



Seed Sector Performance Index (SSPI)

2023 Status Report for Africa

August 2024

*Access to Seed and Biotechnology
(Decision: Assembly/AU/Dec. 135 (VIII), 2007)*

Foreword

Well-functioning, competitive, and pluralistic seed systems are critical for driving resilient and equitable food systems in Africa. Seed of improved varieties can deliver state-of-the-art technology to farmers supporting higher yields, disease and pest resistance, climate change adaptation, and improved nutrition. Recognizing this imperative, African governments and regional economic communities, together with donors and development organizations, have initiated a plethora of programs aimed at fostering sustainable seed systems.

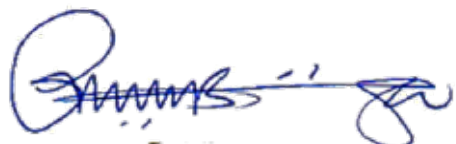
Within the African Union Commission, the Department of Agriculture, Rural Development, Blue Economy and Sustainable Environment (AUC-DARBE) leads continental efforts to facilitate agricultural and rural transformation through enhanced productivity and growth. In this context, the DARBE orchestrates the implementation and surveillance of policies, strategies, and programs that align with pivotal AU Decisions, including Assembly/AU/Dec. 135(VIII), which endorsed the African Seed and Biotechnology Program (ASBP) as a strategic framework for the development of the seed sector in Africa. The ASBP operates within the framework of the Malabo Declaration, the Comprehensive Africa Agriculture Development Program (CAADP), and Africa's Agenda 2063 First Ten-year Implementation Plan.

AGRA, since its inception, has heralded seed systems as the “backbone” of agricultural sector research, quality assurance, extension, and distribution. AGRA seeks to establish strong, efficient, and resilient seed systems that provide farmers with timely and affordable access to suitable and high-quality varieties, equipped with traits for improved yields and resilience against pests and diseases. Against this background, the Center of Excellence for Seed Systems in Africa (CESSA) is dedicated to forming partnerships that address various challenges in the African seed systems. CESSA supports governments, the private sector, and development partners in their quest to deliver modern, effective, and resilient seed systems that better serve African farmers.

Both AUC-DARBE and AGRA's CESSA emphasize the need to objectively measure performance and track the progress of seed systems in African countries to promote mutual accountability and facilitate learning from peers. In pursuit of these objectives, the two organizations have partnered with TASAI Inc. to develop a score-based measurement tool that assesses the vitality of seed systems across Africa. This inaugural edition of the Seed Sector Performance Index (SSPI) is a pilot project that will in the future generate data for the Biennial Review (BR) Report, published by the AUC every two years, and also provide a rich source of information for seed sector stakeholders.

The findings of the report underscore a pressing necessity to escalate investments in seed systems to bolster sustainable agricultural production. For lagging countries, it is imperative to amplify investment and cultivate a supportive policy and regulatory environment. By addressing the bottlenecks identified in this report, member countries can facilitate enhanced access to quality, appropriate, and affordable seeds for African farmers which, combined with other interventions, will improve food and nutritional security.

We extend our profound gratitude to TASAI Inc., along with national and regional seed industry experts, reviewers, and all other contributors to this landmark SSPI report.



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Acronyms

ASBP	Africa Seed and Biotechnology Program
AUC	African Union Commission
BR	Biennial Review
CAADP	Comprehensive Africa Agriculture Development Program
CESSA	Center of Excellence for Seed Systems in Africa
CGIAR	Consultative Group on International Agricultural Research
COMESA	Common Market for Eastern and Southern Africa
EAC	East African Community
ECCAS	Economic Community for Central African States
ECOWAS	Economic Community for West African States
EGS	Early Generation Seed
IGAD	Intergovernmental Authority on Development
NARI	National agricultural research institute
PGRFA	Plant Genetic Resources for Food and Agriculture
QDS	Quality declared seed
REC	Regional Economic Community
SADC	Southern African Development Community
SSPI	Seed Sector Performance Index
TASAI	The African Seed Access Index
UMA	Union du Maghreb Arabe

Executive Summary

Background

The 2023 Seed Sector Performance Index (SSPI) report provides an overview of the performance of national seed sectors in Africa. Developed by TASAI Inc., in collaboration with the African Union Commission's African Seed and Biotechnology Program (ASBP) and AGRA, the SSPI is a new analytical tool that aims to provide a single score measurement of the health of seed systems across Africa. The current report is SSPI's first (pilot) report.

The SSPI report follows on the report entitled "Seed Sector in Africa: Status Report and Ten-year Action Plan (2020-2030)," published by the AUC in 2020 (African Union Commission, 2021). However, the SSPI departs from the previous report in that it uses a more rigorous and detailed methodology. Its findings have informed the results of the 4th CAADP Biennial Review report, slated for release in April 2024, in which seed sector performance was captured through the indicators on "the growth rate of the ratio of supplied quality agriculture inputs." The specific parameters were *"the quantity of seed (of improved and local varieties) required to cultivate the total area of one selected crop from the five priority value chains"*, and *"the quality seed of improved varieties of the selected crop supplied to farmers for planting"*.

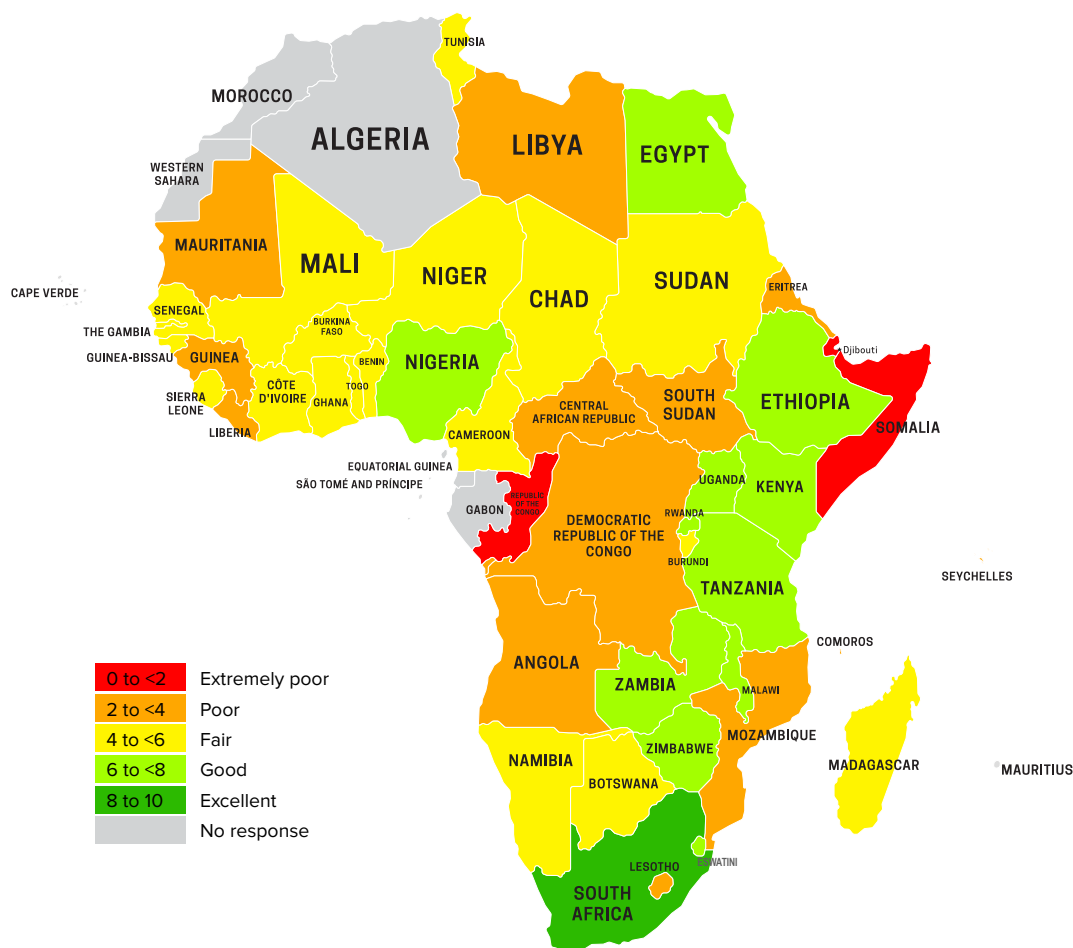
The primary source of indicators for the SSPI were TASAI's 22 and SeedSAT's 166 indicators. The two sources yielded an initial short-list of 30 indicators, which TASAI reviewed with AGRA and ASBP members and further reduced to the current 17 indicators. These 17 indicators encompass all aspects of the seed system, from research and variety development to seed production, marketing and distribution, and the policy environment. The indicators are divided into five groups: five indicators are listed under breeding, variety release and maintenance, three under commercial seed production marketing and trade, two under seed distribution and farmer awareness, four under seed policy frameworks, and three under seed quality assurance and industry support. Each indicator is scored out of ten. The overall score for each country is the simple average of the 17 scores.

All 55 AU Member States were approached to provide data for the SSPI. Forty-seven submitted a response, while Algeria, Cape Verde, Equatorial Guinea, Gabon, Mauritius, Morocco, Sao Tome and Principe, and the Sahrawi Republic declined to participate. Each country's dataset contains information on four crops of importance to the country ("the four priority crops"), which include cereals, legumes, vegetatively propagated crops, fruits, and vegetables. The ten most common priority crops, in order of frequency, were maize, rice, sorghum, groundnut, bean, millet, soya bean, wheat, cowpea, and cassava.

Summary findings

Figure 1 below presents the overall scores by country. Only one country – South Africa – achieved an overall "excellent" score above 8/10. Eleven countries, mostly in East and Southern Africa, had an overall "good" score between 6/10 and 8/10. Nineteen countries, mostly in the Sahelian region, scored "fair" overall, with scores ranging between 4/10 and 6/10. Thirteen countries, many of them in Central Africa, achieved an overall score of "poor," between 2/10 and 4/10. Finally, three countries, the Republic of the Congo, Djibouti and Somalia, achieved an overall score of "extremely poor" between 0/10 and 2/10.

FIGURE 1. OVERALL SSPI SCORES BY COUNTRY



Breeding, Variety Development, Release and Maintenance

Progress in the area of breeding, variety development, release and maintenance is measured through five indicators, starting with the **quality of the variety release and registration process**, which measures the extent to which the variety release and registration process is clearly defined, understood, and followed by both public and private breeders and regulatory agencies. Top scores under this indicator were assigned to South Africa, Kenya, Zambia, Zimbabwe, and Benin, while Angola, the Central African Republic, and Somalia scored the lowest. The average score for this indicator across the countries surveyed was “fair” at 5.33/10.

Another important data point about a well-functioning seed system is the number of varieties released. Counting the **number of varieties released in the last three years**, the SSPI study found South Africa far outpacing all other countries on the continent with 296 releases across the four priority crops. Zambia came in a distant second with 88. Only twelve of the 47 countries surveyed released one or more varieties for all four priority crops over the 2020-2022 period, and thirteen countries had no new variety releases at all. While the “optimal” number of varieties released will vary across countries due to factors such as the country’s size or its agro-ecological diversity, the bottom line is that in most countries, the variety release

process is not keeping pace with farmers' needs and the concurrent challenges of climate change, or new pests and diseases. The average score for this indicator across the countries surveyed was "poor" at 2.98/10.

National agricultural research institutes (NARIs) play an important role in advancing public breeding programs. This indicator assesses the extent to which the national public research institutions have adequate human resources and infrastructure to support variety development and release processes. Specifically, the SSPI study looked at the adequacy of NARIs through three aspects: the number of breeders, and the funding and infrastructure available for breeding programs. Once again, South Africa emerged on top, followed by Egypt, Zambia, Ethiopia Burkina Faso and Uganda with the rest of the countries scoring 6 or below. The average score for this indicator across the countries surveyed was "poor" at 3.84/10.

Another important aspect of sustainable variety development programs is the organized **collection and conservation of plant genetic materials**. This indicator assesses the existence and functioning of a national program (which may include an institute, department, or agency) mandated to carry out or coordinate activities related to Plant Genetic Resources for Food and Agriculture (PGRFA). All but five of the countries surveyed reported having a program in place for collecting and conserving plant genetic materials. The majority of countries scored at least fair (4/10) on this indicator, with top scores going to Egypt, Zambia, Sudan, Botswana, Burkina Faso, Eritrea, South Africa and Tanzania. The lowest scores were assigned to Mauritania and South Sudan. The average score for this indicator across the countries surveyed was "fair" at 5.28/10.

Rounding out this category is the indicator on the **availability of Early Generation Seed (EGS)**. Sufficient quantities of high-quality EGS are the foundation of a well-functioning certified seed production system. This indicator measures three aspects of the availability of EGS: the quantity and the quality of EGS, as well as the timeliness of its delivery to producers. South Africa, Zimbabwe, Malawi, Benin, and Egypt ranked in the top 5, all scoring over 8/10. About half of the remaining countries scored between 6 and 8, while about another half between 4 and 6. Comoros, Mauritania, and the Republic of the Congo scored the lowest. Also, in most countries, the three sub-indicators received similar scores, indicating a positive correlation among the three sub-indicators. The average score for this indicator across the countries surveyed was "fair" at 5.93/10.

Commercial Seed Production, Marketing and Trade

Successful breeding and variety release efforts are only meaningful in the presence of a well-functioning commercial seed production system, which is complemented by marketing and trade that avails certified seed to the end users – farmers. The SSPI measured progress in this area through three indicators: crop varietal choice available to farmers, the utilization rate of commercial seed by farmers, and seed imports.

The indicator for **crop varietal choice** tracks the number of varieties sold to farmers for the four priority crops in the most recent year for which data are available. Once again, South Africa vastly outperformed all other countries surveyed, with 1592 varieties across the four priority crops. The second highest number was recorded in Kenya (149), followed by Zambia (139), Nigeria (98), and Senegal (98). Perhaps more importantly, in a little less than half of the countries surveyed the number of varieties available for the four priority crops was 20 or below, indicating a very limited choice for farmers. The average score for this indicator across the countries surveyed was "poor" at 3.83/10.

An equally important measure of commercialization is the extent to which the available quantities of seed satisfy the existing demand. This indicator measures the **utilization of quality commercial seed by farmers** and is expressed as the ratio of the quantity of commercial seed produced for the four priority crops and the

national seed requirement for the four priority crops. Twenty percent of the countries surveyed were able to meet 80% or more of their national seed requirement, although, as explained in the Methods section, the quantity of seed ‘produced’ included both locally produced and imported seed. The top performers included South Africa, Zimbabwe, Guinea-Bissau, Ghana, Eswatini and Zambia. More importantly, the large majority of countries (75%) met less than half of the combined average national seed requirement for the priority crops, with a number of countries meeting less than 10%. This finding clearly points to the need for increased seed production in most African countries. The average score for this indicator across the countries surveyed was “poor” at 3.65/10.

The indicator on the **status of seed import processes** tracks the degree of clarity of seed import regulations and their enforcement as an opinion indicator. Led by Gambia, South Africa, Uganda, Zambia, and Tunisia, the majority of countries scored 4/10 or higher on this indicator, with nearly half scoring 8/10 or higher. The lowest scores were received by Somalia, South Sudan, and Djibouti. It is important to note that the score pertains to the regulations only and does not reflect whether a country reported any imports for the data collection period. The average score for this indicator across the countries surveyed was “good” at 6.55/10.

Seed Distribution and Farmer Engagement

Two indicators were used to track seed distribution and farmer engagement: the first assessed the **adequacy of the agro-dealer network**, which has a key role in the ‘last-mile’ delivery of seed to farmers. Although the study attempted to record the number of agro-dealers in each country, in many countries, this number was not available. Further, meaningfully comparing countries based on the number of agro-dealers alone was not possible because the optimal number for each country is a function of several factors. As a result, the adequacy of the agro-dealer network was measured as an opinion indicator, relying on the assessment of local seed sector experts. About two-thirds of the countries scored between 4/10 and 8/10. Rwanda, South Africa, Ethiopia, Tanzania, and Botswana scored among the top 5, while Angola, Burundi, and the Central African Republic scored the lowest on this indicator. The average score for this indicator across the countries surveyed was “fair” at 5.03/10.

The second indicator in this category measured the percentage of **seed sold in small packages** as a percentage of overall seed sales. The rationale behind this indicator is that when seeds are available in small packages (defined here as 2 kg or less), more smallholder farmers can purchase them. While this assertion is correct on the whole, the study found that in some countries other factors, such as government mandating the size of packages, or the priority crop requiring larger package sizes, were reflected in the score. Top scores were received by Tanzania, Namibia, Kenya, and Rwanda, all scoring above 8/10. Conversely, 75% of countries scored 4/10 or below on this indicator, showing that, in these countries, little-to-no seed was available in small package sizes. The average score for this indicator across the countries surveyed was “poor” at 2.07/10.

Seed policy frameworks

An adequate policy framework with all the required policy instruments is the foundation of a well-functioning seed system. The SSPI study looked at four indicators on this topic: the **status of a country’s policy instruments** and their **harmonization with regional seed regulations**, as well as the presence of **policies for biosafety frameworks and Farmer-Managed Seed Systems (FMSS)**. It is important to note that the study only considered the existence, completeness, and age of policy instruments, not their implementation. The results were quite similar for the first two indicators, with the majority of countries scoring 6/10 or higher. The average score across all countries for both indicators was “good:” 7.47/10 for the status of seed policy instruments and 6.55/10 for the status of harmonization with regional seed regulations. These scores signal

that most countries have taken important strides towards creating adequate policy frameworks. However, the real test of a policy is its implementation, so it is important to receive this good news with a caveat that it only captures a part of the story.

Recognizing the importance of biosafety regulations as part of a country's seed policies, the next indicator measures whether a country has adopted national biosafety frameworks, including agricultural biotechnology policies, laws, and/or regulations, and whether these frameworks are operational. The good news is that thirty-eight of the forty-seven countries surveyed have some sort of biosafety framework, and about two-thirds of these countries scored 6/10 or higher on this indicator. Once again, South Africa led the continent in this area, followed closely by Burkina Faso, Eswatini, Kenya, Malawi, Namibia, Nigeria, Senegal and Zimbabwe while Eritrea, Rwanda, and Seychelles scored the lowest. The average score for this indicator across the countries surveyed was "fair" at 4.93/10.

The final indicator in this section tracks whether – and to what extent – FMSS have been incorporated into the policy framework of a country. Countries and governments vary in their treatment of this issue. In some countries, the inclusion of FMSS represent the country's recognition that FMSS are – and will be – a part of the seed system in the long term. Uganda, Guinea (Conakry), and Tanzania fall into this category, scoring the highest on this indicator. In many other countries, FMSS are not mentioned in the policy instruments; sometimes this reflects the stance that seed policy frameworks focus solely on the formal seed sector, and at other times it is a reflection of a lack of a policy framework overall. Somalia and the Democratic Republic of the Congo received the lowest scores on this indicator. The average score for this indicator across the countries surveyed was "poor" at 3.45/10.

Seed quality assurance and industry support

If the private sector is to play an important and successful role in a country's seed system, the country needs to ensure that seed produced by private entities undergoes regular quality checks by well-functioning seed inspection services. In addition to assessing the **adequacy of seed inspection services**, the SSPI study looked at two important areas of industry support that influence the successful development of a private seed sector. The first is the government's **efforts to combat the production and sale of counterfeit seeds** and the **presence and role of a national seed trade association**.

While the SSPI study collected data on the number of seed inspectors in all countries, finding a way to produce meaningful country comparisons based on this number was not feasible (see Methods for details); as such, the adequacy of seed inspectors is scored based on expert opinion. Nine countries scored 8/10 or above, with South Africa, Kenya, Egypt, Zimbabwe, and Zambia leading the way. Close to two-thirds of the countries scored between 4/10 and 8/10. Angola, South Sudan, and Djibouti recorded the lowest opinion scores on this indicator. The average score for this indicator across the countries surveyed was "fair" at 5.41/10.

The presence of counterfeit seeds on the market presents a major challenge both because it can discourage farmers from buying new varieties (or buying seed altogether) and also because it threatens the success of emerging or existing private seed producers who may find themselves competing with or needing to protect their products from unscrupulous seed dealers. This indicator rates the adequacy of government efforts to combat counterfeit seeds. In virtually all the countries surveyed, the government recognizes that counterfeit seeds pose a serious problem and more than half of them have made notable efforts to curb counterfeit seeds (scoring 6/10 or higher), with South Africa, Benin, Egypt, Rwanda, Tanzania, Tunisia, Zimbabwe and Kenya leading the way. At the same time, about half the countries are not doing enough to make a dent in the problem, including the fact that a number of countries are yet to set up a reliable

government tracking system for counterfeit seed cases, an essential step towards measuring the true extent of the problem. This is in part the reason why the best possible measure for this indicator is seed industry opinion. The average score for this indicator across the countries surveyed was “fair” at 5.28/10.

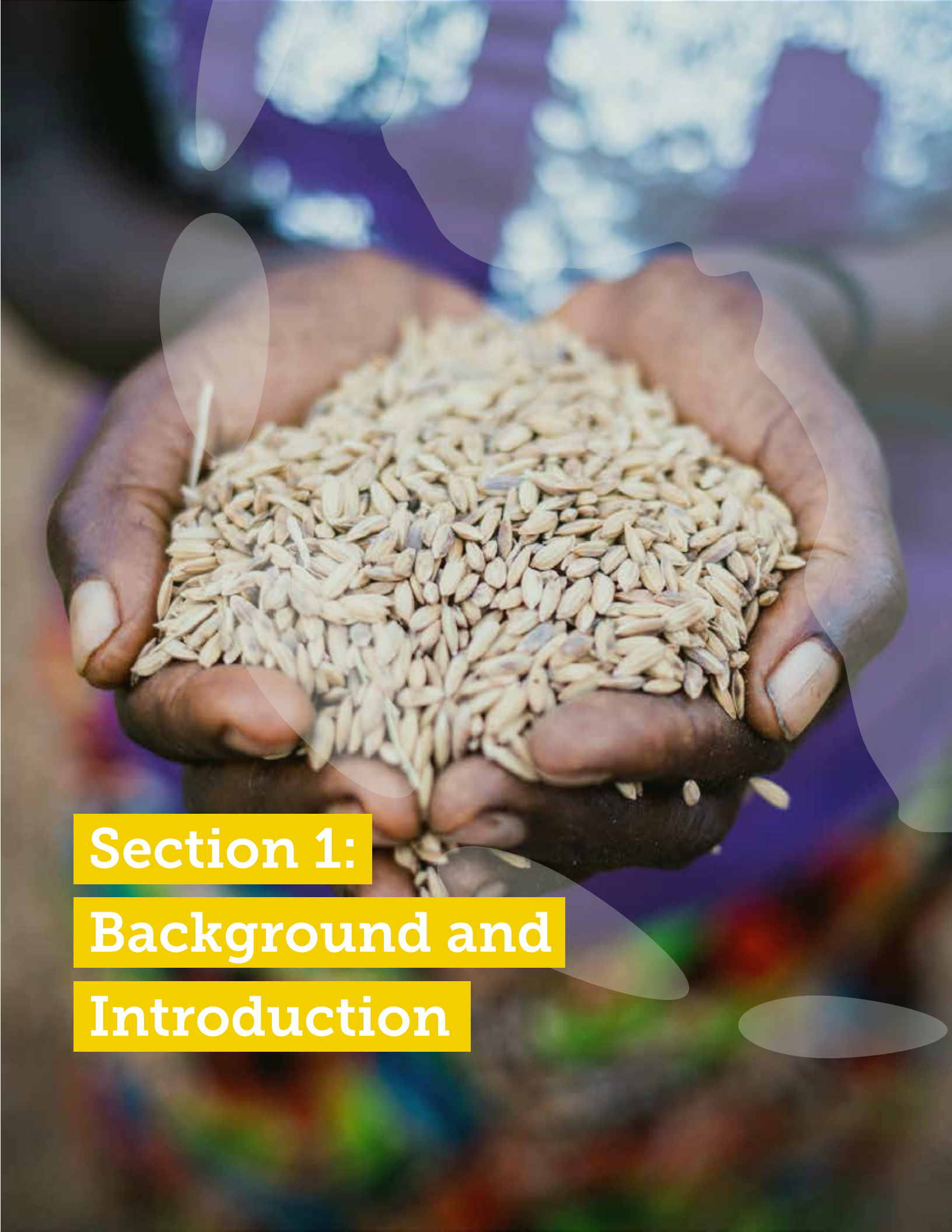
National seed trade associations serve as an important industry group that represents the interests of the private sector and play a key role in engaging with the government. It is an essential part of the development of a formal seed sector, and as such, it is included among the SSPI indicators. This indicator measures the performance of the national seed trade association in a country. The scoring is based on six performance measures of the association: (i) activity on important seed sector issues, (ii) democracy and governance, (iii) effectiveness in advocacy, (iv) managerial ability, (v) provision of value to members, and (vi) ability to mobilize resources. Nearly three-quarters of the countries surveyed have seed associations to date, indicating that they have taken this important step in the development of a private seed sector. The leading scorer on this indicator was South Africa’s SANSOR, followed by ZSA (Zimbabwe), and, tied in third place, NASTAG (Ghana), STAK (Kenya), (USTA) Uganda, and ZASTA (Zambia). Of the six sub-indicators, assessing the organization’s management as well as the ability to advocate for the sector. While the scores for sub-indicators varied across countries, the organization’s ability to mobilize resources was consistently rated lowest in most countries. The average score for this indicator across the countries surveyed was “fair” at 4.23/10.

Conclusion

The overall SSPI score for the continent across all indicators and all countries is “fair” at 4.81/10. This indicates that, although there are some bright spots and consistent high performers to highlight, in most countries the 2023 SSPI report’s findings stress the urgent need to increase investment in seed systems to bolster agricultural productivity and sustainability. Importantly, in countries that consistently rank at the bottom of the list, concerted efforts are needed across the entire value chain to improve the variety release process, to strengthen agricultural research capabilities, to enhance government seed inspection and certification efforts, and to create (or improve) initiatives to combat counterfeit seed.

The main report offers more detail, starting with an introduction on how the Seed Sector Performance Index came to be (Section 1), followed by a detailed section on Methods (Section 2), including a description of how scores for each indicator were computed. The next major section of the report is dedicated to individual country profiles, which contain the indicator scores, as well as a brief explanation of the assigned scores (Section 3). The last major section discusses the findings by indicator, offering a chance for cross-country comparisons (Section 4).

As the 2023 study was the first instance that data were collected for the SSPI, it should be viewed as a pilot study. As such, the authors expect to draw some important lessons from this pilot and use them to improve the methods for the next round of data collection, expected in 2025.



Section 1:

Background and

Introduction

Justification for the SSPI

Enhancing food security for a rapidly rising population is a daunting challenge for Africa. One solution lies in the increased use of adaptive technologies, such as high-quality seed of locally adapted and high-yielding varieties that can meet challenges like climate change. The potential benefits of quality seed for food security and agricultural productivity cannot be overemphasized: well-functioning seed systems are critical to improving food and nutrition security, resilience, and the livelihoods of smallholder farmers in Africa. This requires **all** elements of the system — breeding programs, production, marketing and distribution, and regulatory and quality assurance processes — to work together synergistically, supporting and underpinning each other.

At present, in much of Africa, national seed sectors lack effective and cost-efficient systems that deliver certified seed of improved varieties. In addition, the available varieties do not meet the evolving needs of farmers located in varying agro-ecological zones. These needs include climate-smartness, tolerance to emerging diseases such as Maize Lethal Necrosis, and biofortification with nutrients, such as iron or vitamins. Further, most of the time, improved seed is not delivered at the right time, in the right quantities, and at the right price.

Unfortunately, a tool that captures how national seed sectors are addressing the challenges outlined above does not exist. Taking this fact as a starting point, the Seed Sector Performance Index (SSPI) was created through a partnership of the African Seed and Biotechnology Program (ASBP) of the African Union Commission (AUC), TASAI Inc., and AGRA. The goal of this partnership was to develop and pilot a single score-based measurement tool to assess the health of seed systems across Africa and to provide seed sector data for the 4th Biennial Review (BR) Report¹, published by the African Union Commission. While existing analytical tools such as The African Seed Access Index (TASAI) and SeedSAT are useful to monitor the status of and improvements in a national seed sector, they fall short in providing a quick, continent-wide, bird's eye view of the health of national seed sectors.

This report shares the detailed findings of the 2022 SSPI study. It builds on the first report, entitled “Seed Sector in Africa: Status Report and Ten-year Action Plan (2020-2030)” written at the request of the AUC’s Department of Rural Economy and Agriculture (DREA) (African Union Commission 2021). While gathering data for the 4th BR Report was a primary motivation for the study, we hope that it will also stand alone as an informative assessment of the status of African seed sectors in 2022, and that it will be a vital resource for individuals and entities working on seed sector development in Africa.

The collaboration

The ASBP platform offers opportunities for partners to contribute to an improved understanding of national seed systems. It is through these engagements that the AUC, AGRA, and TASAI developed a methodology to study the main barriers and challenges to improving the seed sector in Africa. The original request came from the AUC and was informed by the decision by heads of state that all AUC declarations should be converted to indicators and indexes that feed into the BR reports. According to the AUC, “the introduction of the Seed Index in the CAADP BR will allow us to report on progress made in seed sector development in Africa to the African Union” (African Union 2022b).

¹ The CAADP Biennial Reviews have been published since 2018. They are a response to the Declaration on Accelerated Agricultural Growth and Transformation (Doc. Assembly/AU/2(XXIII)) adopted by AU Members States in June 2014 in Malabo, Equatorial Guinea. The biennial reviews provide a report on the progress towards achieving the goals set out in the Malabo Declaration.

The African Seed and Biotechnology Program

The Eighth Ordinary Session of the Assembly of the African Union held in Addis Ababa, Ethiopia, on 29-30 January 2007, endorsed the African Seed and Biotechnology Program (ASBP) as a strategic framework for the development of the seed sector in Africa (Doc. ASSEMBLY/AU/6 (VIII)). The overall program goals are to increase food security and nutrition and to alleviate poverty in Africa through effective and efficient seed systems and the enhanced application of biotechnology within the seed sector.

The ASPB has the following eight objectives:

1. Enhanced national capacity for improved seed production, multiplication, and distribution to better supply farmers with high-quality seed that enables them to respond to changing environmental conditions and market demands.
2. Improved seed quality assurance procedures to ensure sustained production and distribution of high-quality seed to farmers.
3. Strengthened linkages between the formal and informal seed sectors to better understand and respond to farmer needs, including small-scale and women farmers.
4. Effective seed policies and regulations to enable and promote increased seed trade among African nations.
5. Enhanced capacity for the conservation and sustainable use and development of plant genetic resources for food and agriculture, to ensure adapted crop varieties are available to meet future farmer needs.
6. Increased capacity to utilize biotechnology tools to enhance plant breeding and high-quality seed production.
7. Increased capacity to implement biosafety measures in relation to seed production and distribution and plant genetic improvement, to protect human health and the environment.
8. The establishment of model codes of conduct for seed used in emergency situations.

TASAI Inc.

TASAI Inc. is the nonprofit organization that coordinates the work of The African Seed Access Index (TASAI). Founded on the premise that well-informed, evidence-based interventions will result in competitive seed systems that serve African smallholder farmers, TASAI's goal is to create, promote, and maintain enabling environments (including institutional, policy, and regulatory realms) for formal seed systems serving smallholder farmers to catalyze inclusive agricultural transformations in Africa. TASAI accomplishes its goal by collecting high-quality data at the national level, which it shares in the form of country reports (the **TASAI Country Studies**) and an interactive, digital dashboard (dashboard.tasai.org) that gives a detailed picture of country seed industries and allows for cross-country comparisons and continent-wide rankings of seed sectors. TASAI studies cover 22 indicators divided into five broad categories: **Research and Development, Industry Competitiveness, Policy and Regulations, Institutional Support**, and **Service to Smallholder Farmers**. Using the indicators, TASAI studies evaluate the structure, conduct, and performance of seed systems serving smallholder farmers. To date, TASAI has collected data in 23 Sub-Saharan African countries; in 2024, TASAI plans to expand its geographic scope to 24 countries.

AGRA-CESSA

AGRA's Center of Excellence for Seed Systems in Africa (CESSA) is focused on forming partnerships to address various challenges in the African seed systems. CESSA is a one-stop center to accelerate the building of functional seed systems and was created to improve the availability of quality seed that meets the market and ecological demands of African farmers for increased profitability, resilience, and production.

CESSA, launched in September 2021, supports governments, the private sector, and development partners in delivering modern, effective, and resilient seed systems to better serve African farmers. It seeks to strengthen the seed value chain in several different areas, including: variety development and release, the production and distribution of early generation and certified seed, farmer awareness creation and participation, quality assurance, national planning, and policy and regulatory frameworks.

CESSA supports informed, evidence-based decision-making, investments, and the provision of technical advice and support for the implementation of improved seed systems. CESSA programs will be implemented under 3 flagship pillars: 1. Analytics and Knowledge Management, 2. Capacity Building and Technical Support, and 3. Catalytic Grants and AGRA Advisory.

AGRA's SeedSAT is an assessment tool that collaboratively undertakes in-depth country seed system analysis with governments and other stakeholders, leading to improvements that increase the delivery and use of improved seed varieties. SeedSAT covers 166 indicators and has been implemented in 11 countries to date.

Seed systems in Africa

Although the SSPI focuses primarily on the formal seed system, it also recognizes the role of the informal seed system in the overall performance of the national seed sector. Seed systems in Africa can be classified primarily into formal and informal systems. Several countries also have an intermediate seed system. The SSPI includes an indicator that tracks the integration of Farmer-Managed Seed Systems (FMSS) in national policy instruments.

The informal seed system refers to a system in which seed is produced, maintained, and distributed through informal networks. These activities “tend to be decentralized and might revolve around local entrepreneurship, seed banking, community-based seed production, or seed villages” (McGuire & Sperling 2016). In many cases, farmers keep seed from the harvest and exchange it with neighbors, relatives, and through rural markets. Seed from this system is of variable varietal purity, physical and sanitary quality.

The formal seed system is a structured and regulated value chain for the production and sale of improved and certified seed varieties. This process involves many actors and institutions, whose activities range from breeding varieties to the multiplication, processing, and distribution of certified seed. The different stages of improved seed production are overseen by governments according to the approved regulations and standards. Seed from this system is sold through limited distribution channels, such as registered seed producers/companies and agro-dealers.

The intermediate seed system comprises business-oriented community-based groups (producer cooperatives or unions) engaged in the multiplication and distribution of non-certified seed of either modern or traditional local varieties. Seed producers usually access basic seed from the formal seed system and produce and distribute Quality Declared Seed (QDS) to other farmers, both through informal arrangements and through local markets. Multiplication and distribution generally take place within the local community and nearby areas (as opposed to seed producers in the formal system, who may scale beyond the local community). FMSS fit within this system.

Report Structure

Following this introduction, the present report provides a detailed description of the methods used to collect data for the SSPI with the help of national and regional seed experts. This is followed by a presentation of the findings by country, followed by a synthesis of the main findings by indicator, allowing for cross-country comparisons. Finally, the report outlines several lessons learned that the partners hope to implement for SSPI data collection for the 5th BR in 2025.

A woman is seen from behind, walking through a lush green cornfield. She is wearing an orange sleeveless top and a colorful patterned skirt. On her head, she balances a large, shallow, white ceramic bowl decorated with red and blue patterns. The corn plants are tall and vibrant green, filling the background and foreground. The lighting is bright, suggesting a sunny day.

Section 2: Methods

Developing the SSPI

The development of the SSPI to its current state can be divided into four key phases: (1) preliminary design, (2) data collection and cleaning, (3) indicator scoring and computation, and (4) validation. While these phases were generally implemented chronologically as the SSPI developed, there were significant overlaps and feedback loops among the stages as the tool was finetuned based on new evidence or suggestions (Figure 2). This section documents the four phases that comprise the SSPI methodology. Table 1 below outlines the key milestones in the development of this report.

FIGURE 2: FROM RAW INDICATORS TO INDEX

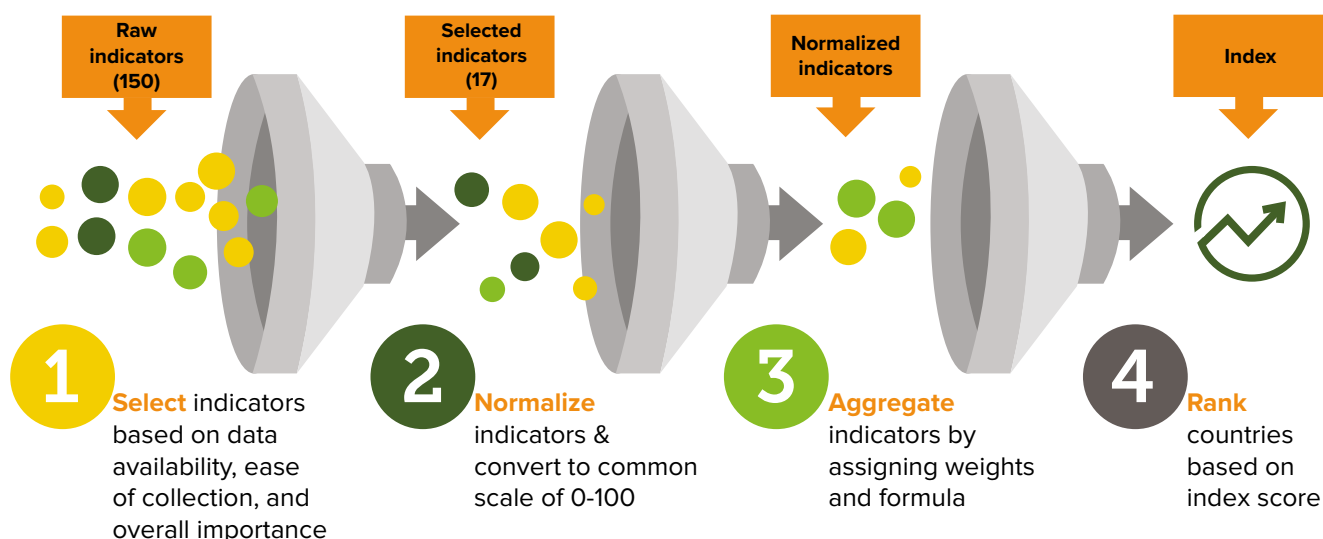


TABLE 1: KEY MILESTONES IN THE DEVELOPMENT OF THIS REPORT

Date	Activity
July 2021	TASAI was requested by the AUC to prepare an annex on access to seed for the 3rd CAADP Biennial Review Report.
September 2021	TASAI presented an annex with 9 indicators spread across the 5 categories covered by TASAI.
June 2022	TASAI presented the SSPI concept in one-on-one meetings to AGRA, the AUC, and AfDB, to explain the value the SSPI would bring to the CAADP Biennial Review Report.
July 2022	TASAI developed an initial set of 150 indicators sourced from existing SeedSAT and TASAI indicators.
July 2022	TASAI reduced the original set of indicators first to 22 and finally to 17, based on the indicators' importance for seed access by smallholder farmers, data availability, ease of data collection, and the goal of minimizing the correlation of indicators.
August 2022	TASAI met with ASBP technical working group members and AGRA to fine-tune the indicators.
October 2022	TASAI participated in the FAO and AUC-convened meetings with all organizations contributing to the Biennial Review Report to standardize and finalize the indicators.
Dec 2022	TASAI conducted a survey among seed sector stakeholders on the weighting of 17 indicators, divided into five categories.
February 2023	TASAI participated in the continent-wide Training of Trainers (TOT) where the 17 indicators were reviewed and adopted. Technical guidelines on the indicators and country reporting templates were developed.

Date	Activity
March to October 2023	TASAI participated in the training of regional and national CAADP focal points ² . TASAI selected and trained national and regional seed experts. SSPI data collection and validation, involving review and validation by RECs. Reports, and data were transmitted by the equivalent of a Permanent Secretary in the Ministry of Agriculture to the AUC.
July 2023	Data submission to the e-BR.
August to September 2023	TASAI participated in the Continental and Regional Data Validation Workshops. The countries resubmitted their validated/revised reports.
October 2023	TASAI participated in the consolidation of the 4 th BR report, and the preparation of country score cards.
November 2023	The AUC presented the 4th BR to the Specialized Technical Committee (STC ³) on Agriculture, Rural Development, Water and Environment (ARDWE).

Phase 1: Preliminary Design

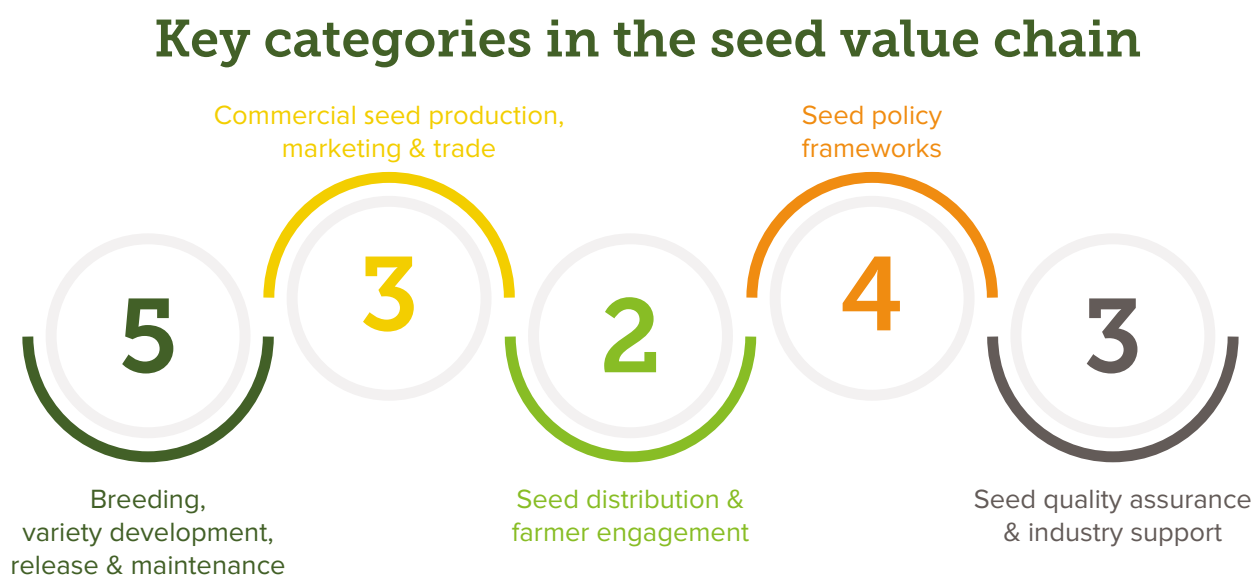
The design phase was focused on selecting indicators and assigning relative weights to these indicators. This phase, which involved consultation with multiple stakeholders and experts, took place from July 2022 to February 2023 (see Table 1 for details.) The consultations served to validate the process and sharpen the choice of indicators. For instance, in the 3rd BR process, the Annex presented data for five TASAI indicators: the number of varieties released for the four priority crops, the number of seed companies producing or selling seed of the four crops, the volume of seed sold for the four crops, the length of variety release process, and the total number of seed inspectors. Data was presented for 16 countries and covered the period 2016 to 2020 (African Union Commission 2021). Through the consultative meetings, it was realized that the five indicators did not capture the full spectrum of a seed sector. In addition, most of the data was not up to date. Steps were taken to increase the number of indicators to cover all key components of a national seed sector. The other consideration was balancing between ease of collecting the data across all 55 countries in Africa. Finally, efforts were made to ensure that there would be minimal redundancies in the data collected.

Selecting and defining indicators: the SSPI indicators were selected from multiple seed industry assessment tools from TASAI, SeedSAT, the Food and Agriculture Organization (FAO), the African Agricultural Technology Foundation (AATF), and the Ecological Organic Agriculture Initiative (EOA). A primary source was The African Seed Access Index developed by TASAI Inc., whose database includes 104 data points per country under 22 main performance indicators in five categories (Research and Development, Industry Competitiveness, Seed Policy and Regulations, Institutional Support, and Service to Smallholder Farmers). Another important source was SeedSAT, developed by AGRA, which has 166 indicators under 8 thematic areas (Breeding, Variety Release & Maintenance; Early Generation Seed; Quality Commercial Seed Production; Farmer Awareness and Participation; Seed markets and distribution; Policy, Legal, Regulatory; Quality Assurance; and National Planning & Coordination). These two sources yielded an initial short-list of 30 indicators, which were reviewed with ASBP members and AGRA and further reduced to 17. While SeedSAT and TASAI are both rigorous, they are costly to implement, have limited country coverage, and do not provide a single score measurement of a country's seed sector performance. The SSPI overcomes all these impediments, while providing specific indicators and overall country scores. The final list of 17 indicators, along with definitions and sources, is given in Table 3. Figure 3 below classifies the 17 indicators into five categories of the seed value chain.

² CAADP focal points are the main point of contact within the national government for CAADP activities and are often based at the Ministry of Agriculture.

³ These are thematic committees which report to the Executive Council. Each STC is composed of Member States' ministers and senior officials responsible for sectors falling within their respective areas of competence.

FIGURE 3: CLASSIFICATION OF SSPI INDICATORS INTO KEY CATEGORIES OF THE SEED VALUE CHAIN



SSPI Indicators

The SSPI consists of 17 indicators that measure the health of various aspects of the seed system. Table 2 (pp. 12-13) presents a description of each indicator and the source from which it was derived. In some cases, the indicators have been modified from the original source for clarity and/or simplicity. The table also indicates whether the indicator is crop specific, that is, whether the data is collected separately for each of the four priority crops.

Assigning relative weight to indicators: Having selected the indicators, the next step was to assign weights to the indicators based on their relative importance and contribution to the single score measurement. Depending on the interests of the final user, the relative importance of the indicators can vary significantly. To benefit from the collective wisdom of seed sector experts, TASAI surveyed 257 stakeholders (representing 36 countries, 27 in Africa), asking them to assign weights to the indicators and indicator categories. The online survey was conducted from September through December 2022. The results presented in Table 3 show the average weights assigned by all respondents to the indicators on a scale of 0-100% (0% not at all important, 100% most important). The average importance assigned to each of the 17 indicators ranged from 60% to 79%, indicating no significant differences in weighting. As a result of this analysis, it was decided to assign each indicator equal weight in the study.

