



**FEED THE FUTURE**

The U.S. Government's Global Hunger & Food Security Initiative



# East Africa Seed and Trade Competitiveness Seed Solutions Report



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# Introduction

Constrained cross-border trade of improved seed has been noted as a significant barrier to the enhancement of agricultural productivity in East Africa.<sup>1</sup> This is crucial because the agricultural sector is the backbone of the economies, contributing about 32% of the region's gross domestic product and employing nearly 80% of its labor force. Despite this, agricultural productivity in the region remains low because smallholder farmers who make up the bulk of the sector face several key challenges. The most notable amongst these are limited knowledge of improved production techniques and lack of access to high quality inputs. It is expected that climate change, with the attendant projections of droughts, will aggravate this situation especially since most agriculture in the region is rainfed.

With respect to crop production, our focus here, the kind of seed that farmers plant is of particular significance. In this area, the use of appropriately certified improved seeds is one of the most significant ways of improving yields. This means planting seeds that are climate adaptable, disease-resistant, fast-growing, high-yield, and suited to the region. Improved seed refers to both hybrid and non-hybrid varieties, though the emphasis is usually placed on the hybrids that are carefully pollinated—but not genetically modified—to produce seed with high-performance traits. Overall, hybrid seed has the potential to yield three-to-four times more than non-hybrids annually, and ten times more than over non-improved seeds.<sup>2</sup>

While the ability of improved seeds to improve productivity is widely acknowledged, their adoption remains low. It is estimated, for instance, that 78% of all the seeds that farmers in Kenya use is not certified, while an estimated 80% of the total cultivated area in Tanzania is planted with non-certified seed. Many farmers rely on retained seed from previous harvest, which have lower germination and vigor and lack some of the benefits of improved seed such as being climate adaptable and resistant to pests and diseases. As a result, they generally produce lower yields. Despite these drawbacks, many farmers continue to rely on retained seed – because they have limited awareness of and access to certified seed, they may not be able to afford them and/or may consider the investment in certified seeds to not be worth it due to the uncertainties of the market especially relating to the demand of their produce and post-harvest-prices. For example, a 2019 McKinsey survey found that, in southern Tanzania, smallholder farmers were aware of the yield benefits of using improved inputs and improved planting techniques but marginal returns due to poor access to markets or low crop prices often made the investment unjustifiable. As a result, farmers would purchase fertilizer and hybrid seed only once every two to three years, choosing to save seed even with lower yields. Any plans to improve the uptake of certified seed by farmers requires to address these challenges.

Policy LINK, a global program of the USAID Feed the Future initiative that advances leadership and collaboration for better policy systems, was tasked with developing solutions to the priority constraints to improve cross-border trade of improved seed.<sup>3</sup> A competitiveness analysis and stakeholder consultations with the Strategic Partners Group (SPG),<sup>4</sup> revealed several challenges that must be addressed to enhance access to certified seeds and improve agricultural productivity.

The first relates to constrained production of certified seeds in the region i.e., existing production capacity cannot meet the demand in the region. The second relates to cross-border trade in certified

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<sup>1</sup> Sanitary and phytosanitary standards, logistics, and agrochemicals also emerged as priorities.

<sup>2</sup> Bigirwa, G. (2020) Seed Production and Distribution White Paper. AGRA, page 3.

<sup>3</sup> Sanitary and phytosanitary standards, logistics, and agrochemicals also emerged as priorities.

<sup>4</sup> A group of donors, implementing partners, private sector associations, and companies exploring ways to boost food security through intra-regional trade.

seeds. The movement of certified seeds across borders is significantly constrained by trade barriers. This means that the productive capacity of the region is not utilized optimally. Third, and finally, last mile distribution of seeds to farmers is highly ineffective meaning that seeds – and the relevant attendant information – do not reach many farmers across the region. This brief delves into these three issues and the proposed solutions for boosting intra-regional trade in improved seed and, ultimately, increasing the adoption and use of these seeds.

## Understanding the Seed Trade Challenge

As indicated above, the core challenges in the distribution of certified seeds in the region relate to production capacity, cross border trade and last mile distribution. This section discusses these challenges in more depth to unearth some of the driving forces behind them.

### Regional seed production capacity

According to COMESA, (<https://www.comesa.int/region-targets/>) the region is currently producing and accessing less than 500,000 metric tonnes of seeds, a scenario that contributes to low use of high quality and improved seeds. Maize and rice seed are the most widely produced and sold seeds with Zimbabwe (44,150 MTs in 2016), Kenya (43,954 MTs in 2017), South Africa (33,223 MTs in 2016), Zambia (33,018 MTs in 2016), and Ethiopia (27,756 MTs in 2016) selling the highest volumes of certified maize seed. All these countries are in East and Southern Africa, where maize is the main staple crop and have a long history in maize seed production and commercialization. Several countries in the East African region produce certified seed. In Tanzania and Rwanda, the government is the primary actor, while in Kenya and Uganda there are varying degrees of both government and private sector actors.

