AGRA
Growing Africa's Agriculture

KIT Royal Tropical Institute

PIATA 2019 Outcome Monitoring Report
AGRA Uganda

Consolidated report

KIT Royal Tropical Institute, Amsterdam

30 April 2020

Colophon

Correct citation:
KIT, 2020. *Uganda Outcome Monitoring Report 2019, AGRA-PIATA Programme*. Alliance for a Green Revolution in Africa, Nairobi; KIT Royal Tropical Institute, Amsterdam.

Contributors:
KIT fieldwork: Boudy van Schagen
KIT team: Geneviève Audet-Bélanger, Verena Bitzer, Coen Buvelot, Peter Gildemacher, Rob Kuijpers, Helena Posthumus, Boudy van Schagen, Elena Serfilippi, Esther Smits, Marcelo Tyszler, Bertus Wennink
Data Capital International: Henry Magala

Photo: Neil Palmer, CIAT

Language edit: WREN*media*

This report has been commissioned by AGRA to monitor its PIATA programme progress in Uganda.

KIT Royal Tropical Institute
Amsterdam, the Netherlands
www.kit.nl

AGRA
Nairobi, Kenya
www.agra.org

Contents

Acronyms

AGRA	Alliance for Green Revolution in Africa
ASSP	Agriculture Sector Strategic Plan
AU	African Union
CAADP	Comprehensive Africa Agriculture Development Programme
CARI-EA	Competitive African Rice Initiative in East Africa
CET	Common External Tariff
COMESA	Common Market for East and Southern Africa
EAC	East African Community
FAO	Food and Agriculture Organization of the United Nations
GIZ	German Development Cooperation
GDP	Gross Domestic Product
ICTs	Information and communication technologies
ISTA	International Seed Testing Association
KIIs	Key informant interviews
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
M&E	Monitoring and evaluation
MoFPED	Ministry of Finance, Planning and Economic Development
NAADS	National Agriculture Advisory Services
NARO	National Agricultural Research Organisation
NAP	National Agriculture Policy
NDP	National Development Plan
NSCS	National Seed Certification Service
OWC	Operation Wealth Creation
PIATA	Partnership for Inclusive Agricultural Transformation in Africa
PPP	Public-private partnership
REACTS	Regional Trade in Staples Phase
SACCO	Savings and Credit Cooperative Organisation
SDGs	Sustainable Development Goals
SMEs	Small and medium enterprises
TASAI	The African Seed Access Index
UAA	Uganda Agribusiness Alliance
USh	Ugandan shilling
US$	United States dollar
USAID	United States Agency for International Development
VBA	Village-based agent

List of tables

List of figures

1 Summary of results

1.1 Introduction

The Alliance for Alliance for Green Revolution in Africa (AGRA) is catalysing and sustaining an inclusive agricultural transformation in Africa by increasing incomes and improving food security for 30 million farming households in 11 focus countries. Since 2006, AGRA and its partners have worked across Africa to deliver proven solutions to smallholder farmers and thousands of African agricultural enterprises. The alliance has built the systems and tools for Africa's agriculture: high quality seeds, better soil health, and access to markets and credit, coupled with stronger farmer organisations and agriculture policies.

AGRA's theory of change is that sustainable agricultural transformation can be facilitated through a combination of:

- Policy and state capability – investments to work with and support governments to strengthen execution and coordination capacities, enhance transparency, accountability and enabling policy environment;
- Systems development – investments to build downstream delivery systems while providing support to local private sector to scale technologies and services for better productivity and incomes; and
- Partnerships – to facilitate alignment between government and private sector, improving integration and coordination for investments in agriculture.

In Uganda, AGRA focuses on:

- Policy and state capability to provide support to flagship projects in mechanisation, irrigation, extension and knowledge generation, management and sharing; and support to the Ministry of Agriculture Animal Industry and Fisheries (MAAIF) in data generation, analysis and dissemination;
- Systems development to support MAAIF in strengthening seed inspection and certification services; strengthening extension services to smallholder farmers using the village agent model; and unlocking finance for agribusiness small and medium enterprises (SME) and farmers via policy and appropriate financial products;
- Partnerships development to facilitate alignment between government priorities and private sector interests to improve integration and coordination, and lead to investments beneficial to smallholder farmers. This intervention also aims at developing a 'deal room' to unlock and scale investment through the private sector.

By executing this strategy, AGRA expects to improve food security and increase incomes for at least 572,000 smallholder households directly and a further 2.02 M indirectly. AGRA's work in Uganda targets four key crops: beans, cassava, maize and rice. To date, AGRA has invested ~US$6.4 M against the strategy. With these funds, AGRA has invested in the different areas of work as below:

- Supporting MAAIF in seed inspection and certification for improved seed quality to enhance crop yields;
- Support value chain actors in key staples (beans, cassava, maize, rice and soybean) to competitively access markets in the East African region;
- Development of a flagship project on irrigation and mechanisation to foster transformation of farming operations for smallholder farmers in Uganda;

- Support development of policies and strategies to unlock access to finance by smallholder farmers.

The strategy is aligned with the government's priorities and contributes to the need for a strong sector with effective coordination and implementation capabilities. For the 2019 outcome monitoring, AGRA Uganda elected to focus on two crops – maize and rice. For the qualitative systems analysis, AGRA selected policy and state capability and market systems.

1.2 Systems analysis

Policy and state capability

System change needs

Uganda's agricultural system performance paints a mixed picture. The sector's strategies respond well to international and regional compacts such the Sustainable Development Goals (SDGs). The 2017 Comprehensive African Agriculture Development Programme (CAADP) biennial review scored Uganda at 4.45 out of 10. This puts Uganda 'on track' to achieving the Malabo Declaration objectives. The weakest theme was commitment 2: enhancing investment in agriculture, largely because Uganda's relative budget share to agriculture has remained low. Uganda's agricultural policy frameworks are well-designed, but the gap between the narrative and reality are significant: commitments are not translated into concrete action. Part of the challenge is that resources budgeted and allocated are not the same, and thus, the sector remains critically underfunded.

AGRA objectives and activities

Under its Partnership for Inclusive Agricultural Transformation in Africa (PIATA), AGRA currently has two investments in the domain of policy and state capability. The first is a grant to the Uganda Agribusiness Alliance (UAA) for agricultural finance policy reform. This started in 2018. The most recent grant, which commenced in 2019, supports MAAIF to implement a quality management system for seed quality assurance.

AGRA PIATA has also recently made financial contributions to the National Seed Certification Service (NSCS) towards early system change. However, the outcomes of this support are not able to be assessed here as grant was provided only shortly before inception of the study.

Early results, analysis and recommendations

- The grant to UAA has achieved important outcomes. By early 2019, an agriculture finance policy and strategy had been drafted. The policy has now been endorsed by all key government ministry departments and agencies, and there is a unified government position on the policy.
- With a limited budget, focusing partly on improvement of policy and state capability is strategic. AGRA can aim to improve the quality of government performance in facilitating agricultural transformation;
- A strengthened NSCS will complement private seed sector investments, and is the next step towards enhancing investment after support to private seed enterprise development. Offering the NSCS support in leading the development of a quality

assurance system that works with trained, accredited officials at a decentralised level, would be a major contribution to seed systems improvement;
- It would be opportune to formulate an ambition to improve the delivery mechanisms of Operation Wealth Creation (OWC) – the main policy mechanism for public input distribution – and transform it into a smart subsidy system to incentivise private seed sector investment.

Strong stakeholder backing of the draft agriculture finance policy and strategy, and the fast-tracking of its approval, are highly encouraging results of AGRA's support to the UAA.

Market systems

System change needs
Uganda has a high, but largely unrealised, agricultural potential. Crop yield gaps are significant and fertiliser use is very low. The use of improved, quality seed is similarly low for most crops. There is generally a low capacity in terms of skills, knowledge and tools among smallholder farmers and SMEs along the different value chains to operate successfully as businesses. For maize, there is weak value chain integration, post-harvest losses are high, and grain quality is low. For rice, there is a lack of access to structured internal markets, and the Ugandan market does not differentiate based on quality.

AGRA objectives and activities
At the time of study, only two grants had been funded – one focussing on rice value chains, the other on staple crops (including maize). Both grants aim to enhance agricultural commodity trade, strengthen competitiveness and access to regional markets, and strengthen enabling policy and the institutional environment for commercialisation.

Early results and analysis
Both projects aim to drive a sustainable change in the market systems dynamics for traded commodities in Uganda and the wider East Africa region. The rice and maize value chains face key challenges at every node, making systemic change complicated. The projects have not yet produced evidence of (early) market systems change. Our early analysis finds that:
- It is highly relevant to focus on the efficiency of the entire rice value chain to improve competitiveness of the sector compared to imported rice. At the same time, a major constraint hampering the competitiveness of rice production in Uganda is the limited area under irrigation schemes, which accommodate larger-scale intensive paddy rice production, and allow for greater investment in quality processing;
- Strengthening the position of Ugandan maize in the regional market – by improving input and output trade relations – is important. With maize being the major food and cash crop of Ugandan smallholders, a better functioning market would offer an incentive for producers to invest in production intensification and increase their maize-derived profits;
- Using large traders and local processors as the entry-points for system change is a good approach. The challenge is in building a quality reputation for Uganda-produced rice and convincing traders that promoting and trading this domestic product is worth their while;
- Improved access to finance is a major value chain constraint, and thus a key opportunity for unlocking growth in maize and rice value chains.

1.3 SME survey

An important pathway of change of the PIATA programme is supporting the development of SMEs operating that provide support services to agricultural value chains. The SMEs that responded to the survey request were rated on their performance in terms of business resilience, financial stability, human capital, and technology/assets.

Key findings from the survey indicated that seed companies have moderate business resilience and human capital. Their financial stability is good. Input supply companies on the other hand are mostly young enterprises, weakening their score in terms of business resilience. However, they do have very good access to formal credit, and make significant business investments. The surveyed agri-value chain actors are also operating 'young' enterprises (one-year-old, on average) but are financially stable with good annual turnover.

2 Objectives and scope of the report

The Royal Tropical Institute (KIT) was contracted by AGRA to implement annual outcome monitoring of its activities under PIATA 2017-2021.

The annual outcome surveys have three different, interrelated objectives:

1. Understand AGRA's progress towards desired outcomes, both for internal and external reporting;
    a. Elicit data and insight into the effect of AGRA interventions on its beneficiaries
    b. Provide insight into sustainable improvement of the performance of agricultural sector support systems
2. Learn about the performance of AGRA interventions to allow for intelligent evidence-based adaptation of implementation;
3. Document lessons learned for improved design of future AGRA, but also external, interventions.

These objectives are realised through a combination of quantitative and qualitative methods, implemented by a team of qualitative and quantitative experts.

The Uganda team consisted of:

- One international quantitative data collection expert in agriculture
- A national coordinator of quantitative and qualitative field-data collection in agriculture

AGRA Uganda selected maize and rice as the priority crops to report on for 2019. AGRA also selected policy and state capability and market systems as the priority domains for system analysis.

Primary data was collected by the qualitative team in Kampala, Uganda, over a period of two weeks in October 2019. For each system, information was collected via key informant interviews (KIIs). Most key informants were identified by AGRA, whilst a small number were contacts suggested during interviews with the informants. AGRA Uganda recommended that expert workshops should not be organised to supplement data collection. Further, AGRA did not require the household survey that was carried out in most other AGRA-supported countries because there are currently no household-level interventions in Uganda.

An SME survey was administered to 32 companies and businesses linked to AGRA's Ugandan interventions.

AGRA Uganda's available data for analysis was limited to two systems, and the field data collection was limited to one week per system. Country programme roadmaps and information related to issued and planned grants were made available by AGRA. Secondary data and online reports completed the data sources. The SME performance survey was designed for rapid and cost-effective data collection.

The report results should be interpreted with caution as a result of the above-listed constraints. The report functions as a baseline for monitoring future change, as the AGRA-PIATA interventions had not been implemented at a scale from which significant results could be expected in 2018. The SME performance measurement will also serve as a baseline for measuring change over time. The system change studies have made an effort to place the entirety of AGRA's in-country investments, and the resulting system impacts, in context. The field work, however, could only cover a portion of AGRA's intervention portfolio because of the limited field time.

PART I: Qualitative system analysis

3 Introduction system analysis

3.1 Agricultural policy context

Agriculture is the mainstay of the Ugandan economy, contributing 25.3% of Gross Domestic Product (GDP), 46% of export earnings and employing over two-thirds of the labour force (Uganda NDP II, 2015). Uganda has a Comprehensive National Development Planning Framework policy comprising five main elements: a national vision document (Uganda Vision, 2040), 10- and 5-year National Development Plans (NDP), sector investment plans and local government development plans.

The Uganda Vision 2040 document is the overarching national development policy document, and was approved by Cabinet in 2007. The report seeks to achieve "a transformed Ugandan society from a peasant to a modern and prosperous country" (Uganda Vision, 2040, 2007). With regard to agricultural development, the Vision foresees investments in agro-processing, extension, market access and the strengthening and harmonisation of the legal, regulatory and institutional frameworks in order to propel the sector from subsistence farming to commercial agriculture.