TABLE 2: AVERAGE WEIGHT OF INDICATORS BY CATEGORY

Category	#	Indicator	Average weight
Breeding, Variety Development, Release & Maintenance	1	Quality of the variety release and registration process	79%
	2	Number of varieties released in the last 3 years	66%
	3	Adequacy of national agricultural research institutes	72%
	4	Status of the national program coordinating activities on Plant Genetic Resources for Food and Agriculture (PGRFA)	63%
	5	Adequacy of Early Generation Seed (EGS)	70%
Commercial Seed Production, Marketing & Trade	6	Availability of crop varietal choice to farmers	73%
	7	Utilization of quality commercial seed by farmers	69%
	8	Clarity and enforcement of seed import/export regulations	72%
Seed Distribution & Farmer Engagement	9	Adequacy of agro-dealer networks	71%
	10	Availability of seed in small package sizes	72%
Seed Policy Frameworks	11	Status of national seed policy instruments	76%
	12	Status of alignment of national seed policy instruments with harmonized regional seed regulations	74%
	13	Status of adoption of national biosafety frameworks to guide plant breeding and seed production	65%
	14	Status of Farmer Managed Seed Systems (FMSS) in national seed policy instruments and institutional arrangements	60%
Seed Quality Assurance & Industry Support	15	Adequacy of seed inspection services	73%
	16	Adequacy of government efforts to combat counterfeit seed	70%
	17	Adequacy of the national seed trade association	65%

Normalization of indicators: Normalizing is a process by which indicators are divided by a measure to allow for easier cross-country comparisons. In the case of the SSPI, this process was complicated by the selection of a suitable denominator. This is because no single denominator can be an ideal fit for a specific indicator. For example: the indicator “number of seed inspectors” can be normalized by multiple variables, including land area under seed production, the number of seed companies, and the volume of seed produced. Each option is supported by several assumptions that we weighed against other options to arrive at the most suitable one available.

TABLE 3: SSPI INDICATORS

Indicator	Description and data sources	Source of indicator	Crop-specific?
1. Quality of the variety release and registration process	This indicator measures the extent to which the variety release and registration process is clearly defined, understood, and followed by both public and private breeders and regulatory agencies. Data sources are TASAI, where available, and national seed authorities.	TASAI/SeedSAT	No
2. Number of varieties released in the last 3 years	This indicator tracks the number of varieties of the top four priority cereal and legume food security crops ⁴ released in the last 3 years, offering a good measure of outputs from the variety development and release system. More varieties released often translates to more varieties commercialized, thereby increasing farmers' choice. Data sources are national variety catalogues and regional variety catalogues.	TASAI	Yes
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs.	This indicator assesses the extent to which public research institutions have adequate human and financial resources and infrastructure for variety development and release; responses are based on opinion ratings by key seed industry informants. Data sources are NARIs.	TASAI/SeedSAT	Yes
4. Status of the national program coordinating activities on Plant Genetic Resources for Food and Agriculture (PGRFA)	This indicator assesses the existence and functioning of a national program (which may include an institute, department, or agency) mandated to carry out or coordinate activities related to PGRFA. These activities include the management of any <i>in-situ</i> conservation area and/or <i>ex-situ</i> conservation facility, such as a national gene bank. The data sources for this indicator are the national entities mandated to coordinate PRGA activities (Food and Agriculture Organisation (FAO) 1997).	FAO report on State of the World PGRFA ⁵	No
5. Adequacy of Early Generation Seed (EGS)	This indicator tracks the level of satisfaction with the availability of EGS as reported by seed experts. The ratings measure satisfaction with the availability of EGS to meet certified seed production needs based on (1) the quantity of the EGS supplied, (2) the quality of the EGS, and (3) the timeliness of delivery of the EGS. Data sources are TASAI, where available, national agricultural research institutes, and national seed authorities.	TASAI/SeedSAT	Yes
6. Availability of crop varietal choice to farmers	This indicator tracks the number of varieties of seed for the four priority crops sold to farmers in the most recent year for which data are available. Data sources are seed experts, national seed authorities, and TASAI reports, where available.	TASAI	Yes
7. Utilization of quality commercial seed by farmers	This indicator tracks the utilization of quality commercial seed by farmers in 2022. Data sources are seed industry experts and national seed authorities.	New	Yes
8. Clarity and enforcement of seed import/export regulations	This indicator tracks the degree of clarity and consistency of enforcement of seed import regulations and tracks volumes of imported/exported seed. Data sources are seed industry experts, national seed authorities, and the Ministry of Agriculture.	TASAI/SeedSAT	No
9. Adequacy of agro-dealer networks	This indicator tracks the adequacy of the agro-dealer (or seed seller) network in a country. Information on the number of agro-dealers is also provided. The two provide a proxy measure for the robustness of the agro-dealer network. Data is sourced from national seed authorities and the Ministry of Agriculture.	TASAI/ SeedSAT	No
10. Availability of seed in small package sizes	This indicator tracks the extent to which seed is available in small packages, which tend to be more suitable and affordable for small-scale farmers. Small packages may also help increase adoption rates of improved seed among this group. Data sources are TASAI reports, seed industry experts, national seed authorities, and national seed associations.	TASAI/SeedSAT	Yes

⁴ In some countries, oil crops, banana, roots and tubers and other crops replace cereals and legumes.

⁵ <https://www.fao.org/3/w7324e/w7324e.pdf> (Page 456)

Indicator	Description and data sources	Source of indicator	Crop-specific?
11. Status of national seed policy instruments	This indicator tracks the status of national seed policy instruments (seed policies, laws, regulations and decrees) that promote an enabling environment for a competitive seed sector and encourage private sector participation in seed sector development. The indicator does not track the implementation of said policy instruments. Data sources are national seed authorities and the Ministry of Agriculture.	TASAI/SeedSAT	No
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	This indicator measures the extent to which national seed regulations are harmonized with the regulations of the respective regional economic communities (RECs), i.e., COMESA, ECOWAS, and SADC. Note that there are countries that are members of more than one REC. Data sources are national seed authorities, and the Ministry of Agriculture.	TASAI/SeedSAT, CORAF	No
13. Status of adoption of national biosafety frameworks to guide plant breeding and seed production	This indicator measures the extent to which a country has adopted national biosafety frameworks including agricultural biotechnology policies, laws, and/or regulations, and whether these frameworks are operational. Data sources are the National Biosafety Authority, the Africa Agricultural Technology Foundation (AATF), and the Ministry of Agriculture.	AATF	No
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments and institutional arrangements	This indicator tracks the extent to which national seed policy instruments (seed policies, laws, regulations and decrees) recognize FMSS and promote institutional arrangements that create an enabling environment for FMSS in seed sector development. Note that the indicator tracks the status of these instruments and not their implementation. Data sources are national seed authorities, and the Ministry of Agriculture.	Ecological Organic Agriculture Initiative (EOAI)	No
15. Adequacy of seed inspection services	This indicator assesses the adequacy of the human resource capacity available for seed field inspections. Data sources are the national seed authorities, the Ministry of Agriculture, and TASAI reports, where available.	TASAI/SeedSAT	No
16. Adequacy of government efforts to combat counterfeit seed	This indicator measures seed industry experts' level of satisfaction with government efforts to eliminate counterfeit seed. Data sources are the national seed authorities, Ministry of Agriculture and TASAI reports, where available.	TASAI/SeedSAT	No
17. Adequacy of the national seed trade association	This indicator measures the performance of the national seed trade association. It assumes that well-functioning national seed trade associations play a key role in developing a country's seed sector, as they represent the interests of the industry and are an important liaison between the government and private sector. Data sources are the national seed association, the national seed authority, and TASAI reports, where available.	TASAI/SeedSAT	No

Phase 2: Data collection

Once the SSPI design phase was completed, TASAI submitted a grant proposal to AGRA to support data collection, data cleaning, and report writing activities. The grant was awarded in June 2023 and data collection commenced immediately. Stage 2 on data collection is divided into four steps, namely (1) the recruitment of national and regional experts, (2) crop selection, (3) the development of data collection tools and, (4) data collection and cleaning.

Recruitment of national and regional experts

The first step of the data collection process was to recruit local seed sector experts in each of the 55 AUC member states, whose task was to collect data for their country based on a set of technical guidelines provided by TASAI. Quantitative data was collected from government records, and qualitative data was based on opinions of key informants who are knowledgeable about their country's seed sector. Where up-to-date data were not available from government records, these were sourced from publications, including TASAI and SEEDSAT reports. Relying on information received from the national CAADP focal points, in each country one seed industry expert was recruited from either the national seed regulatory agency, the national agricultural research institute, or the national seed trade association. In addition, TASAI engaged regional seed industry experts from several Regional Economic Communities (RECs) with cross-country experience to assist with data collection and validation before the data were submitted to TASAI. Using their extensive knowledge of seed sectors in their region, the regional seed industry experts helped ensure that the data reflected the reality as closely as possible. Despite concerted efforts to reach every African Union member state, the following eight countries did not participate in the survey: Algeria, Cape Verde, Equatorial Guinea, Gabon, Mauritius, Morocco, Sao Tome and Principe, and the Sahrawi Republic. In these countries, TASAI received no responses from the national CAADP focal points despite multiple attempts by TASAI and the regional CAADP focal points to reach them.

Crop selection

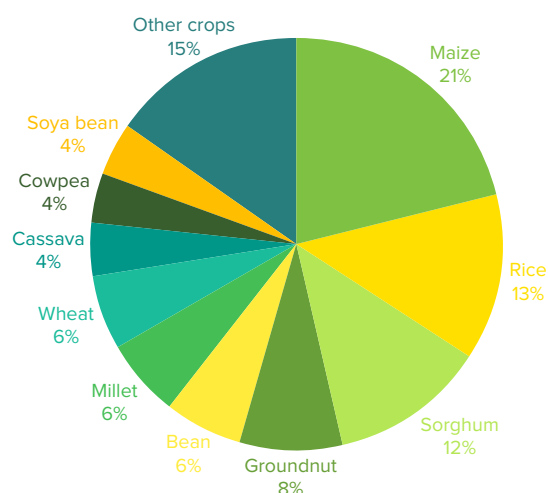
African countries grow a wide range of crops that can be used to evaluate seed sector performance. Following the TASAI approach, it was decided to select four priority crops for each country on which to focus the data collection. The four crops were identified by local seed sector experts and are referred to as “priority crops” in the report. As shown in Table 4, indicators 3 and 5 are crop-specific, meaning that data were collected on each of the four priority crops. The selection of the crops was based on their importance to national food security, the area of land under cultivation, and government prioritization. Table 4 shows the four priority crops by country and their share of the total area harvested to field crops. Importantly, the last column shows the combined total share for the four crops, averaging 80% per country. Across the 47 countries, 31 crops were selected as priority crops, including cereals, legumes, vegetatively propagated crops, fruits, and vegetables. The ten most common crops (selected by at least 7 countries each) were maize, rice, sorghum, groundnut, bean, millet, soya bean, wheat, cowpea, and cassava (Figure 4). Djibouti and Seychelles, which do not have substantial crop sectors, selected vegetables and fruits.

TABLE 4: FOUR PRIORITY CROPS BY COUNTRY AND SHARE OF AREA HARVESTED TO FIELD CROPS

Country	Crop 1	%	Crop 2	%	Crop 3	%	Crop 4	%	Total %
Angola	maize	66%	bean	17%	soya bean	1%	rice	0.2%	84%
Benin	maize	47%	rice	5%	soya bean	9%	cassava	13%	74%
Botswana	maize	39%	sorghum	13%	cowpea	26%	millet	7%	85%
Burkina Faso	maize	18%	rice	3%	sorghum	32%	millet	17%	70%
Burundi	bean	54%	maize	11%	rice	3%	potato	2%	70%
Cameroon	cassava	3%	rice	4%	maize	37%	sorghum	21%	65%
Central African Republic	maize	38%	sorghum	6%	groundnut	27%	bean	10%	81%
Chad	sorghum	24%	millet	25%	groundnut	16%	sesame	8%	73%
Comoros	maize	37%	rice	0.1%	groundnut	19%	pigeon pea	2%	58%
Republic of the Congo	cassava	58%	maize	5%	groundnut	18%	banana	2%	83%
Côte d'Ivoire	rice	17%	maize	14%	yam	34%	cassava	28%	93%
Democratic Rep. of Congo	cassava	50%	maize	25%	rice	16%	bean	4%	95%
Djibouti	tomato	3.4%	onion	2%	melon	0.5%	citrus	0.8%	6.7%
Egypt	wheat	43%	rice	19%	maize	28%	fava bean	1%	91%
Eritrea	sorghum	51%	wheat	5%	barley	9%	millet	14%	79%
Eswatini	maize	83%	bean	2%	sweet potato	1%	groundnut	5%	91%
Ethiopia	teff	19%	maize	16%	wheat	15%	sorghum	10%	60%
Gambia	rice	23%	groundnut	36%	maize	12%	millet	19%	90%
Ghana	maize	41%	rice	10%	soya bean	4%	sorghum	10%	65%
Guinea (Conakry)	rice	42%	maize	14%	fonio	15%	groundnut	22%	93%
Guinea-Bissau	rice	60%	maize	9%	millet	15%	sorghum	9%	93%
Kenya	maize	51%	bean	25%	sorghum	5%	cowpea	5%	86%
Lesotho	maize	78%	sorghum	5%	wheat	15%	bean	1%	99%
Liberia	rice	92%	maize	MD	groundnut	3%	cowpea	MD	95%
Libya	barley	43%	wheat	53%	green peas	0.05%	broad bean	0.05%	96%
Madagascar	rice	83%	maize	6%	bean	3%	groundnut	4%	96%
Malawi	maize	51%	groundnut	12%	soya bean	6%	bean	10%	79%
Mali	millet	31%	sorghum	24%	maize	22%	rice	13%	90%
Mauritania	sorghum	50%	rice	17%	maize	6%	cowpea	5%	78%
Mozambique	maize	44%	cowpea	8%	groundnut	8%	rice	6%	66%
Namibia	pearl millet	71%	maize	11%	sorghum	7%	cowpea	3%	92%
Niger	millet	41%	sorghum	23%	cowpea	35%	maize	0.1%	99%
Nigeria	rice	16%	maize	21%	sorghum	21%	soya bean	4%	62%
Rwanda	maize	16%	bean	35%	potato	7%	cassava	18%	76%
Senegal	groundnut	36%	millet	28%	rice	11%	maize	8%	83%
Seychelles	banana	67%	pawpaw	10%	eggplant	10%	cassava	13%	100%
Sierra-Leone	rice	67%	maize	1%	sorghum	7%	groundnut	8%	83%
Somalia	maize	17%	sorghum	44%	cowpea	9%	sesame	13%	83%
South Africa	maize	53%	soya bean	20%	sunflower	9%	wheat	10%	92%
South Sudan	sorghum	37%	groundnut	14%	maize	11%	sesame	31%	93%
Sudan	sorghum	40%	millet	14%	wheat	2%	groundnut	17%	73%
Tanzania	maize	42%	rice	9%	bean	10%	sunflower	10%	71%
Togo	maize	43%	rice	5%	sorghum	18%	soya bean	0.2%	66%
Tunisia	durum wheat	32%	barley	23%	soft wheat	7%	triticale	1%	63%
Uganda	maize	25%	bean	16%	cassava	18%	banana	16%	75%
Zambia	maize	54%	soya bean	18%	wheat	2%	rice	2%	76%
Zimbabwe	maize	58%	sorghum	11%	soya bean	2%	wheat	4%	75%

Figure 4 illustrates the importance of each priority crop based on the number of countries that selected the particular crop.

FIGURE 4: PRIORITY CROPS BASED ON HOW MANY COUNTRIES CHOSE EACH CROP



Developing data collection tools and training enumerators

Developed by the TASAI team, the survey consisted of 62 questions comprising quantitative, qualitative, and opinion ratings. The questionnaire had three sections, starting with a description of the SSPI, and guidelines for seed sector experts to consider during data collection. The second section included questions on background information on the seed industry in the country, and the third section presented the actual survey questions. The data collection tool was available in three languages - English, French, and Arabic. The survey was designed in Kobo Toolbox and was accessible online and offline (the tool is included in the Appendix section.) Before data collection, the TASAI team hosted four training sessions for the national seed industry experts on the use of the survey tools: three virtual sessions and one in-person session were held, the latter funded by the AUC. Guidelines were developed and shared with seed industry experts to facilitate the interpretation and assignment of scores. Regional seed industry experts monitored the data collection process in the countries assigned to them and reported to TASAI.

Data collection, cleaning, and submission to eBR

Data collection took place between July and October 2023. Once the national seed sector expert submitted the data for their country, TASAI conducted a detailed review of the data. All issues, such as outliers, missing data, etc. were discussed with the national and regional seed industry experts, and the final score was computed in agreement with TASAI and the experts. When necessary, data were returned to the seed industry experts for further clarification. Once this process was completed, TASAI added the final scores in the BR country reporting template and sent these back to the seed industry expert to forward to the national CAADP focal points, who compiled all the BR data and scores from the technical experts and ensured that they were validated by national stakeholders before being transmitted to the AUC. In some instances, the submitted reports were returned to TASAI with queries. The most common reason for such queries was that superiors of the seed industry experts felt that their country deserved a higher score. TASAI, together with the national and regional seed industry experts, reviewed each query, and, if justified, adjusted the score for the indicator. Finally, the national CAADP focal points consolidated SSPI data with the other indicators and the national BR report was entered into the eBR platform managed by Akademiya 2063. The AUC reviewed all the data in the eBR with the regional CAADP focal points and any concerns were sent back to the countries. Common issues included outliers, missing data, and data that was the same as in previous eBR submissions. This process continued until all the data had been validated.

Phase 3: Indicator scoring and computation

This section describes the scoring and computing methods developed for the 17 indicators. The description of the computing methods is more detailed for the quantitative indicators. Additional information such as variations in methods used for the same indicator, data sources, and challenges with the computations, where applicable, are also explained. The opinion scores were provided by the national seed industry experts, in consultation with the relevant entities. In some countries, data was sourced from the most recent TASAI country reports. The section below outlines how each indicator was converted from the original data to a score on a uniform 0 to 10 scale with the following interpretation: between 0 and less than 2: extremely poor, between 2 and less than 4: poor, between 4 and less than 6: fair, between 6 and less than 8: good, and between 8 and 10: excellent. To aid with visual interpretation, a five-color key, presented below, is used throughout the report.

Scoring:	Extremely poor 0-<2	Poor 2-<4	Fair 4-<6	Good 6-<8	Excellent 8-10
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Indicator 1. Quality of the variety release and registration process

This indicator is based on expert opinion on the quality of the variety release and registration process in terms of its clarity to breeders and to the regulatory authorities, and the consistency with which the process is followed. A typical country with a high score would have a functioning variety release system that is clearly defined, with procedures that are consistently followed and clearly understood by public and private breeders. The system has a standard cost structure, and the national variety catalogue is regularly updated. For countries with a score of 6 to less than 8, the variety release process is clear to breeders and the regulatory agency, but it is not followed consistently. For countries scoring 4 to less than 6, the variety release process is clear to breeders and the regulatory agency, but it is not followed consistently. For a score of 2 to less than 4, the variety release process exists, but is not clear to breeders or the regulatory agency and it is not followed consistently. In countries with a score of 0 to less than 2, a variety release process exists, but it is not followed. A country that does not have a variety release and registration process scores 0.

Indicator 2. Number of varieties released in the last three years (2020-2022)

This indicator is a quantitative variable, capturing the total number of varieties registered or released in the three years 2020-2022 for the four priority crops. Data for this indicator were sourced from the recent national/regional variety catalogues. Where the catalogues were not available, the data were obtained from the entity in charge of variety release in the country. Three approaches were considered for scoring this indicator. First was a “distance to frontier” approach that assigns a score of 0 to countries with no variety releases, and a score of 10 to the best performing country. However, on closer analysis of the data, this approach was dropped because the top performing country was too much of an outlier, with 286 varieties released. Moreover, this approach is highly sensitive to the frontier score, which can vary significantly across the years. The second approach considered was normalizing the indicator based on total land under cultivation for each crop to calculate the number of varieties released per hectare. Again, this approach did not seem to suit the data, given the wide variation of agro-ecologies among countries. For example, some large countries with more uniform agro-ecologies require fewer varieties, while a small country with diverse agro-ecologies may require significantly more varieties. The last approach considered was a four-tier scoring system shown in Table 5, where a linear relationship is assumed between the number of varieties released and the score within the ranges 1 to 50 and 50 to 100. We selected this approach as it best captures the stages of seed sector growth over time.

TABLE 5: SCORING ASSIGNED BASED ON NUMBER OF VARIETIES RELEASED

Total number of varieties released	Score
0	0
1-50	1-8
51-100	>8-10
Above 100	10

Indicator 3. Adequacy of the national agricultural research institutes' breeding programs

Responses to this indicator are based on expert opinion ratings on three aspects of national breeding programs for each of the priority crops: (i) adequacy of the number of breeders, (ii) adequacy of funding for breeding programs, and (iii) adequacy of basic research infrastructure, which enhances the ability of active breeders in public institutions⁶ to develop new varieties. The country score is the average of the twelve scores (three scores for each of the four crops). For a top score, a country should have national breeding programs with an adequate number of breeders for all priority crops, have adequate funding for breeding and variety development, and have adequate research facilities for breeding and variety development across all four priority crops. For countries with a score of 6 to less than 8, national breeding programs will typically have multiple, but overall, insufficient, breeders, as well as insufficient funding and basic breeding infrastructure. For a score of 4 to less than 6, the NARI's breeding programs lack breeders for some of the four priority crops, coupled with insufficient funding and a basic breeding infrastructure that needs rehabilitation or replacement. For countries scoring 2 to less than 4, NARI breeding programs have few breeders, funding that is not continuously available, and limited breeding infrastructure. For a score of 0 to less than 2, NARIs do not have breeding programs for all of their priority crops, have insufficient funding or no funding, and lack basic breeding infrastructure. A country with no breeding programs for any of the four priority crops scores 0.

Indicator 4. Status of the national program coordinating activities on Plant Genetic Resources for Food and Agriculture

This indicator assesses the existence and functioning of a national program (which may include an institute, department, or agency) mandated to carry out or coordinate PGRFA activities. The indicator is based on expert opinion. For a score between 8 and 10, a country should have an entity that has a specific mandate to coordinate all matters of plant genetic resources for food and agriculture. This entity should also manage the national gene bank and must be active in the collection, characterization, and conservation of PGRFA. For a score of 6 to less than 8, a country should have a national program comprising several institutions and a mechanism to coordinate national PGRFA activities and should be carrying out some of the activities. Countries with a score of 4 to less than 6 have a national program that coordinates national PGRFA activities, but it is not fully functional. Countries scoring between 2 and less than 4 do not have a national program but do have a functioning committee or another mechanism to coordinate PGRFA activities. A score of 0 to less than 2 indicates a that country does not have national program, but there is a functioning committee or another mechanism to coordinate a few PGRFA activities. A country that does not have any entity in charge of PGRFA activities scores 0.

⁶ The intention of this indicator is to assess the vibrancy of public breeding programs. We do not assess the adequacy of breeders from the CGIAR centers since their mandate covers multiple countries and regions.

Indicator 5. Adequacy of Early Generation Seed

This indicator tracks the level of satisfaction with the availability of EGS (sometimes referred to as basic seed). The ratings measure satisfaction with the availability of EGS to meet certified seed production needs based on (i) the quantity of the EGS supplied, (ii) the quality of the EGS, and (iii) the timeliness of delivery of the EGS. The indicator is scored as an expert opinion indicator. In many cases, seed companies/producers access EGS from their NARIs. However, there are also other sources of EGS, such as CGIAR centers, private sector companies, and universities, among others. Since the primary purpose of this indicator is to measure a country's domestic EGS production capacity, countries that rely (extensively) on external sources of EGS may not score higher than 5/10, even if they source sufficient quantities of EGS. This does not apply to NARIs that collaborate with private EGS suppliers. In countries that received a top score, its NARIs and other EGS providers produce adequate quantities of quality EGS and deliver it on time to all entities that require it. In countries that received a score of 6 to less than 8, the NARIs and other EGS providers supply EGS continuously, the EGS is of reasonably good quality, and is mostly delivered on time. However, from time to time, the EGS suppliers are not able to meet the needs for EGS, causing bottlenecks in the system. In countries that received a score of 4 to less than 6, the NARIs and other EGS providers supply EGS continuously; however, the quantities produced barely meet certified seed production needs, the quality of the EGS is fair, and the delivery is frequently delayed. In countries that scored 2 to less than 4, the NARIs and other EGS providers supply limited quantities of EGS, often of poor quality, and delivery is often delayed. In countries that scored 0 to less than 2, the EGS supplied by the NARIs and other EGS providers is inadequate, of poor quality, and the delivery is hardly, if ever, on time. In countries where the NARIs do not produce EGS for the four priority crops, a score of 0 was assigned. However, some countries with weak breeding programs source EGS from NARIs in neighboring countries and/or from collaborating CGIAR centers and meet the demand for EGS through these channels. In such cases, countries scored higher than 0, recognizing the fact that, while local capacity to produce EGS is lacking, EGS is nevertheless available to seed producers in the country.

Indicator 6. Availability of varietal choice to farmers

This is a quantitative variable capturing the number of varieties that are sold to farmers. Two approaches were considered for scoring this indicator. First was a “distance to frontier” method, which would assign 0 for no varieties sold and 10 to the best performing country (Table 6). However, on closer analysis of the data, this approach was dropped because, with 1,592 varieties sold, the top performing country was an extreme outlier. Moreover, this approach would be highly sensitive to the frontier score which can vary significantly across the years. Instead, similarly to indicator 2, we opted for a four-tier scoring system shown in Table 6, where a linear relationship is assumed between the number of varieties sold and the score within the ranges 1 to 100 and 100 to 200. This approach was chosen as it best captures the stages of seed sector growth. A possible drawback of this method is that the brackets may need to be reviewed in subsequent reports, if the number of varieties changes significantly across many countries.

TABLE 6: SCORING ASSIGNED BASED ON NUMBER OF VARIETIES SOLD

Total number of varieties sold	Score
0	0
1-100	1-8
101-200	>8-10
Above 200	10

Indicator 7. Utilization of quality commercial seed by farmers

This indicator tracks the utilization of quality commercial seed by farmers. For each crop, we use the volume of available commercial seed (calculated as local seed production, plus imports, minus exports) as the numerator and the national seed requirement as the denominator. The denominator (national seed requirement) is calculated using either of two approaches: computed estimates or country-provided estimates, as described below.

Method 1 – computed estimates: For each crop, computed estimates are generated from the following three measures: land under cultivation, seeding rate, and seed replacement rate.

1. **Land under cultivation:** Data is sourced from government statistics, if available, or from the FAOSTAT database.
2. **Seeding rate:** Data is sourced from government agencies, in cases where the government has a recommended seeding rate. In all other cases, the data is sourced from expert entities from the private and public sectors for the different crops. These sources include the SeedCo Growers' Manual⁷ for maize, sorghum, soya bean, cowpea, and groundnut, the International Rice Research Institute (IRRI) for rice⁸, and the Kenya Agricultural and Livestock Research Organization (KALRO) for bean⁹. Most of the recommended seeding rates are given as a range. In these cases, the average was taken.
3. **Replacement rate:** For hybrid varieties, the replacement rate of 100% was used. For Open Pollinated Varieties (OPVs), a replacement rate of 33% was applied, based on the assumption that the seed is replaced every three seasons or three years. For crops such as maize, where both hybrids and OPVs are used, the replacement rate reflects the proportion of area under hybrid vs. OPV varieties, as provided by the country experts. The replacement rates for the other crops ranged from 10% to 60%, also provided by the country experts. Note that, due to the different cropping systems used, seeding and replacement rates may vary by country.

Method 2 – country-provided estimates: For countries where seed requirements are routinely computed by the government and/or the private sector, we opted to use these figures. These forecasting methods followed one of two approaches:

1. In one country, South Africa, the national seed requirement is based on the actual seed sales of the previous year. This method works well in South Africa because the country has a fully private, formal seed sector, which supplies mostly commercial farmers, resulting in minimal changes from year to year.
2. Ten countries (Benin, Central African Republic, Chad, Eritrea, Niger, Nigeria, Senegal, Togo, Zambia, and Zimbabwe) set annual targets for crop production. Factoring in potential yield and seeding rates, the government, often in collaboration with the private sector, converts the crop production targets to national seed requirements. The seed requirements are further adjusted based on factors such as volumes produced in previous years, shortages or surplus in the previous year, import and export volumes, carry-over stocks, assumptions on adoption rates, and requirements from any subsidy programs. Note that this method does not assume 100% adoption rates for improved seed and is therefore likely to yield estimates lower than the computed seed requirements described under Method 1.

⁷ <https://seedcogroup.com/ke/fieldcrops/> Accessed 8 December 2023

⁸ <http://www.knowledgebank.irri.org/decision-tools/rice-doctor/rice-doctor-fact-sheets/item/seed-high-rate> Accessed 8 December 2023

⁹ <https://www.kalro.org/sites/default/files/Dry-land-beans-Dec2020.pdf> Accessed 8 December 2023

Table 7 shows the volume of seed produced and national seed requirements for the 47 countries. It also indicates the method used to compute the national seed requirement. The final score for this indicator is calculated as the weighted (by land under cultivation for each crop) average utilization rate for the four priority crops. Thus, the computed utilization rates may be interpreted as the percentage of land under improved seed cultivation. The utilization rate, a percentage, was multiplied by ten to give a score ranging from 0 to 10.

Computing the score for this indicator requires both data on seed production and national seed requirements. Three countries – Comoros, Libya, and Seychelles – did not have data for either of the two variables, and therefore the utilization rate was not computed. In other countries, data were lacking for vegetatively propagated crops, such as banana, cassava, sweet potato, and potato. All these are listed as missing data (MD).

TABLE 7: COMPUTATION OF NATIONAL SEED REQUIREMENT

Country	Seed production (in MT)				Annual seed requirement (in MT)				Method for calculating national seed requirement
	Crop 1	Crop 2	Crop 3	Crop 4	Crop 1	Crop 2	Crop 3	Crop 4	
Angola	182	1.5	150	250	64,795	10,125	1,154	189	computed
Benin	723	500	744	*3,353,400	16,922	6,482	4,666	MD	country provided
Botswana	2	89	104	1	2,000	1,333	1,500	70	computed
Burkina Faso	3,910	2,650	1,186	606	24,470	7,396	17,431	8,526	computed
Burundi	1177	7790	260	*1943	27,050	4,915	260	39,486	computed
Cameroon	*8,000,000	256	1,135	170	*46,200,000	1,967	4,531	240	computed
Central African Republic	118	50	45.64	152.5	500	250	500	650	country provided
Chad	138	174	138	*21	462	381	2,500	637	country provided
Comoros	MD	MD	MD	MD	MD	MD	MD	MD	MD
The Republic of the Congo	*0	0	0	*5,555	*13,333,333	29	75	17	computed
Côte d'Ivoire	2,112	MD	MD	MD	31,114	37,087	MD	MD	computed
Democratic Republic of Congo	*0	1807	430	311	MD	9,355	11,597	4,168	computed
Djibouti	3	*1	1	MD	11	13	15	10	computed
Egypt	116,122	13,708	17,933	1,893	190,947	68,835	20,483	3,435	computed
Eritrea	19	510	25	17	50	1,000	100	50	country provided
Eswatini	1	10	MD	MD	404	26	219	13	computed
Ethiopia	46	12,188	45,551	100	14,698	42,720	84,852	5,374	computed
Gambia	411	85	92	MD	1,998	1,090	212	MD	computed
Ghana	9,083	8,816	4,071	233	6,077	4,310	4,692	153	computed
Guinea (Conakry)	300	125	0	0	14,000	10,000	3,000	2,000	computed
Guinea-Bissau	223.536	20.328	28.804	26.742	850	150	150	50	computed
Kenya	40,264	1,296	362	123	54,723	17,216	1,076	732	computed
Lesotho	42	MD	MD	84	2,582	361	466	81	computed
Liberia	2	2	0	0	6,000	137	MD	MD	computed

Country	Seed production (in MT)				Annual seed requirement (in MT)				Method for calculating national seed requirement
	Crop 1	Crop 2	Crop 3	Crop 4	Crop 1	Crop 2	Crop 3	Crop 4	
Libya	MD	MD	MD	MD	200,000	216,667	MD	MD	MD
Madagascar	1130	115	38	84	15,000	4,600	1,500	2,200	computed
Malawi	21,993	966	1,834	*325	29,610	4,840	2,741	4,069	computed
Mali	32	174	647	1,640	648	830	3,271	9,023	computed
Mauritania	MD	4,071	2	MD	11,000	7,500	2,000	1,000	computed
Mozambique	4,500	224	119	3,935	45,727	19,874	16,635	7,314	computed
Namibia	240	22	32	15	984	356	21	35	computed
Niger	9238.42	1026.62	1810.84	66.81	20,341	11,358	8,776	82	computed
Nigeria	36,010	37,714	3,463	4,220	133,402	128,973	38,693	25,892	computed
Rwanda	5371.2	527.8	*34649.7	MD	7,526	10,573	*99,798	MD	computed
Senegal	68,266	1,626	2,822	24,852	83,000	900	16,000	4,500	computed
Seychelles	MD	MD	MD	MD	MD	MD	MD	MD	MD
Sierra-Leone	3,256	321	2,187	1,062	56,667	188	553	3,569	computed
Somalia	230	260	220	MD	4,000	6,000	1,000	6,000	computed
South Africa	43110	13399	2481	21782	39,497	13,297	2,062	21,430	country provided
South Sudan	1,060	600	2,850	*350	17,500	20,000	7,500	2,000	computed
Sudan	21,107	410	24,508	1,999	73,062	12,035	39,600	280,896	computed
Tanzania	27,192	577	363	2,192	122,500	39,667	15,292	1,050	computed
Togo	786	412	1	4,107	3,071	855	220	3,000	country provided
Tunisia	32000	1550	780	MD	110,000	5,850	23,500	260	computed
Uganda	6,640	1,063	*130,000	*95,000	22,700	48,000	*13,000,000	*675,000	computed
Zambia	131,017	35,409	8,246	605	30,149	42,444	4,028	3,288	country provided
Zimbabwe	50,480	4,487	8,750	12,459	50,000	3,500	6,000	10,000	country provided
*Vegetatively propagated crops (VPCs)									

Indicator 8. Adequacy of seed import process

This indicator tracks the clarity of seed import regulations and the consistency of their enforcement. The indicator was scored based on expert opinion on the clarity of import processes and the consistency of the enforcement of import regulations.¹⁰ In addition, data were collected on the volume of imports for the four priority crops. For a top score, a country must have clear and comprehensive seed import processes that are enforced consistently. For a score of 6 to less than 8, import processes are clear to seed producers/companies and regulatory agencies, but they are not always followed consistently. Scores between 4 to less than 6 indicate that import processes are not clear to seed producers/companies and regulatory agencies and that they are not followed consistently. Scores between 2 and less than 4 indicate that there are no formal seed regulations that define procedures for seed trade. In countries with a score of 0 to less than 2, import processes are only partially defined and hence cannot be followed. A country that does not have a formal process for seed imports scores 0.

Indicator 9. Adequacy of agro-dealer networks

This indicator tracks the adequacy of the agro-dealer (or seed seller) network in a country. It only considers seed that has passed through a formal system of quality assurance recognized in the country in question. Initially, this indicator was to be based on a quantitative measure, computed as the ratio of the number of agro-dealers to number of agricultural households. Initial computations based on this method did not seem to reflect the adequacy of the agro-dealer network in the country, based on a priori information. This is because of the wide variation in the size and distribution of agro-dealers across the countries. In addition, 10 of the 47 countries were missing one or both of the data points needed for the calculation. Given these limitations, we opted to base the scores on expert opinion on a scale of 0 to 10. For a score between 8 and 10, a country should have a network of agro-dealers large enough to meet the needs of the country; agro-dealers should also reach all farming areas of the country. For a score of 6 to less than 8, the country typically has a relatively large network of agro-dealers, but most are located in urban areas. For a score of 4 to less than 6, the country usually has a reasonable network of agro-dealers, but the vast majority of agro-dealers are based in urban areas. Countries with a score of 2 to less than 4 have a poor network of agro-dealers, with most of them based in urban areas. For a score of 0 to less than 2, the country has a very poor network of agro-dealers, who are all in urban areas. Countries that have no agro-dealers score 0. Although the indicator is scored based on opinion, where available, we provide the number of agro-dealers in the results.

Indicator 10: Availability of seed in small packages

The indicator assesses the percentage of seed sold in packages of 2 kg or less. The data point is the total volume of seed (for the seed-propagated crops) sold in small packages, expressed as a percentage of the total volume of seed produced (for the four crops). The percentage of seed sold in packages of 2 kg or less is then multiplied by 10 to generate a final score out of 10. Note that the volume of seed produced is used as a proxy for seed sales, and that vegetatively propagated crops such as potato, banana, and cassava are excluded from this calculation as they are not sold to farmers in small packages.

There are several limitations to this method:

- The 2 kg upper limit for a small package is not always appropriate. The 2 kg limit does not apply to all crops or to all countries. For example, in Egypt, the government has set 5 kg as the smallest package size as this fits the area of the average landholding for a smallholder Egyptian farmer. In

¹⁰ This indicator focuses on the import and not the export process, as countries place more emphasis on goods that come into the country. That said, the data collection also included some export data, which we present in the Findings section.

addition, 2 kg may be little for some, but not all crops, depending on the seeding rate. The seeding rate varies widely depending on the crop in question, from 20 kg/ha for maize, to 200 kg/ha for wheat, implying that 2 kg of seed may not be appropriate to all smallholder farmers.

- Data is mostly based on estimates. For countries where TASAI studies have not been conducted and this information has not been collected from seed producers, the responses are based on informed estimates from the national seed authorities.
- The exclusion of vegetatively propagated crops from the calculation affects 10 countries, as their scores are not based on all four crops. Five of these countries selected two vegetatively propagated crops as priority crops.

Despite the above limitations, this yardstick measure is still useful for many cases across Africa where smallholder farmers are the main producers of cereal and legume crops. For a country to have a top score, all the seed for the focus crops should be sold in packages of 2 kg or less. A country where none of the seed for the priority crops is sold in small packages of 2 kg or less scores 0.

Indicator 11. Status of national seed policy instruments

This indicator tracks the status of national seed policy instruments. It focuses only on the presence and completeness of these instruments, and not on their implementation. It is scored based on expert opinion and given a rating from 0 to 10. For a country to achieve a score of 8 to 10, all relevant policy instruments should have been enacted by the relevant government entities. A score of 6 to less than 8 indicates that most seed policy instruments are in place and that they are up to date. For a score of 4 to less than 6, a fair number of seed policy instruments must be in place. For a score of 2 to less than 4, insufficient policy instruments are in place, which may, moreover, be outdated. For a score of 0 to less than 2, seed policy instruments are in draft mode. A country with no seed policy instruments at all scores 0.

Indicator 12. Status of alignment of national seed policy instruments with harmonized regional seed regulations

The regional economic communities that have regional seed regulations are the Common Market for Eastern and Southern Africa (COMESA), the Economic Community of Central African States (ECCAS), the Economic Community for West African States (ECOWAS)¹¹, and the Southern African Development Community (SADC)¹². Seed industry experts' ratings are strictly informed by the status of alignment, since the specifics of the process vary by REC. For example, in the ECOWAS region, a country with a top score would have either adopted the ECOWAS Seed Regulations as their national seed regulations or the country would have passed ministerial orders in response to the various clauses in the ECOWAS Seed Regulations (ECOWAS 2008). Ministerial orders might deal with setting up a national seed fund, establishing a national seed committee, decreeing the process for seed importation and exportation or for the registration of seed producers, among other areas. In the COMESA region, a country with a top score would have aligned its national regulations with the COMESA Seed Trade Harmonization Regulations in three key areas – the COMESA certification system, variety release system, and the Quarantine and Phytosanitary measures (COMESA 2014). In the SADC region, a country should have signed the Memorandum of Understanding adopting the guidelines of the SADC Harmonized Seed Regulatory System (HSRS).

¹¹ Seed Regulations harmonizing the Rules governing Quality Control, Certification and marketing of Plant Seeds and Seedlings in the ECOWAS-UEMOA-CILSS region (2008). This is sometimes referred to as the ECOWAS Seed Regulations.

¹² SADC Harmonized Seed Regulatory System

For a top score, harmonization is complete and is being implemented. For a score of 6 to less than 8, harmonization is complete, but the instruments are yet to be adopted. For a score of 4 to less than 6 harmonization is ongoing. For a score of 2 to less than 4, harmonization has been initiated and some steps have been taken. For a score of 0 to less than 2, harmonization has just started. A country that has not harmonized its national seed policy instruments scores 0.

Indicator 13. Status of adoption of national biosafety frameworks to guide plant breeding and seed production

This indicator measures whether a country has adopted national biosafety frameworks and if these frameworks are operational. A typical country with a high score (8 to 10) has a policy instrument to regulate biosafety, which is implemented. For a score of 6 to less than 8, the national biosafety framework is approved and most of its aspects are implemented. For a score of 4 to less than 6, the national biosafety framework is approved but only a few of its aspects are being implemented. For a score of 2 to less than 4, the national biosafety framework is approved, but it has not been implemented. For a score of 0 to less than 2, the national biosafety framework is either in draft form, or is still being completed. A country with no biosafety framework scores 0.

Indicator 14. Status of Farmer-Managed Seed Systems

This indicator tracks the status of FMSS-compliant national seed policy instruments (seed policy, law, regulations and decrees) and institutional arrangements that encourage private sector/community participation in seed sector development. For a top score, a country should have a seed policy or strategy that recognizes and promotes FMSS, as well as a stand-alone legislative or regulatory instrument on FMSS. For a score of 6 to less than 8, countries should recognize FMSS in policy instruments and promote some of their aspects. In countries scoring 4 to less than 6, FMSS are recognized in policy instruments, but minimal actual support is provided to these systems. For a score of 2 to less than 4, FMSS are recognized in policy instruments and minimal support is provided. A score of 0 to less than 2 indicates that the policy instruments that recognize FMSS are in draft form and FMSS receive minimal support. A country whose seed policy instruments do not recognize FMSS scores 0.

Indicator 15. Adequacy of seed inspection services

The indicator assesses the adequacy of the human resource capacity available for seed field inspections. The indicator is computed as an expert opinion on a scale of 0 to 10. The initial plan was for this to be a quantitative indicator calculated as the ratio of land area under seed cultivation to the number of inspectors. However, the preliminary results from this method did not seem to match *a priori* knowledge of the adequacy of seed inspectors in the countries. This was because this quantitative approach did not factor in issues such as the geographical distribution of seed lots, the available resources to support seed inspectors (e.g., vehicles, digital tools), and the number of registered inspectors who are not involved in seed inspection. Moreover, 11 of the 47 surveyed countries did not have data for either seed inspectors or land under seed inspection.

In the absence of a suitable quantitative measure, expert opinion was used to generate the scores. We supplement the score with the number of public and private seed inspectors, wherever data are available. A country with a top score has a vibrant seed inspection service that effectively carries out its mandate in a timely and cost-effective manner. For a score of 6 to less than 8, seed inspection is relatively efficient, with a few aspects that do not work well. For a score of 4 to less than 6, the effectiveness of seed inspection

services is constrained by a lack of personnel or facilities such as transportation. For a score of 2 to less than 4, seed inspection is severely hampered by a lack of inspectors and facilities. For a score of 0 to less than 2, seed inspection functions are barely carried out due to a lack of inspectors and facilities. A country with no seed inspectors scores 0.

Indicator 16. Adequacy of government efforts to combat counterfeit seed

This indicator rates the adequacy of government efforts to combat counterfeit seed. The score represents expert opinion on a scale of 0 to 10 and is based on an assessment of government measures to address the proliferation of counterfeit seed and the presence of punitive measures in statutory instruments. To receive a top score, a country should have fully enforced legal measures to combat the production and sale of counterfeit seed. For a score of 6 to less than 8, the government has structured efforts to combat counterfeit seed, and these efforts are often effective. For a score of 4 to less than 6, the government has structured efforts to combat counterfeit seed, but these efforts are not always effective. A score of 2 to less than 4 indicates that the government has structured efforts to combat counterfeit seed, but these efforts are largely ineffective. In countries with a score of 0 to 2, the government takes *ad hoc* initiatives to combat counterfeit seed. A country where no efforts have been taken to combat the production and sale of counterfeit seed scores 0.

Indicator 17: Adequacy of the national seed trade associations

This indicator assesses the performance of the national seed trade association. The scoring is based on six performance areas, each scored on a scale of 0 to 10: (i) activity on important seed sector issues, (ii) democracy and governance, (iii) effectiveness in advocacy, (iv) managerial ability, (v) provision of value to members, and (vi) ability to mobilize resources. Each area was assigned an opinion score by the country expert, who had reviewed the profile of the association, its management and governance structures, and examples of its recent activities and achievements. The overall indicator score is the average of scores for the six performance areas. For a top score, the national seed association should score highly in each of the 6 performance areas.

Phase 4: Data validation and report review

Since this report is the first attempt to create a continent-wide tool that evaluates the performance to seed sector across Africa, it was of paramount importance to involve all key stakeholders in the entire process, from development to data collection and dissemination. Once preliminary findings had been computed, the results were shared through various platforms for validation.

SSPI Regional validation workshop

To further validate the data, TASAI, in collaboration with AGRA and the AUC, convened a regional workshop on Friday 1st September 2023 in Nairobi, Kenya. The objective of the workshop was to review and validate the SSPI data collected at the country level. The meeting was attended by 20 participants, including seed sector experts and TASAI team members (Appendix 2). The participants included seed industry experts from regional economic communities including CORAF, COMESA, ECCAS, and the SADC, national seed authorities from Kenya and Nigeria, and other institutions such as AGRA, AFSTA, SSG and TASAI. The

objective of the meeting was to critique and provide feedback on the scores for all 17 indicators. Following the meeting, the TASAI team collated the corrections to the submitted data and relayed the feedback to the seed industry experts in the affected countries.