Nonetheless, the seed production capacity in the region remains limited, even though it varies between countries. This is caused by limited number and capacity of seed companies, low breeding and variety release, limited number of competent out-growers, high cost of farm inputs, reducing land sizes, limited human resources, changing climate and regulatory barriers. Only seed companies with the requisite capacities can meet the requirements for seed production. However, besides low numbers of seed companies, most seed companies have limited capacity and focus on local markets. Apart from South Africa, Zambia and Zimbabwe at least three quarter of seed companies in most countries are local. This affect both capacities to breed and to produce quality seeds.

**Table 1: Active Seed Companies and Sale of Certified Seed in Metric Tons (2020)**

Country	Burundi	Kenya	Rwanda	Tanzania	Uganda
Number of active seed companies	5	22	23	22	24
Production of certified maize seed (MT)	550	35,736	2,265	12,503	20,633
<b>Total certified seed production in MT (maize + other priority seed)</b>	<b>1,328</b>	<b>37,046</b>	<b>3,083</b>	<b>14,405</b>	<b>27,680</b>

Source: Author's compilation from TASAI Country Reports 2020 and 2021

An important explanation of the low seed production capacity is that the region has a disjointed and dispersed production strategy, with each country doing its own production even where they are not ecologically suited to do so. There are countries with favorable ecological conditions for seed production, which makes them surplus seed producers, while other have unsuitable ecological conditions and institutions that makes them inherently ineffective and deficient in seed production.

For example, Zambia has a relatively well-developed seed system, seed infrastructure and production capacity with favorable climate that makes it a net exporter of seed. That is, the production of certified seeds is not linked to relative comparative advantage. Additionally, the cost of production is very high because of institutional and structural issues. For instance, while Kenya has well developed market system (e.g., manufacturing) and institutions it has a poor ecological condition and high cost of production that make it seed deficient and less competitive.

Another major factor in the low productive capacity is the narrow base of seed growers in certain countries (e.g., Kenya), which creates stiff competition for the same out growers amongst seed companies. This creates a scenario where out-growers produce inefficiently or charge high cost for the seed they sell to seed companies. Comparatively, countries like Zambia have a huge number of competent seed out-growers who have adopted better agronomy, providing (a good starting point for the zoning strategy), which enhance efficiency and competitiveness of seed produced in Zambia. It is instructive that most of the imported maize seed is from Zambia, which presents an example of a country with a sophisticated, growing seed sector thanks, in part, to government policies designed to increase private sector investment in the sector. As a result, it has become a strategic seed production hub for MNCs.<sup>5</sup>

According to AUC Africa Seed Sector Report (2021)<sup>6</sup>, foundation seed, also known as basic seed, is obtained mainly from National Agricultural Research Institutes (NARIs) and the CGIAR centers, but also from private companies who release their own varieties and maintain their own foundation seed. For instance, the Kenya Agricultural and Livestock Research Organization (KALRO), runs breeding programs – developing improved seed varieties that respond to changing ecological conditions and farmers' needs<sup>7</sup> – to serve public and private companies. This operates alongside breeding programs by large seed companies such as Corteva Agriscience, Monsanto, Kenya Seed, and East African Seed. Some companies import foundation seeds before multiplying and selling to the local market -which limits the development of new varieties of certified seeds that are better suited to the region.

According to AUC Africa Seed Sector Report (2021)<sup>8</sup>, insufficient access to foundation seed is a common problem for seed producers that is constraining seed trade. Often, the NARIs do not have adequate resources (e.g., land, machinery and equipment, personnel, technological and financial resources) to produce the quantities required by seed companies and other producers.

Notably, most of the breeding programs – especially by private companies – focus on breeding profitable, in-demand maize varieties but not other crops. This constrains investments in other crops. Nonetheless, in recent time, they are gradually investing in breeding and commercializing seeds for other staple products such as soybeans, beans, and sorghum, which are also traded in the region. However, these efforts remain limited.

The productive capacity of these breeding programs is largely constrained by the regulatory requirements for registration of the certified seeds in each country's national seed catalogue before

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<sup>5</sup> Feed the Future: Building Capacity for African Agricultural Transformation (Africa Lead II) (2018). Assessment to Support the Promotion of Regional Seed Trade in East Africa. Page 17.

<sup>6</sup> AUC Africa Seed Sector Report, (2021). Status Report and Ten-year Action Plan (2020-2030): A Summary. [https://au.int/sites/default/files/documents/41357-doc-](https://au.int/sites/default/files/documents/41357-doc-Africa_Seed_Industry_Report_summary_April_2020_submFeb2021_a_signed_and_posted_202111.pdf)

[Africa\\_Seed\\_Industry\\_Report\\_summary\\_April\\_2020\\_submFeb2021\\_a\\_signed\\_and\\_posted\\_202111.pdf](https://au.int/sites/default/files/documents/41357-doc-Africa_Seed_Industry_Report_summary_April_2020_submFeb2021_a_signed_and_posted_202111.pdf)

<sup>7</sup> According to stakeholders that participated in the Policy Link Seed Writeshop held 15-16 March 2022, it can take up to seven years to bring a new seed variety to market.