The goal of the current five year NDP (NDP II, 2015-2020) is to propel the country towards middle-income status by 2020 through strengthening the country's competitiveness for sustainable wealth creation, employment and inclusive growth. In the agriculture sector, the objectives are to increase productivity, increase access to farm inputs, improve agricultural markets, and strengthen the institutional capacity of MAAIF and the public agricultural agencies.

The Uganda National Agriculture Policy (NAP) was published in 2013 and responds to the agriculture sector development objectives stipulated by the original NDP of 2010/11. Specifically, the NAP aims to:

- Promote agricultural enterprises that enable households to earn incomes to support food purchases;
- Promote the construction of agro-processing, storage infrastructure, value addition and marketing at appropriate levels to improve post-harvest management;
- Develop and improve food handling, marketing and distribution systems;
- Link domestic, regional and international markets; and support the establishment of a national strategic food reserve system;
- Support the development of a system for collecting, collating and disseminating information on agricultural production;
- Support food and nutrition security across households, communities and agricultural zones;
- Encourage and support local governments to enact and enforce bylaws and ordinances that promote household food security through appropriate food production and storage practices (Mugagga et al., 2018).

The detailed investments to implement this policy are laid out in the periodic Agriculture Sector Strategic Plan (ASSP). The ASSP is also the mechanism to operationalise Uganda's commitment to the CAADP compact. The current ASSP runs until 2020 and is in the process of being updated.

3.2 AGRA objectives and activities

AGRA aims to catalyse and sustain an inclusive agricultural transformation in Africa by increasing incomes and improving food security for 30 million farming households in 11 focus countries. Since 2006, AGRA and its partners have worked across Africa to deliver solutions to smallholder farmers and local African agriculture enterprises. The alliance has invested in the systems and tools for Africa's agriculture: high quality seeds, better soil health, access to markets and credit, coupled with stronger farmer organisations and agriculture policies.

AGRA is an African-led alliance focused on reorienting subsistence-based farming into thrive businesses. It was established to catalyse the transformation of smallholder agriculture into a highly productive, efficient, sustainable and competitive system, while also protecting the natural resource base on which agriculture depends. As the sector that employs the majority of Africa's people, nearly all of them small-scale farmers, AGRA recognises that developing smallholder agriculture into a productive, efficient, and sustainable system is essential to ensuring food security, lifting millions out of poverty, and driving equitable growth across the continent.

AGRA Uganda focus and activities, 2007-2016

knowledge

AGRA commenced activities in Uganda in 2007. In the decade that followed, AGRA invested significant funds in crop breeding and capacity development for crop breeding, notably to Makerere University, while supporting the private sector and other institutions to deliver services to farmers. In this first phase, 59 crop varieties were released, most of which have been commercialised (Figure 1).

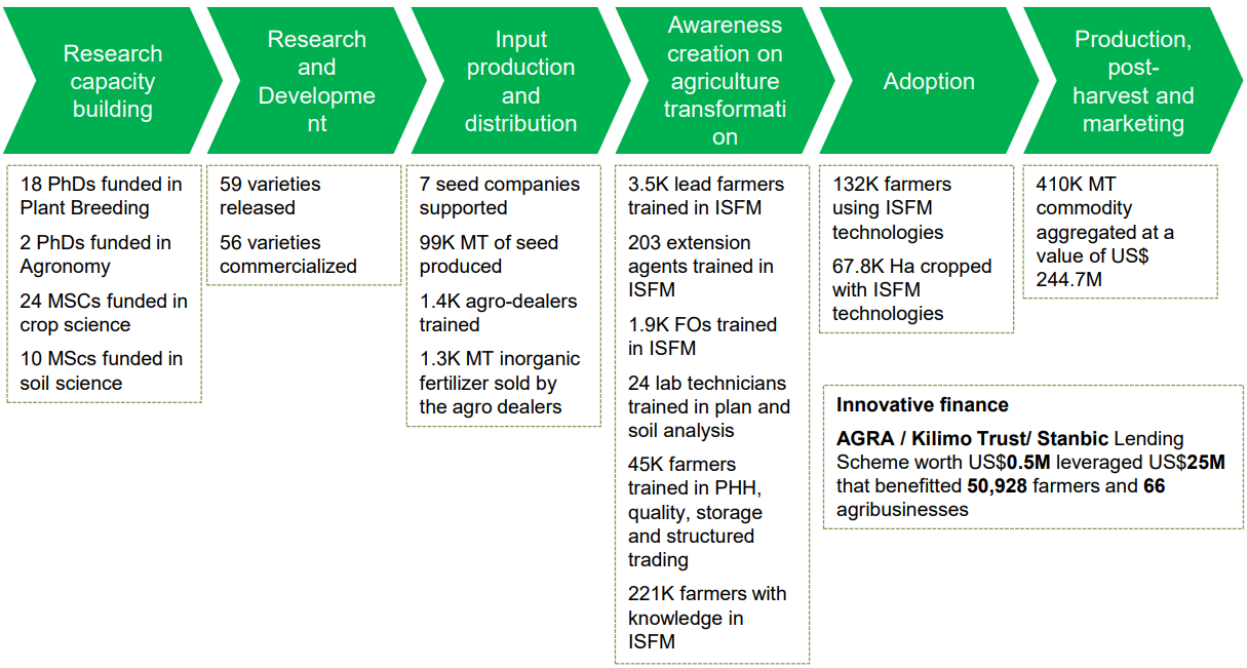

Figure 1: AGRA investments and results over the period 2007-2016

AGRA country strategy 2017-2021

AGRA's strategy in Uganda is to catalyse inclusive agricultural transformation by supporting effective agriculture sector coordination and implementation capabilities, and by strengthening sector delivery systems for improved productivity and marketing of produce. These efforts aim to increase the incomes and improve food security of 570,000 smallholder farming households. AGRA defines agricultural transformation as a process by which farmers shift from highly diversified, subsistence-oriented production towards more specialised production oriented towards the market, and involving a greater reliance on input and output delivery systems.

The strategy is structured around two priority domains (plus a theme on partnerships):

- Policy and state capability. Objectives are to:
  - Enhance sector evidence-based planning and analytics
  - Enhance sector coordination and implementation
  - Support the development of an enabling environment
- Systems development. Objectives are to:
  - Ensure efficient smallholder access to markets, input and credit, and creating integrated value chains
  - Enhance access to improved seeds and blended fertilisers
  - Stimulate demand and supply of agricultural finance products

In Uganda, AGRA's focus is on:

- Supporting MAAIF in seed inspection and improved seed quality certification to enhance crop yields;
- Supporting value chain actors in key staples (beans, cassava, maize, rice, soybean) to competitively access markets in the East African region;
- Developing a flagship project on irrigation and mechanisation to foster transformation of smallholder farming operations in Uganda;
- Supporting the development of policies and strategies to unlock smallholder farmers' access to finance.

To date, AGRA has mobilised US$2.7 M in funding from the United States Agency for International Development (USAID), plus approximately US$3.72 M leveraged funds for the implementation of its PIATA programme in Uganda. In August 2019, AGRA submitted a buy-in proposal of US$5.8 M to the USAID Uganda mission (Table 1), to complement USAID's pledged PIATA funding, and to reach the level of funding required (when used to leverage complementary investments) to achieve its country ambitions. At the time of writing, the proposal had not yet been approved by USAID.

Table 1: Expected results of USAID's buy-in proposal 'Towards Inclusive Agriculture Transformation in Uganda

• **Seed and input systems strengthening** means 30,000 farmers will benefit from AGRA support for the release of improved crop varieties, particularly maize, and improvements to seed certification and regulation. • **Soil heath interventions** include soil nutrient analysis and mapping, support to national and private soil laboratories, further sensitisation of farmers on soil fertility and fertiliser application, and support to the development of fertiliser	• **Scaling of the 'village agent' model of extension** to reach 60,000 farmers. Key actions are coordinating a network of 2000 new village-based agents (VBAs), equipping them with smartphones. AGRA will also support the development of regulations for accreditation of VBAs to ensure quality of service provision. For sustainability and mainstreaming, VBAs will be trained to conduct demonstrations of improved

blends with micronutrients. 20,000 farmers will benefit from these actions.

- **Promoting mechanisation** to 10,000 smallholder farmers by linking them to innovative service providers, such as Hello Tractor.

seed and fertilisers. Ultimately, 600,000 farmers will be reached

- **Strengthening markets and trade**. Upgrade value chains by investing in quality (aflatoxin management) and trading platforms/commodity exchanges.
- Improved state capability by supporting CAADP implementation, assisting with ASSP II development, micro reforms of specific policy (seeds, markets, mechanisation, information and communication technologies (ICTs) for agriculture)
- Support to accountability mechanism implementation in ASSP II.

4 Policy and state capability

4.1 System performance

Overall, Uganda's agricultural system performance paints a mixed picture. The sector's strategies respond well to international and regional compacts such the SDGs. The 2017 CAADP biennial review, which measures overall country progress towards implementing the Malabo Declaration for agricultural transformation, scored Uganda at 4.45 out of 10 (Table 2). This puts Uganda 'on track' to achieving the Malabo Declaration objectives and puts it 12th amongst the African Union (AU) countries.

The weakest theme was commitment 2: enhancing investment in agriculture. Here, Uganda scored 3.8, where the minimum acceptable score is 6.67. This is largely because Uganda's relative budget share to agriculture has remained low. For example, in 2016/17, 3% of the national budget was allocated to agriculture – only 64% of the budget required that year for effective ASSP implementation (Mayanja et al., 2018).

Key CAADP recommendations:

- Uganda should increase funding to the agricultural sector to meet the CAADP Malabo target of 10%, and invest in nutrition interventions to reduce undernourishment and the prevalence of stunting among children under five years old;
- The country should also establish and facilitate the implementation of measures that can promote the use of inputs, especially fertilisers, to boost productivity;
- The country should put in place policies that would facilitate and promote intra-regional African trade in agricultural commodities and services.

Table 2: Uganda's progress towards implementing the Malabo Declaration on agricultural transformation in Africa

Five key areas of strong performance		**Five key areas of weak performance**	
CAADP process completion	95%	Annual growth of the agriculture value added (agricultural GDP)	2.9%
Annual growth of the agriculture value added (agricultural GDP)	41.8%	Prevalence of stunting amongst children under five years old	29%
Percentage of men and women engaged in agriculture having access to financial services	40%	Percentage of the population that is undernourished	25.5%
Reduction in port-harvest loss for national agricultural commodities	8%	Increase of the value of intra-Africa trade of agricultural commodities and services	-38.9%
Number of agricultural commodity value chains for which a public-private-partnership (PPP) is established with strong linkages to smallholder agriculture	5	Kg/ha of fertiliser use per hectare of arable land (Recommendation is 50 kg/ha)	2.15kg
Country progress score (out of 10): 4.4			

Source: AU, 2017

Table 3: Policy and state capability: system indicators for Uganda

Dimension	Indicators	Status	Narrative	Sources
1. Political commitment	Agricultural transformation is high on political agenda		▪ Official statements in key development vision and strategy documents assert agriculture as a key economic sector to support Uganda's transition to middle-income status. The Ugandan Government recognises that public spending on agriculture has a pivotal role in equipping the sector to fulfil its potential to drive economic growth, create employment for a rapidly growing and predominantly young population, and ultimately reduce poverty ▪ Leveraging the private sector to grow the agriculture sector is high on the President's agenda ▪ Agriculture sector systematically underfunded ▪ Policy implementation is a key concern	▪ FAO, 2018 ▪ World Bank, 2019 ▪ KIIs
	Government expenditures on agriculture (share of agriculture in total expenditure)		▪ Uganda is on track with regard to achieving its CAADP commitments. However, government expenditure in agriculture is approximately 3% (CAADP target is 10%) ▪ Although low overall, 2019/20 budget allocation to agriculture increased by 12% over 2018/19 ▪ The budget execution rate is often high.	▪ AU, 2017 ▪ Deloitte, 2019 ▪ Koroma, 2016
2. Agriculture transformation policies	Clear vision and strategy for agricultural transformation		▪ NAP and ASSP outline clear policy priorities	▪ KIIs ▪ Mugagga, 2018
	Policy coherence		▪ The policy landscape is characterised by a lack of some subsector policies as well as policies that are not fully implemented, such as those for seeds, fertiliser and extension. Others are obsolete or outdated, such as the Veterinary Drug Policy. Many existing policies do not have implementation tools like laws, regulations and standard operating procedures ▪ Overall policy coherence is mixed	▪ KIIs ▪ FAO, 2018 ▪ World Bank, 2018
	Policy responsiveness		▪ Little review of sector performance to create evidence to guide policy decisions and development strategies ▪ OWC – the main mechanism for public input distribution – is fraught with technical and administrative issues (described in detail below) ▪ Public research for agricultural development is underfunded – only a small proportion of National Agricultural Research Organisation (NARO) budget covered through public funds	▪ World Bank, 2018 ▪ CSBAG, 2014
3. Enabling environment	Legal framework for private sector development		▪ Uganda ranks 116/190 on the Ease of Doing Business Index 2020, a slight improvement on recent years. Uganda scores well in terms of access to credit for	▪ Trading Economics, 2020