BR Validation workshops

The AUC convened a series of regional validation workshops and one continental validation workshop. The meetings were attended by the national and regional CAADP focal persons and representatives from institutions that had supported the development and collection of data for various indicators in the 4th BR. During the workshops, the TASAI team found that some countries had made errors in their entries. For example, some entries were greater than 10, which is not possible given the scoring method, and others had been rounded off to the next integer, thereby increasing the country's final score. It was realized later that the eBR data platform did not accept decimal points, which contributed to the rounding off.

Official inclusion of the SSPI in 4th Biennial Review

The SSPI was presented and endorsed at the 4th BR Continental Training of Trainers' Workshop from 6-9 February 2023 in Nairobi. Subsequently, the AUC prepared Technical Guidelines and Country Reports following the format provided by the team coordinating the BR process. The initial plan was to include SSPI data in Performance Component 3¹³ under *Commitment 3: Ending Hunger by 2025*¹⁴ Part viii. However, while data for SSPI were collected by TASAI and country researchers and forwarded to the BR team, according to the recently published BR report, they were not used to compute the scores of Member States since their baseline could not be traced to 2015.¹⁵

Challenges encountered and lessons for future studies

Being the inaugural SSPI study, this report should be viewed as a pilot. Although the research team made every effort to meet the goals of the SSPI, we encountered challenges that likely had an impact on the quality and breadth of the data and the conclusions. The research team has carefully documented the process and drawn several lessons that can be implemented in future iterations. Below we list the most significant of these challenges and lessons learnt and some proposed solutions, where applicable.

1. In many instances, there was confusion on how to distinguish between *de facto* vs *de jure* states, especially with respect to policies and regulations. For example, indicators measuring the level of implementation of policy instruments, the national seed industry experts would put more weight on the status of an instrument and downplay enforcement. TASAI made efforts to forestall these kinds of misrepresentations through training sessions and one-on-one engagements with the national seed industry experts. However, in the future, it may be best to create separate indicators for the existence of the policy/regulatory instruments and their implementation.
2. We observed that the level of development in a country's seed sector had some impact on how experts scored key opinion indicators. For example, countries in the nascent stage of seed sector development were more likely to be content with low standards, and thus rating their country higher

¹³ The Biennial Review report comprises 7 components: <https://au.int/en/documents/20220310/3rd-caadp-biennial-review-report>

¹⁴ In this component, African Union Member States committed to improve access to agricultural inputs and technologies, increase agricultural productivity, reduce post-harvest losses, improve food safety, reduce food and nutrition insecurity, and improve social protection coverage for the vulnerable groups.

¹⁵ https://au.int/sites/default/files/documents/43556-doc-EN_4th_CAADP_Biennial_Review_Report-COMLETE.pdf page 12, paragraph 1.6.

than experts in countries with more developed seed sectors, who were generally more critical in their evaluation. To correct for these biases, we convened a meeting of regional seed sector experts who reviewed and recommended changes to some of the scores. In the future, we plan to develop a more detailed rubric to guide the scoring.

3. A major challenge to the whole process is a lack of up-to-date data on many indicators. This inadequacy affects any approach that is heavily reliant on data. This resulted in the SSPI relying on qualitative opinion scores in more indicators than we would have liked. In the future, as good-quality data become available, the reliance on opinion scores may be reduced.
4. For indicators that are crop-specific, the SSPI measured performance for four priority crops as selected by the local seed sector experts. In countries where the crops included vegetatively propagated crops, some metrics, such as the volume of seed produced, were not available. In addition, while focusing the analysis on four crops lowers data requirements for the index, the findings may not be generalizable to other crops. Resources permitting, future versions of the SSPI can expand the scope of crops covered.
5. Aligning the SSPI process with the bigger and broader eBR process was out of TASAI's control. The final scores for all the indicators were transmitted to the AUC through the eBR by the Permanent Secretary of Agriculture in each country. While this formal process was important to get government buy-in, it also resulted in significant delays and communication gaps. However, before submission, all the final scores were shared with the country seed sector experts, giving them a chance to provide feedback on the final version.
6. Not all countries had structured processes for data collection. The BR process requires that countries engage teams of technical experts to collect and collate data on different indicators. After a series of meetings where the technical teams consult each other, the final data is supposed to be validated by participants representing a wide array of public and private sector stakeholders. This ensures that the data is reflective of the true situation in a country. Many countries did not follow this process.
7. Once the data were submitted, countries were offered an opportunity to correct errors after the continental and regional validation exercises. In cases where countries failed to engage the technical experts (who had been trained in the SSPI methodology) to respond to data queries, this may have resulted in differences in submissions to SSPI and the BR.

The above valuable lessons will be used to contribute to better methodology, data collection and analysis. The TASAI team welcomes suggestions for the continued improvement of the SSPI.

Section 3:
SSPI Country
Reports

Country results

This section presents the data collected by country. Each country brief starts with an overview of the seed sector, data on the priority crops, and other relevant agricultural statistics. This is followed by a summary of the findings. Each indicator is presented with a color-coded score and an explanation, and concludes with a list of priorities for intervention. Table 8 presents all indicator and overall country scores for the 47 countries surveyed.

TABLE 8: SSPI SCORES

Countries	Indicator																	Overall country score
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
	Variety release process	Varieties releases	Adequacy of NARIs	Status of PGRFA	Adequacy of EGS	Availability of varieties	Utilization of commercial seed	Import/export regulations	Adequacy of agro-dealers	Small seed packages	Seed policy instruments	Regional harmonization	Biosafety framework	Famer-managed Seed System status	Seed inspectors	Combating counterfeit seed	National seed trade association	
Angola	1.00	2.57	2.17	6.00	5.33	1.07	0.19	8.00	2.00	0.89	10.00	8.00	0.00	5.00	2.00	2.00	0.00	3.31
Benin	8.50	0.00	3.00	6.00	8.58	1.92	0.52	8.00	5.00	0.50	9.00	8.00	7.50	3.00	6.00	9.00	6.83	5.37
Botswana	0.00	0.00	6.00	8.00	6.75	1.99	8.81	8.00	7.00	6.56	6.00	7.00	7.00	0.00	8.00	7.00	6.50	5.56
Burkina Faso	8.00	1.14	6.58	8.00	7.83	4.25	1.17	8.00	5.00	0.26	7.00	8.00	9.00	3.00	7.00	7.00	6.83	5.77
Burundi	6.00	8.71	4.00	6.00	6.67	5.45	3.19	7.00	2.00	5.76	10.00	8.00	6.00	0.00	6.00	7.00	6.50	5.78
Cameroon	7.00	0.00	4.83	5.00	5.00	7.29	3.98	8.00	6.00	2.50	10.00	5.00	6.00	7.00	5.00	7.00	3.00	5.45
Central African Republic	1.00	0.00	0.00	0.00	5.00	1.99	1.47	6.00	2.00	2.10	8.00	0.00	4.00	4.00	0.00	2.00	0.00	2.21
Chad	4.00	1.14	3.08	0.00	5.67	2.13	2.73	6.00	4.00	0.00	9.00	8.00	7.00	4.00	6.00	6.00	0.00	4.04
Comoros	4.00	0.00	1.83	4.00	2.33	0.00	MD	4.00	4.00	MD	3.00	3.00	4.00	0.00	0.00	2.00	0.00	2.14
The Rep of the Congo	0.00	0.00	2.67	4.00	2.00	1.78	0.07	5.00	5.00	0.00	5.00	6.00	2.00	0.00	0.00	0.00	0.00	1.97
Côte d'Ivoire	5.00	2.14	5.00	7.00	6.33	3.69	0.23	6.00	7.00	2.50	7.00	7.00	6.00	0.00	3.00	3.00	2.50	4.32
Dem. Republic of Congo	5.00	3.71	3.67	5.00	4.33	6.37	0.76	5.00	3.00	2.80	3.00	5.00	7.00	1.00	5.00	3.00	1.17	3.81
Djibouti	0.00	0.00	0.00	0.00	0.00	1.14	3.63	0.00	4.00	0.12	3.00	3.00	0.00	0.00	1.00	7.00	0.00	1.35
Egypt	7.00	5.14	7.58	10.00	8.50	7.51	6.36	8.00	7.00	0.00	10.00	10.00	5.00	5.00	8.00	8.00	7.83	7.11
Eritrea	6.00	0.00	4.00	8.00	7.42	1.78	3.69	5.00	0.00	0.00	3.00	2.00	1.00	5.00	8.00	7.00	0.00	3.64
Eswatini	8.00	5.29	1.00	5.00	4.33	3.90	9.68	7.00	5.00	2.01	10.00	8.00	9.00	8.00	5.00	7.00	6.33	6.15
Ethiopia	7.00	6.71	7.17	7.00	7.42	3.33	1.96	8.00	8.00	0.24	9.00	6.00	7.00	8.00	6.00	3.00	7.50	6.08
Gambia	5.00	2.57	3.67	5.00	5.00	1.71	1.77	10.00	5.00	0.00	9.00	9.00	0.00	7.00	7.00	7.00	4.00	4.87
Ghana	8.00	6.14	3.33	6.00	7.42	2.41	9.91	7.00	6.00	2.52	8.00	7.00	4.00	2.00	7.00	6.00	8.00	5.93
Guinea (Conakry)	5.00	1.71	3.50	5.00	4.83	4.04	0.13	5.00	0.00	0.00	6.00	7.00	0.00	9.00	4.00	4.00	0.00	3.48
Guinea-Bissau	6.00	2.57	2.67	6.00	5.00	1.85	9.72	4.00	MD	0.00	3.00	8.00	4.00	0.00	6.00	4.00	2.83	4.10

Countries	Indicator																	Overall country score
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
	Variety release process	Varieties releases	Adequacy of NARIs	Status of PGRFA	Adequacy of EGS	Availability of varieties	Utilization of commercial seed	Import/export regulations	Adequacy of agro-dealers	Small seed packages	Seed policy instruments	Regional harmonization	Biosafety framework	Famer-managed Seed System status	Seed inspectors	Combating counterfeit seed	National seed trade association	
Kenya	9.00	6.00	5.42	6.00	5.75	8.98	3.45	8.00	7.00	8.56	9.00	8.00	9.00	2.00	9.00	8.00	8.00	7.13
Lesotho	0.00	0.00	0.67	7.00	4.17	1.42	2.48	6.00	5.00	0.13	5.00	5.00	5.00	8.00	6.00	4.00	0.00	3.52
Liberia	3.00	0.00	3.00	4.00	5.58	1.42	0.01	8.00	4.00	0.14	9.00	8.00	2.00	2.00	MD	1.00	0.00	3.20
Libya	7.00	2.43	3.67	0.00	7.42	1.85	MD	7.00	7.00	MD	0.00	0.00	0.00	0.00	0.00	5.00	0.00	2.76
Madagascar	5.00	3.00	4.00	5.00	5.67	5.03	0.67	3.00	5.00	1.54	7.00	9.00	7.00	0.00	6.00	5.00	5.00	4.52
Malawi	7.00	5.86	5.58	7.00	8.75	3.55	4.75	7.00	7.00	1.71	10.00	7.00	9.00	4.00	7.00	7.00	7.83	6.47
Mali	6.00	8.29	5.25	4.00	7.50	7.65	1.47	8.00	5.00	0.34	8.00	9.00	7.00	2.00	6.00	6.00	6.17	5.74
Mauritania	4.00	0.00	1.36	1.00	2.08	1.99	5.43	3.00	3.00	0.00	9.00	3.00	0.00	0.00	5.00	2.00	7.00	2.82
Mozambique	4.00	1.57	2.67	3.00	3.08	3.83	1.63	8.00	4.00	0.63	9.00	7.00	6.00	2.00	5.00	2.00	3.33	3.93
Namibia	4.00	1.57	1.50	7.00	6.42	1.99	2.39	7.00	3.00	9.72	7.00	3.00	9.00	0.00	4.00	4.00	0.00	4.21
Niger	5.00	3.14	5.58	7.00	7.83	3.40	3.76	8.00	7.00	2.39	10.00	7.00	6.00	0.00	7.00	4.00	7.50	5.57
Nigeria	8.00	5.14	4.75	6.00	4.75	7.86	2.11	5.00	5.60	3.78	9.00	9.00	9.00	8.00	7.00	7.00	5.00	6.29
Rwanda	6.00	6.29	5.08	4.00	7.33	4.04	2.11	8.00	9.00	8.32	10.00	9.00	1.00	0.00	8.00	8.00	6.67	6.05
Senegal	7.00	2.43	2.50	6.00	6.58	7.86	8.16	5.00	7.00	0.00	8.00	6.00	8.00	0.00	6.00	3.00	6.67	5.31
Seychelles	0.00	0.00	0.00	7.00	6.17	3.69	MD	7.00	4.00	4.47	3.00	6.00	1.00	6.00	7.00	7.00	0.00	3.90
Sierra-Leone	8.00	4.43	4.33	5.00	5.92	1.64	1.30	8.00	5.00	0.75	9.00	9.00	0.00	5.00	4.00	4.00	0.00	4.43
Somalia	1.00	0.00	1.75	0.00	3.58	1.92	0.42	2.00	3.00	0.84	4.00	0.00	0.00	1.00	3.00	4.00	0.00	1.56
South Africa	10.00	10.00	9.00	8.00	9.00	10.00	10.00	10.00	9.00	0.00	8.00	9.00	10.00	5.00	10.00	10.00	9.50	8.62
South Sudan	4.00	2.14	1.67	1.00	4.56	1.49	3.40	2.00	3.00	2.50	3.00	4.00	0.00	2.00	2.00	2.00	5.67	2.61
Sudan	5.00	2.29	4.58	8.00	5.08	2.34	1.89	5.00	3.00	0.00	9.00	6.00	8.00	6.00	4.00	3.00	6.00	4.66
Tanzania	8.00	4.00	4.83	8.00	7.33	7.01	3.03	8.00	8.00	9.89	9.00	8.00	7.00	9.00	7.00	8.00	7.17	7.25
Togo	5.00	3.57	4.33	4.00	6.58	1.99	8.32	8.00	5.00	0.65	10.00	9.00	6.00	4.00	6.00	7.00	5.33	5.58
Tunisia	8.00	1.71	4.17	6.00	7.67	2.77	2.48	9.00	7.00	0.00	10.00	8.00	5.00	3.00	8.00	8.00	7.33	5.77
Uganda	7.00	1.29	6.58	7.00	7.75	5.31	2.06	9.00	6.00	4.95	9.00	9.00	6.00	9.00	6.00	6.00	8.00	6.47
Zambia	9.00	9.52	7.17	9.00	7.67	8.78	9.46	9.00	6.00	1.60	10.00	9.00	7.00	8.00	8.00	7.00	8.00	7.89
Zimbabwe	9.00	5.71	5.33	7.00	8.92	6.73	10.00	7.00	7.00	1.26	9.00	8.00	8.00	5.00	8.00	8.00	8.67	7.21
Average	5.33	2.98	3.84	5.28	5.93	3.83	3.65	6.55	5.03	2.07	7.47	6.55	4.93	3.45	5.41	5.28	4.23	4.81

Color codes: 0-<2 extremely poor, 2-<4 poor, 4-<6 fair, 6-<8 good, and 8-10 excellent. MD=missing data.

The country briefs reference the stages of seed sector development based on a framework developed by Ariga et al. (2019). Table 9 outlines the evolution of the formal seed sector according to this framework; note that the framework has been modified from the original to account for recent changes.

TABLE 9: STAGES OF GROWTH OF SEED SECTORS IN AFRICA

	Stage 1 Nascent	Stage 2 Emerging	Stage 3 Early Growth	Stage 4 Growth	Stage 5 Mature
Improved seed adoption	Aid/relief programs Few commercial farmers	<2.5% Innovators	2.5-16% Early adopters	16-84% Critical mass	>84% All but the best latest adopters
Breeding and variety release	No original breeding No formal variety release process	Some original breeding Variety release formalized	Strong breeding programs Variety release formalized	Robust breeding pipeline Well-functioning variety release processes	Breeding mostly driven by the private sector Well-functioning variety release processes;
Policy and regulation	Nonexistent in most cases	Several seed policy instruments are complete or close to completion	Seed policy instruments complete or close to completion	Policies and regulations established and enforced	Industry driven and self-regulating
Private-sector participation	Very few private seed companies	Few small seed companies	Many small/medium seed companies	Many stable seed companies	Mostly large companies
Distribution system	Imported seed only	Limited agro-dealer network	Growing agro-dealer network	Strong agro-dealer network plus specialized outlets	Vertical integration
Country examples	Comoros, Djibouti, Mauritania,	Niger, Mali, Senegal, Madagascar, and Ivory Coast	Burkina Faso, Ghana, Ethiopia, and Nigeria	Uganda, Zambia, Kenya, Malawi, and Zimbabwe	South Africa

Source: Adapted from Ariga et al., 2019

Seed Sector Performance Index (SSPI) Country Brief – ANGOLA

OVERVIEW OF THE SEED SECTOR

Angola's seed industry is in the nascent stage of growth. The country is in the early stages of implementing key seed policy instruments, including its first Seed Law, DL N°7/05, adopted in 2005, and the accompanying Seed Regulations, adopted in 2016. The main government institutions in the seed sector are the National Seed Service (SENSE) under the Ministry of Agriculture and Forestry (MIAGRIF), and the *Instituto de Investigação Agronómica* (IIA), Angola's national agricultural research institute). SENSE oversees seed certification and seed quality assurance; over time, it is expected to be autonomous with the ability to generate its revenue through inspection and licensing fees, as well as fines. The four priority crops, as identified by local seed sector experts, are maize, bean, soya bean, and rice, which, combined, account for 84.2% of area harvested to field crops. Angola is a member of the Southern African Development Community (SADC).

Overall country score (out of 10):		3.31
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	2,591,805	66%
Bean	675,000	17%
Soyabean	36,442	1%
Rice	8,082	0.2%
Total		84.2%
 Total arable land:		5.373 million ha
 Population:		35,981,281
 Number of farming households:		937,358
 Contribution of agriculture to GDP:		13.65%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	1.00	The Seed Regulations, set out in Presidential Decree No 93/16 of 9 May 2016, outline the processes for variety release and registration. While they exist on paper, in practice they are not functional, primarily because the National Variety Release Committee is not fully operational. Currently, variety release functions as an <i>ad hoc</i> process.
2. Number of varieties released in last 3 years	2.57	Angola lacks strong breeding programs. Between 2020 and 2022, 12 varieties of the four priority crops were released: 5 for maize, 2 for bean, and 5 for rice. No soya bean varieties were released during this period.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	2.17	As of 2023, the IIA employed six breeders, of whom four worked on maize and two worked on soya bean. No breeders worked on bean or rice. The adequacy of the number of breeders was given a score of 1.5, based on the lingering impact of the country's decades-long civil war (1975-2002) on research capacity. The adequacy of funding was given a rating of 2, because the research programs mainly rely on externally funded projects. The adequacy of basic research infrastructure was rated 3, because the available infrastructure is outdated and/or insufficient. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	6.00	The <i>Centro Nacional de Recursos Fitogenéticos</i> (CNRF) oversees plant genetic resources in Angola. The CNRF's main activities include germplasm collection, maintenance, and characterization (phenotyping and genotyping). Its gene bank holds the accessions for food crops and provides them to plant breeders.
5. Adequacy of Early Generation Seed (EGS)	5.33	The IIA is the main source of EGS for all four crops. Due to the lack of breeders in Angola, the adequacy of the quantity of EGS was rated 2.5. The quality of EGS was rated 6.25 due to the government's efforts in quality control. Timeliness of delivery of EGS was rated 7.25. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.07	In 2022, there were only two varieties of the four priority crops on the market - both maize varieties.
7. Utilization of quality commercial seed by farmers	0.19	In 2022, reported production volumes were 182 MT of maize seed, 1.5 MT of bean seed, 150 MT of soya bean seed, and 250 MT of rice seed. When including seed imports, described below (indicator 8), the total amount of available seed meets 2% of the national requirement for maize seed, 1% for bean seed, 19% for soya bean seed, and 100% for rice seed.
8. Clarity and enforcement of seed import/export regulations	8.00	The seed regulations have clear guidelines for importation and exportation, which are mostly followed. In 2022, seed imports for the four focus crops were: 896.4 MT of maize seed, 78.6 MT of bean seed, 68.8 MT of soya bean seed, and 57.3 MT of rice seed. No exports were reported.
9. Adequacy of agro-dealer networks	2.00	In 2022, Angola had 26 agro-dealers, most of whom were based in and around the capital city Luanda. There were a limited number of agro-dealers in the provincial urban centers and even fewer in the rural areas.
10. Availability of seed in small package sizes	0.89	Of the four priority crops, 15% of maize seed, 10% of bean seed, 8% of soya bean seed, and 5% of rice seed was sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	10.00	All important policy instruments are in place, including: - Seed Law - No 7/05 of 11 August 2005 - Seed Regulations - Presidential Decree No 93/16 of 9 May 2016 - Executive Decree No 388/17 of 17 August 2017 – a technical regulation on the production and certification of cereal seed - Executive Decree No 574/17 of 4 October 2017 – a technical regulation for the production and certification of legumes, oil and fiber crop seed.
12. Status of alignment of the national seed policy instruments with regional seed regulations	8.00	As a member of the SADC, Angola has ratified the SADC Harmonized Seed Regulatory System and has participated in regional harmonization processes. Still ongoing is the harmonization of the specific national policy instruments with the SADC's rules and standards for variety release, certification and quality assurance, and phytosanitary measures.
13. Status of national biosafety frameworks for plant breeding and seed production	0.00	Angola does not have a national agricultural biosafety framework.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	5.00	FMSS in Angola are recognized by Law No 7/05. In addition, the government and other organizations implement farmer field schools and encourage the creation of farmer associations, which play a key role in community-based seed production.
15. Adequacy of seed inspection services	2.00	In 2022, Angola had four public seed inspectors. Their number is insufficient, and they also lack adequate resources to carry out their tasks effectively.
16. Adequacy of government efforts to combat counterfeit seed	2.00	Although the government has several measures in place to combat counterfeit seed, including monitoring and surveillance, the suspension of trading licenses, warnings, and fines, these measures are not adequately enforced.
17. Adequacy of national seed trade association	0.00	Angola does not have a national seed trade association.
FINAL SSPI SCORE	3.31	Highest scores: in ECCAS: Rwanda, 6.05 in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Angola's seed sector, though existent, is generally weak. There is a need for reforms across the different areas of the seed system. The government has supported a national seed program where six seed companies received training on the production and marketing of improved. In addition, the demand for improved seed is growing. The priorities for intervention in the seed sector include:

- Increasing funding for public breeding programs to improve capacity for variety development and maintenance.
- Raising awareness of the importance of improved seed among farmers in the country.
- Strengthening the capacity of local seed companies in seed production and internal seed quality assurance.
- Establishing a national seed association as a platform for private sector actors in the seed industry.

Data for the SSPI Angola report was collected by:

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Seed Sector Performance Index (SSPI) Country Brief – BENIN

OVERVIEW OF THE SEED SECTOR

Benin's seed sector is in the early growth stage. It is dominated by the informal and unregulated seed system but is gradually progressing towards a more organized and regulated formal system. The main government institutions in the seed sector include the *Direction de la Production Végétale* (DPV), which is in charge of seed quality assurance, and the *Institut National des Recherches Agricoles du Bénin* (INRAB), the country's national agricultural research institute, which is in charge of research and variety development. Seed is produced by local seed companies, individual seed multipliers, and seed cooperatives. The four priority crops, as identified by local seed sector experts, are maize, rice, soya bean, and cassava. Combined, these four crops account for 74% of area harvested to field crops. Further, these are the main food crops that undergo seed certification in Benin. Benin is a member of the Economic Community of West African States (ECOWAS).

Overall country score
(out of 10):

5.37

Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	1,349,543	47%
Cassava	388,908	13%
Soya bean	281,951	9%
Rice	123,840	5%
Total		74%



Total arable land:

2.8 million ha



Population:

13,352,864



Number of farming households:

926,539



Contribution of agriculture to GDP:

34%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	8.50	Guidelines for variety release are provided in the <i>Manuel des procédures d'homologation et d'inscription des variétés au Catalogue Béninois des Espèces et Variétés végétales</i> (CaBEV), approved by a ministerial decree in 2018. The <i>Comité National des Semences Végétales</i> (CNSV) oversees the variety release process. The process spans two agricultural production seasons, equaling 12 months for vegetables and irrigated crops, and 24 months for rainfed crops.
2. Number of varieties released in last 3 years	0.00	During the 2020-2022 period, no varieties of the four crops were released, because the INRAB breeders did not have the funds needed to collect the data missing from the variety release applications.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	3.00	As of 2023, INRAB had two active breeders for the four crops - one for maize and one for rice. The adequacy of the number of breeders was rated 3, because, due to recent retirements, INRAB does not have enough breeders to develop and maintain varieties. The adequacy of funding was rated 3 because, despite receiving some government support, INRAB continues to depend on donor support. The adequacy of infrastructure was rated 3, because INRAB lacks the necessary research infrastructure to carry out its work effectively. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	6.00	Plant genetic conservation, documentation, and utilization are the mandate of INRAB. The institute is constrained by inadequate funding to carry out its mandate.
5. Adequacy of Early Generation Seed (EGS)	8.58	The main sources of EGS in Benin are INRAB and the State Seed Farms in Alafiarou and Kétou. All maintain their own EGS. The adequacy of the quantity of EGS supplied was rated 8.75, indicating that state farms and domestic enterprises satisfy the needs for EGS for the four priority crops. The quality of EGS was rated 8. The timeliness of delivery of the EGS was rated 9, indicating that most EGS orders are delivered on time. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.92	In 2022, there were 14 varieties available on the market for the four crops: seven for maize, two for rice, three for soya bean, and two for cassava. This number is low, given the country's diverse agro-ecology and corresponding need for a wider range of locally adapted crops.
7. Utilization of quality commercial seed by farmers	0.52	In 2022, production volumes reported for the four priority crops were: 723 MT of maize seed, 500 MT of rice seed, and 744 MT of soya bean seed. The volumes met 4% of the national seed requirement for maize seed, 8% for rice seed, and 16% for soya bean seed.
8. Clarity and enforcement of seed import/export regulations	8.00	There were no reported seed imports or exports in 2022 for the four priority crops. The regulations guiding the import and export of seed and control mechanisms are in place at the various control posts on land, port, and airport.
9. Adequacy of agro-dealer networks	5.00	In 2022, Benin had 20 registered agro-dealers. They were all concentrated in urban centers, leaving rural farmers without adequate access to inputs from registered agro-dealers. However, multipliers and projects complement the lack of agro-dealers by supporting access to quality seed in rural areas.
10. Availability of seed in small package sizes	0.50	For maize, rice, and soya bean seed, only 5% of seed was sold in packages of 2 kg or less. Corresponding figures are not available for cassava, as it is a vegetatively propagated crop.
11. Status of national seed policy instruments	9.00	All important seed policy instruments are in place, including: The National Seed Policy of 2015 The Plant Seed Sub-Sector Development Strategy 2022-2026 Law No 91-004 of 11/02/1991 on phytosanitary legislation – the main law governing the seed sector Decree No 92-258 of 18/09/1992 - procedures for the application of Law No 91-004 of 11/02/1991 Three Ministerial Orders and three decrees and regulations to operationalize different aspects of the seed law No 91-004 of 11/02/1991.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	Benin is a member of ECOWAS. The Special Issue No 15 of the Official Gazette of Benin (13 August 2013) serves as the instrument to harmonize the country's seed law with ECOWAS regulations. The seed sector is supported through the <i>Fonds National de Développement Agricole</i> (FNDA), with a dedicated facility for the seed sub-sector. However, funding for regulatory activities and the CNSV continues to be a challenge for the seed sub-sector.
13. Status of national biosafety frameworks for plant breeding and seed production	7.50	Law No 2021-01 of 03/02/2021 structures the biosafety frameworks in the Republic of Benin. It has set up the <i>Conseil National de Biosécurité</i> (CNB) with a Scientific Committee.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	3.00	FMSS contributed an estimated 80% of the seed supply in Benin's agricultural sector. FMSS are recognized but not yet incorporated into policy instruments. Nevertheless, farmer organizations and NGOs continue to promote FMSS.
15. Adequacy of seed inspection services	6.00	In 2022, Benin had 254 public seed inspectors (198 men and 56 women), which translates to fewer than three inspectors for each of the country's 77 municipalities and border posts. While the number is insufficient, the quality of public inspection services is moderately effective.
16. Adequacy of government efforts to combat counterfeit seed	9.00	Efforts to combat the production and sale of counterfeit seed are guided by Law No 91-004 of 11/02/1991 and Regulation No C/REG.4/05/2008. The government regularly inspects distribution points and seed storage stores, samples seed submitted for lab tests, promotes the use of coded labels on certified seed lots, and requires seed companies to account for seed stock.

Indicator	Score (out of 10)	Description of performance
17. Adequacy of the national seed trade association	6.83	The <i>Association Nationale des Semenciers du Bénin</i> (ANaSeB) is the national seed association representing private seed-sector players in Benin. ANaSeB received an overall rating of 6.83/10, based on the following sub-scores: providing value to members: 8/10, activity on important seed sector issues: 8/10, effectiveness in advocacy: 7/10, ability to mobilize resources: 7/10, managerial ability: 6/10, governance and democracy: 5/10.
FINAL SSPI SCORE	5.37	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Although Benin's seed sector is in the early growth stage, it is characterized by the participation of some private seed companies and seed cooperatives. There is reasonable supply of EGS, and the country has an active agro-dealer network. For the seed sector to sustain the current growth momentum, the following issues need to be addressed:

- Increasing funding to INRAB to hire more breeders for the key crops and to acquire or refurbish the infrastructure for breeding, variety development, and maintenance.
- Increasing the production of certified seed by building the capacity of seed producers and encouraging private sector investment in the industry.
- Enhancing farmer awareness to increase the adoption of certified seed.

Data for the SSPI Benin report was collected by:

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Seed Sector Performance Index (SSPI) Country Brief – BOTSWANA

OVERVIEW OF THE SEED SECTOR

Botswana's seed sector is in the early growth stage of development. A few multinational private seed companies operate in the country and mainly distribute imported seed. The sector is mostly formal and regulated by the Seed Certification Act of 1976. The government's Seed Multiplication Unit (SMU) oversees seed production and certification. Seed production involves contract growers, who focus on crops which are not supplied by seed companies. The government often supports seed distribution through subsidy programs. Seed companies can market any variety without prior registration in the country. The four priority crops identified by local seed sector experts are maize, sorghum, cowpea, and millet, which, combined, account for 85% of the area harvested to field crops. Agriculture, particularly crop farming, contributes minimally to the national economy. Botswana is a member of the Southern African Economic Community (SADC).

Overall country score
(out of 10):

5.56

Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	152,522	39%
Cowpea	52,688	26%
Sorghum	30,489	13%
Millet	14,096	7%
Total		85%



Total arable land:

0.26 million ha



Population:

2,417,596



Number of farming households:

105,900



Contribution of agriculture to GDP:

1.76%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	0.00	The country does not have a process for variety release and registration, which is not required to market seed varieties in Botswana.
2. Number of varieties released in last 3 years	0.00	During the 2020-2022 period, no varieties of the four crops were released, because there is no process for variety release and registration.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	6.00	As of 2023, the National Agricultural Research and Development Institute (NARDI) had three breeders for the four crops. All three breeders work on maize, sorghum, and millet, while two of the breeders also work on cowpea. The adequacy of the number of breeders was rated 6/10, indicating that the number of breeders is nearly adequate for the small size of the breeding programs. The adequacy of funding was rated 7/10, signaling that the available funding is reasonable, given the small size of the programs. The adequacy of basic research infrastructure is rated at 5/10, because the infrastructure is dilapidated. The fences are often damaged by people and wildlife. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	8.00	The National Plant Genetic Resource Centre (PGRC) is affiliated with the SADC Plant Genetic Resource Center and complies with its guidelines. The center is fully functional and collects, multiplies, characterizes, and maintains germplasm. The center serves both the local and SADC countries' users.

Indicator	Score (out of 10)	Description of performance
5. Adequacy of Early Generation Seed (EGS)	6.75	The main source of EGS for the four priority crops in Botswana is the NARDI. NARDI produces and maintains EGS on its farms. Seed industry experts rated the adequacy of the quantity of EGS supplied 5.75/10, the quality of EGS supplied 6.5/10, and the timeliness of delivery 8/10. Since the EGS is produced and maintained on NARDI farms, it is easy to supply. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.99	In 2022, a total of 15 varieties were on the market for the four priority crops: 9 maize varieties, 2 sorghum varieties, 3 cowpea varieties, and 1 millet variety.
7. Utilization of quality commercial seed by farmers	8.81	In 2022, production volumes reported for the four priority crops were 2 MT of maize seed, 89 MT of sorghum seed, 104 MT of cowpea seed, and 1 MT of millet seed. Adding imports and exports (discussed below, indicator 8), the total amount of available seed meets 92% of the national seed requirement for maize, 68% for sorghum, 86% for cowpea, and 100% for millet.
8. Clarity and enforcement of seed import/export regulations	8.00	Much of the seed sold in Botswana is imported. Seed imports are regulated by the Plant Protection Act Cap 35:02. In 2022, the volumes of seed imported were 1,831 MT maize seed, 948 MT sorghum seed, 1,190 MT cowpea seed, and 227 MT millet seed. Seed importers are required to apply for import permits.
9. Adequacy of agro-dealer networks	7.00	In 2022, Botswana had 102 registered agro-dealers, known as seed distribution agents, who import and distribute much of the seed in the country.
10. Availability of seed in small package sizes	6.56	Of the four priority crops, 1% of maize seed, 50% of sorghum seed, 80% of cowpea seed, and 80% of millet seed was sold in small packages of 2kg or less.
11. Status of national seed policy instruments	6.00	Botswana's seed sector is guided by the Seed Certification Act of 1976. A Seed Bill, which will repeal and replace the Seed Act, is under discussion. The other important instrument is the Plant Protection Act Cap 35:02 of 2009.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	7.00	Botswana is a member of the Southern African Development Community (SADC). The Seed Bill, which is yet to be passed, amends the Seed Act of 1976, is harmonized with the SADC Harmonized Seed Regulatory System.
13. Status of national biosafety frameworks for plant breeding and seed production	7.00	The government passed the Biosafety Policy in 2013 and the Biosafety Bill 2022 is in the drafting stage.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not recognized in Botswana.
15. Adequacy of seed inspection services	8.00	In 2022, Botswana had 12 public seed inspectors. The number is adequate given the small size of the area under seed production (72 ha).
16. Adequacy of government efforts to combat counterfeit seed	7.00	Efforts to combat the production and sale of counterfeit seed are guided by the Seed Certification Act of 1976. The Act sets a fine not exceeding BWP 1,000 or imprisonment for the distribution of counterfeit seed. The government conducts regular monitoring and surveillance of seed retailers and at ports of entry into the country. It also holds workshops on the importance of seed certification for farmers and agro-dealers.
17. Adequacy of the national seed trade association	6.50	The Botswana Agro Suppliers Association (BASA) is a newly established association of agro-suppliers in Botswana. BASA received an overall rating of 6.5/10, based on the following sub-scores: providing value to members 7/10, activity on important seed sector issues: 6/10, effectiveness in advocacy: 7/10, ability to mobilize resources: 5/10, managerial ability: 7/10, governance and democracy: 8/10.
FINAL SSPI SCORE	5.56	Highest scores: in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Given that 70% of Botswana is desert, agriculture is constrained by frequent droughts. Crop production is mainly subsistent and is characterized by low productivity. Enhanced access to improved agricultural technologies can improve productivity and improve food security. The priorities for reform in the seed industry all pertain to the seed policy environment:

- The enactment of the Seed Bill that takes into consideration the provisions of the SADC Seed Harmonized Regulatory System should be expedited.
- Guidelines for variety release and registration should be defined in the new seed law and the process should be elaborated in the Seed Regulations.

Data for the SSPI Botswana report was collected by:

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Seed Sector Performance Index (SSPI) Country Brief – BURKINA FASO

OVERVIEW OF THE SEED SECTOR

The seed sector in Burkina Faso is in the early growth stage of development. The formal sector is regulated by the *Ministère de l'Agriculture et des Aménagements Hydro-agricoles* (MAAH), which oversees the implementation of the seed policy. Under the Ministry, the *Direction Générale de la Production Végétale* (DGPV) provides overall technical supervision, while the *Service National des Semences* (SNS) is in charge of seed quality control. The *Institut de l'Environnement et de Recherche Agricole* (INERA) oversees research and variety development. In the formal sector, seed production is undertaken by seed producers, a group that includes seed unions, seed cooperatives/ associations, and seed companies. The informal sector is characterized by seed trade among smallholder farmers and localized, informal markets. The four priority crops, as identified by the local seed sector expert, are maize, rice, sorghum, and millet. Combined, these four crops comprise 70% of the total area harvested to cereals, pulses, and oils in the country. Burkina Faso is a member of the Economic Community of West African States (ECOWAS).

Overall country score
(out of 10):

5.77

Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Sorghum	1,743,159	32%
Maize	1,216,338	18%
Millet	1,065,735	17%
Rice	369,800	3%
Total		70%



Total arable land:

6.1 million ha



Population:

22,489,126



Number of farming households:

1,601,990



Contribution of agriculture to GDP:

20.4%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	8.00	The registration of crop varieties to be released in Burkina Faso is conducted by the <i>Sous-comité d'homologation des variétés</i> (SCHV) of the <i>Comité National des Semences</i> (CNS). The MAAH facilitates the evaluation and official release varieties. These processes function quite well. However, the committee does not always have sufficient funds to conduct the fields visits, which are part of the application review process.
2. Number of varieties released in last 3 years	1.14	During the 2020-2022 period, 33 varieties of the four crops were released: 24 maize varieties, three rice varieties, and six sorghum varieties.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	6.58	As of 2023, INERA had ten active breeders for the four crops: three for maize, three for rice, two for sorghum, and two for millet. The adequacy of the number of breeders was given a rating of 7.25/10, signaling that the number of breeders employed by INERA are adequate. Seed industry experts rated the adequacy of funding 5.0/10, indicating that funding for breeding activities is not adequate. Seed industry experts rated the adequacy of the research equipment and infrastructure at the breeding institutions 7.0/10. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	8.00	<i>Secrétariat Permanent/Commission Nationale de Gestion des Ressources Phytogénétiques</i> (SP/CONAGREP) is functional and holds two ordinary sessions a year. Regular surveys are organized to collect, document, preserve, and avail PGRFA to breeders and farmers for breeding purposes.
5. Adequacy of Early Generation Seed (EGS)	7.83	INERA is the main source of EGS in Burkina Faso. It produces and maintains its own EGS. The adequacy of the quantity of EGS supplied received a rating of 8.0/10. Although the rating is high, from time-to-time INERA experiences challenges with supplying EGS for varieties of certain crops, such as cowpea, sorghum, and groundnuts. The quality of EGS received a rating of 7.0/10. EGS is controlled and certified by the SNS before it is marketed and distributed. Seed industry experts rated the timeliness of delivery of seed supplied 8.0/10. The high score reflects that INERA has seed storage centers throughout the country, where producers can obtain EGS. INERA also organizes a seed fair every year to promote and market EGS. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	4.25	In 2022, the number of varieties available on the market for the four priority crops was 47: 14 maize varieties, 14 rice varieties, 14 sorghum varieties, and five millet varieties.
7. Utilization of quality commercial seed by farmers	1.17	In 2022, seed production for the four crops was: 3,910 MT of maize seed, 2,650 MT of rice seed, 1,186 MT of sorghum seed, and 606 MT of millet seed. Adjusted for imports and exports below (indicator 8), total available seed meets 16% of national seed requirement for maize, 34% for rice, 7% for both sorghum and millet.
8. Clarity and enforcement of seed import/export regulations	8.00	The seed importation process in Burkina Faso is clearly defined and it is enforced consistently. In 2022, of the four priority crops, 1 MT of maize seed was imported, while 138 MT of rice seed was exported.
9. Adequacy of agro-dealer networks	5.00	In 2022, Burkina Faso had 61 licensed agro-dealers, who are mainly concentrated in the major cities of Ouagadougou, Bobo-Dioulasso, and Koudougou, and major agricultural production centers in the Center-East, Hauts Bassins, Sourou, and Boucle du Mouhoun. Other areas have limited access to agro-dealers.
10. Availability of seed in small package sizes	0.26	Of the four priority crops, only 2% of maize seed, 5% of rice seed, and 1% each of sorghum and millet seed are sold in small packages of 2 kg or less. The rest of the seed is mostly sold in large packages of 25 kg or more.
11. Status of national seed policy instruments	7.00	Burkina Faso's seed sector is guided by <i>Loi N°10-2006/AN</i> . It is supported by 3 decrees and 9 regulations.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	Burkina Faso is a member of ECOWAS. The national seed regulations are aligned with the ECOWAS Regional Seed Regulations and are implemented consistently.
13. Status of national biosafety frameworks for plant breeding and seed production	9.00	<i>Agence nationale de biosécurité</i> (ANB) regulates biotechnology in Burkina Faso. The biosafety law and related frameworks have been adopted and operationalized. Cotton is widely adopted in the country.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	3.00	FMSS are not recognized by Burkina Faso's seed regulations. However, the National Commission for the Management of Plant Genetic Resources collects, characterizes, and conserves traditional farmer varieties.
15. Adequacy of seed inspection services	7.00	In 2022, there were 73 seed inspectors in Burkina Faso. The Seed Act stipulates that all seed inspectors be employed by the government. Private seed inspectors are not authorized to operate in the country, although the CNS has proposed a change in the law to allow for the authorization of private seed inspectors.
16. Adequacy of government efforts to combat counterfeit seed	7.00	Combating the production and sale of counterfeit seed is guided by the seed law, 3 regulations, and 3 manuals. Measures taken include follow-up on the packaging of certified seeds, labelling and sealing of packaging, participation of seed inspectors in the reception of seeds acquired under the agreements, surveillance of the distribution/marketing of seeds, and sensitization/information of actors on the content of seed regulations.

Indicator	Score (out of 10)	Description of performance
17. Adequacy of national seed trade association	6.83	<i>L'Union Nationale des sociétés coopératives des Producteurs de Semenciers du Burkina</i> (UNPS-B) represents the seed sector in Burkina Faso. Seed industry experts' overall rating of UNPS-B was 6.83/10, comprising of the following sub-scores: activities on important seed sector issues, (6/10), ability to mobilize resources, providing value to members, managerial ability, governance and democracy, effectiveness in advocacy, and ability to mobilize resources (7/10).
FINAL SSPI SCORE	5.77	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Agriculture contributes 22% of Burkina Faso's GDP and is the source of livelihoods for 80% of the population.¹⁶ However, the harsh semi-arid climate and low and erratic rainfall constrain productivity. For the seed sector to sustain the current growth momentum, the following priority issues need to be addressed:

- Strengthening the human resource and logistical capacity of SNS to improve seed quality control and to implement a system for seed traceability.
- Enhancing the capacity of seed producers to ensure quality in their seed production operations.
- Increasing awareness of the benefits of certified seed among farmers.

Data for the SSPI Burkina Faso report was collected by:

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Service National des Semences (SNS).

¹⁶ <https://www.fondazioneaurora.org/en/advancing-agrifood-production-in-burkina-faso/> Accessed 24 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – BURUNDI

OVERVIEW OF THE SEED SECTOR

The seed sector in Burundi is in the emerging growth stage of development. It is dominated by the informal sector, but there is also a growing and highly regulated formal system. The *Office Nationale de Contrôle et de Certification des Semences* (ONCCS) oversees seed certification and quality control, and the *Institut des Sciences Agronomiques du Burundi* (ISABU) is the national agricultural research institute mandated to conduct research and variety development. The four priority crops, as identified by the local seed sector experts, are bean, maize, rice, and Irish potato. Combined, these four crops account for 70% of area harvested to field crops. Burundi is a member of the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), and the Economic Community for Central African States (ECCAS).