<sup>8</sup> AUC Africa Seed Sector Report, (2021). Status Report and Ten-year Action Plan (2020-2030): A

Summary. [https://au.int/sites/default/files/documents/41357-doc-](https://au.int/sites/default/files/documents/41357-doc-Africa_Seed_Industry_Report_summary_April_2020_submFeb2021_a_signed_and_posted_202111.pdf)

[Africa\\_Seed\\_Industry\\_Report\\_summary\\_April\\_2020\\_submFeb2021\\_a\\_signed\\_and\\_posted\\_202111.pdf](https://au.int/sites/default/files/documents/41357-doc-Africa_Seed_Industry_Report_summary_April_2020_submFeb2021_a_signed_and_posted_202111.pdf)

commercial release. This process can take up to three years, because the seed has to undergo various tests for yield, value for cultivation and use (VCU), and distinctness, uniformity, and stability (DUS). For instance, in Uganda, private sector breeders reported the average length of the process as 24 months for beans, 28 months for maize, and 39 months for sorghum.<sup>9</sup> These processes are also costly. In Uganda, the process can cost as much as \$20,000 for bean seed, \$24,231 for sorghum, and \$5,122 for maize.<sup>10</sup> Further, inadequate laboratory capacity, weak data gathering, surveillance, traceability, and risk management and mitigation systems, low numbers and technical competencies of seed inspectors hinder seed production and effective and efficient cross border trade initiatives.

In addition, population growth and land use pressure are constraining the amount of land available for seed production in certain countries. These complexities and high costs discourage new entrants into the markets and the expansion of seed variety by existing players in the market.

### **Cross-border seed trade**

Crucially, the movement of certified seeds across countries in the region remains limited. The cases of Kenya and Uganda are illustrative, based on the African Seed Access Index (TASAI) Country Surveys which provide insight into regional seed trade from the exporting country's perspective (See Tables 2 & 3). In the case of Kenya, which has 22 companies producing maize seed (Table 1, above) only seven companies exported maize seed (4,168 MT) to Uganda, Rwanda and Burundi in 2020. Meanwhile, bean (5MT) and sorghum (150 MT) were exported by one company each to Uganda in the same year. Uganda, meanwhile, demonstrates slightly better diversification, with nine companies exporting 5,888 MT of maize seed to South Sudan, Burundi, the Democratic Republic of Congo (DRC) and Rwanda in 2020 (see Table 3 below). Seven Ugandan companies exported 6,402MT of sorghum to South Sudan in the same period with another five companies exporting 182MT of bean seed to South Sudan in the same year. It is notable that the Uganda's bean seed export represents a meagre 5% of the bean seed companies' sales, meaning that 95% of the bean seed is sold domestically. The regional trade data also reveal that Burundi, the Democratic Republic of the Congo (DRC), and South Sudan produce a limited amount of seed and, as such, present a huge market for seed companies.




The size of these companies and regulatory barriers (as discussed above) are reasons contributing to the limited number of companies exporting seed in the region. Limited number of seed companies, limited capacity of local seed companies to export - they tend to focus their efforts on local market instead of developing effective distribution systems in target countries or partner with distributors in cross-border markets; and regulatory and institutional constraints - Government policy orientation, export bans, field inspection, CBI protection and quality assurance systems Additional concerns that have been raised include low demand of certified seeds in the market.

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<sup>9</sup> TASAI (2020). Uganda Country Report 2021.





<sup>10</sup> Ibid.

**Table 2: Overview of Kenya Seed Exports (MT), 2020**

Crop	Number of Companies in 2019	Main country destinations of export	Seed exports in MT		
			Total	To COMESA Countries	To COMESA and w/ COMESA label
 Maize	7	Uganda, Rwanda, Burundi, Tanzania	4,168	3,668	1500
 Bean	1	Uganda	5	5	0
 Sorghum	1	Uganda	150	150	0

Source: TASA Kenya Country Report 2020

**Table 3: Uganda Seed Exports (MT), 2020**

Crop	Number of Companies in 2019	Main country destinations of export	Main Border points of exit	Total volume of exports (MT) (all to COMESA Countries)	Exports as % of total sales
 Maize	9	South Sudan, Rwanda, Burundi, DRC	Nimule, Elegu, Gisenyi, Mpondwe, Karombo-Bunagana,	5,888	32%
 Bean	5	South Sudan	Nimule	182	5%
 Millet	0				
 Sorghum	7	South Sudan	Nimule	6,402	78%

Source: TASA Kenya Country Report 2020

This potential can only be realized if the barriers to seed trade in the region are removed. One major challenge here is the failure of the East African countries to domesticate and implement the COMESA Seed Trade Harmonized Regulations which are meant to facilitate and boost regional seed trade. These regulations are the only regional framework available at the moment as the harmonization efforts of the East African Community [EAC] are less advanced. COMESA harmonized its varietal release and labeling requirements, as well as its quality testing and phytosanitary regulations and policies, through its regional seed regulations. To date, 80 active varieties from 15 seed companies have been registered in the COMESA region. However, the domestication and implementation of these regulations by Member States has been slow.