			businesses and enforcement of contracts. It scores very poorly when it comes to the ease of starting a new business and accessing electricity ▪ Enabling the business of agriculture index: Uganda scores 52/100 points; particularly low scores on 'sustaining livestock', 'protecting plant health, securing water, and registration of fertiliser	▪ World Bank, 2019
	Economic or regulatory incentives support private sector development		▪ ASSP emphasises the importance of private sector investments in agriculture ▪ Regulatory standards are perceived by some informants to have been improving over the last five years ▪ Producer price incentives for traditional exports such as coffee and tea are often not well correlated with world market prices. Domestic transfer costs can also be very high ▪ High level of prevailing corruption. The country ranks 137 out of 180 countries in the Corruption Perception Index with a score of 28/100	▪ ASSP ▪ Transparency International 2019 ▪ Key informant interviews ▪ World Bank, 2018
	Rural infrastructure		▪ Very poor access to electricity – only about 11% of the rural population are connected to the grid. The figure is 22% for Uganda as a whole. The primary road network is paved and in 'fair to good' condition, but 96% of Uganda's road network is unpaved. Lack of access to roads hampers access to markets ▪ Public investments in the agricultural sector are low, resulting in underdeveloped (rural) infrastructure (storage facilities and processing facilities) as well as a lack of agricultural services (advisory services, access to inputs and finance)	▪ World Development Indicators ▪ Ministry of Works ▪ AFDB, 2018
4. Implementation and delivery	Organisational structures for policy implementation and service delivery		▪ Organisational structures in place but there is often poor planning, underfunding and late release of funds, and insufficient capacity ▪ Very weak regulatory framework is a particularly serious problem	▪ FAO, 2018 ▪ World Bank, 2018
	Organisational capacity for implementation and service delivery		▪ Low number of extension workers (approximately 1 per 8,000 farmers). Extension service provision is currently being restructured, and should improve service delivery ▪ Uganda's decentralisation policy embraced, but decentralisation objectives are not fully matched to resource allocation ▪ Many departments and functions at the local government level are abandoned or have become dysfunctional	▪ KIIs ▪ Mushemeza, 2019 ▪ Ministry of Finance, Planning and Economic Development (MoFPED), 2019 ▪ Koroma, 2016
	Mobilisation/ leveraging of private sector and donor investments for		▪ The private sector has taken various approaches to engage farming communities in Uganda and provide agricultural services	▪ KIIs ▪ World Bank, 2018

	implementation and service delivery		▪ The current strategy on PPP is not well streamlined	
5. Coordination	Different government agencies/units at national and local levels coordinate on agricultural transformation		▪ The complexity of the institutional setup and budget architecture contribute to technical inefficiencies. MAAIF has 12 departments operating under four directorates, and there are six semi-autonomous agencies (e.g., NARO). MAAIF cannot play an effective coordinating role and take the lead in budget planning, implementation, and monitoring ▪ The institutional setup and budgeting architecture constrain efficient spending in the agriculture sector ▪ Understaffing and insufficient coordination amongst line ministries is detrimental to implementation and monitoring activities	▪ KIIs ▪ AGRA, 2017 ▪ FAO, 2018 ▪ World Bank, 2018
	Government coordinates with stakeholders, including development partners and the private sector		▪ Government recognises the important role of the private sector for agricultural growth, but at the same time, the government's outsized role in the agriculture sector leaves little room for private sector participation ▪ Coordination with development partners is difficult as they pursue their own objectives	▪ World Bank, 2018
6. Accountability	Policies on agricultural transformation are developed based on feedback from rural stakeholders		▪ Uganda needs to strengthen monitoring and evaluation (M&E) capacity as part of its accountability systems that shift resources toward effective spending	▪ World Bank, 2018
	Policies and results on agricultural transformation are published and accessible		▪ Most policy and strategy documentation is available online, whilst outcomes and metrics less easily accessible	
	Results-driven M&E of agricultural transformation		▪ The last agriculture expenditure review in Uganda was undertaken in 2010. Since then, very little analytical information has been made available to ensure that public expenditure prioritises support to the objectives of transforming Ugandan agriculture	▪ World Bank, 2018

Source: own elaboration

Considerable progress made, some gaps remain
Limited progress made, several gaps remain
Very little or no progress made, critical gaps remain

Table 3 shows the performance of Uganda regarding policy and state capability in agriculture, based on the KIT assessment. Uganda's agricultural transformation is high on the country's political agenda, but although diverse efforts are being made, real progress and coherence is lacking. A major bottleneck is that public spending in agriculture is

consistently one-third of the level that what was pledged as part of the Malabo Declaration, stifling Uganda's agricultural growth potential.

More broadly, although the Government of Uganda is instituting a number of civil service and regulatory reforms to improve social services delivery and governance, a number of weaknesses persist at all government levels. These include weak budget credibility and controls; wasteful expenditures, arrears increases, and inadequate accountability; weak public investment management, including poor planning and inefficient procurement, and implementation; failure to control rent-seeking behaviour and corruption, and erosion of participation and voice. These weaknesses are mainly attributed to policy implementation gaps, which are in turn a consequence of weak institutional capacity and enforcement of sanctions and adverse political incentives (AFDB, 2017).

In 2014, the Ugandan Government embarked on its OWC programme to distribute free agricultural inputs (seeds, seedlings, planting materials and breeding stock) to farmers, with the main goal of commercialising agriculture by creating wealth at household level and reducing poverty. The programme uses the army, the Uganda Peoples Defence Forces, to distribute and supervise input delivery based on the assumption that the army is efficient and less liable to corruption. Other African countries have tried similar large-scale public distribution schemes only to fail due to an array of insurmountable challenges. Govere et al. (2009) noted that government involvement in (free) input distribution is challenged by limited budgets and the resulting disruption caused to growth of the private sector. The OWC programme fundamentally compromises the government's own ambitions to stimulate private-sector led commercialisation of the agriculture sector. In a review of the OWC, Robert and Mesharch (2018) identified the following additional challenges:

- Limited quantities, poor quality and the late delivery of inputs;
- Stringent entry requirements unaffordable for subsistence farmers – infrastructure, knowledge, skills, land and financial capability;
- Poor information flow regarding input delivery and distribution;
- Elite capture – political elites benefitting more from the programme than the intended beneficiaries;
- Top-down, non-inclusive selection of priority crops and beneficiaries;
- Army involvement is misplaced – they have little technical agricultural knowledge, and they are feared by citizens. They cannot by questioned, their authority is total;
- Lack of monitoring – there is no system for following up with farmers.

4.2 AGRA change ambition

Table 4: Current AGRA PIATA grants mapped according to policy/state capability component

Envisioned Change	AGRA activity	Timeline (start)	Scope and scale	Intervention budget (US$)	Implementing partners
Enabling environment	Supporting agricultural finance policy and regulatory reforms	Jun 2018 –		249,208	UAA
	Strengthening the NSCS	Oct 2019 –	ICT-enabled Seed Quality Management System for	939,200	NSCS

			Western, Northern and Central Uganda – beans, cassava, maize and rice		
Implementation and delivery	Strengthening the NSCS	Oct 2019 -	ICT-enabled Seed Quality Management System for Western, Northern and Central Uganda – beans, cassava, maize and rice	939,200	NSCS

AGRA PIATA currently has two investments in the domain of policy and state capability (Table 4). The first is a grant to the UAA for agricultural finance policy reform. The most recent grant supports MAAIF to implement a quality management system for seed quality assurance. AGRA maps this investment as 'state capacity', although it could equally be categorised as an investment in the seed sector. The focus of the intervention is not on changing the higher-level policies and regulations governing the seed sector, but on downstream improvement of quality assurance in seed retail.

Strengthening the NSCS

Uganda struggles with low crop yields which is mostly blamed on low input usage. Seed has been singled out as the most critical input to trigger yield improvement at the lowest cost possible. Less than 20% of Ugandan farmers use quality seed from the formal system (Mubangizi et al., 2012), but due to the inability of the 35 national seed companies to meet national demand, about 30-40% of formally marketed seed is alleged to be counterfeit (Byarugaba, 2019). The NSCS, which is mandated to inspect and certify seed production processes, is grossly under-resourced and is hence unable to adequately offer quality assurance services to the industry.

The AGRA grant to NSCS seeks to strengthen the organisation via the use of ICT-enabled technology (scratch cards) to ease the work of monitoring and supervision. The project will concurrently focus on raising awareness among the farming population, targeting a total of 300,000 farmers directly and close to 450,000 farmers indirectly.

Supporting agricultural finance policy and regulatory reforms

Although Uganda scores relatively well in 'access to finance' for the Enabling the Business of Agriculture scorecard (80/100 points), access to finance for agricultural enterprises is still seen by many as a key development constraint. To contribute to the resolution of this this bottleneck, AGRA supports UAA to improve the business environment for agricultural finance in order to increase the quality of financial services for all actors – but especially SMEs – along the agricultural value chain. Overall, project outcomes are expected to be: i) a National Agricultural Finance Policy; ii) a National Agricultural Finance Policy Implementation Strategy; iii) legal reforms in the financial system to support the agricultural sector; and iv) regulatory reforms in the financial system supporting the agricultural sector. Regulatory reforms are needed particularly for the following reasons:

- Improved governance of Savings and Credit Cooperative Organisations (SACCOs). Poor governance leads to poor resource mobilisation because most SACCOs have challenges of liquidity. With the new policy and reforms they should be able to more easily acquire money from banks;
- Regulation of multiple borrowing: SACCOs don't have access to the Central Credit Bureau for information about borrowers in the country;
- Consumer protection in SACCOs, especially on securities submitted for the loan: SACCOs sometimes transfer land titles without consent of the borrower.

4.3 AGRA system change results

AGRA PIATA's grant contributions towards system change for the NSCS are not able to be assessed. This grant was only received shortly before inception of this study. Possible contributions to systems change are discussed in section 2.4.

The grant to UAA was issued in June 2018 and has achieved important outcomes. By early 2019, for example, an agriculture finance policy and strategy had been drafted. Consultations on the draft policy took place and MoFPED encouragingly decided to fast track the policy process with a view of having the policy presented and approved by Cabinet before the budget speech in June 2019. The policy has now been endorsed by all key government ministries departments and agencies including the Ministry of Trade, the Ministry of Agriculture and the Bank of Uganda. This means there is a unified government position on the policy. The draft policy was expected to be approved by Cabinet by June 2019, but at the time of this study, the policy had not yet been approved.

In collaboration with MoFPED, the UAA is undertaking a regulatory impact assessment for the policy and is currently establishing the cost of policy implementation. The implementation strategy has also been drafted and is intended to be presented for validation as soon as the policy goes to Cabinet. Once approved, the agricultural finance policy and strategy will be important enablers for improved system performance in the realm of agricultural finance provision.

4.4 Analysis of AGRA system interventions

Compared to other AGRA-supported countries, the (funded) ambitions of AGRA's grant programme are modest, particularly when contrasted against the challenges of policy and state capability in Uganda. A number of observations regarding systems change in relevant areas of policy and state capability are outlined below.

Relevance

Considering the limited size of AGRA's grant portfolio in Uganda, it is obvious that select funding decisions need to be made. With a limited budget, focusing partly on the improvement of policy and state capability is strategic as this allows AGRA to improve the quality of government performance in facilitating agricultural transformation. It is not an easy choice, nor is success guaranteed. But any improvement in the quality of implementation by the Uganda Government has an impact on sector performance and subsequently, on the livelihoods of a large proportion of Ugandans depending on the agricultural sector.

Within the broad area of policy and state capability, AGRA has chosen to invest in improved performance of the NSCS and the area of agricultural finance. When considering the

relevance of these choices, it needs to be considered whether they offers the best entry points for improved policy and state capability in Uganda.

The performance of the NSCS is a key constraint of the seed sector. By improving its performance, the availability of tested and certified high-quality seed for Ugandan farmers can be improved. A strengthened NSCS will complement private seed sector investments, and should constitute a next step towards enhanced investment after supporting private seed enterprise development. A seed systems analysis is required to test whether or not AGRA's development of a scratch card-based quality assurance system in retail for the NSCS would be the best choice for seed sector strengthening. The NSCS is also dramatically understaffed and under-resourced, undermining its mandate of seed certification, and as a result, is not able to provide private seed companies with adequate and timely quality assurance services. Also, its oversight of the quality declared seed system, which is developing for a number of crops for which local commercial seed production and marketing is more viable than national level seed companies, is wanting.

The AGRA-funded African Seed Access Index (TASAI) study does mention a lack of inspectors as a major problem, and explains that an initiative to tackle this through public-private collaboration has unfortunately folded. At the same time, the study does identify the development of a system with accredited officials in the decentralised government as an opportunity for improved certification services delivery. The study also rightly points out the important role that of the NSCS in certification service delivery. Offering the NSCS support in leading the development of a quality assurance system that works with trained accredited officials at decentralised level, would be a major contribution to seed systems improvement.