Overall country score
(out of 10):

5.78

Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Bean	338,129	54%
Maize	122,871	11%
Rice	21,670	3%
Potato	19,743	2%
Total		70%



Total arable land:

1.27 million ha



Population:

13,162,952



Number of farming households:

1,800,000



Contribution of agriculture to GDP:

27.57%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	6.00	Applications for the release of a new variety are submitted to the Director General of the ONCCS and are approved by the <i>Commission Nationale Semencière</i> , specifically, by the Minister responsible for agriculture. The average length of the variety release process is 8 months, though at times the process takes longer, reducing the number of varieties released and commercialized and available to farmers.
2. Number of varieties released in last 3 years	8.71	Between 2020 and 2022, 55 varieties of the four crops were released: 4 bean varieties, 32 maize varieties, and 19 rice varieties. Most of the hybrid maize varieties registered in the last three years were submitted by Kenyan companies, while Chinese companies have been introducing a growing number of hybrid rice varieties.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	4.00	As of 2023, ISABU had 6 active breeders for the four crops: 1 for bean, 1 for maize, 3 for rice, and 1 for Irish potato. The adequacy of the number of breeders received a rating of 4/10, indicating that ISABU does not have an adequate number of breeders. The adequacy of funding for breeding programs received a rating of 2/10, while the quality of equipment and infrastructure at the breeding programs received a rating of 6/10. This relatively high score reflects that the Government of Burundi has recently provided an additional budget to ISABU and most of the research infrastructure (laboratories and greenhouses) have been rehabilitated. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	6.00	The ISABU is mandated to conduct activities related to the conservation and utilization of plant genetic resources in Burundi. The ISABU has received funding from government and donors to set up a facility for PGRFA activities and has collected a wide range of plant genetic resources and set up the site for <i>in-situ</i> conservation and a botanical garden. The PGRFA activities are conducted by qualified scientific staff.
5. Adequacy of Early Generation Seed (EGS)	6.67	The main sources of EGS in Burundi are the ISABU and the International Rice Research Institute (IRRI). Both maintain their own EGS. Seed industry experts rated the adequacy of the quantity of EGS supplied as 7/10. The country has a pre-order system through which registered seed producers may obtain EGS. The quality of EGS supplied received a rating of 7/10. All seed is tested, packaged, and labeled before being supplied to seed growers. The timeliness of delivery of EGS received a rating of 5/10, reflecting that relatively frequent delays due to climatic shocks, and delayed or early onset of rains, which significantly affect crop yields leading to low availability of seeds. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	5.45	In 2022, the number of varieties available on the market for the four crops was 64: 21 bean varieties, 15 maize varieties, 17 rice varieties, and 11 Irish potato varieties.
7. Utilization of quality commercial seed by farmers	3.19	In 2022, seed production for the four crops was: 1,177 MT of bean seed, 7,790 MT of maize seed, 260 MT of rice seed, and 1,999 MT of Irish potato seed. Adjusted for imports below (Indicator 8), total available seed meets 4% of the national seed requirement for bean, 100% of the same for maize and rice seed, and 5% for Irish potato seed.
8. Clarity and enforcement of seed import/export regulations	7.00	The importation of seed to the country is guided by Article 30 of the Seed Law. In 2022, 1,400 MT of maize seed were imported.
9. Adequacy of agro-dealer networks	2.00	In 2022, Burundi had two registered agro-dealers. There are many active agro-dealers who are not registered. In addition, most seed producers sell their own seeds directly to farmers.
10. Availability of seed in small package sizes	5.76	Of the four priority crops, 50% of bean seed, 60% of maize seed, and 20% of rice seed are sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	10.00	Burundi's seed sector is guided by Seed Law N° 1/08 of 23 April 2013. It is operationalized by Decree N° 100/55 of 23 March 2016 on the protection of plant varieties and four Ordinances.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	Burundi is a member of COMESA, and the government has harmonized the national seed regulations with the COMESA Seed Trade Harmonization Regulations.
13. Status of national biosafety frameworks for plant breeding and seed production	6.00	Burundi has a National Biosafety Framework that deals with the generation, use, and commercialization of agricultural biotechnology. It is led by the <i>Direction de la Protection des Végétaux</i> (DPV) as guided by the <i>Ordonnance Ministérielle N° 710/451 du 04/4/2016</i> .
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS in Burundi are not recognized in any seed policy instrument.
15. Adequacy of seed inspection services	6.00	In 2022, there were 7 public seed inspectors and 49 private seed inspectors in Burundi. Seed production fields that are declared to the ONCCS are inspected unless the inspectors are constrained by a lack of funding to reach all fields.
16. Adequacy of government efforts to combat counterfeit seed	7.00	Combating the production and sale of counterfeit seed is guided by the <i>La loi N° 1/08 du 23 avril 2012</i> on the organization of the seed sector, <i>Ordonnance N° 710/338 du 09 mars 2016</i> on the marketing of certified seeds in Burundi, <i>Décret N° 100/55 du 23 mars 2016</i> on plant variety protection and <i>Ordonnance N° 710/451 du 04 avril 2016</i> on phytosanitary control and quarantine measures in the trade of plants and plant products. Measures include monitoring of seed storage facilities and the use of secure seed packaging labels. The importation or distribution of counterfeit seed is punishable with jail time of six months to one year and/or a fine of 200,000 to 1,000,000 Burundian francs.

Indicator	Score (out of 10)	Description of performance
17. Adequacy of national seed trade association	6.50	The <i>Collectif des Compagnies et Coopératives de Production des Semences du Burundi</i> (COPROSEBU) is the association bringing together private sector seed players in Burundi. Seed industry experts' overall rating of COPROSEBU was 6.5/10 and comprised of the following sub-scores: effectiveness in advocacy, in providing value to members, and managerial ability (7/10), and governance and democracy, ability to mobilize resources, and activities on important seed sector issues (6/10).
FINAL SSPI SCORE	5.78	Highest scores: in EAC: Tanzania, 7.25 in ECCAS: Rwanda, 6.05 in COMESA: Zambia, 7.89 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Burundi's agro-ecological zones are suitable for agricultural production. The country's seed policy instruments are up to date and are aligned to COMESA Seed Trade Harmonization Regulations. For the seed sector to sustain the current growth momentum, the following priority issues need to be addressed:

- Establishment of a seed laboratory for seed testing and analysis that meets international standards.
- Hiring and training of ONCCS staff on seed inspection, seed sampling, and seed testing. In addition, ONCCS needs increased funding to allow staff to conduct seed quality assurance services across the country.
- Increasing efforts to raise awareness of the benefits of certified seed among farmers.
- Building the capacity of local seed companies in internal quality assurance in seed production and processing.

Data for the SSPI Burundi report was collected by:

Gahungu Fidèle

Chef, Office National de Contrôle et de Certification des Semences, Burundi.

Seed Sector Performance Index (SSPI) Country Brief – CAMEROON

OVERVIEW OF THE SEED SECTOR

Cameroon's seed sector is in the early growth stage of development. The government recognizes the coexistence of the informal and formal seed systems. At the national level, the formal seed system is regulated by the Ministry of Agriculture and Rural Development. It includes the Directorate of Regulation and Quality Control of Agricultural Inputs and Products, which is in charge of variety release and registration. The *Institut de Recherche Agricole pour le Développement* (IRAD) is the country's national agricultural research institute. Cameroon has several categories of private seed enterprises, including companies (multinational and local), cooperatives, and individual producers. The four priority crops, as identified by local seed sector experts, are cassava, rice, maize, and sorghum. Combined, these four crops account for 75% of area harvested to field crops. Cameroon is a member of the Economic Community for Central African States (ECCAS).

Overall country score (out of 10):		5.45
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	1,129,032	37%
Sorghum	807,072	21%
Cassava	287,500	13%
Rice	153,509	4%
Total		75%
Total arable land:		6.2 million ha
Population:		30,135,732
Number of farming households:		3,061,201
Contribution of agriculture to GDP:		16.98%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	7.00	The variety release process is under the supervision of the Directorate of Regulation and Quality Control of Agricultural Inputs and Products. Any registration of a new variety in the National Catalogue must first undergo both Distinctness, Uniformity, and Stability (DUS) and Value for Cultivation and Use (VCU) tests. The results are reviewed by the secretariat of the <i>Commission d'homologation des espèces et variétés</i> (CHEV). Approved varieties are added to the Catalogue of Plant Varieties of Cameroon, which was developed in 2018.
2. Number of varieties released in last 3 years	0.00	During the 2020-2022 period, no varieties of the four crops were released. In fact, there have not been any releases for the four crops since 2018. However, since 2021, a number of varieties of maize, soya bean and Irish potato are at various stages of DUS and VCU trials.

Indicator	Score (out of 10)	Description of performance
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	4.83	As of 2023, IRAD had three active breeders for the four crops, all for maize. The small number of breeders is partly due to recent retirements, whose positions are yet to be filled. Seed industry experts rated the adequacy of the number of breeders 4.5/10, indicating that the number of breeders is inadequate to meet the current needs. The adequacy of funding for breeding programs received a rating of 5/10, showing that, apart from key cash crops like coffee or cocoa, the breeding programs of other crops do not receive adequate funding for their work. The adequacy of the equipment and infrastructure at the breeding programs received a rating of 5/10, reflecting that many facilities are dilapidated. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	5.00	Several institutions are engaged in plant genetic resource management, including the Institute of Agricultural Research for Development (IRAD) and the National Forestry Development Agency. These institutes all have their own <i>in-situ</i> gene banks. Within the framework of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRA), Cameroon has a focal point in the Ministry of Agriculture, who is responsible for coordinating the relevant activities. A report on the state of plant genetic resources was produced in 2022 and is currently under review.
5. Adequacy of Early Generation Seed (EGS)	5.00	IRAD is the main source of EGS for all four crops while the International Institute for Tropical Agriculture (IITA) is an important source of EGS for cassava, and PRODERIP, UNDVA, and SEMRY are sources of EGS seed for rice. The adequacy of the quantity of EGS produced was rated 5/10 reflecting that the volumes produced are insufficient to meet national requirements. The quality of EGS was rated 5/10. The timeliness of delivery was rated 5/10 as the volumes produced do not always meet the demand of seed companies. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	7.29	In 2022, the number of varieties available on the market for the four crops was 90: 14 cassava varieties, 21 rice varieties, 44 maize varieties, and 11 sorghum varieties.
7. Utilization of quality commercial seed by farmers	3.98	In 2022, seed production for the four crops was 8,000,000 MT of casava seed, 256 MT of rice seed, 1,134.9 MT of maize seed, and 179 MT of sorghum seed. Adjusted for imports below (Indicator 8), total available seed meets 17% of national seed requirement for cassava, 13% for rice, 27% for maize, and 71% for sorghum.
8. Clarity and enforcement of seed import/export regulations	8.00	In 2022, only 81 MT of maize seed was imported among the four crops. The Directorate of Regulation and Quality Control under the Ministry of Agriculture is responsible for importation. The main requirement is an import permit, which is obtained after the importer submits several documents including an application form, a proforma invoice, a copy of the certificate of seed activity and a receipt of payment of the pest risk analysis fee.
9. Adequacy of agro-dealer networks	6.00	In 2022, Cameroon had 30 agro-dealer outlets, most of which are in the main urban areas. However, many of them work with cooperatives and other groups to distribute seed to the rural areas.
10. Availability of seed in small package sizes	2.50	For each of the four priority crops, about 25% of the seed was sold in small packages of 2k or less.
11. Status of national seed policy instruments	10.00	All important policy instruments are in place, including: • Law N° 2001/014 of 23 July 2001, relating to seed activities. • National Plant Seed Policy of 2018, <i>Arrêté N°068/PM</i> of 28 August 2019, Manual of Procedures granting subsidies to agricultural inputs. • <i>Le décret N° 2005/169</i> of 26 May 2005 on the creation and organization of the Seed Fund. • <i>Le décret N° 2005/153</i> of 04 May 2005 on the creation, organization, and functioning of the National Council on Seeds and Plants.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	5.00	Cameroon is a member of the Economic Community of Central African States (ECCAS). The process of harmonizing regulations on seeds was initiated within the framework of the Regional Pole of Applied Research for the Development of Central African Systems (PRASAC) project, an initiative of the Central African Economic and Monetary Community CEMAC. Regulations have been adopted by CEMAC, and the Member States are internalizing them.
13. Status of national biosafety frameworks for plant breeding and seed production	6.00	For several years, the government has been engaged in the development of a law governing Biosafety in Cameroon. Alongside the Bill currently being drafted, Law N° 2003/2006 of April 21, 2003, addresses the safety aspects related to modern Biotechnology. This law has a section on Biosafety.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	7.00	FMSS are recognized in the National Plant Seed Policy of 2018. The Policy acknowledges the traditional seed system and farm-saved seeds.

Indicator	Score (out of 10)	Description of performance
15. Adequacy of seed inspection services	5.00	In 2022, Cameroon had 72 public seed inspectors. The numbers are satisfactory, however, there is room to improve the logistical resources that are available for seed inspection.
16. Adequacy of government efforts to combat counterfeit seed	7.00	Combating the production and sale of counterfeit seed is guided by Law N° 2001/014 of July 23, 2001, relating to seed activity. In this law, offenses are punishable by a prison sentence of one-to-three months imprisonment and a fine of between 50,000 FCFA and 2,000,000 FCFA. The offences include failure to keep a register of transactions; refusal to submit to seed quality control; sale of seed below pre-established minimum standards; trading in varieties that are not listed in the Official Catalogue; and falsifying seed variety details.
17. Adequacy of national seed trade association	3.00	The Association of Seed Traders of Cameroon (ACOSEC) is the national seed association in Cameroon. The entity is not highly active in seed sector issues and has not held an election for office bearers in several years. ACOSEC received an overall rating of 3/10, based on the following sub-scores: providing value to members – 3/10, activities on important seed sector issues – 3/10, effectiveness in advocacy – 3/10, ability to mobilize resources – 3/10, managerial ability – 3/10, governance and democracy – 3/10.
FINAL SSPI SCORE	5.45	Highest scores: in ECCAS: Rwanda, 6.05 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

The agricultural sector remains one of the engines of growth in Cameroon. The agriculture sector is also the main source of employment, accounting for nearly 60% in 2020 (AfDB 2022). However, despite its high potential, the economic and social contributions of this sector remain low. Some of the priorities for seed industry reform include:

- Increasing efforts towards conduct awareness of the benefits of improved varieties to farmers.
- Strengthening the national breeding programs to develop and release climate-smart varieties.
- Strengthening the national seed association through increased efforts on member awareness, greater involvement in national seed sector activities, and strengthened governance structures.
- Strengthening the logistical and human resource capacity of the national seed certification system.
- Adapting Cameroon's legal and regulatory framework to the ECCAS' regional seed control and certification regulation.

Data for the SSPI Cameroon report was collected by:

Stanislas Bila

Deputy Director of Seed Regulation and Végé Quarantine, MINADER.

Seed Sector Performance Index (SSPI) Country Brief – CENTRAL AFRICAN REPUBLIC

OVERVIEW OF THE SEED SECTOR

The formal seed sector in the Central African Republic (CAR) is in the nascent stage of development. The primary source of seed in the country is the informal seed system, which is unregulated. The formal sector is limited to a few isolated, unequipped seed producers and cooperatives produce seed used by NGO-sponsored programs. Otherwise, the private sector is not actively involved in the sector. The activities of research, seed production, multiplication, and marketing are mostly undertaken by the government. The two main institutions in the seed sector are the *Institut Centrafricain de Recherche Agronomique* (ICRA), in charge of for research and variety development, and *Office National de Semences* (ONASEM), responsible for variety release, registration, and seed inspection and certification. The four priority crops, as identified by the local seed sector experts are cassava, maize, groundnut, and bean. Combined, these four crops account for 81% of area harvested to field crops. The Central African Republic is a member of the Economic Community for Central African States (ECCAS) and of the Community of Sahel–Saharan States (CEN-SAD).

Overall country score
(out of 10):

2.21

Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	25,000	38%
Groundnut	150,000	27%
Bean	70,000	10%
Sorghum	1,500	6%
Total		81%



Total arable land:

1.8 million ha



Population:

5,552,228



Number of farming households:

4,270,000



Contribution of agriculture to GDP:

29.33%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	1.00	The country has the necessary policy documents outlining the procedures for the release and registration of the varieties. However, currently no new varieties are being developed of the four focus crops.
2. Number of varieties released in last 3 years	0.00	Linked to the lack of variety development programs, no varieties have been released in the country over the last three years for the four focus crops.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	0.00	During the 2020-2022 period, the country had no active breeders and breeding programs. The government does not fund breeding work, and ICRA's basic research infrastructure is old and dilapidated, no longer meeting the research needs of the country.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	0.00	There is no national institute responsible for the management of PGRFA in the CAR.
5. Adequacy of Early Generation Seed (EGS)	5.00	The two main sources of EGS in the CAR are the INERA in Burkina Faso and the <i>Institut de Recherche Agricole pour le Développement</i> (IRAD) in Cameroon. Since most of the EGS comes from NARIs outside the country, the maximum score for this indicator may not exceed 5/10. All seed imports undergo laboratory testing to check phytosanitary quality and minimize environmental risks. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.99	In 2022, the number of varieties available on the market for the four crops was 15: two maize varieties, two sorghum varieties, eight groundnut varieties, and three bean varieties.
7. Utilization of quality commercial seed by farmers	1.47	In 2022, seed production for the four crops was: 118 MT of maize seed, 50 MT of sorghum seed, 46 MT of groundnut seed, and 153 MT of bean seed. These volumes account for 24% of the national maize seed requirements, 20% of the national sorghum seed requirements, 9% of the national groundnut seed requirements, and 23% of the national bean seed requirements.
8. Clarity and enforcement of seed import/export regulations	6.00	Only a small fraction of imported seed is declared by importers, who include NGOs, farmer associations, and individuals. This under-reporting is due to the weaknesses in the capacity of the regulatory system. There were no recorded seed imports in 2022.
9. Adequacy of agro-dealer networks	2.00	In 2022, the CAR did not have any registered agro-dealers, although there are a few shops that sell seed. The main obstacle preventing the development of a private agro-dealer network is the government's practice of distributing free seed to farmers.
10. Availability of seed in small package sizes	2.10	Of the four priority crops, 45% of maize seed, 2% of groundnut seed, and 15% of bean seed are sold or distributed in small packages of 2 kg or less. None of the sorghum seed is sold in small packages.
11. Status of national seed policy instruments	8.00	The CAR's seed sector is guided by <i>Loi N°15/001 du 8 Decembre 2015</i> , which established and operationalized the ONASEM as the main seed sector regulatory entity. Other instruments are the <i>Décret 16/351 du 19 Octobre 2017</i> , which approved the statutes of the ONASEM, and <i>Arrêté N° 025/MDRA/DIF/DGAR/ICRA/DG</i> , the technical regulations on the approval and registration of newly released varieties in the national catalogue.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	0.00	The CAR is a member of ECCAS and CEMAC. The CEMAC zone has regional seed regulations. However, the CAR has not yet initiated the harmonization of the national seed regulations with the regional regulations.
13. Status of national biosafety frameworks for plant breeding and seed production	4.00	The country's biosafety law is currently in draft form.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	4.00	FMSS are not recognized in the seed policy instruments. However, the intention is for FMSS to be formally acknowledged once the country has a national seed policy.
15. Adequacy of seed inspection services	0.00	There are no seed inspectors in the CAR.
16. Adequacy of government efforts to combat counterfeit seed	2.00	Chapter II of the seed law, <i>Loi N°15/001 du 8 Decembre 2015</i> , outlines penalties and sanctions against those found guilty of adulterating certified seed or distribution of seeds without approval. The punishment includes imprisonment for one-to-four months and a fine of between 100,000 to 2,000,000 CFA.
17. Adequacy of national seed trade association	0.00	There is no national seed trade association in the CAR.
FINAL SSPI SCORE	2.21	Highest scores: in ECCAS: Rwanda, 6.05 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

The Central African Republic ranked 188th out of 189 countries on the Human Development Index in 2021. Almost 80% of the population is vulnerable to chronic poverty, and 68.8% of them live below the poverty line. Reflecting the country's low level of agricultural development, the seed industry in CAR is in the nascent stage of development. As such, the priorities for developing the industry across the whole sector. The most urgent priorities, identified by local SSPI experts, include:

- Development of a national seed policy to outline the overall strategy for seed sector development in the country.
- Strengthening the national breeding programs to develop and maintain varieties suitable to local agroecologies and making them available to seed producers.
- Encouraging private sector participation in the seed sector through the creation of an enabling environment for a competitive seed system.

Data for the SSPI Central African Republic report was collected by:

Jean Bedel Mandago

seed industry expert

Seed Sector Performance Index (SSPI) Country Brief – CHAD

OVERVIEW OF THE SEED SECTOR

The seed sector in Chad is in the early growth stage. Chad's national seed system is dominated by the informal system. In 2008, the ministry in charge of agriculture, in collaboration with other stakeholders, set out to improve the structure and functioning of the seed sector. The process led to the formulation of a National Seed Policy in 2015. Since then, the sector has experienced rapid growth. The two main institutions in the formal sector are the *Comité National des Semences et Plants* (CNSP), which oversees variety release and registration, and *Instituts Nationaux de Recherche Agricole* (ITRAD), the National Agricultural Research Institute. The four priority crops, as identified by the local seed sector experts, are sorghum, millet, groundnut, and sesame. Combined, these four crops account for 73% of the area harvested to field crops. Chad is a member of the Economic Community for Central African States (ECCAS) and the Economic Community of West African States (ECOWAS).

Overall country score (out of 10):		4.04
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Millet	1,194,000	25%
Sorghum	1,144,000	24%
Groundnut	762,640	16%
Sesame	339,000	8%
Total		73%
Total arable land:		5.3 million ha
Population:		18,523,165
Number of farming households:		no data available
Contribution of agriculture to GDP:		22.6%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	4.00	Researchers apply for variety release and registration to the <i>Comité National des Semences et Plants</i> (CNSP), whose sub-committee in charge of adding new varieties to the variety release catalogue conducts Distinctness, Uniformity, and Stability (DUS) and Value for Cultivation and Use (VCU) in multi-location trials for two seasons. The sub-committee submits the results to the CNSP for approval. The average length of the variety release process is 18 months.
2. Number of varieties released in last 3 years	1.14	Between 2020 and 2022, no varieties of the four crops were released. In fact, breeders have not submitted varieties for registration since the promulgation of <i>Loi 016/PR/2016</i> on seeds and seedlings of plant origin. However, several varieties have undergone adaptation trials in different agro-ecologies.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	3.08	As of 2023, ITRAD had two active breeders for the four priority crops: one for sorghum, and one for sesame. Seed industry experts rated satisfaction with the number of breeders as 0.25/10, reflecting that the number of active breeders is exceedingly small. Seed industry experts rated the adequacy of funding for the breeding programs as 4.75/10, pointing to insufficient funding for research activities. The adequacy of research infrastructure received a rating of 4.00/10, because infrastructure is unevenly distributed among the research centers and is dilapidated. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	0.00	Chad has no national institute to coordinate activities related to PGRFA. The management of PGRFA is supposed to be shared by different institutions; however, none of them actively manages PGRFA now.
5. Adequacy of Early Generation Seed (EGS)	5.67	The main source of EGS in Chad is ITRAD. Seed industry experts rated the adequacy of the quantity of EGS supplied 5/10, and pointed to the fact that requests for EGS are often untimely, making it hard for ITRAD to always supply the required quantities. The quality of EGS supplied received a rating of 6/10, reflecting that plots of pre-basic and basic seed are checked systematically by the official seed control and certification services. The same service also supervises the packaging and labeling of the EGS. Seed industry experts rated the timeliness of delivery of EGSs 6/10, based on the fact that entities that have an agreement with breeding programs receive their EGS on time. Crop-specific ratings for this indicator are available in Appendix 1.
6. Availability of crop varietal choice to farmers	2.13	In 2022, the number of varieties available on the market for the four crops was 17: four sorghum varieties, four millet varieties, seven groundnut varieties, and two sesame varieties.
7. Utilization of quality commercial seed by farmers	2.73	In 2022, seed production for the four crops was: 138 MT of sorghum seed, 174 MT of millet seed, 138 MT of groundnut seed, and 21 MT of sesame seed. Those volumes met 30% of the national requirements for sorghum seed, 46% for millet seed, 6% for groundnut seed, and 3% for sesame seed.
8. Clarity and enforcement of seed import/export regulations	6.00	Importers and exporters largely adhere to regulatory mandates, but the seed import and export procedures and regulations are not clear to all seed companies and enforcement agencies, resulting in inconsistent enforcement.
9. Adequacy of agro-dealer networks	4.00	In 2022, Chad had ten agro-dealers. They were concentrated in the capital city, with minimal presence in the rural areas.
10. Availability of seed in small package sizes	0.00	None of the seed of the four priority crops is sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	9.00	The seed sector in Chad is guided by <i>Politique Nationale Semencière 2015</i> . This recent and comprehensive policy is operationalized through <i>Loi 016/PR/2016</i> with general and specific technical regulations.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	Chad is a member of ECOWAS. All seed policy instruments that were developed after 2015 have been adapted to the ECOWAS harmonized seed regulations.
13. Status of national biosafety frameworks for plant breeding and seed production	7.00	Chad has a national biosafety framework. It was developed in 2008 with support from the United Nations Environmental Program (UNEP). It covers agriculture, health, wildlife, and the environment.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	4.00	FMSS are recognized in Chad; specifically, the <i>Loi 016/PR/2016</i> on seeds and seedlings of plant origin includes mention of local or traditional seeds. While FMSSs are recognized on paper, the low score reflects that, in practice, FMSSs have received little support.
15. Adequacy of seed inspection services	6.00	In 2022, Chad had 32 public seed inspectors. However, more than 90% of the inspectors are concentrated in the capital city and cannot conduct inspections around the country on time.
16. Adequacy of government efforts to combat counterfeit seed	6.00	Combating the production and sale of counterfeit seed is guided by <i>Loi 016/PR/2016</i> . Measures used to control counterfeit seeds are conformity checks for institutional seed markets and the use of labels on seed packages issued by the official inspection and certification service. Penalties for infringement are three months-to-two years imprisonment and fines ranging from 50,000 to 5,000,000 CFA francs.
17. Adequacy of national seed trade association	0.00	Chad does not have a national seed trade association.
FINAL SSPI SCORE	4.04	Highest scores: in ECCAS: Rwanda, 6.05 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Chad's economy has faced several challenges in recent years, including a contraction, which has impacted poverty reduction and development efforts since 2015. The World Bank highlights the need to develop stronger agricultural and livestock value chains as part of the solution for economic diversification, greater food security, and sustainable growth. Despite considerable progress in creating the requisite policy and regulatory instruments for seed sector reform, the agricultural sector lacks sufficient investment to eliminate existing bottlenecks and promote a vibrant, private sector-led industry. For the seed sector to address the existing challenges and to grow, the following priority issues need to be addressed:

- Strengthening the national breeding programs to develop and maintain varieties to be commercialized by seed producers.
- Improving the level of awareness and understanding of the variety release and registration process among public and private breeders.
- Increasing efforts to raise awareness among farmers on the importance and benefits of certified seed.
- Establishing a national seed trade association of champion sector reform.

Data for the SSPI Chad report was collected by:

Mahamat Nour Maï

Comité National des Semences et Plants (CNSP), Chad

Seed Sector Performance Index (SSPI) Country Brief – COMOROS

OVERVIEW OF THE SEED SECTOR

The Comoros' seed sector is in the nascent stage of development. The country does not have a national seed legislation. Seed production and marketing are mostly informal and conducted by a few agricultural cooperatives, individual seed producers, and non-governmental organizations. The key seed sector institutions include the *Institut National de Recherche pour l'Agriculture, la Pêche et l'Environnement* (INRAPE), in charge of variety release, registration, and seed certification, and the *Direction Nationale Stratégique de l'Agriculture et de l'Élevage* (DNSAE)/National Strategic Directorate of Agriculture and Livestock, in charge of research and variety development. The four priority crops, as identified by local SSPI experts, are maize, rice, groundnut, and pigeon pea, which, combined, account for 58.1% of area harvested to field crops. The country is a member of the African Intellectual Property Organization (since 2013), the Common Market for Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC) (since 2017).

Overall country score
(out of 10):

2.14

Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	10,936	37%
Groundnut	5,478	19%
Pigeon pea	516	2%
Rice	17	0.1%
Total		58.1%



Total arable land:

0.65 million ha



Population:

888,378



Number of farming households:

494,190



Contribution of agriculture to GDP:

50%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	4.00	Variety release and development are conducted jointly by INRAPE and DNSAE, who conduct multi-local trials in greenhouses and open fields for two growing seasons. Findings are submitted to INRAPE. If a variety is recommended for registration in the National Catalogue, INRAPE submits the necessary paperwork for the signature of the Minister of Agriculture.
2. Number of varieties released in last 3 years	0.00	During the 2020-2022 period, no varieties of the four crops were released, although there are several ongoing trials.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	1.83	As of 2023, DNSAE had 6 active breeders for the four crops, all of whom worked on maize. Due to their small numbers and focus on a single crop, seed industry experts rated the adequacy of the number of breeders at 1.75/10. The adequacy of funding was also rated 1.75/10, as the program lacks adequate funding to carry out its work. The adequacy of the research infrastructure was rated slightly higher at 1.83/10, signaling that equipment for breeding was woefully inadequate to meet the needs of the plant breeders. Crop specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	4.00	INRAPE is the coordinator for activities related to PGRFA in The Comoros. Currently, the institution is characterizing the genetic materials it has collected.
5. Adequacy of Early Generation Seed (EGS)	2.33	The main source of EGS in The Comoros is INRAPE. The adequacy of the quantity of EGS supplied was rated 3/10, as EGS production is just emerging in the nascent formal seed sector. The quality of EGS supplied was rated 2/10, because private and public multipliers are just being established. The timeliness of delivery of EGS was rated 2/10 as EGS production is just emerging in the nascent formal seed sector. Crop specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	0.00	In 2022, no varieties were available on the market for the four priority crops.
7. Utilization of quality commercial seed by farmers	MD	No data reported.
8. Clarity and enforcement of seed import/export regulations	4.00	In 2022, no imports or exports were reported for the four priority crops. The Comoros primarily imports seed for fruits and vegetables; the imports generally comply with the established import requirements.
9. Adequacy of agro-dealer networks	4.00	In 2022, The Comoros had five agro-dealers, based mostly around the capital with no presence in rural areas.
10. Availability of seed in small package sizes	MD	No data reported.
11. Status of national seed policy instruments	3.00	The country has no seed legislation yet, but the government has been developing a national regulatory framework.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	3.00	The Comoros is a member of SADC and COMESA, and the government has been writing a national seed law that will align with regional instruments.
13. Status of national biosafety frameworks for plant breeding and seed production	4.00	Biosafety is regulated by the Department of Quality Control and Hygiene. However, effective regulation is constrained by a lack of qualified personnel and facilities.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not recognized in The Comoros.
15. Adequacy of seed inspection services	0.00	The Comoros has no public seed inspectors. INRAPE conducts quality control during variety development and for seed imports.
16. Adequacy of government efforts to combat counterfeit seed	2.00	The government is putting in place a system to combat counterfeit seed.
17. Adequacy of national seed trade association	0.00	The Comoros has no national seed association.
FINAL SSPI SCORE	2.14	Highest scores: in COMESA: Zambia, 7.89 in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Since the seed sector in the Comoros is in the nascent stage of development, it is facing a number of cross-cutting challenges. Of the numerous challenges, the following are the most urgent priorities identified by the SSPI study:

- Formulating legislation and regulations to guide the formal seed sector in The Comoros. The instruments should be harmonized with the COMESA and SADC regional regulations and should address all the key aspects of the seed sector.
- Funding INRAPE to conduct research, variety development, and maintenance for the varieties of key crops in the country.
- Training the various categories of seed producers in seed production and marketing to build their capacity to be key actors in the seed sector.

Data for the SSPI The Comoros report was collected by:

Dr. Moilim Fahad

Head of Variety Registration and Release at Institut National de Recherche pour l'Agriculture, la Pêche et l'Environnement (INRAPE).

Seed Sector Performance Index (SSPI) Country Brief – THE REPUBLIC OF THE CONGO

OVERVIEW OF THE SEED SECTOR

The formal seed sector in The Republic of the Congo (also known as Congo-Brazzaville) is in the nascent stage of development. The key government institutions in the seed sector are *L'Institut National de Recherche Agronomique*, (IRA) which is responsible for research and variety development, and *Centre National des Semences Améliorées*, (CNSA) which is responsible for seed inspection and certification. The national seed policy instruments have not been adopted by Parliament and hence are not operational. With no formal regulation, the seed sector remains predominantly informal and unregulated. There are no private seed companies in the country, but there are efforts to support agricultural cooperatives that can serve as seed multipliers under a formal structure. The four priority crops, as identified by the local experts for the SSPI report, are cassava, maize, groundnut, and banana. Combined, these four crops account for 83% of area harvested to field crops. The Republic of the Congo is a member of the Economic Community of Central African States Community (ECCAS).

Overall country score (out of 10):		1.97
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Cassava	155,799	58%
Groundnut	48,232	18%
Maize	13,000	5%
Banana	12,515	2%
Total		83%
 Total arable land:		0.55 million ha
 Population:		5,970.42
 Number of farming households:		450,075
 Contribution of agriculture to GDP:		17.44%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	0.00	There is no system for variety release and registration in The Republic of the Congo.
2. Number of varieties released in last 3 years	0.00	During the 2020-2022 period, no varieties of the four crops were released.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	2.67	As of 2023, IRA had three active breeders for the four crops: one for cassava, one for maize, and one for groundnut. Seed industry experts rated the satisfaction with the number of active breeders as 0.75/10. The small number is due to retirements, without any replacements, and several breeders moving to other jobs in the Ministry of Agriculture. Seed industry experts rated the satisfaction with the funding for the breeding programs as 3.75/10 because the funding allocated to agricultural research is very low. Seed industry experts rated the satisfaction with the basic infrastructure for research as 3.5/10. However, for cassava, the biotechnology laboratories in Brazzaville and Loudima have equipment for cassava sanitation, but the facilities are insufficient. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	4.00	Plant genetic conservation, documentation, and utilization are the mandate of the CNSA. However, CNSA does not have a gene bank. The Minister of Agriculture has appointed a national coordinator; however, their activities are limited to participation in international meetings. There are no noticeable activities at the national level.
5. Adequacy of Early Generation Seed (EGS)	2.00	IRA is the main source of EGS for the four crops. The adequacy of the quantity of EGS was rated 2/10, reflecting that severe shortage of EGS for groundnut and moderate availability for maize, banana, and cassava. The quality of EGS was rated 2/10, justified largely by the absence of a seed quality control system. The timeliness of EGS delivery was rated 2/10, as there are major delays in meeting orders. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.78	In 2022, the number of varieties available on the market for the four crops was seven: four maize varieties and three groundnut varieties. There were no official varieties for banana and cassava.
7. Utilization of quality commercial seed by farmers	0.07	In 2022, seed production for the four priority crops was 5.5 MT of banana planting material. This translates to 33% of the national banana seed requirement. There was no meaningful production maize, groundnut, and cassava seed.
8. Clarity and enforcement of seed import/export regulations	5.00	Seed importation in The Republic of the Congo is monitored closely. All importers are required to obtain an import permit and the imports must undergo phytosanitary inspection at the border point of entry. In 2022, there were no seed imports for the four crops.
9. Adequacy of agro-dealer networks	5.00	In 2022, the Republic of the Congo had 307 agro-dealers. Agricultural input distributors are mainly located in the large cities of Brazzaville and Pointe Noire. Their presence is weaker in smaller towns, such as Dolisie and N'kayi.
10. Availability of seed in small package sizes	0.00	None of the maize or groundnut seed is sold in small packages of 2kg or less.
11. Status of national seed policy instruments	5.00	The National Seed Policy and the National Seed Strategy have been validated, but they are yet to be passed by Parliament. The seed law and specific technical regulations for maize, cassava, and soya bean have been developed but are yet to be validated.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	6.00	The Republic of the Congo is a member of the ECCAS and the Economic and Monetary Community of Central Africa (CEMAC). CEMAC has a regional program on seed sector development that aims to formalize collaboration between member countries and harmonization of seed policies and regulations. The Republic of the Congo's seed policy instruments are aligned to the provisions of CEMAC.
13. Status of national biosafety frameworks for plant breeding and seed production	2.00	The National Biosafety Framework which includes the aspects related to agricultural biotechnology has been drafted but has not been adopted.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not recognized in the policy instruments.
15. Adequacy of seed inspection services	0.00	There are no seed inspectors in the country.
16. Adequacy of government efforts to combat counterfeit seed	0.00	The government is not implementing any measures to address the challenge of counterfeit seed in the country.
17. Adequacy of national seed trade association	0.00	There is no national seed trade association in the Republic of the Congo.
FINAL SSPI SCORE	1.97	Highest scores: in ECCAS: Rwanda, 6.05 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

The Republic of the Congo is witnessing a gradual economic recovery, with a real GDP growth of 3.2% in 2022, bolstered by both the energy (oil) and other sectors. Despite this, economic diversification remains a critical challenge due to the country's heavy reliance on oil revenues and the underdevelopment of its agricultural sector. With only a small fraction of arable land under cultivation, the agriculture sector has substantial potential for expansion, which will improve food security and reduce poverty. The seed sector is nascent and needs support through policy reform and public investment across the system. Some priority areas that need urgent attention are:

- Approval and implementation of the national seed policy and national seed strategy.
- Developing the necessary legal and regulatory instruments to regulate the actors and key activities in the formal seed sector.
- Building the capacity of all key actors in the industry, including seed producers, seed inspection and certification officers, and breeders, to undertake their respective mandates across the seed value chain, as specified in the national seed policy.

Data for the SSPI The Republic of the Congo report was collected by:

Dr. Guy Romain Aimé Kombo

Director, National Center for Improved Seeds in the Ministry of Agriculture, Livestock and Fisheries.

Seed Sector Performance Index (SSPI) Country Brief – CÔTE D'IVOIRE

OVERVIEW OF THE SEED SECTOR

Côte d'Ivoire's formal seed sector focuses on perennial and annual food crops. While the system for perennial crops is well-structured, the system for annual food crops is in the early growth stage of development. The *Direction des Semences Engrais et Produits Assimilés* oversees seed inspection and certification. The *Laboratoire National d'Analyse des Semences* conducts laboratory testing of seeds, while the *Centre National de Recherche Agronomique* (CNRA) is the national agricultural research institution. These institutions are all under the *Ministère d'Etat, Ministère de l'Agriculture et du Développement Rural* (MEMINADER). The four priority crops, as identified by local seed sector experts, are rice, maize, yam, and cassava. Combined, they account for 90% of the area harvested to field crops. Seed for rice, maize, and cassava is produced by private seed producers, and the planting material for yam is produced by research institutions. Cote d'Ivoire is a member of Economic Community of West African States (ECOWAS).

Overall country score (out of 10):		4.32
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	1,007,849	34%
Rice	664,880	23%
Yam	544,865	18%
Cassava	449,414	15%
Total		90%
Total arable land:		3.5 million ha
Population:		29,344,847
Number of farming households:		1,655,529
Contribution of agriculture to GDP:		16.72%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	5.00	In Cote d'Ivoire, the process of variety release and registration is clearly defined in the technical guides. The standard length of the variety release process is 24 months.
2. Number of varieties released in last 3 years	2.14	During the 2020-2022 period, nine varieties of the four priority crops were released: four maize varieties and five yam varieties. The low score reflects that the number of released varieties falls short of the current needs of the seed sector.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	5.00	As of 2023, the CNRA had eight active breeders for the four priority crops: three for rice, three for maize, two for yam, and three for cassava. The adequacy of the number of breeders was rated 3/10, signaling that the current number does not meet the needs of the country's seed sector. The adequacy of funding for breeding programs was rated 5/10, indicating the funding for research activities is relatively low. The adequacy of research infrastructure was rated 7/10, showing that, while basic infrastructure is in place, it needs upgrading. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	7.00	The CNRA's mandate includes the conservation and utilization of plant genetic resources in Cote d'Ivoire. It maintains field gene banks and in-vitro cold storage for accessions that are also used for research.
5. Adequacy of Early Generation Seed (EGS)	6.33	The main sources of EGS in Cote d'Ivoire are the CNRA and AfricaRice. The adequacy of the quantity of EGS supplied was rated 5/10, reflecting that the quantities of EGS produced by the CNRA do not meet current needs due to insufficient infrastructure and poor demand forecasting. The quality of EGS was rated 7/10, as the EGS supplied to seed companies and seed producers are certified by the <i>Ministère d'Etat, Ministère de l'Agriculture et du Développement Rural</i> (MEMINADER) and generally meet the required quality standards. The timeliness of delivery of EGS was rated 7/10, reflecting that most orders were delivered on time. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	3.69	In 2022, the number of varieties available on the market for the four priority crops was 39: 13 rice varieties, 11 maize varieties, five yam varieties, and ten cassava varieties.
7. Utilization of quality commercial seed by farmers	0.23	In 2022, reported production volumes were 2,112 MT of rice seed. Adjusted for imports and exports (Indicator 8 below), the production volumes meet 9% of national seed requirement for rice seed. No certified seeds were produced for the other three crops.
8. Clarity and enforcement of seed import/export regulations	6.00	Seed import and export procedures and regulations are clear to both seed companies and regulatory bodies. In 2022, 787 MT of rice seed and 557 MT of maize seed were imported, and 27 MT of rice seed and 4,337 MT of maize seed were exported.
9. Adequacy of agro-dealer networks	7.00	In 2022, Cote d'Ivoire had 25 large agro-dealers and many small agro-dealers throughout the country (no official number available). Most distribution points were located near rural production areas.
10. Availability of seed in small package sizes	2.50	Of the four priority crops, 25% of rice seed and 80% of maize seed was sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	7.00	Cote d'Ivoire's seed sector is guided by the <i>Politique Semencière Nationale of 2009</i> . It is operationalized through two decrees and a Ministerial Order.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	7.00	The ECOWAS Harmonized Regulations were published in the Official Gazette of Côte d'Ivoire on 15 April 2013. Subsequently, Decree N° 2013-678 of October 2, 2013, established the National Catalog of Plant Species and Varieties cultivated in Côte d'Ivoire, and Decree N° 2013-679 of October 2, 2013, established the National Seed Committee and defined its functions. Ministerial Order N° 25/MINAGRI/MPMEF/MPMB of 19 June 2014 defined the list of acts and activities that the Ministry of Agriculture should carry out. However, some requirements for complete harmonization, such as the establishment of a support fund for the seed sector, are yet to be implemented.
13. Status of national biosafety frameworks for plant breeding and seed production	6.00	Biosafety in Cote d'Ivoire is regulated by <i>Loi n°2016-553 du 26 juillet 2016</i> . However, the <i>Commission Nationale de Biosécurité et de Biosûreté</i> (CNBIOS) and <i>Observatoire National de Biosécurité</i> (ONBIOS) are not yet operational. In the interim, the <i>Ministère de l'Environnement</i> assumes the role of the Permanent Secretariat. It receives and registers applications and sets ad hoc inter-ministerial commissions to assess and manage risk.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not recognized in national seed policy, even though about 80% of seeds used are farmer managed. Though FMSS are not officially recognized by the government, they are promoted by organizations working in the country, such as the FAO.
15. Adequacy of seed inspection services	3.00	In 2022, Cote d'Ivoire had 43 public seed inspectors. However, inspectors are under-resourced and lack motivation. Recent retirements have further decreased the already low number of inspectors in some key areas.
16. Adequacy of government efforts to combat counterfeit seed	3.00	Combating the production and sale of counterfeit seed is aided by <i>Loi N°88-650 du 07/07/88</i> , which establishes punitive measures for offenses relating to trade in agricultural products, amended by <i>Loi N° 89-521 du 11/05/89</i> et la <i>Loi N° 63-301 du 26/06/1963</i> , related to combatting fraud. Measures against counterfeit seeds include the use of secure packaging labels and phytosanitary control of seeds. Penalties for infringement include imprisonment of 5-10 years and fines of 1-5 million CFA francs.

Indicator	Score (out of 10)	Description of performance
17. Adequacy of national seed trade association	2.50	The <i>Association Nationale des Semenciers de Côte d'Ivoire</i> (ANASEMCI) represents private seed sector entities in Cote d'Ivoire. ANASEMCI received an overall rating of 2.5/10, comprised of the following sub-scores: activities on important seed sector issues – 3/10, providing value to members -3/10, ability to mobilize resources - 3/10, advocacy on seed sector issues – 2/10, managerial ability - 2/10, governance, and democracy - 2/10.
FINAL SSPI SCORE	4.32	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Côte d'Ivoire's seed sector is poised for growth. The sector is marked by a strong public sector presence and limited but growing private sector activity in seed production and marketing. Despite challenges, there is significant potential for development, as evidenced by the growing interest from local and multinational seed companies. With a conducive environment to grow a range of crops and a history of innovative breeding, the sector could benefit from increased public-private collaboration. For the seed sector to sustain the current growth momentum, the following priority issues need to be addressed:

- Improving CNRA's capacity to produce quality EGS for commercial seed production by increasing funding for breeders as well as infrastructure for breeding, variety development, and maintenance.
- Enhancing the capacity of the Directorate of Seeds under MEMINADER in all aspects of seed quality control, including field and laboratory seed inspection and seed certification according to the national and ECOWAS standards.
- Raising awareness about the importance of certified seed among farmers to increase adoption rates.

Data for the SSPI Cote d'Ivoire report was collected by:

Ya née Silue Naminata

Direction des Semences Engrais et Produits Assimilés, Cote d'Ivoire.

Seed Sector Performance Index (SSPI) Country Brief – DEMOCRATIC REPUBLIC OF THE CONGO

OVERVIEW OF THE SEED SECTOR

The seed sector in the Democratic Republic of the Congo (DRC) is in the emerging stage of development. It has minimal legal and regulatory frameworks to guide its activities. The *Service National de Semences* (SENASEM) is mandated to coordinate seed sector activities. The Technical Regulations for the Production, Control, and Certification of Seeds guide quality control in the seed sector. Seed producers comprise local and foreign seed companies, agri-multipliers, farmers' organizations, and seed cooperatives. The *Institut National pour l'Etude et Recherche Agronomique* (INERA) is the national agricultural research institution (NARI) in charge of research and variety development. The four priority crops identified by the local seed sector experts are cassava, maize, rice, and bean. Combined, these four crops account for 95% of area harvested to field crops. The Democratic Republic of the Congo is a member of the Common Market for Eastern and Southern Africa (COMESA), the Economic Community for Central African States (ECCAS) and the Southern African Development Community (SADC).

Overall country score
(out of 10):

3.81

Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Cassava	2,176.153	50%
Maize	1,403.226	25%
Rice	497.023	16%
Bean	277.857	4%
Total		95%



Total arable land:

13.68 million ha



Population:

111,859,928



Number of farming households:

15,117,804



Contribution of agriculture to GDP:

17.44%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	5.00	The variety release process is under the mandate of the <i>Commission de la technologie pour l'admission au catalogue</i> (CTAC) under SENASEM. Candidate varieties must undergo both Distinctness, Uniformity, and Stability (DUS) and Value for Cultivation and Use (VCU) tests. Approved varieties are added to the Catalogue of Plant Varieties of Species. The Catalogue, which should be updated every three years, was last updated in 2019. In the interim years, SENASEM produces a temporary list.
2. Number of varieties released in last 3 years	3.71	During the 2020-2022 period, 20 varieties of the four crops were released: ten cassava varieties, three maize varieties, and seven rice varieties. Nineteen out of the 20 varieties were released in 2022, following approval by the Head of the CTAC. One of the main challenges with variety release is a lack of funding to print the Catalogue.