Most countries in the region still have their own protocols for naming and registering seed varieties, meaning a single variety could have a different name in each country. In Kenya, all seed imports follow the same import process regardless of whether they are listed in the COMESA variety catalogue. Rwanda is an exception here. All of Rwanda's seed imports in 2020 originated from COMESA

countries and used the COMESA seed label. Moreover, East African countries lack equivalence frameworks—also called mutual recognition agreements (MRAs)—means companies face complex and repetitive compliance requirements that increase the cost of transaction and restrict regional trade. These requirements are particularly problematic for small seed companies, which do not have requisite capacity to meet stringent requirements of targeted markets.

As such, strengthening national standards and quality management systems are important strategies for enhancing regional trade and dealing with counterfeits (see Box 1). These regulatory hurdles, which are time-consuming and costly, frustrate seed trade, deter investment, and constrain access to new varieties in the region.

### **Weak Seed Quality Assurance System/Capacity**

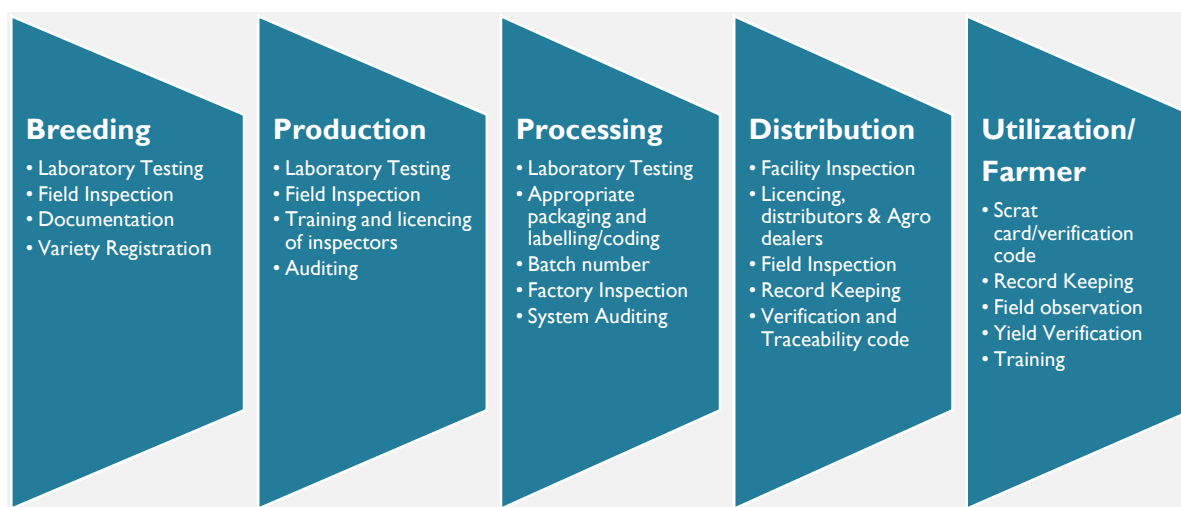
Quality is an important factor in local and regional seed trade. A seed quality assurance system that ensures seed production and trade are controlled, inspected, and certified cannot be overstated. To be effective, such a system requires testing facilities and human resources—to conduct field inspection and surveillance, collect intelligence, and enforce or punish offenders. A good quality assurance system covers all stages of seed production, certification, and marketing, from breeding to seed production, processing, distribution, and utilization (farmers) (see Figure 2). Moreover, a good seed quality assurance system also goes beyond the delivery of seed to the farmer—it follows up on the quantity and quality of output obtained from the seed as well.

Unfortunately, most countries in the region suffer from weak seed quality assurance systems and are therefore not able to adequately perform quality functions, enforce quality requirements, and fight counterfeits (See Box 1). Most of them are underfunded meaning that they lack both the infrastructure and human resources to perform quality functions, enforce quality requirements, and fight counterfeits. Other major factors contributing to the low-quality assurance capacity in the region include:

- Limited knowledge and understanding on quality standards by market actors (and their value in driving competitiveness).
- A market that does not recognize or reward quality and in which purchasing decisions are based purely on relative price and affordability. The culture of compliance is weak largely because price-sensitive consumers do not demand (or reward) quality.

The high costs associated with compliance are often a deterrent, especially in environments where the cost of non-compliance is low or uncertain. Small companies, which are usually resource constrained, in particular, do not see the value in compliance.