The TASAI study indicates that fake seed is a problem, but also makes a direct link to the government's OWC procurement system, which holds strong incentives for seed adulteration. In that light, it is doubtful that the introduction of a scratch-card system is the best response. Seed system development is constrained by the government's procurement and free distribution of seed, which uses a very significant part of the public budget for support to the agricultural sector. The OWC mechanism to promote intensification of agricultural production is highly sub-optimal. Public policy documents emphasise the importance of private sector development in agriculture. Government-led procurement and free distribution of agricultural inputs is therefore at odds with the objective of private sector development, as it is hampers the creation of a true rural input market that is based on demand and supply.

Considering the strategic objective of AGRA within policy and state capability, it would be much more opportune and daring for AGRA to improve the delivery mechanisms of the OWC. Their aim could be to transform the programme into a smart subsidy system, which stimulates the development of a seed and input market and fine-mazed retail system, to replace the current government-run procurement system.

To assess whether the performance of SACCOs is a key constraint within the wider financial system, and whether this is best addressed by a policy and regulatory change approach, a financial system analysis would be opportune. The relevance of AGRA's policy change support in the field of agricultural finance and in particular, the focus on improving the regulation, control and development opportunities of SACCOs, seems relevant. Through better regulation and control, combined with a policy change, SACCOs can be better

connected to banks. This can contribute to improved performance of the financial system – particularly its reach and service delivery to agricultural producers.

Effectiveness

At the point of writing this report, it is neither possible to assess the effectiveness of AGRA's interventions on seed sector performance, nor the interventions strengthening the capacities of SACCOs in the agricultural finance system.

Stakeholder backing of the draft agriculture finance policy and strategy, and the fast-tracking of its approval, are highly encouraging results that have been realised in a short time, indicating effective grant implementation.

Impact

The impact of the interventions aimed at system change cannot be judged at this time. The impact of change brought about by the financial sector policy and strategy could be high, if their implementation result in improved access to financial services for farmers and agri-business SMEs.

Improving certified seed quality through better traceability in the seed retail system is only one component in the performance of the seed sector. The technology is innovative and interesting, but it is doubtful whether it will be a major driver of seed sector improvement.

Sustainability

The impact of AGRA's intervention in seed quality assurance will depend entirely on how it is embraced by private seed companies and retailers. Ugandan seed companies do report that certified seed demand is growing (TASAI, 2016). There is a significant problem with counterfeit seed according to seed sector stakeholders, which could be hampering the further uptake of certified seed by farmers. The reluctance of farmers to invest in seed is a disincentive for seed companies to scale-up their operations, or for additional seed companies to enter the market. An improved performance of the quality assurance services by the NSCS can certainly contribute to improve seed company investment opportunities, which would be a significant system change outcome. However, it would be important to assess how this intervention fits into the broader performance of the seed system.

It is, however, somewhat ambiguous as to how such a system would become economically sustainable. AGRA's funding is time-bound and, moreover, supports a lot of the operational costs. There are hints that the private sector (presumably seed companies) may be interested to bear some of the recurring costs, but this would – at the very least – require a well-functioning proof of concept in 2021, when the grant closes.

An additional risk to sustainability, of which AGRA is aware, is the lack of an International Seed Testing Association (ISTA)-accreditation for the MAAIF seed laboratory. The 2018-19 ministry funds were reportedly available for this – including for extra staffing – but there are no clear developments regarding the accreditation process. Reference is made in AGRA's grant documentation to private laboratories as a fall-back option, yet there is only one private ISTA-certified laboratory in Uganda, and this is not currently used by NSCS.

The availability of a draft agricultural finance policy, implementation strategy and a soon-to-be developed regulatory impact assessment, are significant achievements facilitated by

AGRA. Assuming the policy is approved by Cabinet, there is a need to ensure effective implementation and monitoring.

Several key informants indicated that Uganda's agricultural policy frameworks are well-designed. For example, there is strong harmonisation and coherence between the NDP and the ASSP. But the gap between the narrative and reality are significant: commitments are not translated into concrete action. Part of the challenge is that the budgeted resources do not always match their intended allocation, and thus the sector remains critically underfunded. This reportedly extends to MAAIF, which has a 30% unfilled human capacity gap.

5 Market system

5.1 System performance

The performance of the market systems in Uganda has been assessed and the successes, gaps and opportunities identified with respect to AGRA support and interventions in the system. The crops of focus are maize and rice (Table 5).

Production

Uganda has a very high agricultural potential due to low variations in temperature and two rainy seasons. Agriculture is the core sector and major employer of the Ugandan economy. Uganda has a very high population growth rate and a large proportion of youth, which represents both an issue of concern but also a driver of market growth for agricultural commodities. Crop yield gaps are significant, and overall productivity needs to increase four-fold if predicted regional food demand is to be met in 2050 (ten Berghe, 2019).

Increased agricultural productivity is beset by a number of challenges including very low input use (about 1-1.5 kg/ha fertiliser is used on average, which is one of the lowest rates in the world, MAAIF 216), and limited adoption of quality seed of improved varieties. A weak public extension system presents further challenges, although this is being addressed through the new National Agriculture Advisory Services (NAADS) 'single spine' extension approach, where extension is mainstreamed into local government structures and aims to remove the multiple extension systems that existed in the NAADS framework.

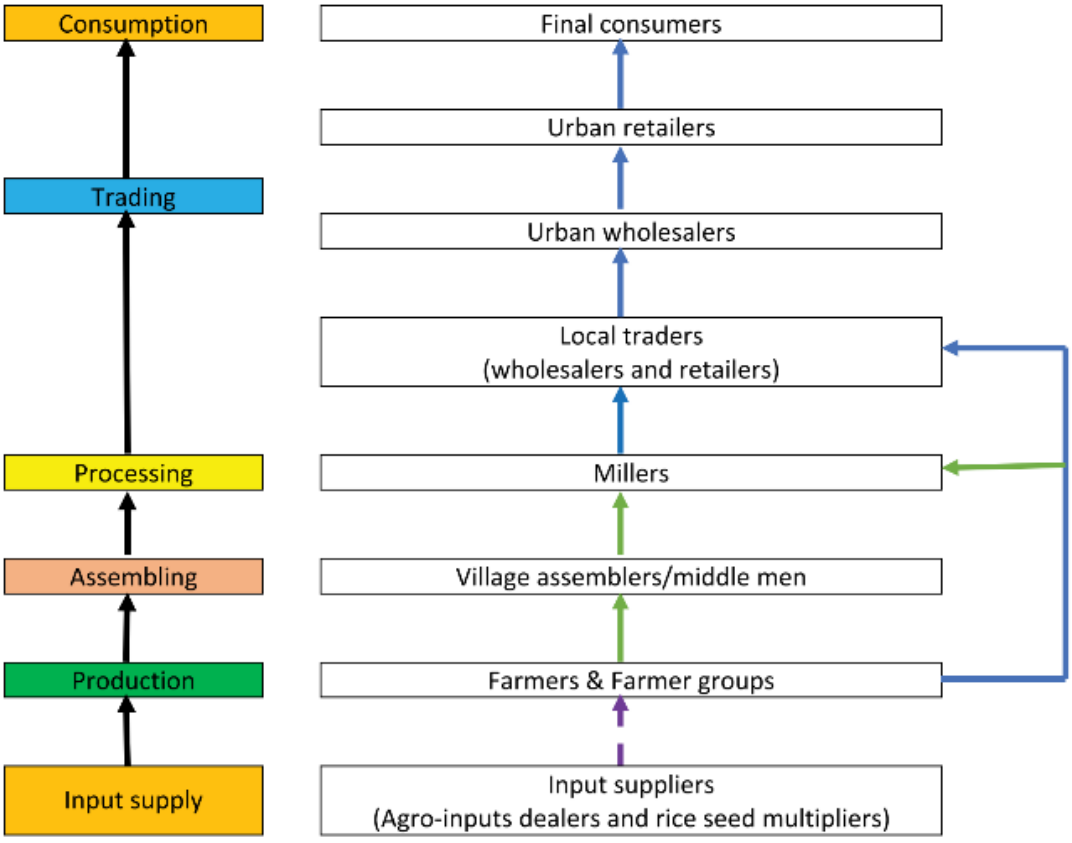

Figure 2: The rice value chain in Uganda
Source: Barungi & Odokonyero, 2016

Looking at rice specifically, farmers in Eastern Uganda mostly grow three rice varieties, namely Kaiso, Super and WITA9. There is a large mismatch between the rice varieties that are commonly grown by farmers and those that are multiplied by seed multipliers. Apart from WITA9, other rice varieties that are multiplied in relatively large quantities (NERICA, Namuche, CH and GRS10057) are not commonly grown by farmers. Three-quarters of farmers cultivate local rice varieties, and a high proportion of them (81%) use recycled seed. Fertilisers are only used by about 18% of households. As a result, average rice yields in Uganda – about 2.5 t/ha (Ayoki, 2012) – are only half of what is achieved in Rwanda and Kenya. Evidence further suggests that boosting access to agricultural extension and training is a potential catalyst for rice crop intensification (Figure 2; Barungi & Odokonyero, 2016).

Counterfeit or poor-quality seed and fertiliser is a serious problem on the Ugandan market, and is at least partially responsible for the low rates of rice intensification. Barungi and Odokonyero (2016) find that limited availability and access to improved rice seed is one of the most binding constraints to rice intensification and requires urgent action. On the other hand, there is a huge deficit in the availability of improved seed and this would get worse if more farmers embrace improved seed, and many new rice seed production enterprises need to be established to fill the gap.

For maize, Uganda is a net surplus producer. It is both a food and cash crop, with about 70% of production being marketed. Domestic surplus is exported, notably to Kenya, which is a voracious consumer. In contrast to rice, about 37% of Ugandan maize farmers plant improved maize varieties purchased in the formal sector (both hybrid and open-pollinated varieties), although fertiliser use is highly variable, and low overall (Figure 3: Barriga & Fiala, 2017). This has been attributed to several factors, such as a lack of economic incentives, weak institutions, poor infrastructure, limited information of the market, lack of insurance against drought risk, credit constraints, low social capital, lack of farmer awareness on the value of new varieties, and low experimentation and uptake of newer technologies (ibid, 2017). Joughin (2014) goes further, attributing constraints to the inability of the agricultural ministry to effectively regulate companies selling fake seeds; donors focusing on narrow technical responses to challenges instead of comprehensive solutions; and a weak regulatory environment.

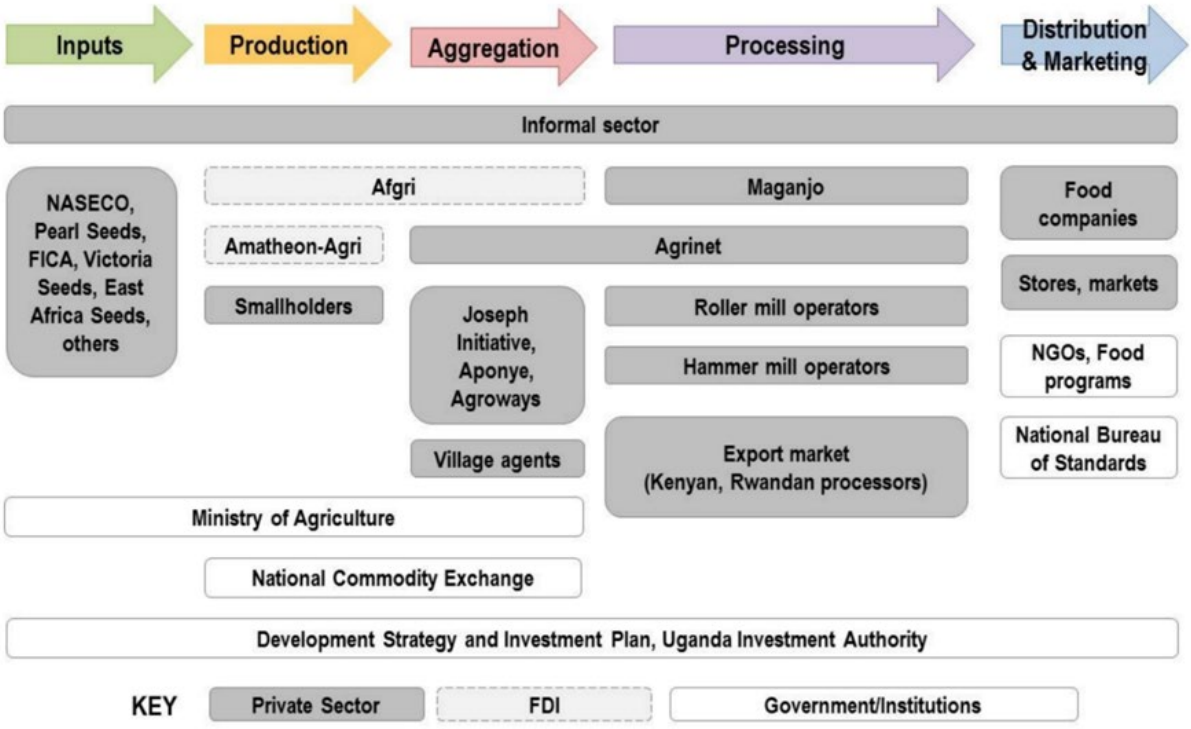

Figure 3: The maize value chain in Uganda.
Source: Daly et al. 2016

Maize in Uganda is predominantly a smallholder crop, with most farmers cultivating maize on less than half a hectare. This makes it difficult to generate economies of scale. A further move toward commercial-sized farms would alleviate the challenge (Daly, 2017). Ultimately, average maize yields are still significantly below potential at around 2.5 MT/ha and have been static for the last decade (Knoema, 2019).