Indicator	Score (out of 10)	Description of performance
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	3.67	As of 2023, INERA had 18 active breeders for the four crops: seven for cassava, four for maize, three for rice, and four for bean. The adequacy of the number of breeders was rated 5/10. The adequacy of funding for breeding programs was rated 3/10, reflecting a lack of sufficient government funding. The quality of basic research infrastructure was also rated 3/10, because INERA lacks adequate seed laboratories, seed storage facilities, and related equipment. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	5.00	INERA is responsible for activities related to the management of PGRFA activities. However, funding for these activities is inadequate.
5. Adequacy of Early Generation Seed (EGS)	4.33	INERA is the main source of EGS for all four crops. Additional sources of EGS include the International Institute for Tropical Agriculture (IITA) for cassava, the University of Lubumbashi (UNILU) for maize, Africa Rice for rice, and CIAT for beans. The adequacy of the quantity of EGS supplied was rated 5/10. The quality of EGS produced was rated 3/10. The timeliness of delivery of the EGS was rated 5/10. The low ratings reflect that INERA is unable to adhere to high standards of seed quality control and has insufficient capacity for seed production, maintenance, and storage. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	6.37	In 2022, the number of varieties available on the market for the four crops was 77: 41 maize varieties, 20 rice varieties, and 16 bean varieties.
7. Utilization of quality commercial seed by farmers	0.76	In 2022, the volume of seed produced for the three seed-propagated crops was 1,807 MT of maize seed, 430 MT of rice seed, and 311 MT of bean seed. Adjusted for imports and exports (Indicator 8 below), the volumes of seed meet 19% of national seed requirement for maize, 5% of the requirement for rice, and 13% of the requirement for bean.
8. Clarity and enforcement of seed import/export regulations	5.00	The importation guidelines for seed stipulate that importers must have a phytosanitary certificate and a tax-exemption certificate and that the imported seed be checked by the quarantine service and tested by the seed laboratory. However, these procedures are rarely followed. In 2022, 2,106 MT of maize seed, 108.7 MT of rice seed, and 240.5 MT of bean seed were imported.
9. Adequacy of agro-dealer networks	3.00	In 2022, the DRC had 279 agro-dealers. The concept of agro-dealers is new in the country, and most agro-dealers are in the eastern and southern provinces of the country.
10. Availability of seed in small package sizes	2.80	Of the four priority crops, 28% of rice seed, 26% maize seed, and 31% of millet seed were sold in small packages of 2kg or less.
11. Status of national seed policy instruments	3.00	There is no seed law in the DRC. A draft Seed Bill is before Parliament. The other instruments include <i>L'arrêté ministériel n°042/CAB/MIN/AGRI/06</i> , which is the National Seed policy and <i>L'arrêté ministériel n°003 du 1990</i> , a decree establishing the SENASEM.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	5.00	The DRC is a member of the Common Market for Eastern and Southern Africa (COMESA), the Economic Community of Central African States (ECCAS), the East African Community (EAC), and the Southern African Development Community (SADC). In the absence of a seed law, the country has harmonized the local seed instruments with the relevant regional seed instruments. However, the DRC has started implementing a roadmap towards harmonization with the COMESA Seed Regulations. The country also intends to register some of the national varieties in the COMESA and SADC regional catalogues, while also applying similar certification standards at home.
13. Status of national biosafety frameworks for plant breeding and seed production	7.00	The mandates of the <i>Conseil National de Semences</i> (CONASEM) and <i>Conseil Provincial de Semences</i> (COPROSEM) include forum for consultations around national biosafety. However, currently these entities are only functional in the provinces of North Kivu, South Kivu, Haut-Katanga, and Kasai Oriental.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	1.00	To date FMSS are recognized only on paper, since the DRC's seed policy instruments are still in draft form. Nevertheless, development partners and NGOs support activities related to FMSS.
15. Adequacy of seed inspection services	5.00	In 2022, there were 105 public seed inspectors under SENASEM. The numbers are satisfactory, but there is an urgent need to increase the resources available for seed inspection.
16. Adequacy of government efforts to combat counterfeit seed	3.00	Article 79 in the draft Seed Bill prescribes penalties for individuals who engage in the production and sale of counterfeit seeds. However, government efforts to address this challenge are inadequate and the prevalence of counterfeit seed is high in the country.

Indicator	Score (out of 10)	Description of performance
17. Adequacy of national seed trade association	1.17	The <i>Union Nationale des Producteurs Agricoles du Congo</i> (UNAGRICO) is the national seed association in the DRC. It is not highly active in seed sector issues in the country and is little known in the provinces. Seed industry experts' overall rating of UNAGRICO was 1.17/10 and comprised of the following sub-scores: activity on important seed sector issues, providing value to members, managerial capacity, democracy in elections and governance, and ability to mobilize resources were all rated 1/10, and effectiveness in advocacy was rated 2/10. Several provinces that play a more prominent role in seed production have established provincial seed associations. For example, the <i>Association de Producteurs et de Distributeurs d'Intrants Agricoles du Congo</i> (APDIAC) in South Kivu, and the <i>Association de Producteurs Semenciers du Katanga</i> (APSKA) in Haut-Katanga are highly active in their respective regions. Further, the seed producers in the eastern part of the country have formed an alternative national association called <i>Union Nationale de Producteurs de Semences du Congo</i> (UNAPSCO), which is based in North Kivu province.
FINAL SSPI SCORE	3.81	Highest scores: - in COMESA: Zambia, 7.89 - in ECCAS: Rwanda, 6.05 - in EAC: Tanzania, 7.25 - in SADC and Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Although agriculture in the Democratic Republic of the Congo (DRC) has enormous potential due to the country's vast arable land, abundant water, and diverse climatic conditions. However, the agriculture sector, including the seed sector, is underdeveloped and is dominated by subsistence farming. Commercial cultivation of food and cash crops is carried out on a small scale. The country's challenges are mainly due to prolonged political instability. Some of the key priorities for seed sector reform include:

- Finalizing and approving the Seed Policy.
- Approving the Seed Bill.
- Drafting ministerial decrees to implement the approved Seed Policy and Seed Law.
- Increasing financial and technical support to INERA to develop, produce, and maintain early-generation seed.
- Building the capacity of SENASEM at the national and provincial levels to implement its mandate of national quality control.
- Establishing and strengthening the agro-dealer network in provinces where it has minimal presence or does not currently exist.

Data for the SSPI Democratic Republic of Congo report was collected by:

André Wutezi Bofengo

Seed Inspector, Service National de Semences (SENASEM)

Seed Sector Performance Index (SSPI) Country Brief – DJIBOUTI

OVERVIEW OF THE SEED SECTOR

The agriculture sector in Djibouti is constrained by multiple structural challenges, chief among them a lack of fresh water. As a result, the country imports 90% of all its food. The seed sector in Djibouti is in the nascent stage of growth. In absence of a national seed policy, the sector is predominantly informal and unregulated. Despite the absence of national seed regulations, the government of Djibouti has ratified several international legal statutes related to seed production. The seed sector is overseen by the Department of Agriculture and Forests (DAF) in the Ministry of Agriculture. The four priority crops, as identified by the local seed sector experts, are tomato, onion, melon, and citrus. Combined, these four crops account for about 7% of area harvested to field crops. Djibouti is a member of the Common Market for Eastern and Southern Africa, (COMESA) and the Intergovernmental Authority on Development (IGAD).

Overall country score (out of 10):		1.35
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Tomato	2,200	3.4%
Onion	1,300	2%
Citrus	700	0.8%
Melon	320	0.5%
Total		6.7%
Total arable land:		0.0105 million ha
Population:		990,000
Number of farming households:		1,900
Contribution of agriculture to GDP:		3%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	0.00	Djibouti has no regulatory framework to govern the variety release and registration process. However, an agronomy and ecology laboratory has just been set up at the Center for Study and Research with financial support from the Directorate of Agriculture and Forestry. The lab is equipped to conduct seed quality tests, in particular purity testing, moisture meter testing, germination testing, and tetrazolium testing following the procedures of the International Seed Testing Association (ISTA).
2. Number of varieties released in last 3 years	0.00	There is no process for variety release in Djibouti.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	0.00	There are no breeders for the four crops in the country.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	0.00	There is no national institute or entity that manages plant genetic resources in the country.
5. Adequacy of Early Generation Seed (EGS)	0.00	There are no breeding programs for the four crops. All seed is imported.
6. Availability of crop varietal choice to farmers	1.14	In 2022, the number of varieties available on the market for the four crops was three: one tomato variety, one onion variety, and one melon variety.
7. Utilization of quality commercial seed by farmers	3.63	In 2022, seed production for the four crops was: three MT of tomato seed, one MT of onion seed, and one MT of melon seed. Adjusted for the imports below (Indicator 8), total available seed meets 55% of national seed requirement for tomato seed, 31% for onion seed, and 13% for melon seed.
8. Clarity and enforcement of seed import/export regulations	0.00	In the absence of a framework regulating the national seed sector, seed imports are not regulated. In 2022, the volume of seed imports was three MT of tomato seed, three MT of onion seed, and one MT of melon seed. The quality of imported seeds is not known and sometimes adaptation to local conditions is poor.
9. Adequacy of agro-dealer networks	4.00	In 2022, Djibouti had three agro-dealers. Though a small number, given the size of arable land in Djibouti, the score is appropriate.
10. Availability of seed in small package sizes	0.12	Of the four priority crops, only 1% of tomato seed, 2% of onion seed, and 1% of melon seed are sold in small packages of 2 kg or less. Most vegetable seed is sold to cooperatives in large packages, which then distribute smaller amounts of seed to individual smallholder farmers.
11. Status of national seed policy instruments	3.00	Djibouti does not have a national seed law or seed regulation. However, the country has ratified Law N° 77/AN/14 of 7th January 18, 2015, of the Nagoya Protocol, governing access to genetic resources and the fair and equitable sharing of benefits arising from their use relating to the Convention on Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	3.00	Djibouti is a member the Common Market for Eastern and Southern Africa (COMESA). The country has held several meetings related to the COMESA Seed Trade Harmonization Regulations, but it is yet to embark on the process of alignment.
13. Status of national biosafety frameworks for plant breeding and seed production	0.00	There is no national agricultural biosafety framework in Djibouti.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not recognized in Djibouti.
15. Adequacy of seed inspection services	1.00	In 2022, there were five public seed inspectors in Djibouti, all under the Department of Agriculture. Although the country is small, the five inspectors are nevertheless insufficient.
16. Adequacy of government efforts to combat counterfeit seed	7.00	The main measure undertaken by the government to combat the production and sale of counterfeit seed is to ensure strict adherence to the labelling of packages for seed imports. The measures are implemented primarily through customs officials at the border points of entry.
17. Adequacy of national seed trade association	0.00	Djibouti has no national seed trade association.
FINAL SSPI SCORE	1.35	Highest scores: in IGAD: Kenya, 7.13 in COMESA: Zambia, 7.89 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Djibouti's harsh climate, scarce water resources, and limited arable land present ongoing challenges to agricultural productivity. Though historically reliant on food imports, the country has embarked on initiatives towards self-sufficiency. Its seed sector is currently in the nascent stage of development and faces significant obstacles to progress. To address them will require reforms across the entire seed system. Some of the priorities include:

- Enactment of a national seed law and the implementing instruments to form the foundation for a functioning formal seed sector in the country.
- Development and implementation of a system for variety release and registration.
- Training of seed producers and government officials on various aspects related to seed quality control at the production, processing, storage, and certification stages.

Data for the SSPI Djibouti report was collected by:

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Seed Sector Performance Index (SSPI) Country Brief – EGYPT

OVERVIEW OF THE SEED SECTOR

The seed sector in Egypt is in the late growth stage of development. The country has a relatively advanced seed sector, the building blocks of which were established in 1924 for cotton seed. Certified seed is mostly produced and marketed by the private sector, which consists of both local and foreign seed companies. The government's role is limited to the production of cotton seed and strategic crops such as wheat, maize, and rice. The government's engagement in the seed business is mainly for price control for the benefit of farmers. The main government entities in the seed sector are the Central Agency for Seed Certification (CASC), responsible for all matters of seed control and certification, and the Agricultural Research Centre (ARC), responsible for breeding and variety development. The four priority crops, as identified by local seed sector experts, are wheat, rice, maize, and faba bean. Combined, these four crops account for 91% of area harvested to field crops. Egypt is a member of the Common Market for Eastern and Southern Africa (COMESA) and the Community of Sahel–Saharan States (CEN-SAD).

Overall country score (out of 10):		7.11
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Wheat	1,383,952	43%
Maize	500,000	28%
Rice	890,570	19%
Faba bean	49,777	1%
Total		91%
Total arable land:		3.077 million ha
Population:		109,546,720
Number of farming households:		22,890,000
Contribution of agriculture to GDP:		11.3%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	7.00	The variety release process is managed by the Agricultural Seed Crops Registration and Release Committee under the Ministry of Agriculture. CASC runs Distinctness, Uniformity, and Stability (DUS) tests for two years following the rules of the International Union for the Protection of New Varieties of Plants (UPOV). Tests for Value, Cultivation, and Use (VCU) are carried out by the Field Crop Research Institute. The Pathological Research Institute conducts disease evaluation, and the Plant Protection Research Institute conducts insect evaluation. According to CASC, the variety release process takes 24 months.
2. Number of varieties released in last 3 years	5.41	During the 2020 - 2022 period, 30 varieties were released for the four crops: 23 maize varieties, three faba bean varieties, three wheat varieties, and one rice variety.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	7.58	In 2022, the ARC employed 45 breeders for the four crops: 13 wheat, 16 rice, eight maize, and eight faba bean breeders. Additional breeders work in the private sector and universities. The adequacy of the number of breeders was rated 9/10. The adequacy of funding for breeding programs was rated 6.5/10, and the quality of research infrastructure was rated 7.25/10. Crop specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	10.0	The National Genebank collects, preserves, and documents samples of plants from the different regions of Egypt. In addition, it has retrieved Egyptian plant genetic material that was previously preserved in the International Gene Bank.
5. Adequacy of Early Generation Seed (EGS)	8.50	The main sources of EGS are the Field Crop Research Institute of the ARC, the Central Administration for Seed Production, and private seed companies. The adequacy of the quantity of EGS was rated 8.5/10. The quality of EGS was rated 9/10, reflecting the fact that seed may only be traded after undergoing field inspection and laboratory testing according to local and international quality standards. The timeliness of delivery of EGS was rated 8/10, as sufficient stocks of EGS are available before cultivation seasons. Crop specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	7.51	In 2022, the number of varieties available on the market for the four crops was 93: 65 maize varieties, eight rice varieties, 14 wheat varieties, and six faba bean varieties.
7. Utilization of quality commercial seed by farmers	6.36	In 2022 the reported volumes of production for the four priority crops were: 116,122 MT of wheat seed, 13,708 MT of rice seed, 17,983 MT of maize seed, and 1,893 MT of faba bean seed. Adjusted for imports and exports below (Indicator 8), the total available seed meets 61% of national seed requirement for wheat, 20% for maize, 88% for rice, and 55% for faba bean.
8. Clarity and enforcement of seed import/export regulations	8.00	An independent committee affiliated with the Ministry of Agriculture issues import and export approvals. In 2022, Egypt imported 1,278 MT of maize seed and exported 150 MT of the same. In contrast, the traded volumes for wheat, rice, and faba bean were each below 5 MT.
9. Adequacy of agro-dealer networks	7.00	In 2023, 4,500 entities that were licensed to trade seed in Egypt. The agro-dealers are located across all the 27 governorates in the country, with 95% based in rural areas.
10. Availability of seed in small package sizes	0.00	Informed by the volume of seed required for small-scale farmers in Egypt, the government has set the minimum package size for the four priority crops at 5kg. This means that none of the four priority crops was sold in small packages of 2 kg or less; while this results in a score of 0, it is important to note that the demand for such small seed packages for the four priority crops is lower in Egypt than in other African countries.
11. Status of national seed policy instruments	10.00	All important policy instruments are in place, including: • Agriculture Law N° 53 of 1966 which is being reviewed. • Ministerial Decree N° 368 of 1998 and its amendments - determine the criteria for laboratory examination of seeds. • Ministerial Decree N° 1550 of 1994 and its amendments - set guidelines for field inspections of seed production fields and criteria for acceptance and rejection of seed lots. • Ministerial Decree N° 82 of 1998 and its amendments - provide the protocol for registering agricultural crop varieties. • Ministerial decree N° 1733 of 2018 - on the adoption and implementation of the regulation of seed trading in the COMESA region.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	10.00	Ministerial Decree N° 1733 of 2018 approved the COMESA Seed Trade Harmonization Regulations of 2014, and it is currently in force.
13. Status of national biosafety frameworks for plant breeding and seed production	5.00	The Biosafety Law has been prepared and is being discussed by parliament. It has not yet been passed.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	5.00	FMSS are not recognized in the seed policy instruments. Government policy focuses on the use of seeds that have undergone the official approval processes of the government. Farmers are encouraged to use such seeds to increase crop production and productivity. However, some agricultural crop seeds produced under FMSS are approved for trading if they are examined in a laboratory and traded under the crop name and not the variety name.
15. Adequacy of seed inspection services	8.00	In 2023, the CASC employed 900 seed inspectors (550 male and 350 female). Egypt has no private seed inspectors. The CASC has 22 departments for seed testing and certification and 11 seed testing laboratories located throughout the country's governorates, and one central laboratory accredited by the International Seed Testing Association (ISTA).

Indicator	Score (out of 10)	Description of performance
16. Adequacy of government efforts to combat counterfeit seed	8.00	Ministerial Decree N° 829 of 2011 outlines the penalties for trading in counterfeit seed, which include a suspension of one's operating license for 6 months for a first offense, and permanent revoking of the license for repeat offenders. Counterfeit seeds are destroyed, or, in the case of imports, returned. Offenders may incur fines and may be liable to pay compensation, the amount of which depends on the extent of the damages as determined by the economic court.
17. Adequacy of national seed trade association	7.83	Egypt has several seed associations. The one rated by SSPI is the Egypt Association for the Seed Industry, which received an overall rating of 7.83/10. The score comprised of the following sub-scores: governance and democracy – 9/10, effectiveness in advocacy -8/10, proving value to members -8/10, managerial ability – 8/10, ability to mobilize resources -7/10, and activity on important seed sector issues -7/10.
FINAL SSPI SCORE	7.11	Highest scores: in COMESA: Zambia, 7.89 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Egypt is mostly desert; agricultural land comprises 4% of the total land area and is situated along the Nile¹⁷. Despite the low acreage, the agricultural food sector in Egypt accounts for 15-20% of the GDP. It employs nearly one third of the country's working population. The seed sector is relatively well developed. For the seed sector to sustain the current growth momentum, the following issues need to be addressed:

- The government should expand the area under cultivation for seed of approved varieties to increase the volume of certified seed produced in the country.
- The ARCs and the private sector, perhaps in collaboration with the CGIAR, should develop new varieties with high productivity and key features such as drought tolerance. In addition, private companies may source varieties from other countries and conduct adaptive trials to increase the number of suitable varieties available to farmers in the country.

Data collection for the SSPI Egypt report was by:

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Secretariat of Seed Registration Committee, Central Administration for Seed Testing and Certification (CASC).

¹⁷ <https://www.croptrust.org/pgafa-hub/crops-countries-and-genebanks/countries/egypt/> Accessed 19 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – ERITREA

OVERVIEW OF THE SEED SECTOR

The seed sector in Eritrea is in the nascent stage of development, dominated by the informal sector. The country has no registered private seed companies. The main player in the formal seed sector is the Ministry of Agriculture (MoA). Every year, the MoA contracts large farmers to produce certified seed. The most experienced among these farmers are contracted to produce early generation seed (EGS). Another important government entity is the National Agricultural Research Institute (NARI), which oversees research and variety development and produces EGS. The four priority crops, as identified by the local seed sector experts, are sorghum, wheat, barley, and millet. Combined, these four crops account for 79% of area harvested to field crops. Eritrea is a member of the Inter-governmental Authority on Development (IGAD) and the Common Market for Eastern and Southern Africa (COMESA).

Overall country score (out of 10):		3.64
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Sorghum	216,210	51%
Millet	68,074	14%
Barley	27,988	9%
Wheat	20,405	5%
Total		79%
Total arable land:		0.69 million ha
Population:		6,274,769
Number of farming households:		377,000
Contribution of agriculture to GDP:		24%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	6.00	The National Variety Release Committee (NVRC) was established in 2011. Its members include staff from the MoA and Hamelmalo Agricultural College (HAC). The NVRC uses the Technical Guidelines for the Release of Varieties and their Packages for Field Crops (2014) to approve crop varieties for release. The variety release guidelines stipulate that both Distinctness, Uniformity, and Stability (DUS) and Value for Cultivation and Use (VCU) tests need to be conducted. Approved varieties are added to the national variety list.
2. Number of varieties released in last 3 years	0.00	During the 2020-2022 period, no varieties were released for the four crops. However, eight varieties of wheat and two mutant lines of sorghum were identified as novel varieties and recommended for release. All the necessary data was sent to the NVRC for verification. The owners of the varieties are waiting for a response from the NVRC.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	4.00	As of 2023, the NARI had six active breeders for the four crops: one for sorghum, two for wheat, 2 for barley, and one for millet. The adequacy of the number of breeders was rated 3/10, reflecting that, while no varieties are being released, the breeders are actively maintaining existing varieties. The adequacy of funding for the breeding programs was rated 5/10, indicating that the current funding by the government is insufficient. The adequacy of infrastructure and equipment for breeding programs was rated 4/10, reflecting that, although there is adequate equipment, the breeding programs lack enough technicians to run the equipment. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	8.00	The Genetic Resources Division under the NARI is responsible for the collection, characterization, and conservation of plant genetic resources. To date the Unit has collected and maintains more than 6,000 accessions.
5. Adequacy of Early Generation Seed (EGS)	7.42	The NARI is the sole producer and supplier of EGS for the four crops in Eritrea. The adequacy of the quantity of EGS supplied was rated 6.75/10, indicating that the quantity produced from the available varieties is reasonably sufficient to meet the demand. The quality of the EGS supplied was rated 7.5/10, reflecting the fact that seed production is closely managed by the government. The timeliness of delivery of EGS was rated 8/10. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.78	In 2022, the number of varieties available on the market for the four crops was 12: one sorghum variety, six wheat varieties, three barley varieties, and two millet varieties.
7. Utilization of quality commercial seed by farmers	3.69	In 2022, the reported volumes of seed produced for the four crops were 19 MT of sorghum seed, 510 MT of wheat seed, 25 MT of barley seed, and 17 MT of millet seed. These volumes accounted for 38% of the national sorghum seed requirements, 51% of the national wheat seed requirements, 25% of the national barley seed requirements, and 34% of the national millet seed requirements.
8. Clarity and enforcement of seed import/export regulations	5.00	The process and documentation of the import and export of seed and seedling materials are clear. In 2023, the country did not import or export seed for the four main crops. However, in previous years, Eritrea imported hybrid maize seed from India. The import process was mostly managed by the Agricultural Extension Division and the process did not face any delays.
9. Adequacy of agro-dealer networks	0.00	There are no agro-dealers in Eritrea.
10. Availability of seed in small package sizes	0.00	None of the seeds of the four crops are sold in small packages of 2kg or less.
11. Status of national seed policy instruments	3.00	Eritrea's seed sector is guided by the National Seed Policy of 2022, which is partially implemented, and the Technical Guidelines for the Release of Varieties and their packages for field crops (2014), which are fully implemented.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	2.00	Eritrea is a member of COMESA. The process to harmonize the national seed policy with the COMESA Seed Trade Harmonization Regulations started in 2014 but it is yet to be concluded.
13. Status of national biosafety frameworks for plant breeding and seed production	1.00	The MoA recognizes the importance of agricultural biotechnology and plans to initiate a process leading to an appropriate framework for the country. At present, there is no national biosafety framework.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	5.00	The National Seed Policy recognizes FMSS; however, FMSS are not actively supported in the country.
15. Adequacy of seed inspection services	8.00	In 2022, there were 15 public seed inspectors in Eritrea, distributed among the headquarters as well as regional and sub-regional levels. This system allows seed inspection services to be provided on time.
16. Adequacy of government efforts to combat counterfeit seed	7.00	Eritrea does not face the threat of counterfeit seed because all aspects of seed production, including storage and distribution, are conducted under the close supervision of the MoA.
17. Adequacy of national seed trade association	0.00	There is no national seed trade association in Eritrea.
FINAL SSPI SCORE	3.64	Highest scores: in COMESA: Zambia, 7.89 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Agriculture in Eritrea, while showing some progress, faces several challenges. On the positive side, the government has taken steps towards improving food security and agricultural productivity, including revising the seed policy. However, progress in the agriculture sector is tempered by structural and environmental constraints. The seed sector in Eritrea is in the nascent stage of growth. There is a need for significant public sector investment in plant breeding and the creation and maintenance of an enabling environment for the private seed sector. Some key priorities include:

- Providing the necessary legislative and regulatory instruments to enable the growth of the seed sector.
- Encouraging the establishment of private seed companies and promoting their investment in seed production, processing, and marketing.
- Building the capacity of seed producers and government officers in seed quality control: seed producers need to build the necessary internal quality assurance measures, while government needs sufficient human resource and logistical capacity to conduct seed quality control.

Data for the SSPI Eritrea report was collected by:

Mussie Weldetsion

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Seed Sector Performance Index (SSPI) Country Brief – ESWATINI

OVERVIEW OF THE SEED SECTOR

The seed sector in Eswatini is in the early growth stage. Seed production in the country is carried out primarily by smallholder seed producers under community-based seed production arrangements. This mainly applies to open-pollinated varieties of maize and legumes, which are inspected and certified by the government. The bulk of hybrid maize seed is imported by seed companies. The main government players are the Department of Agricultural Research and Specialists Services (DARSS), which is responsible for breeding and variety development, the Seed Registrar's Office, which oversees variety registration and release, and the Seed Quality Control Services (SQCS), which is in charge of seed inspection and certification. The four priority crops, as identified by the local seed sector experts, are maize, bean, sweet potato, and groundnut. Combined, these four crops account for 91% of area harvested to field crops. Eswatini is a member of the Southern African Development Community (SADC) and the Common Market for Eastern and Southern Africa (COMESA).

Overall country score (out of 10):		6.15
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	16,135	83%
Groundnut	180	5%
Bean	365	2%
Sweet potato	364	1%
Total		91%
Total arable land:		0.177 million ha
Population:		1,130,043
Number of farming households:		148,559
Contribution of agriculture to GDP:		8.13%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	8.00	The country is implementing the SADC and COMESA variety release and registration processes, which require a variety to be released in two seasons. The Seeds and Plant Varieties Amendments Regulations 2019 is aligned to both SADC and COMESA regulations. The Seed Law was enacted in 2000. The average duration of variety release is 24 months.
2. Number of varieties released in last 3 years	5.29	During the 2020-2022 period, 31 varieties of the four priority crops were released: 13 maize varieties, seven bean varieties, six sweet potato varieties, and five groundnut varieties. Most of the maize and bean varieties were added to the national variety list from regional catalogs.

Indicator	Score (out of 10)	Description of performance
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	1.00	As of 2023, the DARS had no active breeders for any of the four crops in Eswatini. However, one breeder, who teaches Plant Breeding at the University of Eswatini, also evaluates the adaptability of cowpea to climate change. The adequacy of the number of breeders received an average rating of 1/10, reflecting that the country has no active breeders. The adequacy of funding for the NARIs was rated 3/10, reflecting that most of the funds are used to cover salaries with little left over for breeding work. Staff tend to engage in projects that are either regional or in collaboration with international agriculture research institutes. The adequacy of the basic research infrastructure was rated at 2/10, showing that the DARSS office and research facilities are outdated, and most of the vehicles and other machinery are not functional due to poor service or lack of spare parts. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	5.00	The Eswatini National Plant Genetic Resource Centre (NPGRC) is responsible for the management of PGRFA in the country. However, the NPGRC is extremely understaffed: since its establishment in 1993, the center has operated with one professional staff member, whose role is to coordinate and implement all PGRFA activities in the country.
5. Adequacy of Early Generation Seed (EGS)	4.33	The Crops, Legumes, and Roots and Tubers sections in the DARSS are the main sources of EGS in Eswatini. The adequacy of the quantity of EGS supplied was rated 3/10 for all crops, reflecting the fact that, due to insufficient resources, the DARSS cannot meet the current demand for EGS. To ease the bottleneck, in 2023, the DARSS outsourced EGS production to a private enterprise. The quality of the EGS was rated 7/10, indicating that the production follows the required standards and that the agronomists are well trained. In addition, the EGS is inspected and tested by the seed certification authority. The timeliness of delivery of EGS was rated 3/10, once again reflecting the low production capacity of the DARSS. This is despite the fact that seed producers submit advance orders allowing the DARSS to forecast demand. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	3.90	In 2022, the number of varieties available on the market for the four crops was 42: 28 maize varieties, six bean varieties, five sweet potato varieties, and three groundnut varieties.
7. Utilization of quality commercial seed by farmers	9.68	In 2022, seed production for the four crops was 1 MT of maize seed and 10 MT of bean seed. Adjusted for imports below (Indicator 8), the volumes meet 100% of national seed requirement for maize seed and 100% of the requirement for bean seed.
8. Clarity and enforcement of seed import/export regulations	7.00	Seed importation and exportation are regulated by the Plant Health Protection Act of 2021. The law addresses the prevention of the introduction and spread of plant pests and guides the trade in plants and plant products following the provisions of the International Plant Protection Convention. Inspectors are deployed at the border points of entry to enforce import procedures. In 2022, a total of 1,081 MT of maize seed and 185 MT of bean seed were imported into Eswatini.
9. Adequacy of agro-dealer networks	5.00	In 2022, Eswatini had 74 agro-dealers. About 50% of the agro-dealers (35) were in close proximity to rural farming areas.
10. Availability of seed in small package sizes	2.01	Of the four crops, 9% of maize seed and 21% of bean seed were sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	10.00	The seed sector in Eswatini is guided by the following instruments: • National Seed Policy • Plant Health Protection Act of 2021 (quarantine and phytosanitary measures for seed) • Seeds and Plant Varieties Act (variety release and seed certification). All instruments are relatively recent and up to date.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	Eswatini is a member of both COMESA and SADC. Variety release and seed certification under the Seeds and Plant Varieties (Amendments) Regulations of 2019 are aligned with both the SADC Harmonized Seed Regulatory System and the COMESA Seed Trade Harmonization Regulations. The Regulations were passed by Parliament in November 2023 and await publication before they can be implemented. Under quarantine and phytosanitary measures for seed, the Plant Health Protection Act of 2021 is aligned with both SADC and COMESA Regulations and is being implemented.
13. Status of national biosafety frameworks for plant breeding and seed production	9.00	Eswatini has an operational Biosafety Policy, Biosafety Act, and draft Biosafety Regulations. The Regulations have been validated by stakeholders and are to be forwarded to the office of the Attorney General. As part of the enforcement, seed imports are tested for Genetically Modified Organisms (GMOs).

Indicator	Score (out of 10)	Description of performance
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	8.00	FMSS are recognized in Eswatini in two ways. First, seed production is mainly undertaken by community-based seed producers, including farmers and farmer organizations. Unlike in most other African countries surveyed, this seed is inspected and certified by the government. Second, farmers who produce legume seeds use their saved seed as EGS, which is recognized as Quality Declared Seed (QDS).
15. Adequacy of seed inspection services	5.00	In 2022, there were three seed inspectors, in Eswatini. Though the country is small, this number is not sufficient to effectively conduct seed inspection services.
16. Adequacy of government efforts to combat counterfeit seed	7.00	Measures to combat the production and sale of counterfeit seed include regular monitoring through ad hoc inspections, the seizure/confiscation of counterfeit seed from markets by the Seed Quality Control Services, the use of secure labels on packages, and fines up to ten thousand Emalangenani E10,000 (or US\$ 520) and/or imprisonment for up to three years.
17. Adequacy of national seed trade association	6.33	The Eswatini National Seed Trade Association (ENSTA) represents the interests of the industry and plays a key role in engaging with the government. ENSTA received an overall rating of 6.33/10, which comprised of the following sub-scores: effectiveness in advocacy - 7/10, democracy in elections - 7/10, ability to mobilize resources - 7/10, managerial ability - 6/10, and activity on important seed sector issues - 5/10.
FINAL SSPI SCORE	6.15	Highest scores: In COMESA: Zambia, 7.89 in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Eswatini is a small country in terms of population and size of the economy. The country has made commendable progress towards developing and updating requisite policy and regulations to support the seed sector. Being next door to South Africa, a country with the most advanced seed sector on the continent, Eswatini is able to import much of the certified seed it needs. The country's own public institutions responsible for plant breeding and seed inspections are severely under-resourced. For the seed sector to sustain the current growth momentum and increase local production capacity, the government should:

- Strengthen the Department for Agriculture Research and Specialized Services to produce and maintain quality EGS for cereal and legume crops. This includes the establishment or refurbishment of facilities and equipment for breeding, variety development, and maintenance.
- Build the capacity of seed producers, including community-based seed producers and seed companies, to increase their production of certified seed, allowing a gradual reduction in the reliance on seed imports.
- Improve the human resource and infrastructure capacity of the private sector (community-based seed producers and seed companies) to allow it to adhere to seed quality standards at production and post-production levels.

Data for the SSPI Eswatini report were collected by:

Christopher Mthethwa

Head of Seed Quality Control Services, Ministry of Agriculture, Eswatini.

Seed Sector Performance Index (SSPI) Country Brief - ETHIOPIA

OVERVIEW OF THE SEED SECTOR

The seed industry in Ethiopia is in the growth stage of development. The country has a pluralistic seed system that includes the formal, informal, and intermediate sectors. The formal sector is largely driven by the public sector across the entire seed value chain, from breeding to seed distribution. The key government institutions are the Ethiopian Agricultural Authority (EAA) and the Ethiopian Institute for Agricultural Research (EIAR). The EAA was established in 2022 and oversees variety release and registration and seed quality assurance. The EIAR and regional research institutes are responsible for research, variety development, and the production of EGS. In addition, several public seed enterprises produce and market certified seed. The four priority crops, as identified by the local seed sector experts, are teff, maize, wheat, and sorghum. Combined, these four crops account for 56% of the area harvested to field crops. Ethiopia is a member of the Common Market for Eastern and Southern Africa (COMESA) and the Intergovernmental Authority on Development (IGAD).

Overall country score (out of 10):		6.08
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Teff	2,939,669.07	19%
Maize	2,563,201.20	16%
Wheat	1,697,047.71	11%
Sorghum	1,343,506.08	10%
Total		56%
Total arable land:		16.314 million ha
Population:		115,757,473
Number of farming households:		16,786,933
Contribution of agriculture to GDP:		37.64%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	7.00	For a variety to be released in Ethiopia, it must undergo National Performance Trials conducted by the breeding institution. The Ministry of Agriculture facilitates the evaluation and official release of varieties. The National Variety Release Committee (NVRC) evaluates the varieties and recommends those to be released.
2. Number of varieties released in last 3 years	6.71	During the 2020-2022 period, 41 varieties of the four crops were released: eight teff varieties, ten maize varieties, 14 wheat varieties, and nine sorghum varieties.

Indicator	Score (out of 10)	Description of performance
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	7.17	As of 2023, the EIAR had 107 active breeders for the four crops: 22 for teff, 30 for maize, 24 for wheat, and 31 for sorghum. The adequacy of the number of breeders was rated 8/10, indicating that the number nearly satisfies the national requirement. The adequacy of funding for the breeding programs received an average rating of 6.5/10, with significant variation across the four crops: teff breeding is funded exclusively by the government, while breeding programs for the other three crops are funded both by government and external partners. The equipment and infrastructure for the breeding programs were rated 7/10, reflecting that the breeding infrastructure at the EIAR is in reasonably good condition. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	7.00	The Ethiopian Biodiversity Institute (EBI) was established by law in 1998 as the national institute responsible for activities related to PGRFA. The institute has an <i>in-situ</i> conservation area and <i>ex-situ</i> conservation facility. The latter is used as a national gene bank.
5. Adequacy of Early Generation Seed (EGS)	7.42	The EIAR, regional research institutes, and public seed enterprises produce and maintain EGS in Ethiopia. The adequacy of the quantity of EGS supplied received an average rating of 8/10 across the four crops. The quality of EGS supplied was rated 7/10, as EGS mostly meets the required quality standards. The timeliness of delivery of EGS was rated at 8/10. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	3.33	In 2022, the number of varieties available on the market for the four crops was 41: eight teff varieties, ten maize varieties, 14 wheat varieties, and nine sorghum varieties.
7. Utilization of quality commercial seed by farmers	1.96	In 2022, seed production for the four crops was: 46 MT of teff seed, 12,188 MT of maize seed, 45,551 MT of wheat seed, and 100 MT of sorghum seed. These volumes meet 3% of the national teff seed requirement, 29% of the national maize seed requirement, 54% of the national wheat seed requirement, and 2% of the national sorghum seed requirement.
8. Clarity and enforcement of seed import/export regulations	8.00	The process of seed import and export is clear, and the enforcement is consistent. In 2022, there were no seed imports or exports for the four priority crops. The only imports were of maize parental lines by a private seed company to produce EGS.
9. Adequacy of agro-dealer networks	8.00	In 2022, Ethiopia had 1,620 agro-dealers. Agro-dealers – known as agents – were first introduced by the government in 2011 through the Direct Seed Marketing approach. The program has been effective in reaching most farmers.
10. Availability of seed in small package sizes	0.24	Of the four priority crops, 33% of teff seed, 0% of maize seed, 3% of wheat seed, and 16% of sorghum seed are sold in small packages of 2 kg or less. In Ethiopia, seed is mainly packaged to plant half a hectare of land, resulting in larger standard package sizes: 12.5 kg for maize seed, 50 kg for wheat seed, 15 kg for teff seed, and 10 kg for sorghum seed. There are efforts to provide seed in smaller package sizes.
11. Status of national seed policy instruments	9.00	Ethiopia's seed sector is guided by the following instruments: - National Seed Policy of 2022 - Seed System Development Strategy of 2013 - Seed Regulation (375/2016) - Seed Proclamation (1288/2023) - ratified by the parliament and is waiting for gazette - Plant Breeders' Proclamation (1068/2017) - yet to be implemented - Plant Breeder's Directive (769/2021) - yet to be implemented.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	6.00	Ethiopia is a member of COMESA and is implementing the COMESA Seed Trade Harmonization Regulations as they pertain to seed standards. However, the country is yet to implement the harmonized variety release process.
13. Status of national biosafety frameworks for plant breeding and seed production	7.00	The National Biosafety frameworks in Ethiopia are guided by the Ethiopian Biotechnology Council and Biotechnology Institute Establishment Council of Ministers Regulation N° 388 /2016. Biosafety is regulated through Proclamation N°896 / 2015 and the National Science and Technology Policy of 1994. The Environment Forest and Climate Change Commission, under the Prime Minister's office, is responsible for the implementation of the Biosafety Proclamation.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	8.00	FMSS are recognized in the Plant Breeder's Right Proclamation 1068/2017 and its Directive 769/2021.

Indicator	Score (out of 10)	Description of performance
15. Adequacy of seed inspection services	6.00	As of 2023, Ethiopia had 52 seed inspectors, employed by the Ethiopian Agricultural Authority at the national level and various regional regulatory authorities. Ethiopia has no private seed inspection services. Article 6 of Seed Proclamation N° 728/2013 requires that all seed producers have an internal quality control system. As a result, most of the seed companies have trained agronomists who possess sufficient understanding of seed production to oversee internal quality control.
16. Adequacy of government efforts to combat counterfeit seed	3.00	The policy instruments relevant to combatting counterfeit seeds are the Seed Proclamation 782/2013 and the revised 2022 Seed Proclamation. Both have been ratified by parliament. An intensive survey is underway to guide the development of an anti-counterfeit seed Ministerial Directive. Measures to combat the production and sale of counterfeit seed include the use of secure labels on packages and surveillance. However, in 2022, these measures were not implemented as certain parts of the country were not accessible due to security risks.
17. Adequacy of national seed trade association	7.50	The Ethiopian Seed Association (ESA) represents the seed sector in Ethiopia. Seed industry experts' overall rating of ESA was 7.5/10 and comprised of the following sub-scores: managerial ability and governance and democracy (8/10), activities on important seed sector issues, providing value to members, ability to mobilize resources, and effectiveness in advocacy (7/10).
FINAL SSPI SCORE	6.08	Highest scores: in IGAD: Kenya, 7.13 in COMESA: Zambia, 7.89 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Ethiopia's formal seed sector is in the early growth stage of development. The early growth stage is characterized by, among other factors, the active role of the public sector across the seed value chain, a relatively weak private sector, established breeding programs, and an evolving seed policy environment. Seed companies produce and sell a limited range of staple crops. While governments and NGOs are significant players in the seed sector, there is a growing agro-dealer network that supports the distribution of seed to smallholder farmers. To sustain the current momentum, the following priority issues need to be addressed:

- Building capacity of the local private seed companies in seed production, marketing, and internal seed quality assurance to enable them to increase their level of engagement in the industry and their outreach to farmers in all parts of the country.
- Strengthening the public seed enterprises in the production and maintenance of EGS.

Data for the SSPI Ethiopia report was collected by:

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Ethiopian Agricultural Authority.

Seed Sector Performance Index (SSPI) Country Brief – GAMBIA

OVERVIEW OF THE SEED SECTOR

The Gambia's seed sector is in the early growth stage. It is dominated by the informal sector. The key entities in the formal seed sector are the National Agricultural Research Institute (NARI), responsible for breeding and variety development, the Variety Release Committee (VRC), in charge of variety release and registration, and the National Seed Secretariat (NSS), overseeing seed inspection and certification and the production of foundation seed. At present, the Gambia has one active private seed company, and several small, private entrepreneurs are showing interest in seed production and marketing. The country's staple food is rice, grown using four different systems: upland rainfed, lowland rainfed, lowland irrigated (pump and tidal), and mangrove swamps. Besides rice, the other three priority crops, as identified by local seed sector experts, are groundnut, maize, and millet. The four priority crops, combined, account for 90% of area harvested to field crops. The Gambia is a member of the Economic Community of West African States (ECOWAS).

Overall country score (out of 10):		4.87
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Groundnut	53,592	36%
Rice	46,961	23%
Millet	36,235	19%
Maize	20,114	12%
Total		90%
 Total arable land:		0.44 million ha
 Population:		2,468,569
 Number of farming households:		217,610
 Contribution of agriculture to GDP:		22.6%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	5.00	Applications to register a new variety require data from Distinctness, Uniformity, and Stability (DUS) tests and trials across designated environments. The National Seed Council, on the advice of the VRC, registers new varieties in The Gambia. The variety release process takes six months.
2. Number of varieties released in last 3 years	2.57	During the 2020-2022 period, 12 varieties of the four crops were registered: five rice varieties, five groundnut varieties, one maize variety, and one millet variety.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	3.67	As of 2023, the NARI had one active rice breeder. In addition, there were experienced technicians and agronomists: one for rice, two for groundnut, and one for maize. The adequacy of the number of breeders was rated 3/10. The adequacy of funding for breeding programs was rated 4/10, since funding from the government is enough to cover salaries and utilities only. To support its work, the NARI collaborates with neighboring NARIs in adaptive research trials. The adequacy of the research infrastructure for the breeding programs was rated 4/10, because, apart from land, NARI has no breeding infrastructure and equipment. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	5.00	The NARI is responsible for plant genetic resource management in The Gambia. The country has no functional gene bank, so the NARI relies mainly on the <i>in-situ</i> conservation of plant genetic resources. The only available <i>ex-situ</i> conservation facility is a makeshift cold room equipped with refrigerators to conserve seeds of selected varieties. However, erratic power supply often threatens the viability of these varieties.
5. Adequacy of Early Generation Seed (EGS)	5.00	The main sources of EGS in the Gambia are the NARI and the National Seed Service (NSS), who collaborate with the <i>Institut Sénégalais de Recherches Agricoles</i> (ISRA) to produce EGS for groundnut and millet seed, with AfricaRice to produce rice seed, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) to produce groundnut seed, and the International Institute for Tropical Agriculture (IITA) to produce maize seed. Since most of the EGS comes from entities outside the country, the maximum score for this indicator may not exceed 5/10. The timeliness of the delivery of EGS was rated 5/10, indicating that EGS is not consistently delivered on time. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.71	In 2022, the number of varieties available on the market for the four crops was 11: six rice varieties, two groundnut varieties, two maize varieties, and one millet variety.
7. Utilization of quality commercial seed by farmers	1.77	In 2022, the reported production volumes for the four priority crops were 411 MT of rice seed, 85 MT of groundnut seed, and 92 MT of maize seed. No millet seed was produced. Adjusted for imports below (Indicator 8), these volumes meet 22% of national seed requirement for rice, 8% for groundnut, and 67% for maize.
8. Clarity and enforcement of seed import/export regulations	10.00	Seed is mostly imported by government entities and NGOs, who are aware of and follow the requirements for importation, which include import permits and other clearance documents. In 2022, the imports comprised 20 MT of rice seed and 50 MT of maize seed, primarily through government or donor projects.
9. Adequacy of agro-dealer networks	5.00	In 2022, the Gambia had six agro-dealers, mostly concentrated in the urban areas, and selling inputs at weekly markets. The score of five reflects the limited reach of agro-dealers in rural areas.
10. Availability of seed in small package sizes	0.00	None of the seed of the four crops was sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	9.00	Most of the important policy documents are in place, including: - Seed Quality Control and Marketing Act (2014) – provides overall guidance to the sector and established the NSS as a seed quality control and certification agency. - National Seed Policy of The Gambia (2018) and the accompanying seed plan to guide implementation. - Seed Quality Control and Marketing Regulation (2016) - Plant Importation and Regulatory Act (1936) - Seed Quality Assurance and Certification Manual (2016)
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	9.00	The Gambia is a member of ECOWAS and has aligned its national instruments with the ECOWAS seed regulations. Areas to be aligned are the need to establish a national seed sector fund and the need to draft regulations for the importation and exportation of unconventional seeds.
13. Status of national biosafety frameworks for plant breeding and seed production	0.00	The Gambia has no national biosafety/biotechnology framework.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	7.00	The National Seed Policy and the National Seed Plan recognize FMSS. Since most farmers in The Gambia depend on FMSS for their seed requirement, the Policy and Plan acknowledge that, even as the seed sector becomes more formal, FMSS must be given consideration and support.
15. Adequacy of seed inspection services	7.00	In 2022, The Gambia had 15 seed inspectors spread across the country. Given the small size of the country, their number appears sufficient, and they can conduct field inspections effectively.
16. Adequacy of government efforts to combat counterfeit seed	7.00	Three policy instruments include provisions to counter the production and sale of counterfeit seed: the Seed Quality Control and Marketing Act, the National Crop Variety Catalogue, and the Intellectual Property Rights Bill, currently in draft form before Parliament. The measures employed by the NSS currently include posting inspectors at border points and in seed production fields and using certification tags on seed bags.