**Figure 1: Stages of Seed Quality Assurance System**



As a result of these limitations, national regulatory agencies with relatively advanced systems do not trust or recognize other countries' test certificates, requiring traders to re-test products in receiving markets, adding to the inefficiency of trade in the region. In the region, only Kenya, Uganda (private lab) and Tanzania have laboratories that are accredited by the International Seed Testing Association. The situation is aggravated by the fact that some governments do not allow private seed inspection, creating unnecessary delays in the registration and approval process.

Additionally, many international companies which would have the capacity to overcome some of these challenges are unwilling to invest in the region due to inadequate regimes for the protection of Confidential Business Information (CBI) and Intellectual Property (IP) rights. Kenya and Tanzania are members of the Union for the Protection of New Varieties (UPOV), while Zambia and Rwanda are in the process of joining UPOV and have developed Plant Variety Protection Act (PVP) systems. This demonstrates a willingness to embrace the international PVP system, which grants IP rights for breeders on the basis of defined principles in recognition of the time and investment to develop new varieties. Over and above the passing of laws/regulations that recognize IP rights, regulators must emphasize enforcement to boost the confidence of the seed companies in the region.

### **Last mile distribution**

#### **Box 1: Counterfeit Seed**

The region's seed sector has long been plagued by counterfeit seed. Readily available—up to 30 percent of available seed in Uganda,<sup>11</sup> for example— counterfeit seed proliferate thanks to the lack of a robust quality assurance and enforcement system. Their continued presence on the market threatens the business reputation of seed companies and undermines investments in intellectual property and in cross border distribution system.

Farmers bear the cost too. They suffer losses, which, in turn deter them from buying certified seed in the future. In Kenya, only 77 percent of hybrid maize seed sold to farmers germinate— far below the 90 percent germination rate set by the government for certified seed. Furthermore, in 2019, the Kenya Plant Health Inspectorate Service (KEPHIS) registered 12 cases of counterfeits, of which seven cases were associated with agro-dealers, one with a seed company, and four with unauthorized individuals masquerading as seed sellers.<sup>12</sup>

<sup>11</sup> The Access to Seed Index. (2019). <https://www.accesstoseeds.org/index/eastern-southern-africa/key-findings/counterfeit-seed/>

<sup>12</sup> <https://allafrica.com/stories/202109200153.html>



Beyond the movement of seed between countries, the inefficiency of the last mile distribution of certified seeds is also a crucial constraint to their adoption and use by farmers in the region. As noted above, one of the reasons why smallholder farmers—who are responsible for most crop production—have not fully adopted certified seed is that they have limited access to them. Meaning that the systems of distributing seeds to the farmers are not effective. Countries have adopted different methods of distributing seeds to farmers, as shown in Table 4 below. Historically, seed distribution systems in the region have been largely driven by the public sectors. This is still the case in Rwanda where the government purchases and manages the distribution of seeds (and provides extension services) to the farmers. Government seed subsidies and distribution remain the dominant policy. In some countries, this system has stifled the growth of the commercial seed sector and resulted in farmers receiving low-quality seed. Moreover, subsidies create a culture of dependency, in which farmers have few incentives to invest in improved seed technology. Furthermore, government subsidy programs across the region face ongoing challenges, including corruption, seed sourcing and distribution delays, late payments to seed companies, and inconsistent supply of seed due to shifting government priorities and budgetary constraints.<sup>13</sup>

In recent times, most countries have been moving toward more efficient mixed and private-sector systems largely relying on agro-dealers. For example, in Kenya and Tanzania agro-dealers purchase and take responsibility for last-mile distribution to the farmer. In Uganda, there is a more even split between the government (through its Operation Wealth Creation input subsidy program [see Box 2 below] and agro-dealers. In addition, the TASAI data presented in Table 5 confirm that agro-dealer networks and reach to the last mile are weak in most EAC countries, limiting the farmers' access to certified seed. It also matters that most agro-dealers, are concentrated in urban and peri-urban areas, without reach into the rural areas where many smallholder farmers reside.

Besides the few numbers and low capacity, this problem has been exacerbated by the collapse of many agro-dealer shops, like many other small businesses, due to the COVID-19 pandemic. This distribution network requires to be improved.

Other constrain to seed distribution includes weak extension services, and unpredictable government policies deter seed companies from developing their distribution system.

### **Box 2: Government Input Subsidy Programs – Uganda**

The government plays a major role in seed distribution through input subsidy programs. Uganda's Operation Wealth Creation, for example, provides maize, bean, sorghum and millet seed. Managed by the National Agricultural Advisory Services (NAADS), Operation Wealth Creation uses a competitive tender process, in which licensed and eligible seed companies bid to supply seed. Contracted seed companies then deliver seed to district local governments for technical clearance. Delivery to beneficiary farmers is managed by program officers and supported by other government technicians that distribute the seed at the parish level within the designated sub-counties.<sup>14</sup>

<sup>13</sup> Africa Lead (II). (2018). Assessment to Support the Promotion of Regional Seed Trade In East Africa. Page 26

<sup>14</sup> TASAI (2020). Uganda Country Report. Page 22.