Agribusiness and agro-processing

There is generally a low capacity in terms of skills, knowledge and tools among smallholder farmers and SMEs along the different value chains to effectively operate successfully as businesses. In a large-sample study, over 90% of the farmers surveyed did not know how to calculate their unit costs of production and thus profit per unit of sales, and nearly all were unfamiliar with strategies for maximising profits through economies of scale, and/or use of simple cost benefit analyses for decision-making (Kilimo Trust, 2019b).

For rice, there is limited value addition post-harvest. Rice processing involves activities such as buying threshed rice, loading and offloading, transporting threshed rice to the mill, and drying the rice to achieve appropriate moisture content before milling. Milling is the main activity (de-husking and removal of bran) and can include quality grading and weighing. Most millers in Uganda are small- to medium-scale and operate informally. Because they are not organised into associations, they are less likely to adopt innovative practices to reduce inefficiencies and improve quality, such as reducing the number of broken grains (Barungi & Odokonyero, 2016). Most milled rice is not properly packaged nor labelled, further reducing the potential for value addition through good marketing.

For maize, there is generally weak value chain integration in Uganda, which facilitates a network of village agents, traders, and wholesalers to purchase maize from farmers and sell it on to processors. Major challenges are differing motivations and the lack of coordination and communication between downstream and upstream actors, which obscures market signals about the value of high-quality maize. Traders do not reliably grade quality, with the follow-on effect that farmers have reduced incentive to invest in expensive inputs. Farmers' need for cash sometimes makes them more willing to sell to informal traders at lower prices, while traders' inadequate quality differentiation impairs the sales of processors who attempt to sell to Kenyan markets that demand premium maize (Daly, 2017).

Ugandan maize millers process an estimated 60% o into flour, 37% into animal feed, and 3% is destined for breweries to use as an input to make beer (BMGF, 2014). Most of the millers are small-scale, do not use modern technology, have little in the way of storage facilities, and produce less than 10 MT of flour per day.

Post-harvest handling and quality

After harvest, rice is threshed and left to dry. Poorly dried paddy rice is one of the biggest challenges for rice millers (Barungi & Odokonyero, 2016). Post-harvest rice losses are reported at around 13% (CARI, 2018). When rice is purchased by traders, it is evaluated on cleanliness, extent of broken grains, and colour. Traders report that about one-third of the rice they receive is low quality, meaning farmers lose on average Ugandan shilling (USh) 300/kg (ibid, 2018). Proper drying of rice is one of the most important post-harvest practices that greatly impacts on the quality. If threshed rice is not well dried, the percentage of broken grain will be high and the grains may not have a uniform colour.

For maize, post-harvest losses are often high at around 30-40% (EAGC, pers. comm.). Moisture content is a significant factor in post-harvest loss and a key reason why Uganda is unable to dispose of excess maize production in neighbouring countries where there is high demand. East African Community (EAC) standards require that maize is dried to 13.5% in order to be exported, but the KIIs indicated that Ugandan maize is often harvested with a moisture content of 20-25%. Poor drying and storage facilities ensure the kernels cannot reach the required threshold and are susceptible to fungal infections and mildew (Daly, 2017).

Markets

A serious challenge is the discrepancy between market requirements (quantity, quality, timing and variety) and what is produced either by the farmers or other value chain actors. This is because of poor forward planning and a limited understanding of the market requirement in terms of variety, quality and quantity. A second important challenge is the inadequate mobilisation and linking of actors in crop value chains, including service providers (transport, processing), business development (finance and extension services) and input suppliers. Off-takers require support to help them: (i) benchmark their performance, (ii) increase efficiency of their systems and capacity utilisation, and contract other partners, (iii) graduate to equity financing, (iv) expand their storage capacity, (v) establish and maintain quality control and enhancement systems, (vi) run their business professionally i.e., business and financial management, (vii) effectively market their products and carry out continuous market analysis to understand market requirements (Kilimo Trust, 2019).

Rice is both a food and cash crop, with around 40% retained for household needs (MAFAP, 2013). Most farmers market their rice produce individually, not in groups, meaning they have less bargaining power. This generally decreases the price fetched and increases the chance that they will be taken advantage of by millers or traders. Motivations for selling individually can vary, but include lack of access to structured markets or storage facilities. In a study by Barungi and Odokonyero (2016), the three leading marketing challenges faced by farmers were low and fluctuating produce prices, lack of transport or high-cost of transport, and cheating through maladjusted weighing scales. The Uganda retail market does not differentiate according to quality grades – broken rice and full grain are mixed, unlike with imported rice (Ayoki, 2012).

For maize, many of the value chain challenges stem from the fact that many farmers have neither adequate savings nor access to finance. As a result, they do not have the ability to invest in improved inputs and are susceptible to selling to smaller-scale traders who provide immediate payment but do not differentiate or pay a premium for quality (Daly, 2017). Maize grown in Uganda generally sees its lifecycle end in one of four ways: post-harvest loss (30%), the domestic industry (28%), the export market (22%), or on-the-farm consumption (18%) (Gates Foundation, 2014).

International trade

Uganda is not self-sufficient in rice with a deficit of around 200,000 MT (Uganda Investment Authority, 2019) so as rice production increases further in Uganda, the primary market will likely remain domestic and little will be exported internationally. The rice that is exported (e.g., to the Democratic Republic of Congo or South Sudan) is usually repackaged, imported rice. The rice deficit in Uganda, and the region in general, is largely caused by low production capacity, but also because locally-produced rice is significantly more expensive than, for example, Pakistani rice (US$137/MT cheaper – CARI, 2018). This is despite the fact that the EAC enforces a Common External Tariff (CET) for rice procured from outside the bloc, which is set at 75% *ad-valorem* or US$200/MT, whichever is higher. As domestic rice production increases, to compensate rice farmers for the potential decrease in tariff-related protection, it will be all the more important to boost productivity and thus farmers' incomes.

For maize, Uganda is a significant surplus producer (about 137,000 MT *per annum*) which is exported to Kenya, Rwanda and South Sudan. Despite large deficits in Kenya in particular, formal cross border trade in grains accounts for only about 20% of total traded volume (EAGC, pers. comm. 2019). Other than mycotoxin contamination, a key reason Uganda is unable to dispose of excess maize production in neighbouring countries, where there is high demand, is the low quality of maize in general. According to a KII, a large proportion of maize is lower than grade 3 and 60% of production does not meet EAC grain standards, thus making (formal) cross-border trade a challenge.

Cross-border trade is further challenged by a lack of harmonisation of customs and border procedures, a lack of basic means by customs agencies to assess compliance with standards, and excessive delays due to a limited institutional capacity to apply established rules and regulations consistently and efficiently. Non-tariff barriers (export or import restrictions, e.g., the closed Uganda-Rwanda border at time of writing) imposed by governments are also a constraint to farmers after poor harvests, and a disincentive for value chain actors to invest. For rice, Ayoki (2012) mentions that the growth of intra-regional

rice trade is increasingly becoming dominated by informal and illicit trade, in part because other taxes and barriers other than duty appear excessive to traders. The same is also likely for maize.

Policies

The ASSP 2015/16-2019/20 establishes both maize and rice as priority crops for Uganda. For maize, the sector intends to increase production and productivity by increasing multiplication and distribution of seed; improving access and use of fertilisers; increasing pest and disease control measures; promoting mechanisation; improving extension services; support to post-harvest handling through training traders and farmers on quality standards, and post-harvest handling technologies (MAAIF, 2015)

For rice, the ASSP intends to increase rice production and productivity through: multiplication and distribution of improved foundation seed, mechanisation of rice production, investment in irrigation infrastructure (starting with Eastern Uganda) and provision of extension services. In order to reduce post-harvest losses in rice, the sector intends to promote and distribute appropriate post-harvest technologies, increase access to credit by rice farmers, traders and processors, and promote rice marketing through collective marketing for high-quality rice (MAAIF, 2015).

The NDP II and Export Action Plan of 2016 identify export-oriented growth as one of the key development strategies towards achieving sustainable wealth creation, employment and inclusive growth. To deliver the NDP, the agriculture sector has a target of increasing agricultural exports to US$4 billion by 2020 from the current US$1.3 billion.

For rice, there are challenges coordinating the sector at the regional level and inconsistent implementation of EAC protocol supporting regional trade. The National Rice Development Strategies focused more on increasing productivity with no marketing strategy for capturing surplus produce and farmers experiencing marketing problems for their paddy rice. On the other hand, non-tariff barriers imposed by government may also be a constraint to farmers and a disincentive for value chain actors to invest. This has caused limited formal trade among EAC countries and thus, failure to tap into the existing potential for rice self-sufficiency in the region.

For rice specifically, the unilateral lower-tariff exception for imported rice in Kenya (35%, instead of 75% in other EAC member states) is partly responsible for the illicit trade across EAC common borders. This does make Ugandan rice less competitive but at the same time, reduces consumer prices and helps to drive demand.

For maize, despite common border protocols, the high bank transfer fees (US$300 for a single 1,000 MT transaction), ad-hoc increases in taxes and transport levies, as well as ad-hoc border closures (e.g., with Rwanda in 2019) were cited as by KIIs as important challenges. These issues are reportedly difficult to resolve at the higher policy and regulatory levels.

Table 5: Strengths, weaknesses and opportunities for the maize and rice market systems in Uganda

	Strengths	Weaknesses	Opportunities for improvement
Production	• High agricultural potential due to low variations in temperature and two rainy seasons • Rice production has been increasing since 2000 • Maize production has also doubled since early 2000s and still significant potential for growth	• Rice: low uptake of quality seed, disconnect between seed varieties available and what farmer demand • Rice: very low rate of fertiliser application leads to low crop productivity • Low and static maize productivity	• Modernise farming for higher yields and improved natural resource management • Rice: significant scope for rapidly increasing productivity through increased use of improved seed and fertiliser application. This could be stimulated through input subsidy • Improve resilience of farming in view of climate change • Improve smallholder access to finance to facilitate greater investment
Agribusiness and agro-processing	• Comprehensive network of rice millers (although some based far from farmers), and sufficient capacity for managing production growth • Conducive environment for digital agribusiness services, with 71% cellular penetration rate • Youthful population can be leveraged for innovative business model development	• High cost of electricity and outages negatively affect rice processors • Small-scale rice millers are inefficient and operate at less than half their capacity • Rice milling infrastructure is not often upgraded, rice is often not sorted, graded and poorly packaged • Rice processing infrastructure is not evenly distributed and far to travel for some farmers	• Support initiatives for better rice milling (quality), grading and packing
Post-harvest handling and storage	• Maize: significant storage capacity has been upgraded or repurposed	• Uncertainty of markets and cash needs reduces viability of storage for famers • Rice: limited post-harvest storage/warehouse receipt systems • Maize: only about 30% storage capacity utilised • High levels of aflatoxin in maize constrains exports • Low-quality of maize grain	• Support (private or collective) investment in warehouses and post-harvest infrastructure • Install maize dryers to increase quality • Viably improve farmer access to finance
Marketing	• Rice: significant and growing domestic market • Domestic maize surplus	• Rice: most farmers sell their harvests individually, and as such, are 'price-takers' • Unregulated markets increase risks for farmers, and nearly all rice traders operate informally • Rice: high cost of transport to valuable but distant markets	• Rice: improved domestic prices will help reduce and stabilise rice prices • Promote price differentiation based on formal standards, grades and measurement • Rice: promote the advantages of group marketing to strengthen the ability of farmers to link and access rice markets

		• Rice: limited farmer access to price and market information • Maize: a major lack of access to finance for collective bulking and initiating warehouse-receipt type systems	and increase bargaining power • Rice: price information can be made available to farmers to access better markets • Maize: engage with financial service providers to create products for bulking and aggregation
International trade	• Established export trading channels within EAC • Liberalised trading environment • Huge potential for increasing maize export	• Maize: ad-hoc deviations from expected cross-border trade regulations increases costs (non-tariff barriers)	• Rice: as price protection from the CET becomes less relevant, farmers can compensate lost income by increasing productivity • Rice: improve trade infrastructure (storage, packaging, grading) • Maize: improve post-harvest processes to boost quality and high-grade maize markets
Policies	• Support policies for agricultural commercialisation and transformation	• Weak implementation and enforcement of policies and standards across the value chains	• Establish mechanisms for policy implementation and monitoring • Improve evidence base for decision-making

Source: own elaboration

5.2 AGRA system change ambitions

In terms of its ambitions for change in the policy and state capability system, AGRA's aims for the market system in Uganda are relatively modest (Table 6), to match the limited sum available for grants. At the time of study, only two grants had been funded. Both grants aim to enhance agricultural commodity trade, strengthen competitiveness and access in regional markets, and strengthen enabling policy and the institutional environment for commercialisation.