Indicator	Score (out of 10)	Description of performance
17. Adequacy of national seed trade association	4.00	The National Seed Growers Association (NSGA) is the umbrella organization for seed growers in The Gambia. The NSGA received an overall rating of 4/10, comprised of the following sub-scores: democracy in elections - 5/10, effectiveness in advocacy – 5/10, providing value to members – 4/10, activity on important seed sector issues – 4/10, managerial capacity – 2/10, and ability to mobilize resources - 2/10.
FINAL SSPI SCORE	4.87	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

The Gambian economy relies heavily on agriculture, which provides employment to about 75% of the labor force and contributes around 30% of Gross Domestic Product (GDP).¹⁸ Despite its potential, agricultural production is low due to overreliance on rainfall. The seed sector is in the early growth stage of development. For the sector to continue to grow, the following issues need to be addressed:

- Establishing seed production and processing infrastructure and facilities at the NARI and NSS.
- Strengthening the technical capacity for the production and maintenance of EGS.
- Enhancing the participation of the emerging local private sector in seed production and marketing.
- Increasing seed field inspection and seed testing capacity of NSS field and laboratory technicians.
- Increasing the number of breeders and seed scientists for NARI and NSS.

Data for the SSPI report for The Gambia was collected by:

Demba Jallow

Seeds Officer, National Seed Secretariat

¹⁸ <https://www.trade.gov/country-commercial-guides/gambia-agriculture> Accessed 19 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – GHANA

OVERVIEW OF THE SEED SECTOR

Ghana's seed industry is in the early growth stage. It comprises both the formal and informal seed systems. The former is regulated by the Plant Protection and Regulatory Services Directorate (PPRSD) of the Ministry of Food and Agriculture (MoFA). Seed production in the formal sector is by local seed companies, seed growers, and multi-national companies, which mostly specialize in hybrid maize varieties. The number of seed producers has increased significantly over the last five years due to the government's agricultural input subsidy program, Planting for Food and Jobs (PFJ). Other government institutions working in the sector include the National Seed Council (NSC), which is responsible for the overall coordination of the sector; the Directorate for Crop Services (DCS), which oversees the PFJ; and the Savanna Agricultural Research Institute (SARI) and the Crop Research Institute (CRI), the two main research institutions for food crops. The four priority crops, as identified by local seed sector experts, are maize, rice, soya bean, and sorghum. Combined, they account for 65% of area harvested to field crops. Ghana is a member of the Economic Community of West African States (ECOWAS).

Overall country score (out of 10):		5.93
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	1,307,629	41%
Rice	386,645	10%
Sorghum	226,959	10%
Soyabean	138,977	4%
Total		65%
Total arable land:		4.7089 million ha
Population:		33,846,114
Number of farming households:		2,585,531
Contribution of agriculture to GDP:		18.78%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	8.00	The National Variety Release and Registration Committee (NVRRC), under the PPRSD, oversees the variety release process. After conducting the Distinctness, Uniformity, and Stability (DUS) and the National Performance Trials, NVRRC recommends the varieties for approval to the NSC. The variety release process takes about 24 months on average.
2. Number of varieties released in last 3 years	6.14	During the 2020 - 2022 period, a total of 37 varieties were released for the four crops: 27 maize varieties, seven rice varieties, and three soya bean varieties.

Indicator	Score (out of 10)	Description of performance
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	3.33	In 2022, the SARI and the CRI had 15 breeders for the four crops: six for maize, five for rice, three for soya bean, and one for sorghum. Adequacy of the number of breeders was rated at an average of 3.50/10 across the four priority crops because most of the senior breeders have retired. The funding for research was given a rating of 2.25/10 because most programs were highly dependent on donors. Adequacy of infrastructure for breeding was given a score of 4.25/10 due to the need to improve on the available infrastructure and equipment at the research centers. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	6.00	The Plant Genetic Resource Research Institute (PGRRI) is responsible for plant genetic conservation in the country. Several species of plants are being conserved and a directive has been given by the chairman of the NVRRC for every released variety to be submitted to PGRRI as a reference sample for conservation.
5. Adequacy of Early Generation Seed (EGS)	7.42	CRI and SARI are the main sources of EGS in Ghana. Adequacy of the quantity of EGS supplied was 6.25/10 because the current supply falls short of demand. The quality of EGS supplied was given a rating of 8.25/10 because most of the breeders provide quality seed consistently. The timeliness of the delivery of EGS supplied was given a rating of 8.25/10 because seeds are delivered on time in most cases. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	2.41	In 2022, there were 21 varieties of the four priority crops available on the market: 15 for maize, two for rice, three for soya bean, and one for sorghum.
7. Utilization of quality commercial seed by farmers	9.91	In 2022, seed production for the four priority crops was: 9,083 MT of maize seed, 8,816 MT of rice seed, 4,071 MT of soya bean seed, and 233 MT of sorghum seed in 2022. The volumes met 100% of the national maize, rice, and sorghum seed requirements, and 87% of the national soya bean seed requirements.
8. Clarity and enforcement of seed import/export regulations	7.00	Seed import and export procedures are clearly outlined in policy instruments and are well understood by the industry. In 2022, 4,754 MT of maize seed were imported. There were no seed exports in 2022.
9. Adequacy of agro-dealer networks	6.00	In 2022, Ghana had 2,258 agro-dealers. Agro-dealers are licensed by the Ghana Seed Inspection Division of PPRSD and the Environmental Protection Agency (EPA). Agro-dealers must possess a business license to apply to the PPRSD for an operating permit.
10. Availability of seed in small package sizes	2.52	Of the four crops, 55% of maize seed, 6% of rice seed, and 2% of soya bean seed were sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	8.00	Ghana's seed sector is guided by the Plant and Fertilizer Act of 2010 (Act 803), the Seed Certification and Standards Regulation of 2018 (L.I. 2363), and the ECOWAS Regulation C/REG.04/05/2008. Other relevant policy instruments and documents include the National Seed Policy of 2015, the Plant Variety Protection Act (Act 1050), the Bio-Safety Act of 2011 (Act 831), and the draft National Seed Strategy and Investment Plan.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	7.00	Ghana is a member of the Economic Community of West African States (ECOWAS). Act 803 and L.I. 2363 were aligned with the Regulations (C/REG.4/05/2008) of the ECOWAS region. PPRSD is in the process of harmonizing the new amended instruments from ECOWAS including the Manual of Harmonized Procedures for the Import and Export of Seeds and Seedling in the ECOWAS, UEMOA, and CILSS Region.
13. Status of national biosafety frameworks for plant breeding and seed production	4.00	The Biosafety Act (Act 831) was passed in 2011 to regulate genetically modified organisms. The National Biosafety Authority (NBA), oversees the implementation of the Act and has initiated engagement with the National Seed Council (NSC), National Variety Release and Registration Committee (NVRRC), and PPRSD to develop modalities for transgenic breeding and GMO seed production.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	2.00	FMSS are not explicitly recognized in the seed policy instruments in Ghana. However, the informal seed system is recognized in the National Seed Policy of 2013, and the National Seed Plan of 2015 has a section on how to facilitate the role of the informal seed sector in the country.
15. Adequacy of seed inspection services	7.00	In 2022, Ghana had 45 public seed inspectors located in the 14 regions of the country. PPRSD intends to pilot a private seed inspection regime to complement the efforts of the public inspectors.

Indicator	Score (out of 10)	Description of performance
16. Adequacy of government efforts to combat counterfeit seed	6.00	The Seed Certification and Standards Regulation of 2018 (L.I 2363) stipulates a fine of not less than two hundred penalty units or a term of imprisonment of not more than two years or both for anyone convicted of engaging in the production and sale of counterfeit seed. The MOFA may in the case of a persistent offender, order, in addition to penalties provided for under this section, the withdrawal of any permit or certificate of registration issued to the offender under the Plants and Fertilizer Act of 2010 (Act 803).
17. Adequacy of national seed trade association	8.00	The National Seed Trade Association of Ghana (NASTAG) is the umbrella body of the private-sector seed industry in the country. Overall rating of NASTAG was 8.00/10 and comprised of the following sub-scores, all measured on a scale of 1-10: democracy in elections and governance: 10, effectiveness in advocacy: 8, proving value to members: 8, managerial ability: 8, ability to mobilize resources: 7, activity on important seed sector issues: 7.
FINAL SSPI SCORE	5.93	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Ghana's formal seed sector is in the early growth stage of development, characterized by established breeding programs and evolving seed policy environments. Seed companies and growers produce and sell a limited range of staple crops. While governments and NGOs play a significant role in the sector, there is a growing private agro-dealer's network that supports the distribution of seeds to smallholder farmers. Nevertheless, most seed sales of staple crops are conducted through the agri-input subsidy program Planting for Food and Jobs. As the percentage of farmers using improved seed is still low, there is ample opportunity for the sector to grow. For Ghana's seed sector to sustain the current growth momentum, the government should prioritize:

- Strengthening PPRSD's capacity in national seed quality control, seed certification, seed analysis, and seed testing.
- Increasing funding to CRI and SARI for the production and supply of quality Early Generation Seed.
- Increasing levels of awareness on newly released varieties for all four crops. Availability of seed in small packages could also boost adoption.

Data for the SSPI Ghana report was collected by:

Kwasi Wih

Head of Ghana Seed Inspection and Certification Division in PPRSD under the Ministry of Food and Agriculture in Ghana.

Seed Sector Performance Index (SSPI) Country Brief – GUINEA (CONAKRY)

OVERVIEW OF THE SEED SECTOR

The seed industry in Guinea Conakry is in the early growth stage. The seed sector is dominated by the informal system. The formal sector is regulated by *Direction Nationale de l'Agriculture* (DNA), the government agency in charge of seed quality assurance. The other important government institution is *Institut de Recherche Agronomique de Guinée* (IRAG, Guinea Conakry's National Agricultural Research Institute). The private sector players include seed producer groups, seed cooperatives, seed associations, and individual seed producers. The formal seed sector is guided by the *Politique Semencière Nationale of 2015*. The four priority crops, as identified by the local seed sector experts are rice, maize, fonio, and groundnut. Combined, these four crops account for 93% of area harvested to field crops. Guinea Conakry is a member of the Economic Community of West African States (ECOWAS).

Overall country score (out of 10):		3.48
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Rice	1,627,939	42%
Groundnut	854,287	22%
Fonio	594,555	15%
Maize	543,138	14%
Total		93%
Total arable land:		3.1 million ha
Population:		13,607,249
Number of farming households:		1,186,924
Contribution of agriculture to GDP:		27.3%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	5.00	Guinea Conakry has a simple and reliable variety registration system. The approval and registration of varieties are done by the IRAG and the DNA. The length of the variety release is 24 months.
2. Number of varieties released in last 3 years	1.71	During the 2020 – 2022 period, a total of six varieties of the four priority crops were released: four rice varieties and two groundnut varieties.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	3.50	As of 2023, the IRAG has 25 active breeders for the four crops: 10 for rice, seven for maize, three for fonio, and five for groundnut. The adequacy of the number of breeders was rated at 4.5/10 on average across the four crops due to the retirement of senior breeders without replacement. Funding to the breeding programs was rated at 3/10 because IRAG receives funds only for operation and not for research activities. The research infrastructure was given a rating of 3/10 because the infrastructure at IRAG is obsolete while breeding programs lack laboratories, equipment, and rolling stock. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	5.00	IRAG is mandated to conduct activities on plant genetic conservation and utilization in Guinea Conakry. Although the law on the management of plant genetic resources for agricultural use was adopted by the national government in 2007, it has not been implemented.
5. Adequacy of Early Generation Seed (EGS)	4.83	The main source of EGS in Guinea Conakry is IRAG. Adequacy of the quantity of EGS supplied was rated at 5.50/10 on average across the four crops since IRAG is constrained by inadequate funding, personnel, infrastructure, and equipment. They are not able to meet EGS demand. Quality of EGS supplied was given a score of 4.50/10 while the timeliness of delivery as 5.50/10 due to challenges posed by low funding and inadequate personnel. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	4.04	In 2022, the number of varieties available on the market for the four crops was 44: 31 for rice, seven for maize, and six for groundnut.
7. Utilization of quality commercial seed by farmers	0.13	In 2022, seed production for the four crops was: 300 MT of rice seed and 125 MT of maize seed. These volumes meet 2% of the national rice seed requirements and 1% of the national maize seed requirements. There was no data available on seed produced for fonio and groundnut.
8. Clarity and enforcement of seed import/export regulations	5.00	The provisions for the export and import of seeds in the national seed law are not followed. In addition, provisions in the ECOWAS regulation on seeds have not been implemented. In 2022, there were no seed imports or exports.
9. Adequacy of agro-dealer networks	0.00	In 2022, there were no agro-dealers in Guinea Conakry.
10. Availability of seed in small package sizes	0.00	None of the four priority crops is sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	6.00	Guinea Conakry's seed sector is guided by the <i>Politique semencière nationale</i> of 2015. It is operationalized through <i>règlementation semencière nationale</i> which is yet to be implemented.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	7.00	Guinea Conakry is a member of ECOWAS. The seed policy instruments are aligned to the harmonized ECOWAS-UEMOA-CILS Seed Regulations.
13. Status of national biosafety frameworks for plant breeding and seed production	0.00	Guinea Conakry does not have a national biosafety framework.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	9.00	FMSS are incorporated and recognized in seed policy instruments. In addition, FMSS activities are actively promoted and implemented in many areas across the country.
15. Adequacy of seed inspection services	4.00	In 2022, Guinea Conakry had nine public seed inspectors. The number of inspectors and the resources to support seed inspection are inadequate.
16. Adequacy of government efforts to combat counterfeit seed	4.00	Policy instruments to guide the control of the production and sale of counterfeit seed are in the process of being adopted.
17. Adequacy of national seed trade association	0.00	There is no seed trade association in Guinea Conakry.
FINAL SSPI SCORE	3.48	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

The seed sector in Guinea Conakry is an integral component of its agricultural development, crucial for enhancing the productivity and sustainability of the sector. However, it faces several challenges, including inadequate access to high-quality seeds, limited investment in seed production, and underdeveloped distribution networks. While the seed sector holds significant potential for growth, particularly considering the country's agricultural history and existing cash crop base, its development is hampered by infrastructural deficiencies and a lack of coordinated efforts to improve seed quality and availability. Significant investments and policy reforms are needed across the entire seed value chain, including the following priorities by government:

- Expediting the implementation of the ECOWAS-UEMOA-CILSS Seed Regulations and the *règlementation semencière nationale*.
- Strengthening the capacity of IRAG to produce crop varieties adapted to the country.
- Raising the level of awareness of the importance of certified seed among farmers.
- Developing a robust distribution system for certified seed that can reach farmers in remote, rural locations.

Data for the SSPI Guinea Conakry report was collected by:

Ibrahima Diallo

Head of Seeds, Plants and Fertilizers Division and Director of Quality Control and Certification in Guinea Conakry.

Seed Sector Performance Index (SSPI) Country Brief – GUINEA-BISSAU

OVERVIEW OF THE SEED SECTOR

Guinea-Bissau's seed industry is in the early growth stage. The country has no national seed law or policy to guide the development of a formal seed system. However, the seed sector operates under the ECOWAS Seed Regulations (C/REG.4/05/2008). The two main government institutions in the seed sector are the *Laboratoire National des Semences* (LNS) and *Instituto Nacional de Pesquisa Agrária* (INPA). LNS is under the General Directorate of Agriculture in the Ministry of Agriculture and Rural Development and is responsible for seed inspection and certification. INPA is responsible for research and variety development. The four priority crops, identified by local seed sector experts are rice, maize, millet, and sorghum, which, combined, account for 96% of area harvested to field crops. Guinea-Bissau is a member of the Economic Community of West African States (ECOWAS) and the Community of Sahel–Saharan States (CEN-SAD).¹⁹

Overall country score
(out of 10):

4.10

Focus crop	Area harvested (ha) ¹⁸	% of total area harvested to cereals, pulses, and oils
Rice	126,654	60%
Millet	30,960	15%
Sorghum	25,404	12%
Maize	20,546	9%
Total		96%



Total arable land:

0.3 million ha



Population:

2,078,820



Number of farming households:

600



Contribution of agriculture to GDP:

46%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	6.00	On paper, the variety release process includes the testing of candidate varieties by farmers in collaboration with extension agents. However, due to a lack of resources, this process is not always followed.
2. Number of varieties released in last 3 years	2.57	During the 2020–2022 period, 12 varieties of the four priority crops were released: three for each of the four crops - rice, maize, millet, and sorghum.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	2.67	As of 2023, the <i>Instituto Nacional de Pesquisa Agrária</i> (INPA) had five active breeders for the four crops: two for rice and one each for maize, millet, and sorghum. The adequacy of the number of breeders was rated two, signaling that the current number of breeders is insufficient to meet the country's variety development needs. Funding for breeding programs was given a rating of two, highlighting the fact that breeding programs lack the financial support needed to improve current breeding efforts. The Basic research infrastructure was given a score of four on account that most of the equipment needs repair or replacement. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	6.00	The INPA is responsible for plant genetic resource management in the country; however, due to a lack of adequate funding, it is not able to carry out the task fully and effectively.

¹⁹ FAOSTAT, 2022

Indicator	Score (out of 10)	Description of performance
5. Adequacy of Early Generation Seed (EGS)	5.00	The main local source of EGS for rice is INPA. EGS for rice is also sourced from AfricaRice in Cote d'Ivoire. The <i>Institut Sénégalais de Recherches Agricoles</i> (ISRA) provides EGS for all four crops. The West and Central African Council for Agricultural Research and Development (CORAF) provides EGS for millet and sorghum. Since most EGS is from another NARI, the maximum score for this category is capped at five. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.85	In 2022, the number of varieties available on the market for the four priority crops was 13: six rice, three maize, two millet, and two sorghum varieties.
7. Utilization of quality commercial seed by farmers	9.72	In 2022, volumes of production reported for the four priority crops were 223.5 MT of rice seed, 20.3 MT of maize seed, 28.8 MT of millet seed, and 26.7 MT of sorghum seed. Adjusted for imports below (indicator 8), total available seed meets 100% of national seed requirement for rice, maize, and sorghum, and 86% for millet.
8. Clarity and enforcement of seed import/export regulations	4.00	Seed importation follows the ECOWAS, UEMOA, and CILSS Regulations, although these are not yet published in the national gazette. Seed imports are usually sampled and tested by the national seed laboratory before they are released for commercialization. In 2022, the volume of imports for the four crops was 2,400 MT of rice seed, 150 MT of maize seed, 100 MT of millet seed, and 50 MT of sorghum seed. No exports were reported.
9. Adequacy of agro-dealer networks	MD	Guinea-Bissau has no agro-dealers.
10. Availability of seed in small package sizes	0.00	None of the seed of the four priority crops is sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	3.00	Guinea-Bissau has no national policy instruments; instead, the seed sector is guided by the ECOWAS Regulation C/REG.4/05/2008 and Regulation N° 03/2009/CM/UEMOA ²⁰ , which provide guidelines for the quality control, certification, and marketing of plant seeds and seedlings in its respective region. While helpful, the regional guidelines are not a perfect substitute for local policy instruments.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	Guinea-Bissau is a member of ECOWAS and follows the region's Harmonized Seed Regulations. However, as the country does not have a national seed law nor regulation, local instruments are not aligned to the ECOWAS Regulations.
13. Status of national biosafety frameworks for plant breeding and seed production	4.00	<i>Biosécurité Nationale</i> is the entity designated to develop and oversee national biosafety frameworks; it is not yet operational.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	Guinea-Bissau has no national seed policy instruments and thus FMSS are not officially recognized.
15. Adequacy of seed inspection services	6.00	In 2022, Guinea-Bissau had 18 public seed inspectors. The number is not sufficient to inspect fields across the whole country; further, the inspectors lack adequate training in field inspection.
16. Adequacy of government efforts to combat counterfeit seed	4.00	Measures to address counterfeit seed are outlined in the ECOWAS Seed Regulations, including those governing seed multiplication, as well as marketing and phytosanitary measures. However, they are not consistently enforced due to a lack of inspectors.
17. Adequacy of national seed trade association	2.83	<i>Anapa Socoven Proagri</i> is the national seed traders' association in Guinea-Bissau. Although the association is set up, it functions minimally. <i>Anapa Socoven Proagri</i> received an overall score of 3.83/10, comprised of the following sub-scores: activity on important seed sector issues: 3/10, providing value to members: 3/10, managerial capacity: 3/10, governance and democracy: 3/10, ability to mobilize resources: 3/10, and effectiveness in advocacy: 2/10.
FINAL SSPI SCORE	4.10	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

²⁰ The West African Economic and Monetary Union

PRIORITY INTERVENTIONS

For Guinea-Bissau's seed sector to grow, the following issues need to be prioritized:

- Drafting and aligning national seed policy instruments with Regulation C/REG.4/05/2008, which is the ECOWAS seed regulations.
- Strengthening the capacity of NARI to produce locally adapted varieties.
- Enhancing the capacity of *Laboratoire National des Semences* in seed inspection.

Data for the SSPI Guinea-Bissau report was collected by:

N'Queba Cia

Director, National Seed Committee, Ministry of Agricultural Development and Rural Service of Guinea-Bissau

Seed Sector Performance Index (SSPI) Country Brief – KENYA

OVERVIEW OF THE SEED SECTOR

Kenya's seed industry is in the mature stage of growth. It is composed of formal and informal systems. The formal system is structured and is supported by appropriate legislation, anchored on the Seeds and Plant Varieties Act of 2012 and subsidiary legislations. The informal sector is largely unstructured and includes the use of farm-saved seed, community seed banks, and relief seed. The Kenya Plant Health Inspectorate Service (KEPHIS) regulates the formal system. The four priority crops, as identified by local seed sector experts, are maize, bean, sorghum, and cowpea, which, combined, account for 86% of area harvested to field crops. Kenya is a member of the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), Community of Sahel-Saharan States (CEN-SAD), and the Intergovernmental Authority on Development (IGAD).

Overall country score (out of 10):		7.13
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	2,168,603	51%
Bean	1,171,869	25%
Cowpea	235,734	5%
Sorghum	197,403	5%
Total		86%
	Total arable land:	5.8 million ha
	Population:	57,052,004
	Number of farming households:	6,354,211
	Contribution of agriculture to GDP:	33%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	9.00	The variety release process in Kenya requires Distinctness, Uniformity, and Stability (DUS) tests, and National Performance Trials (NPT). Each of these takes two seasons and may be run consecutively. Following the NPT, KEPHIS presents the results to the National Performance Trials Committee (NPTC), which recommends varieties that meet the relevant criteria for release to the National Variety Release Committee (NVRC). The process takes 36 months.
2. Number of varieties released in last 3 years	6.00	During the 2020 – 2022 period, 36 varieties of the four crops were released: 32 maize and four bean varieties. While the number of maize varieties released is commendable, the score is affected by the small number of releases, – or no releases at all – for the other three priority crops.

Indicator	Score (out of 10)	Description of performance
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	5.42	As of 2023, the Kenya Agriculture and Livestock Research Organization (KALRO) had 48 breeders: 22 maize, 10 bean, 12 sorghum, and four cowpea breeders. In addition, several private companies and universities also employ breeders, although SSPI only rates public breeding programs. The adequacy of the number of public breeders was rated 6.25/10, mainly driven by the significant maize breeding program, which attracts both donor and private-sector funding. The funding for public breeding programs was given a score of 4/10 due to insufficient funding for the bean and cowpea breeding programs. The research infrastructure was rated 6.2/10, showing that basic infrastructure is in place, but funding for research activities is lacking. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	6.00	The Genetic Resources Research Institute (GERRI) at KALRO is responsible for PGRFA activities in Kenya. GERRI leads the collection, conservation, and exchange of plant genetic materials and supplies breeders with germplasm.
5. Adequacy of Early Generation Seed (EGS)	5.75	The main sources of EGS for the four priority crops are KALRO, public seed companies, public universities, and private seed companies. The adequacy of the quantity of EGS was rated 6/10, reflecting that quantities demanded are not always available. The quality of EGS was given a rating of 6.25/10, even though the EGS does undergo quality checks by KEPHIS. The timeliness of delivery of EGS was rated 5/10 on the basis that the delivery of the EGS is frequently delayed. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	8.98	In 2022, the number of varieties available on the market for the four priority crops was 149: 100 maize, 28 bean, 10 sorghum, and 11 cowpea varieties. The score reflects the wide range of choices available for Kenyan smallholder farmers.
7. Utilization of quality commercial seed by farmers	3.45	In 2022, production volumes reported for the four priority crops were 40,264 MT of maize seed, 1,296 MT of bean seed, 362 MT of sorghum seed, and 123 MT of cowpea seed. Adjusted for imports and exports below (indicator 8), total available seed meets 53% of national seed requirement for maize, 4% for bean, 54% for sorghum, and 100% for cowpea.
8. Clarity and enforcement of seed import/export regulations	8.00	Seed import and export processes are clearly defined and KEPHIS works with seed importers and exporters to ensure that they adhere to the relevant procedures and rules. In 2022, 9,461 MT of maize seed and 10,200 MT of sorghum seed were imported 4,029 MT of maize seed was exported.
9. Adequacy of agro-dealer networks	7.00	In 2022, Kenya had 4,654 active agro-dealers. However, outreach to seed sellers is limited especially in the rural areas.
10. Availability of seed in small package sizes	8.56	Of the four priority crops, 85% of maize seed, and 100% of bean, cowpea, and sorghum seed were sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	9.00	All important seed policy documents are in place and are up to date, including: - National Seed Policy 2010 – guides the seed sector (currently being revised) - Seeds and Plant Varieties Act, 2012 - Seeds and Plant Varieties (Seeds) Regulations, 2016 - Seeds and Plant Varieties (Variety Evaluation and Release) Regulations, 2016 - Seeds and Plant Varieties (Plant Breeders Rights) Regulations, 1994 Plant Protection Act (revised 2012)
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	The Seeds and Plant Varieties (Variety Evaluation and Release) Regulations, 2016 are harmonized with the COMESA Seed Trade Harmonization Regulations and are being implemented.
13. Status of national biosafety frameworks for plant breeding and seed production	9.00	Kenya's Biosafety Act is implemented by the National Biosafety Authority. Evaluation and approval of applications for the production and commercialization of varieties with GMO content are ongoing.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	2.00	Kenya does not recognize FMSS at present, but the ongoing review of the National Seed Policy will incorporate FMSS. In the meantime, several NGOs promote activities that support FMSS.

Indicator	Score (out of 10)	Description of performance
15. Adequacy of seed inspection services	9.00	In 2022, Kenya had 57 public seed inspectors employed by KEPHIS and 48 authorized private inspectors. Although the number is relatively high, it is insufficient because inspectors are not always able to reach all seed production areas in time.
16. Adequacy of government efforts to combat counterfeit seed	8.00	KEPHIS is leading efforts to combat counterfeit seeds with measures that include surveillance, the use of seed package labels linked to an SMS-based verification system, and awareness raising among farmers on how to detect counterfeit seeds. The cases of counterfeit seed have decreased since 2017 when the above measures were introduced ²¹ .
17. Adequacy of national seed trade association	8.00	The Seed Trade Association of Kenya (STAK) is the national seed association representing registered seed merchants. STAK received an overall rating of 8/10, comprised of the following sub-scores: providing value to members, activities on important seed sector issues, effectiveness in advocacy, ability to mobilize resources, managerial ability, governance, and democracy, all given a score of 8/10.
FINAL SSPI SCORE	7.13	Highest scores: in COMESA: Zambia, 7.89 in EAC: Tanzania, 7.25 in IGAD: Kenya, 7.13 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Kenya's agriculture sector contributes 20% of the country's gross domestic product (GDP).²² The sector employs over 70% of the rural population. Kenya's high rainfall areas constitute about 10% of the arable land and produce 70% of national commercial agricultural production.²³ The seed sector is one of the most developed in Africa. For the seed sector to sustain the current growth momentum, the government should aim at:

- Availing public land to private seed producers to enable them to work on large tracts of land that allow for high isolation distances.
- Evaluating measures that can reduce the cost of seed production.
- Enhancing the capacity of public entities to produce Early Generation Seeds.
- Developing alternative financing mechanisms to unlock affordable credit for seed production.

Data for the SSPI Kenya report was collected by:

Simon Maina

Head of Seed Certification, KEPHIS, Kenya.

²¹ As reported by 2022 Kenya TASAI study (Mabaya et al., 2022). Accessed 19 February 2024.

²² <https://www.centralbank.go.ke/2023/02/03/agriculture-sector-survey-of-january-2023/> Accessed 7 March 2024.

²³ <https://knoema.com/atlas/Kenya/topics/Land-Use/Area/Arable-land-as-a-share-of-land-area#:~:text=In%202021%2C%20arable%20land%20as,average%20annual%20rate%20of%201.15%25.> Accessed 7 March 2024.

Seed Sector Performance Index (SSPI) Country Brief – LESOTHO

OVERVIEW OF THE SEED SECTOR

Lesotho's seed sector is in the early growth stage and is dominated by the informal sector. The formal sector is dependent on the government's seed subsidy program, and most of the seed companies and agro-input dealers sell inputs through it. The Seed Development Unit of the Department of Agricultural Research in the Ministry of Agriculture and Food Security is responsible for seed inspection and certification services. The four priority crops identified by the local seed sector experts are maize, wheat, sorghum, and bean, which, combined, account for 99% of area harvested to field crops. Lesotho is a member of the Southern African Development Community (SADC).

Overall country score (out of 10):		3.52
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	129,088	78%
Wheat	24,079	15%
Sorghum	7,774	5%
Bean	1,625	1%
Total		99%
Total arable land:		0.429 million ha
Population:		2,210,646
Number of farming households:		194,212
Contribution of agriculture to GDP:		3.51%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	0.00	Lesotho does not have a variety release committee, and, as a result, variety release and registration is not carried out in the country.
2. Number of varieties released in last 3 years	0.00	No varieties have been released in Lesotho as no procedures for variety release and registration exist.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	0.67	Lesotho has no crop breeding programs. The government does not allocate funds to breeding activities. Occasionally, the Department of Agricultural Research receives breeding lines from the International Maize and Wheat Improvement Center (CIMMYT), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the International Center for Tropical Agriculture (CIAT), and the Agricultural Research Council (ARC) of South Africa. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	7.00	The National Plant Genetic Resource Centre is housed in the Plant Genetics section of the Department of Agriculture. Until 2009, the center received external funding and had numerous activities; since 2009, the funding provided by government has largely been inadequate to carry out operations effectively.

Indicator	Score (out of 10)	Description of performance
5. Adequacy of Early Generation Seed (EGS)	4.17	In Lesotho, the main source of EGS is the Seed Development Unit of the Department of Agricultural Research in the Ministry of Agriculture and Food Security. To meet the increasing demand for EGS, two private companies were also producing EGS in 2022. The adequacy of the quantity of EGS was rated 2.5/10, as EGS production is in the infancy stage. The quality of EGS was given a rating of 5/10, reflecting that, while seed policy instruments are absent, quality control is still conducted properly. The timeliness of delivery of EGS was given a score of 5/10. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.42	In 2022, the number of varieties available on the market for the four crops was seven: four maize and three bean varieties. No varieties of wheat or sorghum were sold.
7. Utilization of quality commercial seed by farmers	2.48	In 2022, production volumes reported for the four priority crops were 42 MT of maize seed and 84 MT of bean seed. No seeds were produced for wheat and sorghum. Adjusted for imports below (indicator 8), total available seed meets 30% of national seed requirement for maize, and 100% for bean.
8. Clarity and enforcement of seed import/export regulations	6.00	Lesotho is a net importer of seed for the four crops. Importers largely follow the procedures and requirements for importation. In 2022, 733 MT of maize seed, 20 MT of wheat seed, 225 MT of sorghum seed, and 405 MT of bean seed were imported. There were no seed exports in 2022. Most seed is imported or exported through agro-dealers.
9. Adequacy of agro-dealer networks	5.00	In 2022, Lesotho had 17 agro-dealers. The number only partly satisfies the demand, and some districts have no agro-dealers.
10. Availability of seed in small package sizes	0.13	Of the four priority crops, only 1.4% of maize seed and 1.2% of bean seed were sold in small packages of 2 kg or less. The low score indicates unmet demand for seed in small packages.
11. Status of national seed policy instruments	5.00	The National Seed Policy of 2016 outlines the framework for Lesotho's seed sector. However, the policy is not operational as Parliament is yet to pass the Seed Bill which will guide the implementation of the policy. Similarly, the Plant Variety Protection Bill is also waiting to be passed. On the plus side, government has developed a seed certification scheme.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	5.00	The National Seed Policy is aligned with the SADC Harmonized Seed Regulatory System. However, since the policy is not operational, the implementation of the SADC Regulations are also hindered.
13. Status of national biosafety frameworks for plant breeding and seed production	5.00	The Biosafety Bill has been drafted but it is yet to be enacted by Parliament into law.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	8.00	FMSS, along with community-based seed programs, are recognized in the National Seed Policy. Several NGOs also support community-based seed production.
15. Adequacy of seed inspection services	6.00	In 2022, Lesotho had four seed inspectors. One of the seed inspectors was trained in South Africa, and thereafter trained the other inspectors. The inspectors don't have adequate access to vehicles to carry out their work.
16. Adequacy of government efforts to combat counterfeit seed	4.00	To address the challenge of counterfeit seed, agro-dealers are required to carry the required import/export documentation, including import permits, certificates from seed testing laboratories, and, in the case of exports, phytosanitary certificates. The Plant Protection and Quarantine section works with inspectors at the border to ensure compliance. Locally produced seed is required to be sold with a label on seed package. However, imported seed packages are not always labeled. During peak cropping season, the incidence of counterfeit seed increases because of the country's porous borders.
17. Adequacy of national seed trade association	0.00	Lesotho has no national seed trade association.
FINAL SSPI SCORE	3.52	Highest scores: in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Lesotho is a relatively small country as measured by population and size of the economy. The country has made commendable progress in developing and updating the requisite policies and regulations to support the seed sector. However, public institutions that are responsible for plant breeding and seed inspections are severely under-resourced. Consequently, much of the certified seed is imported from neighboring countries, primarily South Africa which has one of the most advanced seed sectors on the continent. For the seed sector to sustain the current growth momentum, the government should target:

- Enacting the Seed Bill into Law to provide the legal framework for the seed sector.
- Strengthening the breeding programs through consistent funding for the Department of Agricultural Research.
- Hiring additional technical staff in the Seed Development Unit to strengthen the quality control, variety release, and registration activities.

Data for the SSPI Lesotho report was collected by:

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Seed Development Unit, Department of Agricultural Research, Ministry of Agriculture and Food Security, Lesotho.

Seed Sector Performance Index (SSPI) Country Brief – LIBERIA

OVERVIEW OF THE SEED SECTOR

Liberia's seed sector is in the nascent stage of development. The sector is composed of both the formal and informal systems. The formal seed system is supported by the Central Agricultural Research Institute (CARI), Liberia's national agricultural research institute, which is in charge of breeding and variety development, and the Ministry of Agriculture, which is responsible for regulating the sector. A few private seed companies and cooperatives produce and market certified seed. The informal system consists of small-scale businesses, seed banks, group-based seed production, and seed villages. The four priority crops, as identified by local seed sector experts, are rice, maize, groundnut, and cowpea, which, combined, account for 95% of area harvested to field crops. Further, these are the only food crops that undergo seed certification. Liberia is a member of the Economic Community of West African States (ECOWAS).

Overall country score (out of 10):		3.20
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Rice	257,000	92%
Groundnut	8,412	3%
Maize	MD	MD
Cowpea	MD	MD
Total		95%
Total arable land:		0.5 million ha
Population:		5,311,296
Number of farming households:		312,314
Contribution of agriculture to GDP:		31%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	3.00	On paper, the variety release process is clearly defined in the Seed Development and Certification Agency Act of 2019; however, the Seed Development and Certification Agency (SDCA), and the Variety Registration and Release Committee which SDCA should oversee, are not operational.
2. Number of varieties released in last 3 years	0.00	During the 2020–2022 period, no varieties of the four priority crops were released as there is no procedure for variety release and registration.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	3.00	As of 2023, CARI had 11 active breeders for the four priority crops: six rice, two maize, one groundnut, and two cowpea breeders. The adequacy of the number of breeders was rated 4/10, on the basis that, while the breeders are experienced, their output is hampered by a lack of basic breeding infrastructure and equipment. The adequacy of funding for breeding programs was given a rating of 2/10, clearly indicating that CARI's funding needs are not met. The adequacy of basic research infrastructure was given a score of 3/1-, reflecting the lack of equipment. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	4.00	CARI serves as the national gene bank for Liberia. As of 2022, due to inadequate resources, CARI only focused on <i>in-situ</i> conservation for a limited collection of priority accessions.
5. Adequacy of Early Generation Seed (EGS)	5.58	CARI is the main source of EGS for all four crops in Liberia, while AfricaRice from Cote d'Ivoire supplies EGS for rice. The adequacy of the quantity of EGS was rated 3.75/10, as CARI is not able to meet the demands by seed companies and seed producers consistently, although adequate quantities are more likely to be available with adequate notice to CARI. The quality of EGS was rated, reflecting that CARI maintains EGS adequately. The timeliness of delivery of EGS was given a score of 5/10; the underlying reason is a lack of storage, which means that orders submitted on short notice may not be satisfied on time. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.42	In 2022, the number of varieties available on the market for the four crops was seven, all of which were rice varieties. The lack of varieties for the other three crops clearly indicates that smallholder farmers in Liberia have a limited selection of varieties to buy.
7. Utilization of quality commercial seed by farmers	0.01	In 2022, production volumes reported for the four priority crops were 2 MT of rice seed and 2 MT of maize seed. Rice seed production accounted for 0.04% of the national requirement for rice seed. Maize seed production accounted for 1% of the national requirement.
8. Clarity and enforcement of seed import/export regulations	8.00	According to importers, import and export regulations are clear and are adhered to, although no seed imports or exports for the four priority crops were reported in 2022.
9. Adequacy of agro-dealer networks	4.00	In 2022, Liberia had 105 agro-dealers. However, a substantial portion of farmers in rural areas are not accessing improved seeds and other agricultural inputs due to poor distribution of agro-dealers.
10. Availability of seed in small package sizes	0.14	For the four priority crops, only maize seed was sold in small packages of 2 kgs or less in 2022; even in the case of maize seed, only 3% of seed was sold in small packages.
11. Status of national seed policy instruments	9.00	Liberia's seed sector is guided by the Liberia National Seed Policy and Regulatory Framework of 2012 and the Liberia Seed Development and Certification Agency Act of 2019. The latter established the Seed Development and Certification Agency, which is not yet operational due to a lack of funding. The government has also developed the Liberia National Rice Development Strategy (2018-2030) to support the seed sector for the country's most important staple crop.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	Liberia is a member of ECOWAS. The SDCA Act is aligned with the ECOWAS Seed Regulations.
13. Status of national biosafety frameworks for plant breeding and seed production	2.00	Liberia does not have a national biosafety framework that addresses the generation, utilization, and commercialization of agricultural biotechnology. However, Article 48 of the SDCA Act requires that genetically modified varieties be subject to bio-security rules, although these rules are not yet in place.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	2.00	FMSS are not recognized in Liberia's seed policy instruments. FMSSs are considered a part of the informal seed system, which is not regulated.
15. Adequacy of seed inspection services	MD	Liberia has no seed inspectors. Seed inspection services are the responsibility of the SDCA, which is not yet functional.
16. Adequacy of government efforts to combat counterfeit seed	1.00	There are currently no legal measures to address counterfeit seed in Liberia, although the SDCA Act stipulates quality control arrangements. However, the Act is yet to be operationalized.
17. Adequacy of national seed trade association	0.00	Liberia has no national seed trade association.
FINAL SSPI SCORE	3.20	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Liberia's agricultural sector provides livelihood for more than 60 percent of Liberia's population and accounted for 31 percent of Liberia's 2021 real gross domestic product (GDP).²⁴ Most agricultural production is small scale, and overall agricultural productivity is low due in large part to low-technology practices and a lack of quality agricultural inputs. As a result, Liberia imports more than 80% of its staple crop rice, making the country vulnerable to global food price volatility. Since the seed sector is in the nascent stage, the government should focus on:

- Enhancing CARI's capacity to meet the demand for EGS from seed companies and producers.
- Funding the Liberia Seed Development and Certification Agency to facilitate inspection, certification, and variety release and registration in the country.
- Supporting awareness raising among farmers about the benefits of certified seed among farmers.
- Promoting and supporting agro-dealers in rural areas to increase adoption rates of improved seed and other agricultural inputs.

Data for the SSPI Liberia report was collected by:

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²⁴ <https://www.trade.gov/country-commercial-guides/liberia-agricultural-sectors#>. Accessed 19 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – LIBYA

OVERVIEW OF THE SEED SECTOR

Most of Libya is a desert, with only 2% of the land suitable for agriculture. Over the last ten years, the country's modest agriculture sector, including its seed sector, has further declined due to political instability. The government entities regulating the seed sector are the Agriculture Research Centre (ARC), responsible for research and variety development, the Cereal Production Authority, responsible for variety release, and the Agriculture Quarantine Centre (AQC), responsible for seed inspection and certification. The four priority crops, as identified by local seed sector experts, are barley, wheat, green peas, and broad bean, which, combined, account for 96% of area harvested to field crops. Libya is a member of the *Union du Maghreb Arabe* (UMA), the Common Market for Eastern and Southern Africa (COMESA), and the Community of Sahel–Saharan States (CEN-SAD).

Overall country score (out of 10):		2.76
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Wheat	1,350	53%
Barley	14.65	43%
Green peas	160	0.05%
Broad bean	90	0.05%
Total		96.1%
Total arable land:		1.72 million ha
Population:		7,252,573
Number of farming households:		418
Contribution of agriculture to GDP:		1.6%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	7.00	Candidate varieties are evaluated based on standards of quality, productivity, and resistance to pests and diseases, as well as standards of Distinctness, Uniformity, and Stability. The length of the variety release is 14 months.
2. Number of varieties released in last 3 years	2.43	During the 2020 – 2022 period, 15 varieties of the four crops were registered: four each for barley, green pea, and bean, and three for wheat.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	3.67	In 2022, the ARC, the National Center for Improved Seeds, and universities had 15 active breeders, who all worked on barley. The adequacy of the number of breeders was rated 2/10, because no breeders worked on the other three priority crops. The funding for breeding programs was given a rating of 4/10, reflecting a lack of financial support from government. The adequacy of basic research infrastructure was given a score of 5/10, highlighting that research programs no longer operate at capacity since many experienced personnel have left. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	0.00	In Libya, no entity is responsible for PGRFA activities.

Indicator	Score (out of 10)	Description of performance
5. Adequacy of Early Generation Seed (EGS)	7.42	The main sources of EGS in Libya are the research centers under ARC and multinational seed companies that supply seed to the country. The adequacy of the quantity of EGS was rated 7.75/10. The quality of EGS was given a rating of 7.50/10, reflecting that the EGS supplied met international quality standards. The timeliness of the delivery of EGS was given a score of 7/10, based on the fact that seeds are supplied and delivered at the beginning of each season according to the terms agreed upon between the supplying and receiving agencies. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.85	In 2022, the number of varieties available on the market for the four crops was 13: four for barley, three for wheat, three for green pea, and three for bean.
7. Utilization of quality commercial seed by farmers	MD	In 2022, no seed production was reported for the four priority crops. The last records for seed production date back to 2019.
8. Clarity and enforcement of seed import/export regulations	7.00	The government is the sole importer of seed in the country. The seed import process is clearly defined and followed by the government. However, no imports or exports were reported in 2022.
9. Adequacy of agro-dealer networks	7.00	In 2022, Libya had seven agro-dealers. This number is low, but seed is mostly distributed by the departments of the Ministry of Agriculture.
10. Availability of seed in small package sizes	MD	Of the four priority crops only 4% of green pea seed and 6% of bean seed were sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	0.00	Due to the current state of the seed industry, seed policy instruments (decrees and ministerial orders) cannot be traced.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	0.00	Libya is a member of COMESA. The country has not made any substantive progress towards harmonizing the national seed regulations with the COMESA Seed Trade Harmonization Regulations.
13. Status of national biosafety frameworks for plant breeding and seed production	0.00	Under the current conditions, the frameworks in place for national biosafety are no longer operational. The biotechnology laboratory was suspended in 2016.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	As implied under indicator 11, the status of FMSS cannot be confirmed.
15. Adequacy of seed inspection services	0.00	Libya has no seed inspectors as the country has no local seed production.
16. Adequacy of government efforts to combat counterfeit seed	5.00	Because there is no local seed production, currently Libya does not need to combat counterfeit seeds in the country. However, the government regularly inspects imports to ensure that counterfeits seeds do not enter the country.
17. Adequacy of national seed trade association	0.00	Libya has no national seed association, although there is a Farmers Syndicate that participates in agriculture and livestock policy discussions with government.
FINAL SSPI SCORE	2.76	Highest scores: in COMESA: Zambia, 7.89 in UMA: Tunisia, 5.77 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Libya's Plan for National Renewal and Transformation by 2030 aims to increase the productivity of Libya's agricultural sector by focusing on the production of high-yield revenue crops, and improving access to production inputs.²⁵ However, the seed sector has been deeply affected by over ten years of political instability, and the seed sector is underdeveloped. Efforts to revive the underdeveloped seed sector should focus on:

- Developing a comprehensive national program for seed sector development, starting with seed production
- Introducing and commercializing new and improved varieties of seed for the four crops and promoting their uptake among farmers.
- Building the human capacity across the seed system, including for breeders, seed producers, seed analysts and technologists, and seed inspectors.

Data for the SSPI Libya report was collected by:

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International Cooperation Office, Ministry of Agriculture and Livestock, Libya.

25 https://andp.unescwa.org/sites/default/files/2021-11/lhyaLibya_english_2030.pdf Accessed 28 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – MADAGASCAR

OVERVIEW OF THE SEED SECTOR

The seed sector in Madagascar is in the early growth stage. The informal sector is dominant and is characterized by the exchange of seeds between farmers. The semi-formal sector, producing Quality Declared Seed (QDS) is prevalent in the arid, southern parts of the country. In the formal sector, seed production is carried out by local and foreign seed companies, seed producers, and cooperatives. In total, more than 350 local seed establishments are currently approved for seed production. The *Agence Nationale Officielle de Contrôle des Semences et des Plantes* (ANCOS) oversees variety release and registration, seed inspection and certification. The *Foibem-Pirenena momba ny Fikarohana ampiarina amin'ny Fampandrosoana ny eny Ambanivohitra* (FOFIFA) is responsible for research and variety development. The four priority crops, as identified by the local seed sector experts, are rice, maize, bean, and groundnut. Combined, they account for 96% of the area harvested to field crops. Madagascar is a member of the Common Market for Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC).