**Table 4: Maize Seed Sales by Category of Buyers (%)**

	Government	Agro dealers	Farmers (direct from seed companies)	NGOs	Other Buyers	Other Seed Company
<b>Kenya</b>	7	79	8	5	-	-
<b>Rwanda</b>	76.8	20.3	0.7	1.3	0.3	0.5
<b>Uganda</b>	32	25	8	31	3	-
<b>Tanzania</b>	-	85	3	6	5	1

Source: TASAI Country Reports 2020 & 2021

**Table 5: Concentration of Agro-dealer Networks in East Africa, 2017 – 2020**

Country	Number of agro-dealers		Ratio of agro-dealers to Household
	2017	2020	
<b>Burundi</b>	41	52	1: 36,752
<b>DR Congo</b>	199*	-	1: 9,248
<b>Kenya</b>	-	-	1: 1,910
<b>Uganda</b>	-	2500	1: 1,580
<b>Rwanda</b>	-	2,871	1: 1,814
<b>Tanzania</b>	-	7,189	1: 1,085

Source: Author's own compilation from TASAI Country Reports 2017 – 2021

# Policy And Technical Proposals to Enhance Regional Seed Trade

The preceding section has highlighted the core challenges facing the trade and distribution of certified seeds to farmer in the East African region relating to the limited production capacity, limited cross border trade due to significant trade (policy and regulatory barriers), and the inefficiencies of the last mile distribution. In this section, we highlight the ways in which these challenges can be addressed in order to enhance the production of certified seeds in the region, strengthen national and cross-border seed trade and distribution systems and facilitate their adoption by farmers and thereby contribute to improved agricultural productivity.

## 1. Enhancing the production of certified seeds in East Africa by incentivizing investment

Increasing the production of certified seed in the East African region requires encouraging and facilitating the entry of new companies into the market and enhancing growth and productivity of the existing ones. Attracting new investments, by new entrants and existing ones, requires friendly policies that facilitate set up, infrastructural development and viable markets. Seed companies require incentives not only to invest in breeding and seed commissioning in the region, but also to diversify seed production to other crops other than maize. Some of the crucial changes that will be necessary here include:

- Incentivizing production of certified seeds through subsidies and tax breaks will encourage more investment and increase production. Seed production uses a lot of fertilizer and crop protection products, and energy. Subsidies by the East African governments to reduce cost of input for seed production will be useful in incentivizing production and reducing cost of production making seed affordable to farmers.
- Establishing strong trade associations of seed producers that can develop an industry or sector wide strategy and lobby the government to provide enabling environment and infrastructure to support production and output market expansion. These trade associations can partner with the government to generate market intelligence required by the seed companies to inform their investment plans, structures for market assessment and to support market development should be put in place.
- Increasing availability of financing for new investments. Stakeholders should work with commercial banks and other financiers to develop appropriate financial facilities/product for the huge capital outlay required for seed production, especially to encourage expansion of diversity of seeds being produced. The government and development partners should buy down the risk to encourage financial institutions to lend to seed companies.
- Provision of technical assistance to companies to establish their production systems including location identification, agronomy and setting up of processing plant.
- Enhancing capacity of seed out-growers including recruitment, training, accreditation, and access to critical services to enhance competition and reduce cost of seed production. Trade Association can work with regulatory agencies and seed companies to develop and roll out a training curriculum for the seed growers, conduct recruitment drive and training, while regulatory agency can register and certify such growers.

## 2. Strengthen cross-border distribution of certified seeds by removing trade barriers

Trade barriers in the production and movement of seeds within the region have constrained the emergence of a strong regional market for seed trade. To strengthen cross-border trade of certified seed in the region, it will be crucial to address those barriers. The necessary interventions include:

- Developing a mutual recognition agreement and an audit mechanism to reduce the burden of testing or registering seed in several countries. Interventions to consolidate, build confidence in, and institutionalize MRA may include exchange visits, dialogue platforms, regular joint audits, joint training of seed inspectors, and the development of a common curriculum for seed inspectors. These efforts can be coordinated by national seed regulators in collaboration with the EAC. Operationalizing MRA between countries will also include establishing a framework for conformity assessment, an integrated data management system and platform (for tracking the process and sharing data), and an audit mechanism to validate the quality of the system on a regular basis.
- Strengthening national and regional laboratory and testing capacity within countries in the region by investing in laboratory and testing facilities, standardizing testing procedures, training laboratory personnel, seeking accreditation for testing laboratories and reference laboratories, and facilitating linkages with support services. This will include licensing and accrediting commercial laboratories to quickly ramp up capacity and make efficient use of public resources (government). Governments can outsource or delegate testing services to the region's many accredited private sector laboratories but still retain the role of auditing and quality control.
- Developing digital seed tracking and traceability systems. The system would entail a digital e-verification system that farmers use to confirm whether a product is genuine and a feedback loop for reporting actual vs. declared yield (the feedback loop could be complemented by farm-level/field inspection, observation, surveillance, and reporting of the yield by the seed company, regulatory authority, farmers, or independent parties). See Box 3 for a model from the region.

