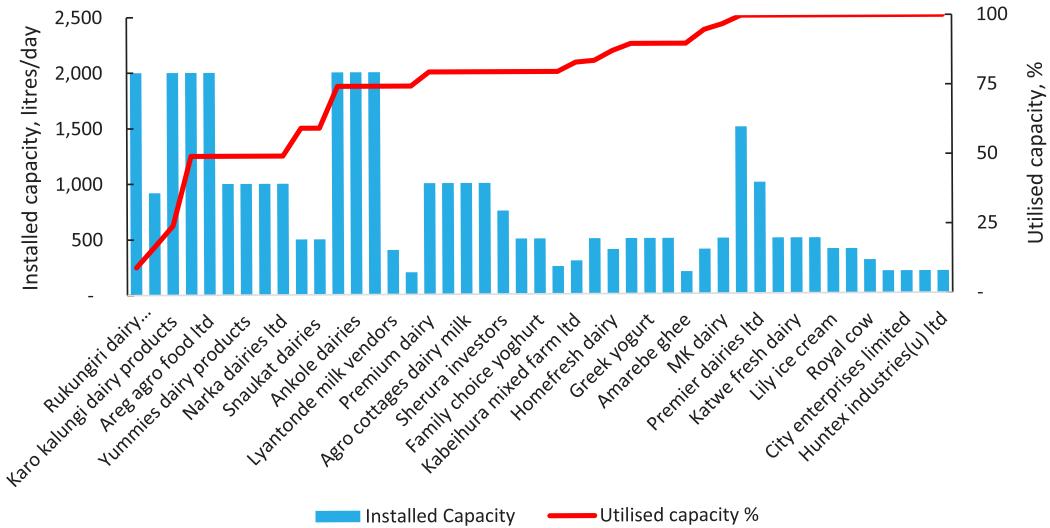
China's industrial upturn is hugely credited to the Township and Village enterprises (TVEs). TVEs include small industrial units (enterprises) supported by townships and villages, alliance enterprises formed by peasants and individual enterprises (Naughton 2007). TVEs first emerged around 1958 from agricultural collectives/communes and brigade enterprises during the great leap forward, but gained prominence around 1978 after government agricultural and economic reforms including the household (contract) responsibility system which gave farmers the right to use land for a period of 15 years under a considerable management autonomy (Harvie, 1999). The reforms gave farmers ready market, a fixed price plan to sell to government, and clearance of the surplus at market rate thus the dual-price system which allowed producers to retain excess profits. By 1980, the TVEs had adopted the agricultural communes' contract responsibility system and shared ownership, with employees as shareholders (Dacosta and Carroll 2010). TVEs were mostly under collective ownership, but user rights rested with managers of the collectives appointed by local government officials, they were originally restricted to agriculture but later diversified to the production of iron, steel, cement, chemical fertiliser, hydroelectric power, and farm tools (Saich, 2001). Many of these enterprises have strong linkages to agriculture, both backward and forward, such as farm machinery, fertilisers, and feed/grain processing (Dacosta and Carroll 2010). TVEs were a key government tool to achieve agricultural modernisation and absorb surplus labour from agriculture (Field *et al.* 2006). Aided change from SOEs to market oriented under the jurisdiction of local government.

The success of TVEs credit Government reforms which included the creation of special economic zones with special economic policies and special economic management systems in 1979. These zones were designed to among others attract FDI, absorb foreign capital and technology, adjust agricultural structure, and promote scientific and technological development (Dacosta and Carroll 2010). The TVEs benefited from the lack of competition from private firms due to restrictions on the markets and exploited the existence of surplus labour and limited mobility. By policy, the TVEs became the main source of fiscal revenue for the Local government and hence the career potential of local officials was hinged to fiscal performance (*ibid.*). These local government units facilitated the channelling of funds (mostly from households) in the absence of a well-functioning banking system (*ibid.*). TVEs also got strong support from state owned enterprises which subcontracted to them. By 2007, TVEs accounted for 30 percent of China's GDP and had put back Yuan 200 billion in to modernisation of agriculture. From 1979 to 1991, TVEs TFP grew three times as fast as SOEs. From mid 1990s preference changed from TVEs to foreign owned enterprises, 30 percent of TVEs gone bankrupt by 2003 (Saich 2001). However, TVEs suffered from changing government policy around 1995 favouring massive privatisation and stronger preference for foreign owned enterprises (Park and Shen 2001).

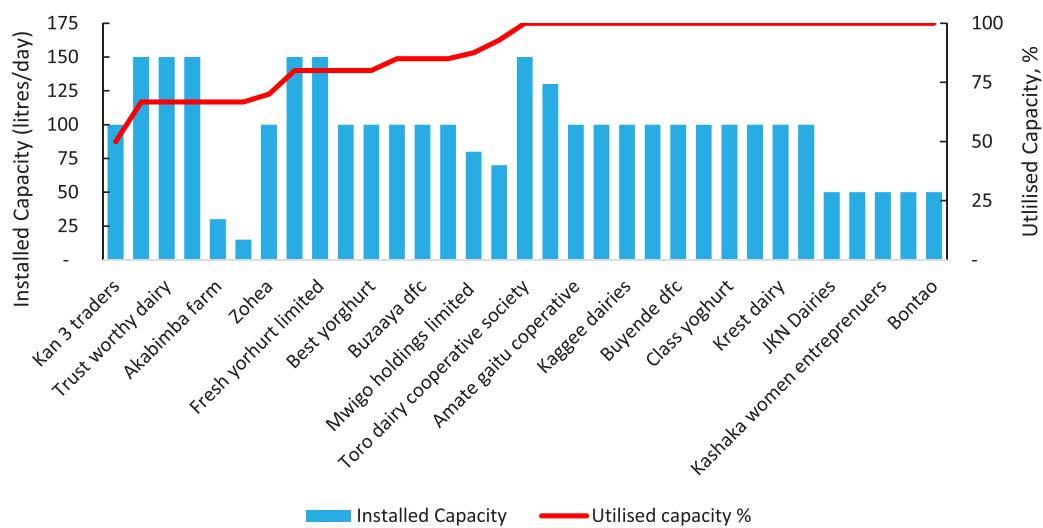
While the exact form of TVEs remains a puzzling debate to date, their function in uplifting the Chinese economy is unquestionable. Their success underscores the importance of the state in leading development. The TVEs benefited not only from policy reforms by government but also from strong government backing and efficient incentive mechanism. The granting of land control to producers and allowing them to sell excess output at market price and to retain excess profits (dual pricing) increased their productivity, the tying of local government revenue to TVE output incentivized local government officials to closely supervise the TVEs.

Appendix 4: Installed and utilised capacity for small scale dairy firms

Note: Small scale refers to those firms with 200 to 2,000 litres per day.



Appendix 5: Installed and utilised capacity for cottage dairy firms



Note: Cottage refers to those firms with 15-150 litres per day.

Footnotes

- 1 A smallholder farmer has access to a total agricultural land size between 1 and 10 acres and/or had a maximum of 10 large animals or 10 small animals or a minimum of 100 poultry.
- 2 United Nations (2016) *World Urbanisation Prospects*



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