Overall country score (out of 10):		4.52
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Rice	1,800,000	83%
Maize	230,000	6%
Groundnut	81,000	4%
Bean	57,000	3%
Total		96%
Total arable land:		3.0 million ha
Population:		28,812,195
Number of farming households:		5,060,888
Contribution of agriculture to GDP:		22.4%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	5.00	Variety release and registration is based on the Distinctness, Uniformity, and Stability (DUS) and Value for Cultivation and Use (VCU) tests. The process is overseen by ANCOS. The average duration for variety release is 30 months.
2. Number of varieties released in last 3 years	3.00	During the 2020 – 2022 period, only 15 varieties of the four priority crops were released: 13 rice varieties, one maize variety, and one groundnut variety.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	4.00	As of 2023, the FOFIFA had 15 active breeders for the four priority crops: nine for rice, one for maize, three for bean, and two for groundnut. Adequacy of the number of breeders was rated at 3.5/10 on average across the four crops. Funding for the breeding programs was given a rating of 3.5/10, because funding allocation to agricultural research is inadequate. Basic research infrastructure was rated at 5/10 because funds allocated for facilities and equipment are inadequate. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	5.00	FOFIFA and <i>Fiompiana sy Fambolena Malagasy Norveziana</i> (FIFAMANOR) are responsible for the <i>ex-situ</i> conservation of plant genetics. Both institutions lack funding to carry out their functions adequately. The focal point for PGRFA is based in the Ministry of Agriculture.
5. Adequacy of Early Generation Seed (EGS)	5.67	FOFIFA is the main source of EGS for the four crops in Madagascar. Seed industry experts rated the adequacy of the quantity of EGS supplied as 4.5/1- because of the frequent mismatch between supply and demand. Seed industry experts rated the quality of EGS as 5.5/10 because the production of EGS follows the defined standards and undergoes control by the regulator. Seed industry experts scored the timeliness of delivery of EGS at 7/10 because compliance with on-time delivery is enforced. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	5.03	In 2022, the number of varieties available on the market for the four crops was 58: 46 for rice, five for maize, four for bean, and three for groundnut.
7. Utilization of quality commercial seed by farmers	0.67	In 2022, seed production for the four crops was: 1,130 MT of rice seed, 115 MT of maize seed, 38 MT of bean seed, and 48 MT of groundnut seed. These volumes met 7.5% of the national rice seed requirements, 2.5% of the national maize seed requirements, 2.5% of the national bean seed requirements, and 3.8% of the national groundnut seed requirements.
8. Clarity and enforcement of seed import/export regulations	3.00	Seed importation into Madagascar is unregulated due to ambiguities in the legislation that oversees the process. In 2022, there were no imports of seed for the four crops.
9. Adequacy of agro-dealer networks	5.00	In 2022, Madagascar had 350 agro-dealers registered by ANCOS. They are mainly located in urban areas and along the major roads.
10. Availability of seed in small package sizes	1.54	Of the four priority crops, 75% of bean and groundnut seed, 10% of rice, and 5% of maize seed are sold in small seed packages of 2 kg or less.
11. Status of national seed policy instruments	7.00	Madagascar's seed sector is guided by Loi N°94-038 du 03/01/95 (1994), four decrees, and the draft national seed strategy of 2023.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	9.00	Madagascar is a member of COMESA and SADC. Seed policy instruments have been aligned with harmonized SADC regulations on the designation of seed classes, the standards for control and certification, and the standards for seed analysis. In addition, ANSOC is very active in COMESA and SADC meetings on harmonization of the regional standards.
13. Status of national biosafety frameworks for plant breeding and seed production	7.00	<i>Politique et Structure Nationale de Biosécurité</i> of Octobre 2004 and <i>Décret n°2012-833</i> of September 2012 guide the biosafety frameworks in Madagascar.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not recognized in Madagascar.
15. Adequacy of seed inspection services	6.00	In 2022, Madagascar had 109 public seed inspectors. The number is adequate for work that is needed.
16. Adequacy of government efforts to combat counterfeit seed	5.00	Penalties for engaging in actions in violation of the seed law are specified in diverse decrees. In addition, ANCOS is in the process of digitizing transaction along the formal seed value chain. This exercise will lead to each approved seed establishment obtaining a QR code which interacts with the ANCOS database to verify the traceability of the seeds.
17. Adequacy of national seed trade association	5.00	<i>Fikambanana Malagasy Misaotra Masomboly</i> (F3M) is the national association of seed professionals. F3M was established in 2022 to replace the Malagasy Association for the Promotion of Seeds (AMPROSEM), which is no longer functional. The F3M is currently being set up and is raising awareness among seed actors. Performance of F3M was rated at 5/10 overall and comprised of the following sub-scores, all measured on a scale of 1-10: providing value to members: 5, activities on important seed sector issues: 5, effectiveness in advocacy: 5, ability to mobilize resources: 5, managerial ability: 5, and governance and democracy: 5.
FINAL SSPI SCORE	4.52	Highest scores: in COMESA: Zambia, 7.89 in SADC and in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Madagascar's seed sector is at a crucial stage of development, with a diverse landscape comprising informal, semi-formal, and formal components. While the informal sector remains dominant, there is growing potential for formal seed production, as evidenced by the presence of local and foreign seed companies, cooperatives, and over 350 approved seed establishments. However, challenges such as limited utilization of quality commercial seed by farmers and ambiguous seed import/export regulations are hampering the sector's progress. On a positive note, Madagascar has shown commitment to regional cooperation, aligning its seed policies with harmonized regional standards in COMESA and SADC. For the seed sector to thrive, the following urgent issues need to be addressed:

- Enhancing the capacity of ANCOS to implement its mandate of national seed quality control.
- Improving the financial and technical support to FOFIFA for the development, production, and maintenance of Early Generation Seed.
- Strengthening the capacity of local seed enterprises in internal seed quality assurance at the production, processing, and marketing levels.

Data for the SSPI Madagascar report was collected by:

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Seed industry expert

Seed Sector Performance Index (SSPI) Country Brief – MALAWI

OVERVIEW OF THE SEED SECTOR

The seed industry in Malawi is in the growth stage. The formal seed sector is regulated by the Seed Services Unit (SSU) in the Ministry of Agriculture and governed by up-to-date seed policy instruments. The main players in the formal sector are private seed companies. The registered seed producers are seed companies, co-operatives, and individual seed producers. The Department for Agricultural Research (DARS) oversees variety research and development. The informal seed system is common among smallholder farmers growing legumes and planting material for vegetatively propagated crops. The four priority crops, as identified by the local seed sector experts are maize, groundnut, soya bean, and bean. Combined, these four crops account for 79% of area harvested to field crops. Malawi is a member of the Common Market for Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC).

Overall country score (out of 10):		6.47
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	1,776,591	51%
Groundnut	423,468	12%
Bean	356,060	10%
Soya bean	239,845	6%
Total		79%
 Total arable land:		4.0 million ha
 Population:		21,279,597
 Number of farming households:		3,100,000
 Contribution of agriculture to GDP:		30%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	7.00	Crop varieties that are released in Malawi undergo Value for Cultivation and Use (VCU) trials for at least three seasons as a prerequisite for release. Crop varieties are released through the Agricultural Technologies Release Committee (ATCC) which is chaired by the Ministry of Agriculture. The average duration of the release process is 36 months.
2. Number of varieties released in last 3 years	5.86	During the 2020-2022 period, 35 varieties for the four crops were released: 17 for maize, three for groundnut, 10 for soya bean, and five for bean.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	5.58	As of 2023, the DARS had five active breeders for the four crops: two for maize, and one each for groundnut, soya bean, and bean. Satisfaction with the number of breeders was rated at an average of 5/10 across the four priority crops because breeders in DARS are much fewer than what is required for improved nutrition and food security. The funding to the breeding programs was given a score of 5/10 because the government and development partners do not provide adequate funding for breeding activities. The equipment and infrastructure at the breeding programs was given a rating of 7/10. While basic breeding facilities are in place, there is a shortage of storage and cold room infrastructure, and the state of irrigation equipment and greenhouses is deteriorating. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	7.00	The Malawi Plant Genetic Resources Centre (MPGRC) conducts <i>in-situ</i> and <i>ex-situ</i> conservation of plant genetic resources. It also distributes seed to farming communities. MPGRC is constrained by an inadequate storage facility for <i>ex-situ</i> conservation and a lack of backup power supply.
5. Adequacy of Early Generation Seed (EGS)	8.75	The main sources of EGS in Malawi are DARS, CGIAR centers, and private seed companies. Adequacy of the quantity of EGS supplied was rated at 7.5/10 on average across the four priority crops as it is usually adequate to meet demand. However, sometimes the quantities of maize and bean seed are inadequate. The quality of the EGS supplied was given a rating of 9/10, as it consistently meets the required quality standards. The seed is registered for cultivation by SSU after testing for germination and purity. Timeliness of delivery of EGS seed was rated at 9/10. In most cases, the EGS seed is usually collected by the buyer immediately after payment. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	3.55	In 2022, the number of varieties available on the market for the four crops was 37: 28 for maize, three for groundnut, four for soya bean, and two for bean.
7. Utilization of quality commercial seed by farmers	4.75	In 2022, seed production for the four crops was: 29,610 MT for maize seed, 381 MT for groundnut seed, 2,500 MT for soya bean seed, and 637 MT for bean seed. Adjusted for imports and exports below (indicator 8), total available seed meets 59% of national seed requirement for maize, 19% for groundnut, 74% for soya bean, and 8% for bean.
8. Clarity and enforcement of seed import/export regulations	7.00	The process for seed importation and exportation is very clear and consistency in the enforcement. In 2022, 447 MT of maize seed and 214 MT of soya bean seed were imported. The volume of exports was: 5,068 MT of maize seed, 53 MT of groundnut seed, and 10 MT of soya bean seed.
9. Adequacy of agro-dealer networks	7.00	In 2022, Malawi had 2,473 registered agro-dealers. The agro-dealers are registered by SSU and the Seed Trade Association of Malawi (STAM). Many of them are in rural areas near farming communities.
10. Availability of seed in small package sizes	1.71	Of the four priority crops, only 16% of maize seed, 2% of groundnut seed, 36% of soya bean seed, and 33% of bean seed are sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	10.00	Malawi's seed sector is guided by the National Seed Policy of 2018 which is operational. The Seed Act of 1996 is operational. The new Seed Act of 2022 has been enacted and assented to by parliament and is waiting to be operationalized.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	7.00	Malawi is a member of COMESA and SADC. The Seed Regulations of 2018 are aligned with the harmonized regulations of the SADC and COMESA seed regulations. Although Malawi's seed standards are based on the harmonized seed standards, the country has yet to start implementing the harmonized variety release requirements. These will be implemented after the Seed Regulations of 2018 are revised and the Seed Act 2022 is operationalized.
13. Status of national biosafety frameworks for plant breeding and seed production	9.00	The Biotechnology and Biosafety Policy of 2008 and the Biosafety Act of 2014 regulate agricultural biotechnology in Malawi. Both are operational.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	4.00	Although the National Seed Policy recognizes the FMSS, it clearly states that it focuses on the formal seed system. However, several non-governmental organizations promote FMSS.
15. Adequacy of seed inspection services	7.00	In 2022, Malawi had 47 seed inspectors where 21 were public inspectors and 26 were private inspectors. The SSU encounters challenges related to the adequacy of resources required for conducting effective seed inspections.
16. Adequacy of government efforts to combat counterfeit seed	7.00	Seed Act of 1996, Seed Regulations of 2018, and Malawi Bureau of Standards Act outline penalties for violating government quality control standards. Measures taken include monitoring seed selling points, collaboration with law enforcement and judicial officers on enforcement of seed laws to assist in curbing malpractice, and the introduction and use of scratch card seed labels. Penalties include loss of license and a prison sentence.

Indicator	Score (out of 10)	Description of performance
17. Adequacy of national seed trade association	7.83	The Seed Trade Association of Malawi (STAM) is a dynamic industry association that boasts a membership encompassing both seed producers and seed distributors. The overall rating of STAM was 7.83/10 and comprised of the following sub-scores, all measured on a scale of 1-10: managerial ability: 9, governance and democracy: 9, activities on important seed sector issues: 7, providing value to members: 7, ability to mobilize resources: 7, and effectiveness in advocacy: 7.
FINAL SSPI SCORE	6.47	Highest scores: in COMESA: Zambia, 7.89 in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Malawi's formal seed sector is in the growth stage of development. Agriculture accounts for 30% of Malawi's GDP and generates over 80% of national export earnings.²⁶ The country has registered several years of growing private sector involvement in the production and commercialization of crop varieties as well as a stable seed policy environment. The agro-dealer network is strong and well-linked to seed companies. For the seed sector to sustain the current growth momentum, the following issues need to be addressed:

- Enhancing the capacity of local seed companies to manage parental lines for maize varieties.
- Strengthening DARS's capacity to produce adapted varieties.
- Supporting availability of seed in small packages to promote trial and adoption of newer improved varieties.
- Enhancing the capacity of the Seed Services Unit to conduct seed inspections to minimize the prevalence of counterfeit seed.

Data for the SSPI Malawi report was collected by:

Dr. Hastings Musopole

Head of the Seed Services Unit in the Ministry of Agriculture of Malawi.

²⁶ <https://efaidnbmnnnibpcajpcglclefindmkaj/https://www.jica.go.jp/Resource/malawi/english/activities/c8h0vm00004bpzlh-att/agriculture.pdf> Accessed 19 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – MALI

OVERVIEW OF THE SEED SECTOR

Mali's seed industry is in the early growth stage. In the formal sector, seeds are produced and marketed by a combination of seed companies, seed cooperatives, and individual seed producers. Seed quality control, inspection, and certification are overseen by the *Laboratoire des Semences* (LABOSEM) and, in the case of seed imports, the *Division Législation Contrôle Phytosanitaire* (DLCP). LABOSEM falls under the *Direction Nationale de l'Agriculture* (DNA). The four priority crops, as identified by local seed sector experts, are millet, sorghum, maize, and rice, which, combined, account for 90% of area harvested to field crops. Mali is a member of the Economic Community of West African States (ECOWAS).

Overall country score (out of 10):		5.74
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Millet	2,079,082	31%
Sorghum	1,546,030	24%
Maize	1,536,189	22%
Rice	874,031	13%
Total		90%
Total arable land:		8.341 million ha
Population:		21,359,722
Number of farming households:		800,000
Contribution of agriculture to GDP:		36.4%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	6.00	The <i>Comité National des Semences</i> (CNS) is responsible for variety release and registration in the national seed catalogue. The variety release process is managed by the <i>Comité National d'Homologation</i> under the supervision of LABOSEM, which acts as a technical adviser to the CNS. The average length of the process is 24 months, i.e., two independent seasons.
2. Number of varieties released in last 3 years	8.29	During the 2020-2022 period, 52 varieties were released for the four crops: 16 sorghum, 23 maize, and 13 rice varieties.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	5.25	As of 2023, the <i>Institut d'Economie Rurale</i> (IER) employed eight breeders for the four crops: two millet, three sorghum, one maize, and two rice breeders. The adequacy of the number of breeders was rated 3.75/10, highlighting the limited breeding capacity in the public sector. The funding was given a rating of 6/10, as breeding programs often rely on project funds. The basic research infrastructure was given a score of 6/10 on the basis that breeding programs have benefited from project support that built infrastructure such as irrigation facilities. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	4.00	The <i>Unité des Ressources Génétiques</i> (URG) under the IER oversees the management of plant genetic resources in Mali. URG lacks sufficient funding, and its infrastructure is inadequate.
5. Adequacy of Early Generation Seed (EGS)	7.50	The main source of EGS for the four priority crops is the IER. In addition, ICRISAT supplies EGS for millet and sorghum. Seed producers, farmer organizations, and the <i>Association Semencière du Mali</i> (ASSEMA) are sources of EGS for sorghum, maize, and rice. The quantity of EGS was rated 5.5/10, because, due to inadequate planning, the quantity of EGS produced did not meet seed producers' requirements, especially for millet. The quality of EGS was given a rating of 9/10, reflecting that LABOSEM and the regional directorates adhere to field and laboratory standards. The timeliness of delivery of EGS was given a score of 8/10, reflecting that research stations deliver EGS to seed producers efficiently. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	7.65	In 2022, the number of varieties available on the market for the four priority crops was 95: eight for millet, 28 for sorghum, 19 for maize, and 40 for rice.
7. Utilization of quality commercial seed by farmers	1.47	In 2022, the volumes of production reported for the four priority crops were 32 MT of millet seed, 174 MT of sorghum seed, 647 MT of maize seed, and 1,640 MT of rice seed. These volumes met 4% of the national requirement for millet seed, 21% of the same for sorghum seed, 20% for maize seed, and 18% for rice seed. The low score reflects the fact that the current production volumes for seed fall short of the national requirements for all four priority crops.
8. Clarity and enforcement of seed import/export regulations	8.00	The procedures for seed importation and exportation are harmonized with the ECOWAS/UEMOA/CILSS Regulations under two national laws: Law No. 02-013 of June 3, 2002, governing phytosanitary control in the country, and Law No. 10-032 of July 12, 2010, which pertains to seeds of plant origin.
9. Adequacy of agro-dealer networks	5.00	In 2022, Mali had 25 registered agro-dealers. The agro-dealers are too few for the large country and their distribution in the rural areas is thin.
10. Availability of seed in small package sizes	0.34	Of the four priority crops, only 10% of the seed for millet, sorghum, and maize is sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	8.00	Most important seed policy instruments are in place and are up to date, including: - National Seed Policy, adopted in 2009 and updated in 2018. - Seed Law of July 2010 (Loi N°10-032 of July 12th, 2010) 3 decrees and 4 by-laws, published in 2018 and 2019.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	9.00	Mali is a member of ECOWAS. It has adopted the ECOWAS Seed Regulations (C/Reg.4/05/2008), which were published in the official gazette on June 6, 2014 (Official Journal N°23). Mali is implementing the regulations and uses the ECOWAS Catalogue of Plant Varieties and Species, along with other harmonized manuals and protocols.
13. Status of national biosafety frameworks for plant breeding and seed production	7.00	The following relevant laws and decisions are in place: - Law No. 08-042-AN-RM of December 1, 2008, regulates biotechnology in Mali. - Decision No. 2021-0055-USTTB-R/SG-SAJE of March 12, 2021, created the <i>Comité de Biosûreté et de Biosécurité des établissements Publics</i> (CIPBB). - Decision No 2021-0118-USTTB- R/SG-SAJE of June 08, 2021, appointed the members of the CIPBB in Mali.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	2.00	FMSS are not recognized in the seed policy or seed law. However, several NGOs promote support FMSS.
15. Adequacy of seed inspection services	6.00	In 2022, Mali had 82 public seed inspectors. The seed inspectors are active across the country. They work in accordance with the regulatory texts governing phytosanitary control in the Republic of Mali and the Seed Law. According to TASAI study, the main constraints facing seed inspection are inadequate transportation and security risks in some parts of the country.
16. Adequacy of government efforts to combat counterfeit seed	6.00	Seed policy instruments outline punishment and penalties for seed quality-related offenses. However, the laws are not enforced strictly.

Indicator	Score (out of 10)	Description of performance
17. Adequacy of national seed trade association	6.17	The ASSEMA is Mali's national seed trade association. ASSEMA received an overall rating of 6.17/10, comprised of the following sub-scores: democracy and governance:7/10, activity on important seed sector issues:6/10, providing value to members:6/10, managerial ability:6/10, ability to mobilize resources:6/10, and effectiveness in advocacy:6/10.
FINAL SSPI SCORE	5.74	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Despite the high potential for production and productivity, the agriculture sector operates below its capacity due to overreliance on rain-fed crop production and limited use of improved inputs. Mali's seed sector is in the early growth stage. For the seed sector to sustain the current growth momentum, the following issues need to be addressed:

- Increasing the capacity to produce and maintain Early Generation Seed.
- Enhancing the analytical capacity of the seed laboratory.
- Improving seed distribution networks in the rural networks.
- Enhancing awareness of the benefits of certified seed among farmers.

Data for the SSPI report for Mali was collected by:

Binta Diallo Traore

Laboratoire des Semences, Mali.

Seed Sector Performance Index (SSPI) Country Brief – MAURITANIA

OVERVIEW OF THE SEED SECTOR

The seed industry in Mauritania is in the nascent stage of development. The formal system comprises seed companies, seed producers, cooperatives, and a network of seed multipliers who produce under multiplication contracts between institutions and multipliers. These entities source breeder seed from the *Centre National de Recherche Agronomique et de Développement Agricole* (CNRADA), the national agricultural research institute. The sector is guided by Law No 96-025 of 8 July 1996, which opened the industry to private players. In addition, there are multiple regulatory instruments including decrees, technical regulations, and ministerial orders, most of which are either drafts, or were passed, but not being implemented. The main government agency in the seed sector is *Conseil National des Semences et Plants* (CNSP). The four priority crops, as identified by the local seed sector experts are sorghum, rice, maize, and cowpea. Combined, these four crops account for 78% of area harvested to field crops. Mauritania is a member of the *Union du Maghreb Arabe* (UMA).

Overall country score (out of 10):		2.82
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Sorghum	137,000	50%
Rice	77,000	17%
Maize	19,000	6%
Cowpea	22,526	5%
Total		78%
Total arable land:		0.45 million ha
Population:		4,244,878
Number of farming households:		MD
Contribution of agriculture to GDP:		19.2%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	4.00	Varieties that have passed Distinctness, Uniformity, and Stability (DUS) and Value for Cultivation and Use (VCU) tests are approved by the CNRADA, in collaboration with the CNSP. The average length of the variety release process is 28 months.
2. Number of varieties released in last 3 years	0.00	During the 2020 – 2022 period, no varieties of the four crops were released.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	1.36	As of 2023, the CNRADA had two active breeders for the four crops: one for sorghum, and one for rice. The adequacy of the number of breeders was rated at 1.50/10 on average across the four crops because two breeders fall way short of requirements. Funding to the breeding programs was given a score of 1/10 because budgets for research activities are extremely low. The research infrastructure received a low rating of 1.25/10 due to the obsolescence of research facilities and a shortage of laboratory equipment. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	1.00	There is no national institute for the coordination of PGRFA activities. However, the CNRADA has a cold room in which varieties are stored.
5. Adequacy of Early Generation Seed (EGS)	2.08	The main source of EGS in Mauritania is private seed companies. Adequacy of the EGS supplied was rated at 2.5/10 on average across the four crops because EGS production is almost exclusively dedicated to rice varieties. Quality of EGS supplied was given a rating of 1.75/10 because only rice EGS is produced under sufficient quality standards. Timeliness of delivery of EGS was given a score of 2/10 because only rice varieties are provided by private companies. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.99	In 2022, the number of varieties available on the market for the four crops was 15 rice varieties. There were none for the other three crops.
7. Utilization of quality commercial seed by farmers	5.43	In 2022, seed production for the four crops was: 4,071 MT of rice seed and 2 MT of maize seed. These volumes met 54% of the national rice seed requirements and less than 1% of the national maize seed requirements.
8. Clarity and enforcement of seed import/export regulations	3.00	The CNRADA is the only entity that is authorized to import planting materials. All other food and fiber imports are controlled by the Minister responsible for Agriculture.
9. Adequacy of agro-dealer networks	3.00	In 2022, Mauritania had only 15 agro-dealers. The marketing and distribution of seed are under the responsibility of seed companies, but all are concentrated in the Trarza region.
10. Availability of seed in small package sizes	0.00	Of the four priority crops, none of the seed is sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	9.00	Mauritania's seed sector is guided by Law No. 96-025 of 8 July 1996 on the production, control, and marketing of seeds and seedlings. It is operationalized through two decrees, one regulation, and 10 ministerial orders.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	3.00	Mauritania is an associate member of the Economic Community of West African States (ECOWAS), through <i>Comité permanent inter-État de lutte contre la sécheresse au Sahel</i> (CILSS). CILSS is an organization of countries in the Sahel region that subscribe to the ECOWAS Seed Regulations. However, the implementation of the ECOWAS seed regulations is constrained by the lack of an Arabic version.
13. Status of national biosafety frameworks for plant breeding and seed production	0.00	Mauritania does not have a national biosafety framework.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not recognized in Mauritania.
15. Adequacy of seed inspection services	5.00	In 2022, Mauritania had five public seed inspectors.
16. Adequacy of government efforts to combat counterfeit seed	2.00	Combating the production and sale of counterfeit seed is guided by Law No. 96-025 of 8 July 1996, which designates a directorate to lead efforts to combat counterfeit seeds. On paper, two main measures exist to control counterfeit seeds: certificates issued by the government agency in charge of control and certification of seed, and penalties for infringement. However, these measures are not used consistently, justifying the low score.
17. Adequacy of national seed trade association	7.00	The Interprofessional Seeds and Seedlings of Mauritania (ISPM) is the national seed trade association. ISPM comprises 35 to 40 private producer companies, 19 of which are active and produce rice seed. The overall rating of ISPM was 6.83/10 and comprised of the following sub-scores, all measured on a scale of 1-10: effectiveness in advocacy: 8; managerial ability: 7; proving value to members: 7; governance and democracy: 7; ability to mobilize resources: 7; activities on important seed sector issues: 6.
FINAL SSPI SCORE	2.82	Highest scores: in UMA: Tunisia, 5.77 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

The agricultural sector in Mauritania faces several challenges, primarily due to its arid and semi-arid climate, which limits agricultural production. Agriculture plays a relatively minor role in the country's economy, contributing a small percentage of the GDP. The sector is characterized by subsistence farming, with crops such as millet, sorghum, maize, and rice grown for domestic consumption. Challenges in the agricultural sector include water scarcity, inadequate infrastructure, and limited access to modern farming techniques and technologies. Similarly to the broader agricultural sector, the formal seed sector is in the nascent stage of growth. For the seed sector to grow, significant investments as well as policy reforms are needed along the entire seed value chain, particularly in the following areas:

- Updating the main seed law and passing multiple regulatory instruments to provide a framework for the development of the formal seed sector.
- Enhancing CNRADA's capacity to produce pre-basic and EGS for priority cereal crops in the country.
- Enhancing the capacity of personnel and facilities of the quality control center for seeds and seedlings.

Data for the SSPI Mauritania report were collected by:

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Head of Seeds and Plants Quality Control in the Ministry of Agriculture of Mauritania.

Seed Sector Performance Index (SSPI) Country Brief – MOZAMBIQUE

OVERVIEW OF THE SEED SECTOR

The seed sector in Mozambique is in the early growth stage and is dominated by the informal seed system. The *Autoridade Nacional de Sementes (ANS)* which oversees seed certification and control is under the Ministry of Agriculture. The *Instituto de Investigação Agrária de Moçambique (IIAM)* is Mozambique's national agricultural research institute. The four priority crops, as identified by the local seed sector experts are maize, cowpea, groundnut, and rice. Combined, these four crops account for 63% of area harvested to field crops. Mozambique is a member of the Southern African Development Community (SADC).

Overall country score (out of 10):		3.93
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	2,286,362	44%
Cowpea	348,274	8%
Groundnut	346,563	8%
Rice	283,919	6%
Total		63%
 Total arable land:		5.65 million ha
 Population:		32,513,805
 Number of farming households:		4,167,702
 Contribution of agriculture to GDP:		27.5%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	4.00	As part of the variety release process, the ANS conducts the Distinctness, Uniformity, and Stability (DUS), and Value for Cultivation and Use (VCU) tests, while the <i>Subcomité de Registo e Libertação de Variedades (SCRLV)</i> evaluates and approves the release. While the process of variety release may be clearly laid out, in practice it faces multiple challenges, which in turn often delay the process (TASAI, 2020). The duration is 25 months.
2. Number of varieties released in last 3 years	1.57	During the 2020-2022 period, five varieties were released for the four crops: one for maize and four for rice. There were no varieties released for cowpea and groundnut.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	2.67	As of 2023, IIAM had 17 active breeders for the four crops: seven for maize, two for cowpea, two for groundnut, and six for rice. Satisfaction with the number of breeders was rated at an average of 5/10 across the four crops due to the inadequate number of breeders. Funding for breeding programs was rated low at 1.5/10 because funding for breeding programs is inadequate. Basic research infrastructure was also given a low score of 1.5/10 because of inadequate investment in research infrastructure. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	3.00	The <i>Centro Nacional de Recursos Fitogenéticos (CNRF)</i> is the national center for the management of plant genetic resources in Mozambique. The center manages a basic gene bank and undertakes <i>ex-situ</i> conservation. However, the center is constrained in the maintenance and multiplication of accessions, because there is no effective national program for <i>in-situ</i> conservation.

Indicator	Score (out of 10)	Description of performance
5. Adequacy of Early Generation Seed (EGS)	3.08	IIAM, the International Maize and Wheat Improvement Centre (CIMMYT), the International Institute for Tropical Agriculture (IITA), and the International Rice Research Institute (IRRI) are the main sources of EGS for the four crops in Mozambique. Adequacy of the quantity of EGS supplied was rated at 2/10 on average. While adequate quantities of EGS for maize and rice are usually available, there are challenges for cowpea and groundnut. The quality of EGS was given a score of 4/10 because seed quality for the preferred old varieties has degenerated. The timeliness of delivery of EGS was given a rating of 3.25/10 due to poor planning and coordination between IIAM and seed companies. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	3.38	In 2022, the number of varieties available on the market for the four crops was 15: seven for maize, two for cowpea, two for groundnut, and four for rice.
7. Utilization of quality commercial seed by farmers	1.63	In 2022, seed production for the four crops was: 4,500 MT of maize seed, 224 MT of cowpea seed, 119 MT of groundnut seed, and 3,935 MT of rice seed. Adjusted for imports and exports below (indicator 8), total available seed meets 16% of national seed requirement for maize, 4% for cowpea, 1% for groundnut, and 54% for rice.
8. Clarity and enforcement of seed import/export regulations	8.00	The regulations to guide seed importation and exportation are very clear. However, their implementation is weak due to inadequate coordination among the actors. In 2022, 2,774 MT of maize seed and 615 MT of cowpea seed were imported.
9. Adequacy of agro-dealer networks	4.00	In 2022, Mozambique had only 109 agro-dealers. In compliance with Article 41 of the Seed Regulation, agro-dealers first apply for a permit from the Ministry of Industry and Trade, after which they are licensed by the ANS and the local state bodies that oversee agriculture.
10. Availability of seed in small package sizes	0.63	Of the four priority crops, only 10% of maize seed, 30% of cowpea seed, and 30% of groundnut seed were sold in small packages of 2kg or less. None of the rice seed was sold in small packages.
11. Status of national seed policy instruments	9.00	The formal seed sector in Mozambique is regulated by Decree N° 12/2013 of 10 April 2013. The Decree mandates the ANS to regulate the formal sector.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	7.00	Mozambique is a member of the SADC. The Mozambique Seed Regulation is aligned with the SADC Harmonized Seed Regulatory System. The clauses related to variety release are implemented and have allowed varieties in the SADC Variety Catalogue to be commercialized in Mozambique. The clauses related to Seed Quality Assurance and Seed Certification are not yet implemented.
13. Status of national biosafety frameworks for plant breeding and seed production	6.00	Decree 71/2014, <i>Regulamento de Biossegurança Relativa a Gestão de Organismos Geneticamente Modificados</i> , is expected to regulate the national biosafety frameworks. It establishes procedures and norms related to the use, importation, exportation, and research related to GMOs. However, the regulation is not being implemented fully.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	2.00	FMSS are only recognized in the draft seed policy. In addition, FMSS are promoted by some local and international development agencies and NGOs.
15. Adequacy of seed inspection services	5.00	In 2022, Mozambique had 42 seed inspectors. Of these, 18 were public inspectors and 24 were private inspectors. Public inspection service is not effective due to lack of resources to effectively conduct their mandate. Most private seed inspectors are in academic institutes and are not active.
16. Adequacy of government efforts to combat counterfeit seed	2.00	The government measures to address the challenge of counterfeit seed are inadequate. Activities for monitoring the players as well as surveillance are not conducted consistently. In addition, the details of the seed lots are not labelled on the seed packages.
17. Adequacy of national seed trade association	3.33	The Mozambique Seed Trade Association (MOSTA) is the national umbrella for the private-sector seed industry. The overall rating of MOSTA was 3.33/10 and is comprised of the following sub-scores, all measured on a scale of 1-10: democracy in elections:8, effectiveness in advocacy:4, managerial ability:3, activity on important seed sector issues:2, providing value to members:2, and ability to mobilize resources:1.
FINAL SSPI SCORE	3.93	Highest scores: in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Mozambique's formal seed system is in the early growth stage of development. It is characterized by well-established breeding programs, evolving seed policy environments, many small and medium seed companies, and a growing agro-dealer network. Seed companies produce and sell a limited range of staple crops, while the government and NGOs are still significant players in the sector. The number of local and regional seed companies entering the seed market is increasing. The agro-dealer network that supports the distribution of seed to smallholder farmers is also growing. Recently government and development partner initiatives have contributed to a favorable environment for seed business competition. For the seed sector to sustain the current growth momentum, the government should focus on:

- Enhancing the capacity of IIAM to produce and maintain Early Generation Seed.
- Strengthening the capacity of the ANS in seed quality control and certification.
- Facilitating the strengthening of the capacity of seed companies in seed quality assurance and improving their capacities in seed production and marketing.

Data for the SSPI Mozambique report was collected by:

Dr. Elsa Adélia Timana

Head of the National Seed Authority, Ministry of Agriculture of Mozambique.

Seed Sector Performance Index (SSPI) Country Brief – NAMIBIA

OVERVIEW OF THE SEED SECTOR

While agriculture is an important contributor to Namibia's economy, due to the country's arid climate, much of the sector focuses on livestock as opposed to crop production. Its agroecological conditions set Namibia apart from many other African countries and impact its seed sector, which is in the early growth stage and is mostly semi-formal. The main relevant policy instrument is the Seed and Seed Variety Act, No.23 of 2018, though enacted, is yet to be enforced because the accompanying regulations are not yet passed. The seed sector is the mandate of the Ministry of Agriculture, Water, and Land Reform (MAWLR). As of 2022, Namibia had no private seed companies (local or multinational) actively producing seed. The four priority crops, as identified by the local seed sector expert, are pearl millet, maize, sorghum, and cowpea. Combined, these four crops account for 92% of area harvested to field crops. Namibia is a member of the Southern African Development Community (SADC).

Overall country score (out of 10):		4.21
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Pearl millet	355,200	71%
Maize	80,000	11%
Sorghum	14,000	7%
Cowpea	10,000	3%
Total		92%
Total arable land:		0.8 million ha
Population:		2,756,722
Number of farming households:		197,607
Contribution of agriculture to GDP:		5.1%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	4.00	Namibia has no functional variety release and registration system: the process for variety release is outlined in the Seed and Seed Variety Act (No.23 of 2018), but the accompanying regulations are yet to be passed.
2. Number of varieties released in last 3 years	1.57	During the 2020-2022 period, no varieties of the four crops were released due to the lack of a variety release process. However, five cowpea varieties were pre-released in 2020 in anticipation of the launch of the Variety Release Committee.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	1.50	As of 2023, the MAWLR had only breeder for sorghum. The adequacy of the number of breeders was rated 0.5. The adequacy of funding for breeding programs was rated 2/10, as the Ministry of Agriculture received support from the International Atomic Energy Agency (IAEA) to develop cowpea varieties using mutation breeding. The breeding infrastructure was rated 2/10. The MAWLR has received support from FAO, the <i>Gesellschaft für Internationale Zusammenarbeit</i> , and IAEA to construct screen houses. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	7.00	The national gene bank is under the National Botanical Research Institute, which collects, characterizes, and conserves the genetic resources of most of the cultivated crops and wild species.

Indicator	Score (out of 10)	Description of performance
5. Adequacy of Early Generation Seed (EGS)	6.42	The MAWLR is the sole producer of EGS for the four priority crops, which it sells to seed growers to produce certified seed. The adequacy of the quantity of EGS was rated 6.25/10, reflecting that the government does lacks sufficient capacity and land to produce enough EGS. The quality of EGS was scored 6/10, reflecting that the seed certification process is not always adhered to. The timeliness of the delivery of EGS was rated 7/10 on account of occasional delays in the delivery of EGS to seed cooperatives and seed producers. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.99	In 2022, the number of varieties available on the market for the four crops was 15: three pearl millet, two maize, two sorghum, and eight cowpea varieties.
7. Utilization of quality commercial seed by farmers	2.39	In 2022, the volumes of production reported for the four priority crops were 240 MT of pearl millet seed, 22 MT of maize seed, 32 MT of sorghum seed, and 15 MT of cowpea seed. These volumes met 24% of the national requirement for pearl millet seed, 6% of the same for maize seed, 100% for sorghum seed, and 43% for cowpea seed.
8. Clarity and enforcement of seed import/export regulations	7.00	The Seed and Seed Variety Act guides the importation and exportation of seeds. The Department of Law Enforcement in the MAWLR is responsible for issuing import permits. In 2022, no seed imports or exports were recorded for the four priority crops.
9. Adequacy of agro-dealer networks	3.00	In 2022, Namibia had eight agro-dealers. The number is not adequate, and they are mostly located in urban areas.
10. Availability of seed in small package sizes	9.72	Of the four priority crops, 100% of the millet, sorghum, and cowpea seed was sold in small packages of 2 kg or less, while 60% of the maize seed was sold in small packages.
11. Status of national seed policy instruments	7.00	Most important seed policy instruments exist, but some are yet to be enacted. The policy instruments include: - Namibia Seed Policy (2013) - operational - Seed and Seed Variety Act No.23 (2018) – passed but yet to be enforced. - Regulations for the implementation of the Seed and Seed Variety Act No.23 (2018) – in draft form, yet to be enacted into law. - Namibia Plant Breeders' and Farmers' Right Bill (2009) - was reviewed in 2016, but is yet to be enacted into law
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	3.00	The Seeds and Seed Varieties Act and the Draft regulations are aligned with the SADC Harmonized Seed System. However, the Act is not enforced and the regulations are in draft form.
13. Status of national biosafety frameworks for plant breeding and seed production	9.00	Biosafety Act No. 7 (2006) became operational in 2016. The law is being implemented.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not recognized in seed policy instruments, although they are mentioned in the Namibia National Strategic Action Plan for Plant Genetic Resources for Food and Agriculture, 2016-2026, which advocates for on-farm conservation to maintain crop diversity. One community seed bank has been set up in Kavango West, and three more are planned for other regions to ensure that farmer varieties are preserved.
15. Adequacy of seed inspection services	4.00	In 2022, Namibia had 37 public seed inspectors, who are employed by the MAWLR and also carry out research or extension activities. Their main constraint is a lack of vehicles for seed inspection.
16. Adequacy of government efforts to combat counterfeit seed	4.00	The draft regulations for the Seeds and Seed Varieties Act outline the penalties and fines for offenses involving counterfeit seed in the Schedule of Fees section. The government also uses secure seed packages to help reduce the incidence of counterfeit seeds.
17. Adequacy of national seed trade association	0.00	Namibia has no national seed trade association.
FINAL SSPI SCORE	4.21	Highest scores: in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Namibia is mainly arid and thus the amount of arable agriculture is limited. For the seed sector to grow, the government should focus on:

- Finalizing and adopting the regulations to implement the Seed and Seed Variety Act, adopting the Seed and Seed Varieties Act of 2018 into law and finalizing the Namibia Plant Breeders and Farmers' Rights Bill.
- Strengthening the capacity of the plant breeders in the MAWLR to develop and maintain new varieties that are suitable for the agroecological conditions in the country.
- Establishing seed processing facilities and seed laboratories to improve the performance of the quality control system.

Data for the SSPI Namibia report was collected by:

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Seed Sector Performance Index (SSPI) Country Brief – NIGER

OVERVIEW OF THE SEED SECTOR

Niger's seed industry is in the emerging stage. Although the seed system is dominated by the informal system, it is moving towards a more organized and regulated formal system. The main entity in charge of seed certification and quality control is the *Direction du Contrôle et de la Certification des Semences* (DCCS) under the Ministry of Agriculture. Plant breeding activities are concentrated in the *Instituts Nationaux de Recherche Agricole* (INRA, Niger's national agricultural research institute). The four priority crops, as identified by the local seed sector experts are maize, millet, sorghum, and cowpea. Combined, these four crops account for 99% of area harvested to field crops. Niger is a member of the Economic Community of West African States (ECOWAS) and the Community of Sahel–Saharan States (CEN-SAD).

Overall country score (out of 10):		5.57
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Millet	6,145,774	41%
Cowpea	5,971,377	35%
Sorghum	3,519,085	23%
Maize	10,467	0.1%
Total		99.1%
Total arable land:		17.7 million ha
Population:		25,396,840
Number of farming households:		2,387,412
Contribution of agriculture to GDP:		40%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	5.00	Applications for variety release are evaluated by the <i>Comité National des Semences</i> (CNS). The evaluation is based on Distinctness, Uniformity, and Stability (DUS) and Value for Cultivation and Use (VCU) tests. The length of the variety release process is between three and four years.
2. Number of varieties released in last 3 years	3.14	During the 2021-2023 period, a total of 16 varieties were released: seven cowpea and nine maize varieties. The low score reflects the absence of new varieties for the other two priority crops.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	5.58	As of 2023, the INRA had nine active breeders for the four crops: two millet, four sorghum, two cowpea, and one maize breeder. The adequacy of the number of breeders was rated 6.75/10, signaling that the number of breeders employed by INRA is not sufficient to meet the needs of the industry. The funding for breeding programs was given a rating of 5/10, reflecting that the current funding levels meet only a part of the overall need. The research infrastructure was scored at 5/10, similarly signaling that the current infrastructure needs improvement and updating. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	7.00	Plant genetic conservation and utilization is INRA's mandate in the country.
5. Adequacy of Early Generation Seed (EGS)	7.83	The main sources of EGS in Niger are INRA and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). ICRISAT is a source of EGS for millet, sorghum, and groundnut. The adequacy of the quantity of EGS was given a rating of 6.5/10, reflecting the fact that recently the availability of EGS has improved considerably. The quality of EGS was rated 8/10, on the basis that EGS undergoes field and laboratory checks before it is delivered to producers. The timeliness of delivery of EGS was scored 9/10, indicating that EGS is mostly delivered on time. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	3.40	In 2022, the number of varieties available on the market for the four crops was 35: 15 millet, seven sorghum, 11 cowpea, and two maize varieties.
7. Utilization of quality commercial seed by farmers	3.76	In 2022, the volumes of production reported for the four priority crops were 9,238 MT of millet seed, 1,027 MT of sorghum seed, 1,811 MT of cowpea seed, and 67 MT of maize seed. These volumes meet 45% of the national requirement for millet seed, 9% of the same for sorghum seed, 21% for cowpea seed, and 81% for maize seed. The low rating reflects that, apart from maize, the available volumes of seed for sorghum, cowpea, and millet fall short of meeting the demand.
8. Clarity and enforcement of seed import/export regulations	8.00	Guidelines for seed imports and exports are outlined in the Manual of Harmonized Procedures for the Import and Export of Plant Seeds and Seedlings in the ECOWAS-WAEMU-CILSS region, which Niger follows. There were no reported seed imports and exports in 2022.
9. Adequacy of agro-dealer networks	7.00	In Niger, agro-dealers are authorized to market seed and other inputs by the Ministry of Agriculture. In 2022, the number of registered agro-dealers was 84. The number is adequate for the current demand, as most seed is not distributed through agro-dealers, but instead sold directly to farmers, NGOs, or other projects.
10. Availability of seed in small package sizes	2.39	Of the four priority crops, 22% of millet seed, 36% of sorghum seed, 26% of cowpea seed, and 45% of maize seed are sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	10.00	All important policy instruments are in place and are up to date, including: - Seed policy - <i>La Politique Semencière Nationale</i> (2012) <i>Loi N°1214-67 du 05 Novembre</i> - provides overall guidance to the seed sector. - Nine regulations that operationalize various aspects of the seed law, including registration of seed producers, quality control, seed packaging, among others.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	7.00	Niger is a member of ECOWAS. While Niger has adopted the ECOWAS seed regulations of 2008, the implementation of the various harmonization requirements is ongoing, namely: - While <i>Arrêté N°121 MAG/DGA</i> of 16 September 2014 established the <i>Comité National de Semences</i> (CNS), the variety release subcommittee does not meet regularly. - The decree for seed import and export has not been implemented. - The Ministry of Agriculture has adopted a National Catalog of Crop Varieties and Plant Species in <i>Arrêté 122 MAG/DGA du 16/09/2014</i>. However, the catalogue is not updated regularly. - The seed sector support fund has not been set up.
13. Status of national biosafety frameworks for plant breeding and seed production	6.00	Niger has a National Biosafety Framework that deals with all aspects related to the generation, use, and commercialization of agricultural biotechnology.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not recognized by the government of Niger or any of the seed policy instruments.
15. Adequacy of seed inspection services	7.00	In 2022, Niger had 74 public seed inspectors. The number of inspectors is not sufficient given the size of the country, which means fields are located large distances from each other. To remedy the problem, in some areas, field inspectors travel to the same area in groups to be able to inspect all declared fields in the region.