Table 6: AGRA PIATA grants mapped according to envisioned change to market system components

Envisioned change	AGRA activity	Timeline	Scope and scale	Intervention budget (US$)	Implementing partners
Production	Regional Trade in Staples Phase II (REACTS II) project implemented in Kenya, Rwanda and Uganda. The project aims to indirectly strengthen productivity	April 2018-March 2022	Kenya, Rwanda and Uganda: Strengthening of SMEs, farmer trade capacity, regional value chain linkages. Targets ultimately 43,307	881,000 (Uganda only)	Kilimo Trust

			smallholder farmers		
	The Competitive African Rice Initiative in East Africa (CARI-EA) project aims to increase productivity, commercialisation, profitability and resilience for smallholder producers	March 2019-March 2022	Kenya Tanzania and Uganda. Targets 220,000 smallholder farmers directly and an additional 440,000 indirectly	3.13 M	Kilimo Trust, EAC Secretariat
Agri-business and agri-processing	REACTS II project supports enabling businesses and service providers	April 2018–March 2022	See REACTS II scope and scale above	881,000 (Uganda only)	Kilimo Trust
Post-harvest handling	REACTS II project (indirect contribution). Interventions support grain quality improvement	April 2018–March 2022	See REACTS II scope and scale above	881,000 (Uganda only)	Kilimo Trust
Marketing	REACTS II project is improving the competitiveness of traders through market knowledge	April 2018–March 2022	See REACTS II scope and scale above	881,000 (Uganda only)	Kilimo Trust
International trade	CARI-EA Aims to strengthen and expand access and competitiveness in national and regional markets	March 2019 – March 2022	See CARI-EA scope and scale above	3.13 M (all counties)	Kilimo Trust, EAC Secretariat
	REACTS II project aims to allow market system in Uganda to be more responsive and understanding of regional market needs	April 2018–March 2022	See REACTS II scope and scale above	881,000 (Uganda only)	Kilimo Trust
Policies	CARI-EA supports local, national and regional enabling policy and institutional environment for optimal commercialisation	March 2019–March 2022	See CARI-EA scope and scale above	3.13 M (all countries)	Kilimo Trust, EAC Secretariat

Source: AGRA, REACT II project documents, CARI-EA project documents

REACTS II

REACTS II aims to build sustainable trading systems in Kenya, Rwanda and Uganda in order to take advantage of national, regional and 'opportunistic' international markets. For Uganda, the focus crops are maize and pulses. REACTS II builds on the achievements of REACTS I, which was funded by the International Fund for Agricultural Development and ran from 2014-2017. REACTS I enabled projects across the East African region to align their interventions, re-tool/skill project teams and service providers, and work with relevant trade-facilitating agencies in enabling business enterprises working with at least 10,000 smallholder farmers to respond effectively to regional food markets. This was to be achieved through supporting projects to attain a robust understanding of opportunities in the regional

markets, and subsequently, use such understanding to improve small-scale producers' and traders' competitiveness.

REACTS II continues this approach to building sustainable trading systems. Specifically, REACTS II aims to strengthen and expand access to input and output markets and strengthen partnerships with AGRA, governments, USAID and other potential agricultural investors, to ensure synergies and complimentary efforts in Uganda's maize value chain. The project does not work with farmers directly, but rather relies on a 'pull effect' by strengthening market systems. However, smallholder farmers are the ultimate target beneficiaries. The project aims to enhance their ability to produce and deliver to a clearly defined market. In becoming more commercially oriented, farmers should become more profitable and also have better access to formal credit. The REACTS phase 1 results – on which REACTS II will build – are shown in Table 7.

Table 7: Results of REACTS I, 2014-17

- **Increased trade through structured trade arrangements:** 13,593 MT of produce valued at US$4.3 M of which, approximately 20% by value was traded across borders.
- **New business linkages:** five projects brokered to create new business linkages.
- **Consortia formed:** one regional and eight national consortia formed comprising 34,000 smallholder farmers.
- **Knowledge management portal** created for sharing experiences on business linkages: http://reacts.kilimotrust.org/
- **Six market information packages produced** and shared with participating projects to increase their understanding of regional markets.
- **Five projects reoriented interventions** by adopting REACTS innovations, such as a farmer business schools, cross-learning events and geographical information systems technology.

CARI-EA

The project's central aim is to enable locally-produced rice in East Africa to competitively substitute rice imports to the EAC market. The project is implemented in Kenya, Tanzania and Uganda. Imported rice from Pakistan is US$131/MT cheaper than domestically-sourced rice in Uganda (CARI, 2019).

CARI-EA, implemented by EAC and Kilimo Trust, builds on the CARI-1 project which was rolled out in Burkina Faso, Ghana, Nigeria and Tanzania, and jointly funded by the Bill and Melinda Gates Foundation and the German Federal Ministry for Economic Cooperation and Development from 2014 to 2018. CARI-1 promoted the holistic development of the rice value chain and claims a number of achievements in terms of the numbers of trained farmers, rice yield increases, and rising household income (CARI, 2020).

The low competitiveness of locally-produced rice is mainly attributable to:

- Inefficient market linkages and low productivity due to limited use of production-enhancing technologies across EAC countries;
- Limited coordination of the rice subsector at the EAC regional level; and
- Limited access to appropriate financial services for smallholder farmers and other rice value chain actors.

A key initiative of the project is to explore working with large businesses currently invested in rice importation, to attract them to increase sourcing and marketing of locally-produced rice in the region. A second approach focuses on rice millers as the central drivers of the competitiveness required to substitute imports. Specific project objectives are to:

- Increase productivity, commercialisation, profitability and resilience for smallholder rice producers;
- Strengthen and expand access and competitiveness in the national and regional markets for locally-produced rice;
- Strengthen the local, national and regional enabling policy and institutional environment for optimal commercialisation of the rice sector.

5.3 AGRA system change results

Both the REACTS II and CARI-EA projects aim to drive a sustainable change in the market system dynamics for traded commodities in Uganda, and in the wider East Africa region. The rice and maize value chains face key challenges at every node, making systemic change complicated. CARI-EA only commenced mid-2019, and as such, has not yet produced evidence of (early) market systems change.

5.4 Analysis of AGRA system interventions

Relevance

Regarding the rice market system, it is highly relevant to focus on the efficiency of the entire chain to improve competitiveness of the rice sector compared to imported rice. A major constraint hampering the competitiveness of rice production in Uganda is the limited area under irrigation schemes, which are accommodating intensive paddy rice production on a larger scale and allowing for greater investments in quality processing. But whilst irrigation infrastructure is high on the political agenda, there is limited appetite for investing in the major resources required to build it.

With regard to maize, there is a need to improve the position of Ugandan maize in the regional market by improving input and output trade relations. With maize being the major food and cash crop of Ugandan smallholders, a better functioning maize market will offer an incentive for smallholder farmers to invest in production intensification and thus, increase their maize-derived profits. Politicised trade regulation of maize brings market fluctuations and reduces predictability of the market, and often reduces the liquidity of surplus maize production.

Effectiveness

The REACTS II project is based on the assumption that improving regional trade will have a positive effect on the prices of cash crops in countries where the project intervenes. This assumption only holds true if the production and market chain in one country can compete reasonably with the next.

In the case of maize in Uganda, competitiveness is hampered by poor post-harvest practices. The major constraint to maize export is low-quality grain, often because of high moisture content, which is associated with aflatoxin contamination. In 2018, a bumper maize harvest could not be exported to Kenya for this reason, and local maize prices dropped from around USh1,000 to USh200/kg, with much downgraded for use in animal feed.

AGRA's support could be used to improve post-harvest handling. If no acceptable results at the farm level can be obtained, industrial-scale sorting and drying capacity (for example at the Busia border with Kenya, or smaller decentralised units in keeping with the East Africa Grain Council strategy) can be set-up to help address this challenge.

For rice, the growing gap between demand versus availability will strengthen prices and stimulate production so long as competition with cheap imports is effectively managed. CARI-EA will need to ensure that production-side constraints – particularly with regard to supply and use of sufficient seed – are identified and addressed.

Impact

At this point, the impact of both initiatives cannot be judged.

Sustainability

- Both REACTS II and CARI-EA are projects that attempt to achieve system-level change by structuring markets of concerned commodities, and by bringing value chain actors across multiple nodes of the rice and maize value chains together to solve their own systemic challenges. This is ambitious and laudable, but does embody some risks (although some of these will be understood from previous REACTS and CARI projects). For example, engaging a wide range of sector stakeholders across the value chain will possibly bring together divergent motivations and capacities, and not result in sufficient momentum everywhere to deliver sustainable system change;
- Using large traders and local processors as the entry-points for system change is a good approach. Farmers can produce excellent rice at a competitive price, but without quality local processing, the produce will end up being of low quality, which cannot compete with bulk rice from Asian countries. The challenge is in building a quality reputation for Uganda-produced rice (for example, through branding, a planned activity for the future) and convincing traders that it is worth their while to promote and trade this domestic product;
- Sustainability of initiatives supporting structured regional trade will at times be challenged due to the recurring, ad-hoc nature of temporary non-tariff barriers. This is recognised by the projects, yet fully outside their control. At the time of writing, trade is not yet possible between Uganda and Rwanda, and traders and value chain actors must adapt by routing exports via Tanzania. When considering maize in Uganda, focussing on the domestic consumer market and the South Sudan export market may offer more sustainable results;
- As a general comment, better access to finance for smallholders and aggregators was mentioned by several KIIs as a key opportunity for unlocking growth in maize and rice value chains. For example, the Development Finance Company of Uganda Bank Limited is part of the REACTS consortium and provides asset loans to farmers and traders. Yet, the bank will not support investments in bulking and trading. Access to finance for the 12 large grain traders, and their associated aggregators, would remove a large value chain bottleneck and merit consideration for investment.

PART II: SME survey

6 SME performance

6.1 Introduction

AGRA considers SMEs as important drivers of growth. They account for up to 90% of all businesses in sub-Saharan African markets. In many agricultural commodity value chains, SMEs also take up many of the downstream activities of processing, storage, transportation, wholesale and retail that are necessary to send farmers' produce to the end market.

An important pathway for change in the PIATA programme is supporting the development of SMEs operating in, and providing support services to, agricultural value chains. AGRA works to stimulate both demand and supply sides of technical assistance and financial products for SMEs. Core interventions focus on:

- Identifying high-potential SMEs and supporting them with business and technical advisory services to scale up operations. These advisory services involve a performance-based model for service providers, which requires them to produce business plans and achieve results through effective support to SMEs;
- Matching grants for emerging medium-sized aggregation/storage businesses in under-served areas where smallholder farmers are increasing their yields, and marketing greater surpluses;
- Providing access to working capital finance for SMEs;
- Influencing the ecosystem within which SMEs operate by supporting the development of business, enabling goods and services such as packaging, commodity handling and processing machinery, as well as payment processing services and market data.

To assess the changes in performance of SMEs benefitting from the AGRA-PIATA programme, a rapid survey instrument has been designed, and the baseline data collected. Both are reported on here.

In the design of the monitoring tool the following needs were taken into consideration:

- A rapid and affordable tool to monitor SME performance;
- A tool which can be tailored to different SMEs, but still allow comparison and use across very different types SMEs;
- A tool which can be used for very different sizes of SMEs, including micro enterprises;
- A tool which can monitor SME performance change over time;
- A tool which can offer an immediate overview of SME performance;
- A tool which is simple, openly accessible, and can be implemented across countries by enumerators with a reasonable level of education.

To answer all these demands, KIT has developed a simple SME performance scorecard.

6.2 Methodology

Performance dimensions

This scorecard for SME performance is based on monitoring four dimensions:

- Business resilience: indicates the ability of the SME to adapt to disruptions while maintaining business operations, employment and assets. The variables used to determine business resilience are:
    - Years in business
    - Number of services provided
    - Diversity of clients
- Financial stability: indicates the financial health and access to financial services of an SME. The variables used to determine financial stability are:
    - Estimated annual turnover
    - Proportion of capital need covered with formal credit
    - Capital investments made over the last three years
- Human capital: indicates the education level and gender diversity of the SME workforce. The variables used are:
    - The proportion of staff having received a form of tertiary education
    - The proportion of staff with a permanent contract
    - The proportion of casual workers
    - The proportion of women among staff with a permanent contract
- Technology/assets: indicates the SME assets and investments in R&D. The variables used are:
    - Investments in R&D
    - Value of buildings
    - Value of equipment

For all of the above indicators, four levels are predefined, either numeric or descriptive, representing progression, with 1 being the lowest score and 4 being the highest score. In a way, the highest level represents what could be considered the desired state of the SME for the particular variable. The average of the scores gives the total score for each dimension. Performance scorecards are presented in Annex 2. An overview of all SME indicators and associated descriptive statistics is presented in Annex 3.

Sampling

Sampling was carries out among SMEs benefitting from AGRA support only. This has been done for the practical reason that SMEs not benefitting are not expected to be willing to answer questions about the performance of their enterprise. Also, the objective is monitoring the performance improvement of SMEs receiving support from AGRA, over time.

The targeted sample in each country consisted of:

- 10 commercial seed producers
- Five seed companies
- 10 traders
- 10 processors
- 10 agro-dealers
- Five input supply companies

Randomly sampling was performed used a list of SMEs provided by AGRA, which was validated with the local AGRA team. The sample distribution of SME types was only considered a guideline, and adapted based on the investment portfolio of AGRA in each country.