### Box 3: Kenya's Public Sector-led Seed Scratch Card Model—Gaps, Lessons, and Opportunities for Scale-Up

Kenya offers a model of a public sector-led seed tracking and traceability system. Run by KEPHIS, the state seed regulator, the system has as its centerpiece a seed sticker label that establishes whether the seed in a particular package has been certified. The Kenya Seeds and Plant Varieties (Seeds) Regulations make it mandatory for all certified seeds sold in packages of five kgs and or fewer to have the label affixed. After buying a seed, the farmer can scratch the label, send a 12-digit code via toll-free SMS, and receive an instant message confirming if the seed is genuine or not. This model, though beneficial, would be difficult to replicate in other East African countries, however, as many seed regulators lack the financial and technical resources to fund, manage, and implement a seed tracking and traceability system.

In East Africa, where regulatory capacity is low, a private sector-led seed tracking and traceability system is most viable. This could either mean that seed companies develop and operate their own internal seed tracking and traceability systems or that database management companies develop and manage a seed tracking and traceability system, which seed companies subscribe to as a service.

The first option has been used in different countries in the region and beyond. In Tanzania, for example, International Institute of Tropical Agriculture developed a cassava seed tracker that provides real-time

tracking of cassava seed production, including pre-planting planning, registration of seed fields, crop management, harvesting, quality assessment, and quality assertion.<sup>15</sup>

The second option is illustrated by Sproxil, a private database management company that offers similar services to different industries including the pharmaceutical industry. GlaxoSmithKline (GSK), for example, uses Sproxil's point of sale verification solution—Sproxil Defender—which relies on single-use codes on all units produced. Consumers and retailers can also verify the authenticity of drugs using several tools (e.g., an online portal, USSD, SMS, digital app). Using a similar system to Sproxil, seed companies can protect their brand name, mitigate against counterfeit seed, and ensure agro-dealers distribute certified seed to the last mile.

- Establishing a platform for continuous dialogue and conflict resolution. Seed quality is a contentious issue. As such, a standing platform for dialogue and data sharing can facilitate relationship building and increase trust and confidence in the system. Beyond increasing transparency and coordination, such platforms can also help countries resolve conflicts and address emergencies in a timely manner. The EAC and trade associations should partner with regulatory agencies to establish platforms for regular dialogue and conflict/dispute resolution. The dialogue platforms should be supported by strong data and evidence generation systems for quality decisions.
- Building the capacity of seed companies and businesses to meet standards. Previous efforts to improve quality assurance and certification have focused on the development and enforcement of policies, with the expectation market actors would automatically comply. But many market actors do not have the capacity to meet these standards. As such, it is important to build company capacity to comply with standards, which requires laboratory facilities, testing procedures, and training lab technicians, as part of the internal quality assurance system. The private sector should also be incentivized to invest in seed storage and warehouse facilities to enhance seed standards and shelf-life during trade.
- Establishing a private sector seed inspection model and outsources quality assurance services. Seed inspection has traditionally been the responsibility of national seed authorities. As the number of seed companies has grown over the past decade, however, private seed inspection has emerged to complement strained and underfunded government services. A frontrunner in this area is South Africa, which has a private inspection service run by South Africa National Seed Organization (SANSOR). Kenya, Zambia (see Box 4), and Zimbabwe also have well established private seed inspection systems that can provide lessons for implementing this solution. Notably, all these countries have encouraged and supported the role of private seed inspection services. Scaling up private sector seed inspection—a form of industry self-regulation—across the region could help strengthen weak seed quality assurance systems. To successfully implement a private sector seed inspection system, seed companies must first address their internal quality inspection management systems (see previous solution).<sup>16</sup> In addition the Government working with Trade Associations should accredit and encourage commercial quality assurance (audit) services to supplement government role. This provides

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<sup>15</sup> More information available at <https://seedtracker.org/cassava/>

<sup>16</sup> Public-private dialogue is also necessary to assess the readiness of stakeholders to adopt this system.

opportunity to outsource instead of investing search services, increase scale and enhance efficiency in service delivery.

#### **Box 4: The Zambian Private Sector Seed Inspection Model**

Zambia's formal seed system—among the most advanced in Eastern and Southern Africa—includes a well-established private sector seed inspection system. As of 2020, Zambia had 118 licensed seed inspectors—83 private and 35 public sector, under the Zambian Seed Control and Certification Institute (SCCI), which has been licensing private seed inspectors since 1995. Under Zambian law, Sections 3(2), 17 and 18 of the Plant Variety and Seeds Act, Cap 236, No. 21 of 1995, the SCCI allows seed personnel from the private and public sectors to be licensed to perform seed quality control services, such as seed inspection, sampling, and analysis. Private seed inspectors must meet the same minimum qualifications as government inspectors (i.e., hold a diploma in agriculture and pass SCCI's Seed Inspector Training Course).