In Uganda, 24 out of the 32 identified SMEs agreed to participate in the interview were. The sample was composed of:

- Seven seed companies
- Eight input supply agro-dealers
- Nince value-chain companies.

The performance relative to seed producers is not reported since they refused to participate in the survey. More information about SMEs participating in the survey can be found in Annex 4.

6.3 Performance dashboard

This section summarises the performance of the different types of SMEs for each of the four dimensions: business resilience, financial stability, human capital and technology. A red bar indicates poor performance (score 1-2); orange indicates that there is room for improvement (score 2-3); green indicates good performance (score 3-4).

Seed companies

Seven seed companies were assessed in the sample. Their average score for business resilience was 2.5, signalling a positive pathway toward good performance. The scores assigned to the three indicators (years in business, number of services provided, number of buyers) are 1, 3.1, and 3.5, respectively (see Figure 4). The low value is due to the fact that these SMEs are new enterprises, having been in business for almost four years on average (see Table 9 in Annex). They offer diversified services – three on average, which mainly involve production of early generation seed/foundation seed, and production and sales of improved/certified seed (see Table 15 in Annex). They deal with three different buyers on average, mainly associations, government and traders (see Table 14 in Annex).

The average financial stability score for these SMEs is 3.2, indicating that they are close to good performance. The scores assigned to the three indicators (use of formal credit, annual turnover and number of investments) are 2.8, 3.5, and 3.5, respectively (see Figure 4). These SMEs have an average annual turnover of around US$1,962,230 with high variation between them (see Table 1 in Annex). They have access to formal credit, but while 28% indicated that they get more than 50% of their credit from formal credit institutions, there is still a high percentage that get between 25-50%, or less, credit from a formal channel (see Table 17 in Annex). These SMEs have a good attitude toward investments; they declared more than three investments in the last three years, on average, and only 14% declared not investing at all (see Table 16 in Annex).

The average score for human capital is 2.9. The scores assigned to the three indicators (% permanent employees, % female and % skilled employees) are 2.4, 3.2 and 3.2, respectively (see Figure 5). These SMEs should enrol more permanent staff. The average score for technology is 2.6. The scores assigned to the three indicators (investment in R&D, investment in buildings or storage facilities; investment in equipment) are 2.2, 2.7, and 3.1, respectively (see Figure 4), showing that these SMEs have good attitudes toward investments in technology.

Figure 4: Seed companies' performance scorecard

Input supply or agro-dealers

The performance of eight input supply/agro-dealers was assessed in the sample.
The average business resilience score for these SMEs is 2.6, signalling a positive pathway toward good performance. The scores assigned to the three indicators (years in business, number of services provided, number of buyers) 1, 3.1, and 3.6, respectively (see Figure 5). The low value is due to the fact that these SMEs are new enterprises, having been in business for almost four years on average (see Table 9 in Annex). They offer very diversified services on average, four on average, showing a good attitude toward risk diversification (see Table 15 in Annex). They also deal with a number of different buyers – three on average (see Table 14 in Annex).

The average score for financial stability is 3.3, indicating very good performance. The scores assigned to the three indicators (use of formal credit, annual turnover and number of investments)are 3.6, 3, and 3.3, respectively (see Figure 5). These SMEs have an average annual turnover of around US$334,371 with high variation between them (see Table 1 in Annex). They have good access to formal credit, but there is a small proportions that still does not have access to formal credit institutions (see Table 17 in Annex). These SMEs show a positive attitude toward investments, declaring three investments in the last three years on average (see Table 16 in Annex).

The average score for human capital is 2.5. The scores assigned to the three indicators (% permanent, % female and % skilled employees) are 2.7, 2.5 and 2.5, respectively (see Figure 5). These SMEs should enrol more female and skilled employees. The average score for technology is 1.4. The scores assigned to the three indicators (investment in R&D, investment in buildings or storage facilities and investment in equipment) are 2.1, 2.5, and 2.1, respectively (see Figure 5), showing that these SMEs have made some investment in technology in the last three years.

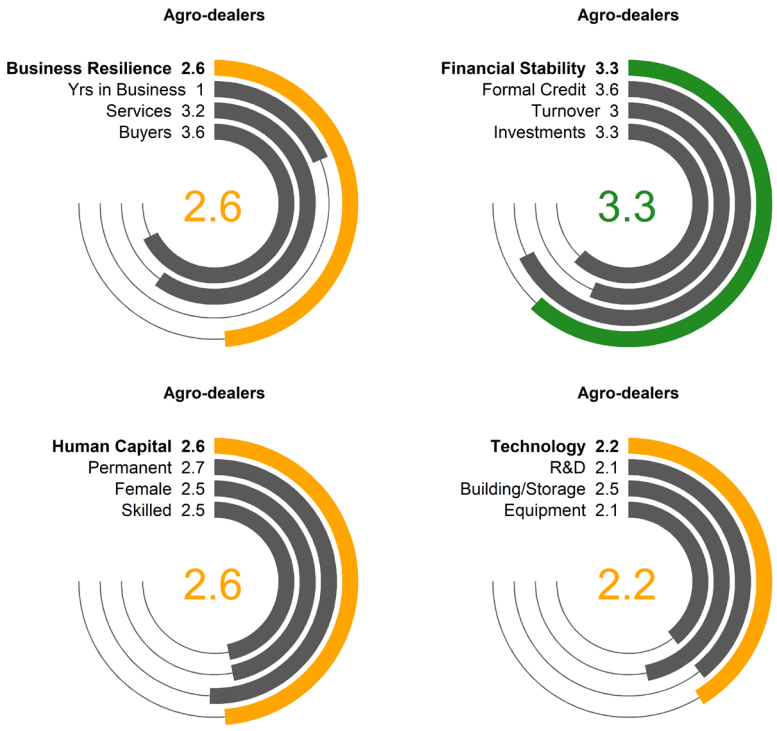

Figure 5: Input supply or agro-dealers' performance scorecard

Agri-value chain actors

Nine SMEs operating in the agricultural value chain sector as aggregators/traders or processors were assessed as part of the survey. The average score of business resilience is 1.9, signalling low business resilience performance. The scores assigned to the three indicators (years in business, number services provided, number of buyers) are 1, 1.8, and 3, respectively (see Figure 6). The low value is due to the fact that these SMEs are new enterprises, having been in business for three years on average (see Table 9 Annex). They offer almost two services on average – mainly the aggregation of farmers' production and agri-food processing (see Table 15 in Annex). They deal with three buyers on average, mainly individual producers and traders, which shows good market risk diversification (see Table 14 in Annex).

The average score for financial stability is 3.5, signalling a positive pathway toward good performances. The scores assigned to the three indicators (use of formal credit, annual turnover and number of investments) are 3.3, 4,3.4 respectively (see Figure 6). These SMEs have an average annual turnover of US$344,742. They have access to formal credit with 44% getting more than half of their credit from formal credit institutions. However, there is still a small percentage (11%) that does not have access to credit (see Table 17 in Annex). The agri-value chain actors made few investments, on average, in the last three years (see Table 16 in Annex).

The average score for human capital is 2.2, indicating that there is room for improvement. The scores assigned to the three indicators (% permanent employees, % female and % skilled employees) are 2.6, 2 and 2, respectively (see Figure 6). It may be a good strategy to enrol more female and skilled employees. The average score for technology is 2.8. The scores assigned to the three indicators (investment in R&D, investment in building/storage

and investment in equipment) are 2.2, 3, and 3.2, respectively, showing good performance in investments in building and equipment (see Figure 6).

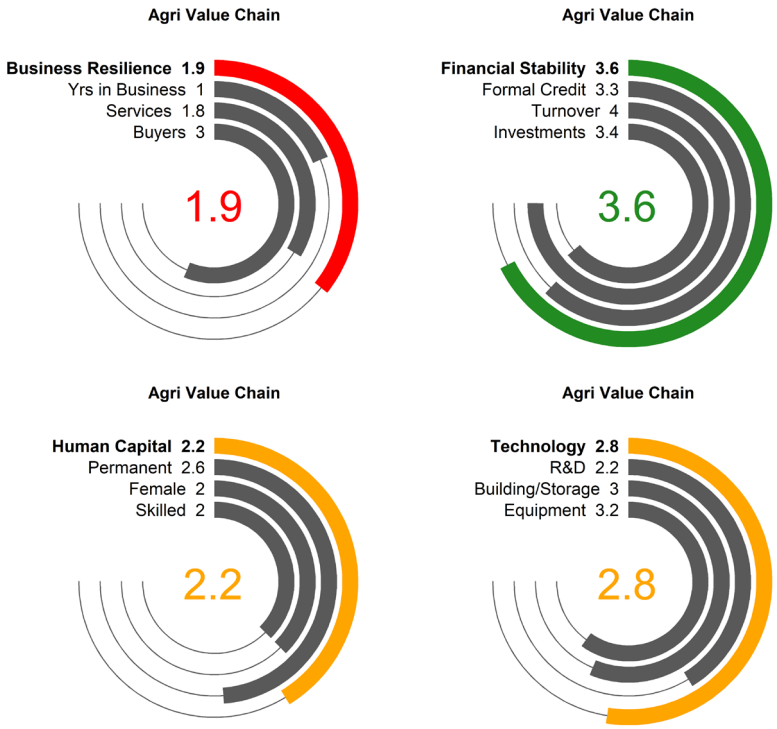

Figure 6: Agri-value chain actors' performance scorecard

References

African Union Development Agency. 2017. *Tracking progress in implementing the Malabo Declaration on Agriculture transformation in Africa*. Available through: https://www.nepad.org/caadp/countries/uganda (Accessed 14 January 2020).

AFDB (African Development Bank Group). 2017. *Uganda Country Strategy Paper 2017-2021*. African Development Bank Group, Abidjan.

AGRA (Alliance for a Green Revolution in Africa). 2018. *Grant Memo 2018 UG 002*. AGRA, Nairobi.

AGRA (Alliance for a Green Revolution in Africa). 2019a. *AGRA Uganda Operational Plan* (revised June 2019). PowerPoint presentation.

AGRA (Alliance for a Green Revolution in Africa). 2019b. *E.A. Planning*. PowerPoint presentation.

AGRA (Alliance for a Green Revolution in Africa). *2019c. Towards Inclusive Agriculture Transformation in Uganda (TIAT- Uganda)*. Project proposal. AGRA, Nairobi.

Ayoki, M. 2012. *Rice Trade in East Africa: Flows, Dynamics and Policy*. IPRA Working Paper 24. Institute of Policy Research and Analysis, Kampala.

Barriga, A. and Fiala, N. 2017. *The Supply Chain for Seed in Uganda: Where Does It All Go Wrong?* Leibniz-Institut für Wirtschaftsforschung Hohenzollernstr, Essen.

Byarugaba, B. 2019. Uganda lacks enough planting seeds. *New Vision Newspaper*. [online]. Available through: https://www.newvision.co.ug/new_vision/news/1496553/uganda-lacks-planting-seeds (Accessed 19 March 2020).

CSBAG (Civil Society Budget Advocacy Group). 2014. *Policy Brief on Financing Agricultural Research in Uganda: An Exploration of the National Agricultural Research Organization (NARO) Funding*. CSBAG, Kampala.

Competitive African Rice Initiative. 2020. CARI Website. [online] Available through: https://www.cari-project.org/ (Accessed 16 April 2020).

Daly, J., Hamrick, D., Gereffi, G. and Guinn, A. 2016. *Maize value chains in East Africa*. Publication reference number F-38202-RWA-1. Duke Center on Globalization, Governance & Competitiveness, North Carolina.

Deloitte Touche Tohmatsu. 2019. *Uganda Budget Highlights 2019/20: Unravelling the Puzzle*. Deloitte Touche Tohmatsu, London.

FAO (Food and Agriculture Organization of the United Nations). 2018. *FAO policy and capacity building support to Uganda*. Briefing paper. FAO, Rome.

BMGF (Bill and Melinda Gates Foundation). 2014. *Maize Uganda: Multi-Crop Value Chain Phase II*. BMGF, Seattle.

Govere, I., Foti, R., Mutandwa, E., Mashingaidze, A. B. and Bhebhe, E. 2009. Policy perspectives on the role of government in the distribution of agricultural inputs to farmers: Lessons from Zimbabwe. *International NGO Journal*, 4(10), pp.470-479.

Government of Uganda. 2015. *Second National Development Plan (NDPII)*. Government of Uganda, Kampala.

Government of Uganda. 2013. *Uganda Vision 2040*. National Planning Authority. Government of Uganda, Kampala.

Government of Uganda. 2013. *National Agriculture Policy*. Government of Uganda, Kampala.

Joughin, J. 2014. Fake Seeds are Keeping Uganda's Farmers Poor. *The Guardian newspaper* [online], July 21. Available through: https://www.theguardian.com/global-development-professionals-network/2014/jul/16/fake-seeds-uganda (Accessed 19 April 2020).

Kilimo Trust. 2018. *Competitive African Rice Initiative in East Africa Project (CARI-EA)*. Project proposal.

Kilimo Trust. 2019a. *Competitive African Rice Initiative in East Africa Project (CARI-EA)*. Factsheet. Kilimo Trust, Kampala.