### **3. Strengthening last mile distribution of certified seeds by improving agro-dealer outreach and extension services**

There are two main ways of strengthening seed distribution: strengthening the agro-dealer system and strengthening extension support. The Agro-dealer seed distribution system can be strengthened using two anchor firm models examples – Input Supplier or Off-taker Models.

The input-supplier and off-taker model is a distribution model in which the anchor firm (input-supplier and off-taker) develops, executes, and controls the distribution system of the product, with the aim of maximizing value for the chain actors. In this model, the anchor firm designs and manages the distribution channel, strategy and method; recruits, assembles, and coordinates actors in the supply chain (distributors, transporters, agrodealers, output aggregators); develops the marketing strategy; designs, integrates, organizes, and coordinates support services (extension, soil testing, finance, advertisement); determines the form in which the commodity is delivered and the inventory and quality control system; and, to some extent, determines the payment system and the output market. Besides building sustainable business relationships, the approaches provide opportunities for integrating various support services into seed distribution.

Unlike public sector, Anchor firms have the inherent incentive to invest in strong distribution systems that guarantee a consistent supply of quality seeds and incentivize all market actors to develop or expand input and output markets, in order to drive sales and returns. Seed companies, input distributors, and agro-dealers need to improve their sales of seeds by increasing the value proposition for the improved seeds (to farmers), building strong relationships with market actors, expanding farmer extension and support system, and expanding their network and outreach, put in place quality assurance and traceability system, and fight counterfeits. This can be achieved by deploying strategies for market expansion, segmentation, and consolidation through improving infrastructure and logistics, information systems, market intelligence, and inventory management, product diversification and quality, organizing farmers into groups.

### *3.1 Strengthening the Agro-Dealer System*

Supporting the uptake of certified seeds by farmers requires strengthening the agro-dealer model for effective distribution. To address the challenges affecting the agro-dealers, as outlined above, the solutions proposed here are designed to increase agro-dealer numbers, build capacity, and improve outreach. These include:

- Certification of Agro-dealers to generate a pool of competent agro-dealers to distribute seed, provide extension/ advisory service, ensure seed quality, and drive demand. A professionalized agro-dealer system can ensure agro-dealers fulfill these important functions, while also countering malpractice (e.g., seed counterfeiting). Developing an agro-dealer registration and certification scheme can ensure quality control, provide a platform for capacity building, and generally professionalize the field. Specific seed quality assurance tasks, processes, and milestones can be defined and executed at this level once the scheme and coordination structures are established.
- Using Business Development Service (BDS) providers to strengthen agro-dealer network. While BDS can support agro-dealer growth, the number of qualified service providers in the region is limited. As such, this proposed solution requires a broader conceptualization of BDS, to include establishing a pool of competent BDS providers, developing a mechanism for coordinating and rewarding BDS providers, and creating an enabling environment for BDS to thrive then using a critical mass of BDS providers to strengthen capacity of Agro-dealers. Only then can BDS providers begin building capacity of agro-dealers by targeting a critical mass that would create traction in supply chain. Provision of BDS would transition agro-dealers to well managed businesses with a strong capital base, diversified and quality product portfolio, strong competencies, good customer relations, strong outreach, and improved profitability.

### *3.2 Strengthening Extension Support*

In a region where extension services are weak, such as East Africa, farmers need access to reliable information. This requires the integration of extension services into the input distribution system to enhance adoption and use of certified seeds. Any seed distribution strategy should include a strong extension component that raises awareness and technical knowledge of not only seed but also related inputs like agrochemicals and fertilizer. Stronger extension support will link farmers with various services, improve farmer knowledge, encourage proper use of farm inputs and adoption of appropriate technologies, maximize yields, and build farmers' resilience. By maximizing farmers' return on investment, extension services can help drive market demand for certified seed.

Finally, the uptake of certified seeds by farmers requires making sure that the seeds are available and affordable, providing them with adequate information (extension services) and building their confidence that they are receiving genuine seeds. This requires the creation of financial solutions to facilitate the purchase of inputs and produce payment. Partnering with financial institutions that can provide the financial products cooperatives and farmer groups need to buy quality seeds and other inputs. Partnerships with other input suppliers (agrochemicals and fertilizers) also would be beneficial, as they can help equip farmers with the inputs required to produce optimum yields. It is evident that where there is a demonstrated market for farmer output, financial institutions are more willing to lend to farmers, as demonstrated with Mukwano in Uganda, where Stanbic Bank and Centenary Bank independently developed financial products targeting the oilseed farmers. The tea and coffee value chains in Kenya offer models, too. In addition, input-suppliers can extend trade credit to agro-dealers and cooperatives that they then extend to farmers.