Kilimo Trust. 2019b. *Regional East Africa Trade in Staples-Phase II (REACTS-II) Project*. Project proposal.

Knoema. 2019. Uganda maize yield. *Knoema* [online]. Available through: https://knoema.com/atlas/Uganda/topics/Agriculture/Crops-Production-Yield/Maize-yield (Accessed 16 April 2020).

Koroma, S., You, N. and Kakuba, T. 2016. *Piloting the methodology for estimating government expenditure in agriculture in Uganda*. Food and Agriculture Organisation of the United Nations (FAO), Rome.

MAAIF (Ministry of Agriculture, Animal Industry and Fisheries). 2015. *Agriculture Sector Strategic Plan 2015/16 – 2019/20*. MAAIF, Kampala

MAAIF (Ministry of Agriculture, Animal Industry and Fisheries). 2016. *National Fertiliser Policy*. MAAIF, Kampala.

MAFAP (Monitoring African Food and Agricultural Policies). 2013. *Rice in Uganda: Supporting producers but penalising consumers*. MAFAP Policy brief number 4. MAFAP, Kampala.

Mayanja, F., Kakuba, T. and Massawe, S. 2017. *CAADP Biennial Review Brief: Africa Agriculture Transformation Scorecard Performance and Lessons for Uganda*. Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Kampala.

MoFPED (Ministry of Finance, Planning and Economic Development. 2019. *Performance of Agricultural Extension Services: What are the emerging challenges?* BMAU Briefing Paper 25/19. Budget Monitoring and Accountability Unit (BMAU), Kampala.

Ministry of Works and Transport. 2020. Key Summary Statistics. [online]. Available through: https://www.works.go.ug/key-summary-statistics/ (Accessed 13 February 2020).

Mubangizi, E., Ntamu, D., Thembo, W.M. and Thijssen, M. 2012. *ISSD Assessment Uganda*. Wageningen Univesity and Research, Wageningen.

Mugagga, F., Kakooza, L. and Asiimwe, G. 2018. *A review of Uganda's Agricultural Policy and how it addresses AgriFose 2030's Target Groups*. Agriculture for Food Security 2030 (AgriFose).

Mushemesa, E.D. 2019. *Decentralisation in Uganda: Trends, Achievements, Challenges and Proposals for Consolidation*. ACODE Policy Research Paper Series No.93. ACODE, Kampala.

Robert, T. and Mesharch, K. 2018. Public Sector Provision of Free Agricultural Inputs in Uganda: The Rationale and Challenges of Operation Wealth Creation Programme. *Journal of Public Administration and Governance* 8(2), ISSN 2161-7104 2018.

Trading Economics. 2020. *Ease of Doing Business Index*. [online]. Available through: https://tradingeconomics.com/uganda/ease-of-doing-business (Accessed 13 February 2020).

Transparency International. 2019. *Corruptions Perceptions Index 2019*. [online]. Available through: https://www.transparency.org/cpi2019 (Accessed 13 February 2020).

Uganda Investment Authority. 2019. UIA secures duty remission on rice imports. [online]. Available through: https://www.ugandainvest.go.ug/uia-secures-duty-remission-on-rice-imports/ (Accessed 18 April 2020).

World Bank. 2018. *Closing the Potential-Performance Divide in Ugandan Agriculture*. World Bank, Washington, DC.

World Bank. 2019. *Enabling the Business of Agriculture 2019*.: World Bank, Washington, DC.

World Bank. 2020. *World Development Indicators*. [online]. Available through: https://databank.worldbank.org/source/world-development-indicators (Accessed 13 February 2020).

Annex 1: Interviewees

Organisation	Respondent	Department/function	Topic discussed	Relation to AGRA
NARO Uganda	Dr. Kayuki Kaizzi	Soil scientist	State capability, markets	Grantee
USAID Uganda	Simon Byabagambi	Programme management and agronomist	State capability	Partner
MAAIF/FAO	Dr. Jean-Marie Byakweli	Embedded policy advisor	State capability	Informant
MAAIF	Moses Erongu	Senior seed inspector	State capability	Grantee
Makerere Regional Center for Crop Improvement	Dr. Richard Edema	Director	State capability	Grantee (ex-)
UAA	Edward Katende	CEO	State capability	Grantee
Makerere Univeristy	Prof. Phineas Tukumuhabwa	Professor, genetics, plant breeding and seed systems	State capability	Grantee (ex-)
Kilimo Trust	Rachel Ajambo	Team leader CARI-EA project	Market system	Grantee
Kilimo Trust	Mariam Sanyu	Technical assistant field officer REACTS II	Market system	Grantee
Kilimo Trust	Dr. Mary C. Shetto	CEO	Market system	Grantee
Rice Millers Council of Uganda	Ambassador Phillip Idro		Market system	Grantee
Zirobwe Agaliawamu Agri-business Training Association	Geoffrey Myambala	Manager	Market systems	Grantee
Grainpulse	Jeremiah Nyambinya	CEO	Market system	Grantee (ex-)
Grain Council of Uganda	Harriet Nabirye	Communications manager	Market system	Informant
Rwanda Agriculture Board	Dr. Clement Urinzwenimani	Early generation seed breeder	Seed systems	Grantee
BK Techouse	Jean Claude Munyangabo	CEO	Extension system	Grantee

Annex 2: Performance scorecard

Table 8: Business resilience performance scorecard

Business resilience		Performance category 1	Performance category 2	Performance category 3	Performance category 4
Years in business	Ranges (Years)	1-5	5-10	10-15	>15
	Score	1	2	3	4
Number of services	Ranges (#)	1	2	3	>3
	Score	1	2	3	4
Number of buyers	Ranges (#)	1	2	3	>3
	Score	1	2	3	4

Table 9: Financial sustainability performance scorecard

Financial sustainability		Category 1	Category 2	Category 3	Category 4
Percentage using formal credit	Ranges (%)	0%	0%-33%	33%-66%	>66%
	Score	1	2	3	4
Annual turnover (US$)	Ranges (thousands)	1-10	10-25	25-50	>50
	Score	1	2	3	4
Number of investments	Ranges (#)	0	1	3	>3
	Score	1	2	3	4

Table 10: Human capital performance scorecard

Human capital		Category 1	Category 2	Category 3	Category 4
% Female	Ranges (%)	0%	0%-33%	33%-66%	>66%
	Score	1	2	3	4
% Skilled	Ranges (%)	0%	0%-33%	33%-66%	>66%
	Score	1	2	3	4
% Permanent	Ranges (%)	0%	0%-33%	33%-66%	>66%
	Score	1	2	3	4
% Casual	Ranges (%)	0%	0%-33%	33%-66%	>66%
	Score	1	2	3	4

Table 11: Technology performance scorecard

Technology		Category 1	Category 2	Category 3	Category 4
Investments in R&D	Ranges (#)	0	-	-	1
	Score	1			4
Building storage	Ranges (#)	0	-	-	1
	Score	1			4
Equipment	Ranges (#)	0	-	-	1
	Score	1			4

Annex 3: SME descriptive statistics

Table 12: General SME characteristics

General SME Characteristics	Seed Companies	Input Supply Agro-Dealers	Agri Value Chain
Years of business	3.71 (1.11)	3.87 (0.83)	3.44 (1.42)
Average number of commodities			
Commercialized/traded	8.14 (6.36)	-	2.3 (2.17)
Processed	-	-	1.8 (1.83)
Transported	-	-	1.44 (2.8)
Main Commodities commercialized/traded			
Maize	100%	-	33%
Sorghum	28.57%		22%
Rice	14.29%	-	33%
Cowpea	14.29%	-	-
Soybean	14.29%		11%
Other	14.29%	-	-
Permanent staff	32.28 (26.48)	13.87 (15.92)	20.22 (18.08)
Casual staff*	372 (519)	18 (8.21)	41.33 (48.53)
Total annual turnover (USD)**	1.962.230 (2.070.239)	334.371 (511.818)	344.742 (475.458)
Observations	**7**	**8**	**9**

*Standard Deviation in parenthesis. *There is one seed company reporting 1400 employees recruited as casual staff.*
**Incomplete information for Annual Salary and Daily wage*
Seed companies: There is a seed company indicating a total annual turnover of 21.600.000.000 USD. We excluded this company from the average since considered outlier.
Input supply/agro-dealers: Observations total annual turnover: 62%.
Agri-Value Chain Actors: Observations total annual turnover: 88%.

Table 13: SME employees

Employees	Seed Companies	Input Supply Agro-Dealers	Agri Value Chain
Permanent Staff	20.75	13.97	20.22
	(9.60)	(15.29)	(18.08)
Casual Staff	3.75	18	41.33
	(1.25)	(8.21)	(48.53)
% Female(over total)	59%	30%	18%
% Skilled(over total)	23%	32%	17%
*Annual Salary Permanent (USD)**	119565	45687	23860
	(135958)	(97486)	(26486)
*Annual Salary Casual (USD)**	117160	20756	23144
	(85266)	(31269)	(22328)
*Daily Wage Casual (USD)**	3.05	4.95	1.67
	(1.41)	(3.95)	(0.79)

*Standard Deviation in parenthesis. *Incomplete information for Annual Salary and Daily wage. Detailed information reported below.*

Agri-Value Chain: Obs salary permanent workers: 42%; Obs salary casual workers 36%; Obs daily wage 73%

Seed Companies: Obs salary permanent workers: 85%; Obs salary casual workers 71%; Obs daily wage 71%

Input Supply agro dealers: Obs salary permanent workers: 62%; Obs salary casual workers 62%; Obs daily wage 62%

Table 14: SME buyers

Buyers	Seed Companies	Input Supply Agro-Dealers	Agri Value Chain
Projects, programs and government	100%		66%
Farmer organizations, coops, associations	100%	75%	77%
Individual buyers / producers	57%	100%	88%
Traders, input suppliers, wholesalers	100%	87%	66%
Average number of buyers	3.57	2.62	3
	(0.53)	(0.74)	(1)
Observations	**7**	**8**	**9**

Standard Deviation in parenthesis

Table 15: SME services

SME Services	Seed companies
Variety development	28%
Breeder seed production	28%
Production of early generation seed / foundation seed	85%
Production of improved / certified seed	100%
Production of noncertified seed	28%
Sales of improved / certified seed	85%
Sales of non certified seeds	28%
Sales of early generation seed / foundation seed	71%
Average number of services provided	3.57 (1.61)
Observations	**7**

SME Services	Input supply agro dealers
Retail (sales) of improved / certified seed	75%
Retail (sales) of chemical fertilizers and pesticides	87%
Advisory services / extension	75%
Import of inputs	50%
Wholesale and country-wide	75%
Manufacturing of inputs	37%
Average number of services provided	4 (1.8)
Observations	**8**

SME Services	Agri Value Chain
Aggregation of farmer production (transport, bulking and storage)	77%
Agri-food processing (transformation of produce)	77%
Transport	22%
Mechanization	11%
Average number of services provided	1.8 (0.60)
Observations	**9**

Table 16: SME investments

Investments	Seed Companies	Input Supply Agro-Dealers	Agri Value Chain
Expansion of land area	42%	37%	44%
Expansion of buildings and/or storage	47%	50%	66%
Upgrading of equipment	57%	37%	66%
Research & Development	71%	37%	11%
Training of staff	42%	75%	55%
Increase / injection for working capital	85%	75%	44%
No Investment	14%	12%	11%
Average number of investments	3.71 (2.13)	3.12 (1.95)	2.88 (1.53)
Observations	**7**	**8**	**9**

Table 17: Percentage of credit from formal sources

Access to formal credit	Seed Companies	Input Supply Agro-Dealers	Agri Value Chain
0%		12.50%	11.11%
<10%			
10-25%	28.57%		
25-50%	42.86%	25%	44.44%
50-75%	14.29%	12.50%	22.22%
75%-90%	14.29%	25%	11.11%
>90%		25%	11.11%
Observations	**7**	**8**	**9**

Table 18: AGRA support services

AGRA Services	Seed Companies	Input Supply Agro-Dealers	Agri Value Chain
Grant	14%	25%	
Loan/Credit		12%	
Training	28%	37%	11%
Technical Assistance	14%		11%
No Service	57%	12%	77%
Average Number AGRA Services	0.57 (0.78)	0.87 (0.83)	0.36 (0.49)
Observations	**7**	**8**	**9**

Standard Deviation in parenthesis

Annex 4: SMEs interviewed

Seed companies	Input supply/agro-dealers	Agri-value chain actors
Equator Seeds Limited	Bugiri Agribusiness	A K Purongo Ltd
Farm Inputs Care Centre Limited	Farm support limited	Agri-Net Uganda Limited
Masindi Seed Company Limited	Grow more seeds and chemicals Ltd	AgroWays (U) Ltd
Naseco (1996) Ltd	Grainpulse Limited	Diner's group Ltd
Otis Garden Seed Limited	Katerera Area Cooperative	Eastern Rice Company Ltd
Pearl Seeds Limited	MASIGA NAPHITAL	Kumi Epuripuri Farmers Association
SOZO	Zirobwe agali-awamu agribusiness	New Kakinga Millers Enterprises Ltd
		Soroti Grain Millers Limited
		West Acholi Cooperative Society