Indicator	Score (out of 10)	Description of performance
16. Adequacy of government efforts to combat counterfeit seed	4.00	The DCCS, which oversees seed quality, does not have a mechanism to track and report counterfeit seed at present. <i>Loi N°1214-67 complétant REG.4.5 -2008</i> (November 2014) spells out guidelines on combating counterfeit seeds. Measures used by the government include monitoring seed storage facilities and the use of secure labels on packaging. Further, seed supplied through tenders must be certified by the <i>Direction du Contrôle et de la Certification des Semences</i> (DCCS).
17. Adequacy of national seed trade association	7.50	The <i>Association des Producteurs Privés de Semences du Niger</i> (APPSN) brings together private seed sector players in Niger. APPSN received an overall rating of 7.50/10, comprised of the following sub-scores: effectiveness in advocacy:9/10, managerial ability:8/10, activities on important seed sector issues:7/10, providing value to members:7/10, governance and democracy:7/10, and ability to mobilize resources:7/10.
FINAL SSPI SCORE	5.57	Highest scores: in ECOWAS is Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Niger's Sudano-Sahelian zone covering the southern part of the country is the most suitable for agriculture, although it receives limited rainfall (between 600 to 800 mm per year).²⁷ Crop production is based on smallholder, subsistence farming. For the seed sector to grow, the following priority issues need to be addressed:

- Increasing funding for variety development, especially for the crops that have had no new varieties for years.
- Increasing support to produce seed for the priority crops to ensure that local production covers a greater percentage of the national requirement.
- Increasing the percentage of seeds available in small packages to better cater to smallholder farmers.
- Strengthening DCCS in seed quality control and certification.

Data for the SSPI Niger report was collected by:

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Direction du Contrôle et de la Certification des Semences (DCCS), Ministry of Agriculture

²⁷ <https://www.yieldgap.org/Niger> Accessed 23 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – NIGERIA

OVERVIEW OF THE SEED SECTOR

The seed industry in Nigeria is in the early growth stage of development. The National Seed Policy of 2021, the National Agricultural Seed Council (NASC) Act of 2019, and the National Seed Roadmap for Nigeria of 2020 provides the policy direction and regulatory framework for the formal seed sector. The NASC Act describes the roles of the NASC, which is the seed regulatory agency. The National Centre for Genetic Resources and Biotechnology (NACGRAB) coordinates variety release and registration, and several research institutions such as the Institute for Agricultural Research and Training (IART), the National Cereals Research Institute (NCRI), and the Institute for Agricultural Research (IAR), as well as universities that play a role in research, variety development and maintenance. The four priority crops, as identified by the local seed sector experts are rice, maize, sorghum, and soya bean. Combined, these four crops account for 62% of area harvested to field crops. Nigeria is a member of the Economic Community of West African States (ECOWAS).

Overall country score (out of 10):		6.29
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	6,205,340	21%
Sorghum	5,931,100	21%
Rice	4,321,130	16%
Soya bean	1,262,280	4%
Total		62%
Total arable land:		36.872 million ha
Population:		230,842,743
Number of farming households:		23,510,909
Contribution of agriculture to GDP:		24.17%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	8.00	The NACGRAB oversees the activities of the National Committee on Naming, Registration, and Release of Crop Varieties, Livestock Breeds, and Fisheries. All measures are in place to align the DUS (Distinctness, Uniformity, and Stability) and VCU (Value for Cultivation and Use) guidelines with both regional and national regulations for variety release and registration in Nigeria. Furthermore, there is an ongoing review aimed at reducing the costs associated with variety release, with the objective of making it more economically feasible for breeders and variety developers.
2. Number of varieties released in last 3 years	5.14	During the 2020-2022 period, 30 varieties were released for the four crops: two for rice, 23 for maize, two for sorghum, and three for soya bean.

Indicator	Score (out of 10)	Description of performance
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	4.75	As of 2023, the IAR, Amadu Bello University (ABU), the IART, Obafemi Awolowo University (OAU), and the NCRI had 37 active breeders for the four crops: six for rice, 20 for maize, four for sorghum and seven for soya bean. Adequacy of the number of breeders was rated at 5.25/10 on average across the four crops because most breeders are not adequately funded to conduct any serious breeding work. Similarly, funding to the breeding programs was given a score of 5/10 because funding is generally limited. Equipment and infrastructure at the breeding programs was given a score of 4/10 because existing infrastructure facilities in most of the research stations require a major overhaul. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	6.00	The NACGRAB is mandated to conduct activities on plant genetic conservation and utilization in Nigeria. However, the institute is constrained by inadequate funding to conserve, document, and handle the national genetic resources. Infrastructure capacity is also a big challenge.
5. Adequacy of Early Generation Seed (EGS)	4.75	The main sources of EGS in Nigeria are private seed companies as well as national and regional agricultural research institutions, such as NCRI, the International Institute for Tropical Agriculture (IITA)-Sentex, and IAR. Adequacy of the quantity of EGS supplied was rated as 4.5/10 on average across the four priority crops. The quantity of EGS in most cases is far below the national requirement due to the lack of a proper central coordination and planning system. The quality of EGS supplied was scored at 4.75/10 as there is room for improvement through the use of innovative technologies in the production and distribution of the EGSs. The timeliness of delivery of EGS supplied was given a rating of 5/10 as there is significant room for improvement through the introduction of licensing and contract seed production. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	7.86	In 2022, the number of varieties available on the market for the four crops was 98: 15 for rice, 62 for maize, 14 for sorghum, and seven for soya bean.
7. Utilization of quality commercial seed by farmers	2.11	In 2022, seed production for the four crops was: 36,010 MT for rice seed, 37,714 MT for maize seed, 3,463 MT for sorghum seed, and 4,220 MT for soya bean seed. Adjusted for imports and exports below (indicator 8), total available seed meets 27% of national seed requirement for rice, 29% for maize, 9% for sorghum, and 16% for soya bean.
8. Clarity and enforcement of seed import/export regulations	5.00	The process of importing and exporting seed is hampered by a huge knowledge gap on requisite procedures. In addition, the process involves multiple government agencies that are currently not coordinated. Further, the enforcement mechanism of the various agencies is weak. In 2022, 300 MT of rice seed, 319 MT of maize seed, and 1.52 MT of sorghum seed were imported while 1.33 MT of maize seed was exported.
9. Adequacy of agro-dealer networks	5.60	In 2022, Nigeria had 30 agro-dealers who were registered by NASC. However, the number of active but unregistered agro-dealers is much higher.
10. Availability of seed in small package sizes	3.78	Of the four priority crops, only 20% of rice seed, 60% of rice seed, 1% of sorghum, and 1% of millet seed are sold in small packages of 2kg or less.
11. Status of national seed policy instruments	9.00	The seed sector in Nigeria is guided by the National Agricultural Seed Policy (2022) and operationalized by the National Agricultural Seed Council Act (2019). The National Harmonized Seed Rules and Regulation (2015) is operational. NASC has set up a Plant Variety Protection Desk, as a key part of implementing the Plant Variety Protection Act of 2021.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	9.00	Nigeria is a member of ECOWAS. The current seed policy instruments are aligned with the regional seed regulations and are being implemented. In 2022, the National Agricultural Fund was established.
13. Status of national biosafety frameworks for plant breeding and seed production	9.00	National Biosafety Management Act (2019) regulates biotechnology in Nigeria. The Act is fully operational and is managed by the National Biosafety Management Agency (NBMA).
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	8.00	FMSS in Nigeria are recognized in the National Agricultural Seed Policy (2022) and the National Agricultural Seeds Council Act (2019). Although FMSS are promoted in Nigeria, stakeholder engagement and sensitization are still needed to promote pluralistic seed systems.

Indicator	Score (out of 10)	Description of performance
15. Adequacy of seed inspection services	7.00	In 2022, Nigeria had 152 seed inspectors. 77 were public while 75 were private. Efforts are ongoing to implement the Organization for Economic Cooperation and Development (OECD) seed scheme and decentralize the coordination of seed certification and quality assurance mechanisms to make it service-oriented and improve efficiency.
16. Adequacy of government efforts to combat counterfeit seed	7.00	Combating the production and sale of counterfeit seed is guided by the NASC Act and the Seed Policy. Measures taken include regular market raids, surveillance missions, enlightenment missions, public burning of confiscated seeds, deployment of National Seed Tracker, and special labels called SEEDCODEX. Punitive measures include stoppage of sale of suspected seed, confiscation of seeds, sealing of premises, withdrawal of license, prison term of one year for a first offender or two years for a second offender, and withdrawal from participation in government seed subsidy programs.
17. Adequacy of national seed trade association	5.00	The Seed Entrepreneurs Association of Nigeria (SEEDAN) is the umbrella body of seed producers in Nigeria. SEEDAN's performance was rated at 5.00 /10 average and comprised of the following sub-scores: activities on important seed sector issues:6/10, effectiveness in advocacy:6/10; managerial ability:6/10; providing value to members:6/10; ability to mobilize resources:4/10; governance and democracy:2/10.
FINAL SSPI SCORE	6.29	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Nigeria's formal seed sector is in the early growth stage of development characterized by established breeding programs and evolving seed policy environments. Seed companies produce and sell a limited range of staple crops. While governments and NGOs are still significant players in the sector, there is a private growing agro-dealer network that supports the distribution of seed to smallholder farmers. Since a large percentage of farmers' seed requirements are met through the informal seed sector, there is ample opportunity for the formal sector to grow, especially given the country's large population of over 201 million and its diverse agro-ecology and dietary preferences. Collectively, these factors call for much larger investments in the research, development, and the multiplication of new crop varieties that are both climate and nutrition smart. For the seed sector to sustain the current growth momentum, the following issues need to be addressed:

- Strengthening the capacity of NARIs to produce varieties, produce and maintain EGS.
- Strengthening the coordination between research centers and seed companies to ensure a timely supply of adequate quantities of quality seed.
- Raising awareness of farmers on the benefits of newly developed varieties.
- Enhancing efforts to identify, train, register, and monitor agro-dealers across the country.
- Using the Plant Variety Protection Act of 2021 to encourage private companies to introduce new and improved varieties to the Nigerian market.

Data for the SSPI Nigeria report was collected by:

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Senior Technical Adviser to Director General of the National Agricultural Seeds Council

Seed Sector Performance Index (SSPI) Country Brief – RWANDA

OVERVIEW OF THE SEED SECTOR

The seed industry in Rwanda has developed rapidly from nascent to a growth stage over the last 10 years. The industry is characterized by an up-to-date policy environment, a growing local private sector, and active public breeding programs. The Rwanda Inspectorate, Competition, and Consumer Protection Authority (RICA) oversees seed inspection and certification. The Rwanda Agriculture and Animal Resources Development Board (RAB) is the national agricultural research institute, in charge of variety development and maintenance of public varieties and is the main source of EGS for seed companies. The four priority crops, as identified by the local seed sector experts are maize, bean, potato, and cassava. Combined, these four crops account for 76% of area harvested to field crops. Rwanda is a member of the Common Market for Eastern and Southern Africa (COMESA) and the East African Community (EAC).

**Overall country score
(out of 10):**

6.05

Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Bean	634,365	35%
Cassava	338,674	18%
Maize	301,022	16%
Potato	119,758	7%
Total		76%



Total arable land:

1.2684 million ha



Population:

13,400,541



Number of farming households:

2,300,011



Contribution of agriculture to GDP:

25%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	6.00	The RICA is the custodian of the data on variety release and registration. The National Variety Release Committee (NVRC) does not conduct tests for Distinctness, Uniformity, and Stability (DUS) and the National Performance Trials (NPT) for locally developed varieties but relies on data from breeders. For the varieties that are already registered in COMESA, the DUS and VCU data is obtained from the countries where the varieties were previously released.
2. Number of varieties released in last 3 years	6.29	During the 202-2022 period, the number of varieties released for the four crops was 38: 19 for maize and 19 for bean.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	5.08	In 2023, the RAB had eight breeders for the four crops: two for maize, two for bean, two for potato, and two for cassava. The adequacy of the number of breeders was rated 5.25/10 on average across the four crops, as the current number is insufficient to meet existing needs. The adequacy of funding for breeding programs was rated 5/10, as government only partly covers of the RAB's breeding program budget for the four crops. The adequacy of basic research infrastructure was rated 5/10, because it is not sufficient for the production and maintenance of Early Generation Seed. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	4.00	The RAB operates the national gene bank and coordinates PGRFA activities. Although the RAB recently acquired equipment for the gene bank, it is currently operating below capacity due to the lack of personnel and funding.

Indicator	Score (out of 10)	Description of performance
5. Adequacy of Early Generation Seed (EGS)	7.33	The RAB is the main source of EGS for seed companies and producers in Rwanda. Adequacy of the quantity of EGS supplied was rated 6.25/10 on average across the four crops due to RAB's lower production capacity. The quality of EGS was rated 7.75/10 due to RICA's strict adherence to quality control. Timeliness of supply of EGS was also rated highly (8/10) because ordering EGS has an established process that most seed producers follow. See Appendix 1 for crop-specific ratings.
6. Availability of crop varietal choice to farmers	4.04	In 2022, there were 44 varieties of the four crops on the market: 20 for maize, 9 for bean, 9 for potato, and 6 for cassava.
7. Utilization of quality commercial seed by farmers	2.11	In 2022, reported seed production was: 5,371 MT of maize seed, 527.8 MT of bean seed, and 34,649.7 MT of potato seed. When including seed imports described below (indicator 8), the total amount of available seed meets 73% of national seed requirement for maize seed, 5% for bean seed, and 35% for potato seed.
8. Clarity and enforcement of seed import/export regulations	8.00	The import process is efficient, assisted by online application and processing facilities. In 2022, 145 MT of maize seed was imported.
9. Adequacy of agro-dealer networks	9.00	In 2022, Rwanda had 2,871 agro-dealers. The agro-dealers are registered by RICA and distributed across the agricultural regions of the country. About half of these agro-dealers work exclusively under the Tubura program of the One Acre Fund (OAF).
10. Availability of seed in small package sizes	8.32	Of the four priority crops, only 89% of the maize seed and 24% of the bean seed was sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	10.00	Rwanda's seed sector is guided by the National Agriculture Policy (2018), Law N° 005/2016 of 05/04/2016 governing seeds and plant varieties and seven Ministerial Orders.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	9.00	Rwanda is a member of the EAC and the COMESA. The Seed Law and the Seed Standards are aligned with the COMESA Seed Trade Harmonization Regulations of 2014.
13. Status of national biosafety frameworks for plant breeding and seed production	1.00	The Biosafety Bill is under development.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not legally recognized in the country.
15. Adequacy of seed inspection services	8.00	As of 2023, Rwanda had 32 seed inspectors. Of these 10 are public inspectors while 22 are newly authorized private inspectors.
16. Adequacy of government efforts to combat counterfeit seed	8.00	The government has adopted several measures to improve seed quality assurance. There is strict implementation of the regulations on seed inspection (in the field and warehouses), seed sampling, and seed testing. In addition, seed that does not meet the standards is rejected and not sold and seed producers or agro-dealers who are caught dealing in counterfeit seed are blacklisted. Article 51 of the Seed Law stipulates a fine of up to US\$ 5,000 for any person who is caught contravening the provisions of the law.
17. Adequacy of national seed trade association	6.67	Rwanda has two national seed trade associations: the National Seed Association of Rwanda (NSAR) and the National Seed Consortium (NSC). Founded in 2015, NSAR is the older of the two and serves as the umbrella for the private seed sector in Rwanda. The 2023 SSPI study evaluated NSAR, which received an overall rating of 6.67/10, comprised of the following sub-scores: democracy in elections and governance – 8/10; effectiveness in advocacy – 7/10; managerial ability – 7/10; activity on important seed sector issues – 6/10; providing value to members -6/10; and ability to mobilize resources -6/10. The NSC was founded in 2021 through the support of MINAGRI and AGRA projects. It has a well-organized, national structure, and it is dominated by local seed companies and multipliers.
FINAL SSPI SCORE	6.05	Highest scores: in COMESA: Zambia, 7.89 in EAC: Tanzania, 7.25 in ECCAS: Rwanda, 6.05 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Rwanda's formal seed sector is in the early growth stage of development characterized by budding breeding programs and recently reformed seed policies. Seed producers and companies produce and sell a limited range of staple crops. While governments and NGOs are still significant players in the sector, the number of local and regional seed companies in the seed market is increasing. A strong private agro-dealer network supports the distribution of seed to smallholder farmers. The government's recent transition away from seed production and marketing has improved levels of competition in Rwanda's seed sector. For the seed sector to sustain the current growth momentum, the following issues need to be addressed:

- Enhancing the capacity of local seed companies in terms of breeding, variety maintenance, quality control, and seed marketing.
- Raising awareness among farmers of newly released varieties by RAB.
- Completing the process of accreditation of the national seed laboratory to the Internal Seed Testing Association (ISTA), following the Organization for Economic Cooperation and Development (OECD) seed schemes, and securing membership to the International Union for the Protection of New Varieties of Plants (UPOV).
- Supporting seed companies to develop climate-resilient driven varieties that respond to market demands and farmer preferences.
- Enhancing public capacity to develop guidelines to implement germplasm exchange, crop variety licensing, and royalty schemes.

Data for the SSPI report for Rwanda was collected by:

Dr. Clement Urinzwenimana

seed industry expert

Seed Sector Performance Index (SSPI) Country Brief – SENEGAL

OVERVIEW OF THE SEED SECTOR

Senegal's seed sector is in the early growth stage and is moving towards a more organized and regulated formal system. Seed producing entities include seed companies, seed cooperatives, economic interest groups, and individual seed producers. The *Division des Semences* (DISEM) is responsible for seed inspection and certification, and the *Comité National Consultatif des Semences et Plants* (CNCSP) oversees variety release and registration. The *Institut Sénégalais de Recherches Agricoles* (ISRA) oversees research and variety development. The ISRA and AfricaRice supply breeder seed to seed producers to produce certified seed. Senegal follows OECD regulations for certification of maize, sorghum, and rice, and it has an ISTA accredited laboratory. The four priority crops, as identified by local seed sector experts, are groundnut, millet, rice, and maize. Combined, these four crops account for 83% of area harvested to field crops. Senegal is a member of the Economic Community for West African States (ECOWAS) and the Community of Sahel–Saharan States (CEN-SAD).

Overall country score (out of 10):		5.31
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Groundnut	1,225,172	36%
Millet	969,693	28%
Rice	372,413	11%
Maize	277,243	8%
Total		83%
Total arable land:		3.83 million ha
Population:		18,384,660
Number of farming households:		871,042
Contribution of agriculture to GDP:		16%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	7.00	The CNCSP oversees the release and registration of varieties, which follow the ECOWAS Regulations and the UPOV guidelines. The average duration is 28 months.
2. Number of varieties released in last 3 years	2.43	During the 2020-2022 period, 11 varieties were released for the four crops: four for millet, four for rice, and three for maize.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	2.50	In 2022, ISRA employed five breeders for the four crops: two for groundnut, one for millet, and two for rice. The adequacy of the number of breeders was given a score of 0.75/10, indicating that the number does not meet the needs of the country's seed sector. The adequacy of funding for breeding programs was given a rating of 3/10, on the basis that the ISRA lacks sufficient government support and relies heavily on donor-funded projects. The adequacy of basic research infrastructure was rated 3/10, reflecting that breeding infrastructure is dilapidated and in need of updates. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	6.00	The ISRA oversees plant genetic resource management in Senegal. The genetic resources are collected, characterized, and conserved in national gene bank, called l'Unité de Recherches sur les Culture In vitro (URCI). The work at the Unit was constrained after the retirement of the Coordinator. However, he has since been replaced. However, facilities at the gene bank are dilapidated and need to be refurbished.
5. Adequacy of Early Generation Seed (EGS)	6.58	EGS is produced by seed companies, seed cooperatives, and individual seed producers. The adequacy of the quantity of EGS was rated 6.75, on the basis that EGS is produced by approved seed companies and producers. The quality of EGS was rated 7, reflecting that EGS is field inspected, packaged, and laboratory tested before it is certified for marketing. The timeliness of delivery of EGS was rated 6, reflecting challenges faced by ISRA in the timely supply of EGS, especially for groundnut. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	7.86	In 2022, there were 98 varieties of the four priority crops on the market: 36 groundnut varieties, 13 millet varieties, 36 rice varieties, and 13 maize varieties. The score reflects the fact that the variety releases have been few and the process erratic.
7. Utilization of quality commercial seed by farmers	8.16	In 2022, reported seed production volumes were 68,266 MT of groundnut seed, 1,626 MT of millet seed, 2,822 MT of rice seed, and 24,852 MT of maize seed. Adjusted for imports and exports below (indicator 8), total available seed meets 100% of national seed requirement for millet and maize, 82% for groundnut, and 18% for rice.
8. Clarity and enforcement of seed import/export regulations	5.00	Seed importation and exportation is overseen by the <i>Direction de la Protection des Végétaux</i> (DPV) under Decree No. 60-121 SG on the phytosanitary control of plant imports and exports. The low score reflects that the guidelines are not consistently followed and not all imports/exports go through the official process. In 2022, the official record includes 86 MT of maize seed imported, 7 MT of maize seed exported.
9. Adequacy of agro-dealer networks	7.00	In 2022, Senegal had 1,493 agro-dealers who were involved in the sale or distribution of seeds. The number is adequate, and they are located across the different regions.
10. Availability of seed in small package sizes	0.00	<i>Règlement C/REG.04/05/2008</i> stipulates standard sizes for seed packages, namely, 50 kg for groundnut, 40 kg for rice, 16 kg for maize, and 4 kg for millet. Accordingly, in 2022, none of the seed of the four crops was sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	8.00	Senegal's seed sector is guided by the ECOWAS Seed Regulations (C/Reg.4/05/2008), which harmonize the rules governing the quality control, certification, and marketing of seed and seedlings in the ECOWAS region, Law No. 94-81 of December 23, 1994, deals with the registration of varieties, the production, certification and trade of seeds or plants and several Decrees and one Ministerial Order. The seed industry stakeholders have highlighted the need for a national seed policy to provide general direction for the seed sector in the country.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	6.00	Senegal is a member of the ECOWAS. The implementation of harmonized seed regulations is ongoing. The national seed committee has been set up, and Senegal has also implemented a decree governing imports and exports. Still outstanding is the establishment of a seed fund. Outstanding areas to align include the application of the certification fees, and use of the professional card that is used as proof that one is an authorized inspector.
13. Status of national biosafety frameworks for plant breeding and seed production	8.00	The National Biosafety Authority, established by Law No. 2009-27 of July 13, 2009, is responsible for regulating genetically modified organisms (GMOs), and derived products, including their development, use, import, export, transportation, and sale.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	0.00	FMSS are not recognized in any of the seed policy instruments.
15. Adequacy of seed inspection services	6.00	In 2022, DISEM employed 107 (103 male and 4 female) public seed inspectors. In addition, there were 13 private, approved, and licensed technicians (inspectors) responsible for ensuring that seed producers maintained the required quality standards during production. Public seed inspectors are constrained by a lack of vehicles to access fields in all areas of the country.
16. Adequacy of government efforts to combat counterfeit seed	3.00	Law No. 94-81 of December 23, 1994, outlines the fines and penalties for producing or marketing counterfeit seeds. At present, the only measure used to combat counterfeit seed is the use of certification tags.

Indicator	Score (out of 10)	Description of performance
17. Adequacy of national seed trade association	6.67	The <i>Union National Interprofessionnelle des Semences</i> (UNIS) is the national seed trade association in Senegal. The members of the UNIS are either individual seed producers or seed producer groups/cooperatives. UNIS received an overall rating of 6.67/10, comprised of the following sub-scores: activity in important seed sector issues – 7/10, managerial ability -7/10, providing value to members -7/10, ability to mobilize resources – 7/10, effectiveness in advocacy – 6/10, and democracy and governance – 6/10.
FINAL SSPI SCORE	5.31	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Senegal's agricultural production is carried out in the drought-prone Sahel region, which is characterized by irregular rainfall and poor soils. As a result, the country relies on imports to meet most of its food needs.²⁸ Use of improved technologies including seed can alleviate some of the food shortages. For the seed sector to grow further, the following issues need to be addressed:

- Increasing capacity for ISRA's plant breeding programs to ensure the development of new, locally adapted, varieties.
- Strengthening seed quality control measures, including seed certification, seed analysis and laboratory testing.
- Rehabilitating the regional seed laboratories and establishing new seed sorting and conditioning centers.
- Increasing and improving measures to combat counterfeit seeds.

Data for the SSPI report for Senegal was collected by:

Mamadou Ndoye

Chef de la Division des Semences.

²⁸ <https://www.trade.gov/country-commercial-guides/senegal-agricultural-sector> Accessed 23 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – SEYCHELLES

OVERVIEW OF THE SEED SECTOR

In Seychelles, agricultural land is scarce, which limits local food production. The main agricultural activities include fishing, meat production, and the cultivation of fruits and vegetables. Overall, the country is a net importer of food. This context helps explain why the seed sector in Seychelles is in the nascent stage of growth and relies heavily on imported seed. The country has no seed producers or plant breeders. The Department of Agriculture in the Ministry of Agriculture regulates the seed sector. The four priority crops identified by the local seed sector experts are banana, pawpaw, eggplant, and cassava. Combined, these crops account for 100% of area harvested to crops. Seychelles is a member of the Common Market for Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC).

Overall country score (out of 10):		3.90
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Banana	40	67%
Cassava	25.67	13%
Eggplant	15.2	10%
Pawpaw	15.09	10%
Total		100%
Total arable land:		0.00015 million ha
Population:		97,617
Number of farming households:		700
Contribution of agriculture to GDP:		2.8%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	0.00	Seychelles has no variety release and registration process. However, the research station under the Department of Agriculture performs adaptive trials for imported crop varieties.
2. Number of varieties released in last 3 years	0.00	As there is no process for variety release, there were no varieties released for the four crops during the 2020 and 2022 period. The adaptive trials for the imported varieties only permit the varieties to be commercialized, but they are not counted as released varieties.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	0.00	Seychelles has no breeding programs. On average, the research station performs 25 adaptive research trials annually, five of which are dedicated to screening imported varieties while the others are on farmers' fields. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	7.00	The country has no dedicated institute to manage plant genetic resources; however, the focal point for the International Treaty on Plant Genetic Resources for Food and Agriculture, coordinates all relevant activities in collaboration with the Department of Agriculture. Seychelles is also affiliated with the Southern African Development Community (SADC) Plant Genetic Resources Centre in Zambia.

Indicator	Score (out of 10)	Description of performance
5. Adequacy of Early Generation Seed (EGS)	6.17	The research stations under the Department of Agriculture are the main suppliers of EGS and planting material for the four priority crops. EGS are imported and tested before being supplied to farmers. The adequacy of the quantity of EGS/planting material was given a score of 6.5/10, because the research station lacks an in-vitro unit to supply <i>in-vitro</i> seedlings for banana. The quality of EGS/planting material was given a rating of 7/10, indicating the high quality of imported varieties. The timeliness of delivery of EGS/planting material was rated 5/10, due to delays associated with the sourcing of imported varieties. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	3.69	In 2022, there were 39 varieties of the four crops on the market: 15 banana varieties, four pawpaw varieties, 11 eggplant varieties, and nine cassava varieties.
7. Utilization of quality commercial seed by farmers	MD	In 2022, there was no local seed production for the four crops. Instead, the national seed requirement was met through seed imports.
8. Clarity and enforcement of seed import/export regulations	7.00	The guidelines for import and export processes are outlined in the Animal and Plant Biosecurity Act of 2014. All persons importing seeds are required to apply for an import permit and comply with biosecurity standards. In 2022, the country imported seed for pawpaw and eggplant.
9. Adequacy of agro-dealer networks	4.00	In 2022, Seychelles had six agro-dealers, who were inadequate for the industry. The agro-dealers were based in urban areas and imported seed, which they distributed directly to their customers.
10. Availability of seed in small package sizes	4.47	Of the four priority crops 25% of eggplant seed and 46% of pawpaw seed were sold in small packages of 2 kg or less. Banana and cassava are vegetatively propagated and are not sold in packages.
11. Status of national seed policy instruments	3.00	Seychelles' seed sector is currently governed by the Animal and Plant Biosecurity Policy of 2014, which does not provide sufficient guidance for the seed sector. Better regulation is expected to be provided by the Plant Protection Variety Bill, once it has been enacted into law.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	6.00	Seychelles is a member of the COMESA and the SADC regions. The country is currently aligning the national policy instruments to those of the two regions.
13. Status of national biosafety frameworks for plant breeding and seed production	1.00	Seychelles does not have a national agricultural biosafety framework. The existing Plant Biosecurity Policy of 2014 is too broad and does not include provisions for modern crop biotechnology. The Ministry of Health has a Biosafety Committee and a biosafety officer, but they only handle health issues.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	6.00	FMSS are addressed in the Plant Variety Protection Bill, currently in draft form and yet to be enacted.
15. Adequacy of seed inspection services	7.00	In 2022, Seychelles had 15 public seed inspectors. Inspectors were based at different border points, including the airport.
16. Adequacy of government efforts to combat counterfeit seed	7.00	Since certified seed are all imported into the country, the border control authorities monitor all shipments of seed and to detect and eliminate counterfeit seeds.
17. Adequacy of national seed trade association	0.00	Seychelles has no national seed trade association, which is not surprising given the very limited local seed sector activity.
FINAL SSPI SCORE	3.90	Highest scores: in COMESA: Zambia, 7.89 in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Agricultural production in Seychelles is constrained by a lack of arable land and extreme weather patterns. For the seed sector to grow, the following issues need to be addressed:

- Reducing the timeliness of delivery of EGS by the Department of Agriculture
- Sourcing more varieties that are adapted to the Seychelles agroecological conditions.
- Exploring alternatives to the high cost of importing quality seeds.
- Strengthening the policy environment by passing the draft Plant Variety Protection Bill.

Data for the SSPI Seychelles report was collected by:

Dr. Nelson Charles

Department of Agriculture

Seed Sector Performance Index (SSPI) Country Brief – SIERRA LEONE

OVERVIEW OF THE SEED SECTOR

Sierra Leone's seed sector is in the early growth stage. The sector is dominated by the informal seed system. In the formal sector, variety release and registration are coordinated by the Sierra Leone Seed Certification Agency (SLeSCA) and the National Seed Board. The Sierra Leone Agricultural Research Institute (SLARI) conducts breeding and variety development. The four priority crops, as identified by local seed sector experts, are rice, maize, sorghum, and groundnut. Combined, these four crops account for 83% of area harvested to field crops. Further, these are the only food crops that undergo seed certification. Sierra Leone is a member of the Economic Community of West African States (ECOWAS) and the Community of Sahel-Saharan States (CEN-SAD).

Overall country score (out of 10):		4.43
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Rice	944,447	67%
Groundnut	71,388	8%
Sorghum	55,324	7%
Maize	7,538	1%
Total		83%
 Total arable land:		1.584 million ha
 Population:		8,908,040
 Number of farming households:		913,151
 Contribution of agriculture to GDP:		57.5%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	8.00	Variety release is the mandate of the Variety Release and Registration Committee (VRRC). The VRRC is operational, meets at least once a year, and released crop varieties in 2014, 2015, 2019, and 2022. The guidelines for variety release are followed by breeders, the VRRC members, and other stakeholders. The regulations stipulate that the length of the variety release process should take 24 months, but breeders reported that the process may take longer.
2. Number of varieties released in last 3 years	4.43	During the 2020 – 2022 period, 21 varieties were released for the four crops: 17 rice varieties, three sorghum varieties, and one groundnut variety.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	4.33	In 2023, SLARI employed 9 breeders for the four crops: six rice breeders, one maize breeder, one sorghum breeder, and one groundnut breeder. A private seed company - African Seed Company Ltd. - employed one sorghum breeder. The adequacy of the number of breeders was given a score of 4.75/10 indicating that the number of breeders is low, except for rice, which has six breeders. The adequacy of funding for breeding programs was given a rating of 4.25/10, due to insufficient government funding, which mainly covers salaries and basic operating costs. The adequacy of basic research infrastructure was rated 4/10, because SLARI lacks adequate irrigation facilities, laboratories, and land. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	5.00	There is no central institute coordinating national PGRFA activities. However, Rokupr Agricultural Research Centre (RARC) coordinates the PGRFA activities for rice, maize, and sorghum, while Njala Agricultural Research Centre (NARC) coordinates PGRFA activities for groundnut. The activities are not coordinated.
5. Adequacy of Early Generation Seed (EGS)	5.92	The main sources of EGS in Sierra Leone are RARC for rice, maize, and sorghum seed, and NARC for groundnut. Both the RARC and the NARC are under the SLARI. The adequacy of the quantity of EGS was rated 5/10, because recent projects funded by the African Development Bank and the Islamic Development Bank have increased the production of EGS for all four crops, especially for rice. The quality of EGS was rated 8/10, recognizing SLeSCA's improvement in quality control of EGS. The timeliness of delivery of EGS was rated 4.75/10 reflecting the poor distribution of EGS to most seed producers. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.64	In 2022, there were 10 varieties of the four crops on the market: five rice varieties, one maize variety, two sorghum varieties, and two groundnut varieties. The low number of varieties stands in contrast with the number of varieties released and may indicate that new varieties are not commercialized at a fast enough rate.
7. Utilization of quality commercial seed by farmers	1.30	In 2022, the reported volumes of production for the four priority crops were 3,256 MT of rice seed, 321 MT of maize seed, 2,187 MT of sorghum seed, and 1,062 MT of groundnut seed. When including imports described below (indicator 8), the total amount of available seed meets 6% of national seed requirement for rice, 100% for maize seed, 100% for sorghum seed, and 30% for groundnut seed.
8. Clarity and enforcement of seed import/export regulations	8.00	The seed importation procedures are clear and consistently enforced. The procedures for seed imports and exports are generally followed closely. The seed importer applies to the Sierra Leone Seed Certification Agency for a notice of importation of seed. In 2022, 113 MT of rice seed was imported.
9. Adequacy of agro-dealer networks	5.00	Agro-dealers that sell seed are required to register with the SLeSCA. In 2022, Sierra Leone had 96 active agro-dealers. The number has increased steadily over the last few years.
10. Availability of seed in small package sizes	0.75	In 2022, of the four priority crops 6% of sorghum seed and 13% of groundnut seed were sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	9.00	The important seed policy instruments are in place and are relatively new. They include: - National Seed Policy (2009) – provides overall guidance for the seed sector. - Sierra Leone Seed Certification Agency Act 2018 - Sierra Leone Seed Certification Agency Regulations of 2020 – to operationalize the SLeSCA Act of 2018
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	9.00	Sierra Leone is a member of the ECOWAS region. The country has been implementing the harmonized ECOWAS Seed Regulations of 2008 the ECOWAS Seed Regulations, published in the National Gazette in December 2014. This regulation established a seed sector support fund, provided guidance on seed quality control and certification, seed production, and instituted a national catalogue of plant varieties and species.
13. Status of national biosafety frameworks for plant breeding and seed production	0.00	Sierra Leone does not have a biosafety framework to guide agricultural biotechnology.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	5.00	FMSS are recognized in the National Seed Policy (2009). Several local and international NGOs support FMSS in various ways.
15. Adequacy of seed inspection services	4.00	In 2022, SLeSCA had six seed inspectors, which is very low given the current size and needs of the seed industry. Further, seed inspection services are negatively affected by the lack of resources and limited use of digital technology that can improve seed inspection services.
16. Adequacy of government efforts to combat counterfeit seed	4.00	SLeSCA's efforts to combat counterfeit seed are inadequate. A common source of counterfeit seed are dishonest retailers or agents who buy low-quality seed, especially to sell on the relief market. The government subsidy program is also an enabler of trade in counterfeit seeds due to weak seed procurement arrangements and insufficient checks on the sources and quality of seeds.

Indicator	Score (out of 10)	Description of performance
17. Adequacy of national seed trade association	0.00	Sierra Leone has no seed trade association.
FINAL SSPI SCORE	4.43	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Sierra Leone's agriculture contributes 60% of the gross domestic product (GDP) and employs two thirds of the population.²⁹ Although the country has suitable cropping land, prevalence of subsistence farming and limited use of improved technologies hampers meaningful productivity. For the seed sector to grow further the following issues need to be addressed:

- Increasing funding for the SLARI's breeding programs.
- Boosting the production of seeds for priority crops to meet more of the national requirement.
- Enhancing the SLeSCA's fight against the production and sale of counterfeit seed by introducing security seed labels on seed packages.
- Strengthening of the SLeSCA's seed inspection services by hiring and training more inspectors.

Data for the SSPI Sierra Leone report was collected by:

Momoh Turay

Sierra Leone Seed Certification Agency (SLeSCA).

²⁹ <https://www.trade.gov/country-commercial-guides/sierra-leone-agriculture-sector> Accessed 23 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – SOMALIA

OVERVIEW OF THE SEED SECTOR

The seed sector in Somalia is in the nascent stage. It is dominated by the informal system since most of the country consists of arid and semi-arid lands. However, there are recent efforts to progress towards a regulated formal system. In 2020, the Somali Federal Parliament passed laws and governing structures establishing the Somali Agricultural Regulatory and Inspection Services (SARIS) as the regulatory agency within the Federal Ministry of Agriculture and Irrigation. The Agricultural Research Section in the Plant Protection and Agricultural Research Department operates as the national agricultural research institute. The Ministry has also facilitated the drafting of the Seeds and Plant Varieties Law, 2020. The four priority crops, as identified by the local seed industry experts are maize, sorghum, cowpea, and sesame. Combined, these four crops account for 83% of area harvested to field crops. Somalia is a member of the Intergovernmental Authority on Development (IGAD), the East African Community (EAC), and is applying to the Common Market for Eastern and Southern Africa (COMESA).

Overall country score (out of 10):		1.56
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Sorghum	200,000	44%
Maize	100,000	17%
Sesame	250,000	13%
Cowpea	50,000	9%
Total		83%
Total arable land:		1.1 million ha
Population:		12,693,796
Number of farming households:		600,000
Contribution of agriculture to GDP:		70%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	1.00	There is no functional system for variety release and registration in Somalia. In September 2021, the Ministry formed an <i>ad-hoc</i> team comprising representatives from the Federal Ministry of Agriculture and Irrigation, State Ministries of Agriculture and Irrigation, breeders, cooperatives, academia, and researchers to register three rice varieties. These varieties had been produced by a local seed company.
2. Number of varieties released in last 3 years	0.00	No varieties have been released in Somalia.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	1.75	In 2022, the Agricultural Research Section had only one maize breeder in Somalia. The Plant Protection and Agricultural Research department operates as the national agricultural research institute. Satisfaction with the number of breeders was given a score of 0.25/10 on average across the four crops because the country has only one breeder. Funding of breeding programs was given a rating of 2/10 because there are no active breeding programs. Breeding infrastructure was rated 3/10 because the infrastructure facilities in research stations are in poor condition and need rehabilitation. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	0.00	There is no coordination of the PGRFA activities in Somalia.
5. Adequacy of Early Generation Seed (EGS)	3.58	The International Maize and Wheat Improvement Center (CIMMYT) and Quali Basic Seed are the sources of EGS for maize while the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is the source of EGS for sorghum. The adequacy of the quantity of EGS was rated 3.75/10 while quality of was rated 3.5/10 because there is only one breeder in the country. Timeliness of delivery was also rated 3.5/10 because local seed producers rely on the importation of EGS from seed entities in the region. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.92	In 2022, there were 14 varieties of the four priority crops on the market: five maize varieties, five sorghum varieties, and four cowpea varieties.
7. Utilization of quality commercial seed by farmers	0.42	In 2022, reported seed production volumes for the four crops were: 230 MT of maize seed, 260 MT of sorghum seed, and 220 MT of cowpea seed. These volumes were inadequate and only met 6% of the national maize seed requirements, 4% of the national sorghum seed requirements, 22% of the national cowpea seed requirement and 0% for sesame.
8. Clarity and enforcement of seed import/export regulations	2.00	There were no commercial seed imports or exports for the four crops in 2022.
9. Adequacy of agro-dealer networks	3.00	In 2022, there were 200 agro-dealers in Somalia. There are currently no laws governing seed import and export.
10. Availability of seed in small package sizes	0.84	Of the four priority crops, 5% of maize seed, 10% of sorghum seed, and 10% of cowpea seed were sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	4.00	Somalia's seed sector is guided by the draft Seeds and Plant Varieties law of 2020 which has provisions for seed testing, certification, variety indexing, variety evaluation and release, import/export of seed, and granting of Plant Breeders' Rights. The Somali Agricultural Regulatory and Inspection Services (SARIS) is designated in the draft law as the national seed authority. The Somali Seed Sector Guidelines, 2021, aims to monitor, regulate, and ensure the production of quality seeds.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	0.00	Somalia joined the Common Market for Eastern and Southern Africa (COMESA) on 9th July 2018. However, the membership status is yet to be ratified.
13. Status of national biosafety frameworks for plant breeding and seed production	0.00	There is no national biosafety framework to regulate the generation, utilization, and commercialization of agricultural biotechnology.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	1.00	FMSS are not recognized in the draft Seeds and Plant Varieties law of 2020. However, the establishment of FMSS is among the priorities of the Ministry of Agriculture and Irrigation.
15. Adequacy of seed inspection services	3.00	In 2022, SARIS had 22 public seed inspectors. The numbers are not adequate to perform the required functions nationwide.
16. Adequacy of government efforts to combat counterfeit seed	4.00	The SARIS is leading the efforts to address the challenge of counterfeit seed. Different policy instruments outline various measures in this regard.
17. Adequacy of national seed trade association	0.00	There is no national seed trade association in Somalia.
FINAL SSPI SCORE	1.56	Highest scores: in EAC: Tanzania, 7.25 in IGAD: Kenya, 7.13 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Agriculture is an important component of the Somali economy, employing a large segment of the population. However, ongoing political conflict, frequent droughts, limited – or outdated – infrastructure, and inadequate access to modern farming practices have hindered agricultural development. In addition, displacement and insecurity stemming from political conflict have disrupted farming activities. Efforts by the government, international organizations, and NGOs have focused on improving food production, introducing drought-resistant crops, and providing support to farmers. For the seed sector to grow, the following issues need to be addressed:

- Enacting the draft Seeds and Plant Varieties Law of 2020.
- Strengthening the capacity of the SARIS in all matters of seed quality control,
- Strengthen the national breeding programs by hiring breeders and rehabilitating the facilities for research and variety development,
- Strengthening the relationships with regional seed companies and research institutions to source varieties that are well-adapted to hostile climatic conditions in the country.

Data collection for the SSPI Somalia report was by:

Zakaria Hagi

*seed industry expert assigned to the task by the Head of
the Somali Agricultural Regulatory and Inspection Services (SARIS).*

Seed Sector Performance Index (SSPI) Country Brief – SOUTH AFRICA

OVERVIEW OF THE SEED SECTOR

The seed sector in South Africa is in the mature growth stage. The highly formal seed sector is dominated by private multinational companies. Much of the agricultural production in South Africa is driven by large scale commercial farmers. The Agricultural Research Council (ARC) is a government parastatal with a mandate for agricultural research. The South Africa National Seed Organization (SANSOR) is the national seed association that brings together the private sector industry in the seed sector. SANSOR is the nationally designated authority in charge of seed inspection and certification. The four priority crops, as identified by the local seed industry experts are maize, soya bean, sunflower, and wheat. Combined, these four crops account for 96% of area harvested to field crops. South Africa is a member of the Southern African Development Community (SADC).

Overall country score (out of 10):		8.62
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	2,944,720	53%
Soyabean	1,148,300	20%
Wheat	566,800	10%
Sunflower	555,700	9%
Total		96%
Total arable land:		12 million ha
Population:		59,795,503
Number of farming households:		2,600,000
Contribution of agriculture to GDP:		2.57%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	10.00	The variety release process is well defined, understood, and is followed diligently. The duration is 24 months.
2. Number of varieties released in last 3 years	10.00	During the 2020-2022 period, 286 varieties of the four priority crops were released: 183 maize varieties, 56 soya bean varieties, 15 sunflower varieties, and 32 wheat varieties.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	9.00	Most of the breeding programs for these crops are in the private sector, under seed companies. As of 2023, the ARC has six breeders: two for maize, one for soya bean, and three for wheat. Satisfaction with the number of breeders was given a score of 9/10, on average across the four crops. While University research tends to focus more on pre-breeding research for useful trait identification, the ARC researchers focus on end-use traits but not on variety development breeding. Funding to breeding programs was given a rating of 9/10 because, while relatively well resourced, ARC's funding is based on projects. Adequacy of breeding infrastructure was rated 9/10 because breeding programs are managed privately and are effective. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	8.00	The Plant Genetic Resource Centre is under the Department of Agriculture, Land Reform and Rural Development (DALRRD), and is world-class. However, there is growing concern about the impact of load shedding on refrigerators that hold some genetic materials.
5. Adequacy of Early Generation Seed (EGS)	9.00	Private seed companies maintain their own EGS. As such, there are no challenges with the quantity of basic available, the quality of EGS, and the timeliness of supply of EGS. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	10.00	In 2022, there were 1,592 varieties of the four crops on the market: 545 yellow maize varieties, 476 white maize varieties, 101 soya bean varieties, 121 sunflower varieties, and 149 wheat varieties.
7. Utilization of quality commercial seed by farmers	10.00	In 2022, reported production volumes were: 43,110 MT of maize seed, 13,399 MT of soya bean seed, 2,481 MT of sunflower seed, and 21,782 MT of wheat seed. When including seed imports and exports below (indicator 8), the total amount of available seed met the national seed requirement for each of the four crops.
8. Clarity and enforcement of seed import/export regulations	10.00	The regulations and procedures for importation and exportation are clear and well-understood by the seed actors. In 2022 the volume of seed imports was 2,964 MT for maize seed and 161 MT for soya bean seed. Seed exports were: 6,104 MT of maize seed, 263 MT of soya bean seed, 703 MT of sunflower seed, and 352 MT of wheat seed.
9. Adequacy of agro-dealer networks	9.00	There are thousands of agro-dealers in South Africa and concentration is not a problem. Seed and other inputs are available from dedicated agro-dealers and supermarkets, general agro-input dealers, and hardware stores.
10. Availability of seed in small package sizes	0.00	Of the four priority crops, 5% of all maize (including OPVs) and less than 1% of hybrid maize are sold in small packages of 2 kg or less. Seed for sunflower, soya bean, and wheat is not sold in small packages. However, this is not a major challenge as most of the farmers are large scale commercial.
11. Status of national seed policy instruments	8.00	South Africa's seed sector is regulated through the Plant Improvement Act of 2018 and the Plant Variety Protection Act of 2018. Regulations for the Plant Improvement Act 53 of 1976 are still in use as new regulations are being formulated. The other seed laws are the Genetically Modified Organisms Act (GMO Act; Act No. 15 of 1997), the Genetically Modified Organisms Amendment Act (Act No. 23 of 2006), and the Genetically Modified Organisms Act Regulations (No. R. 120 of 2010).
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	9.00	South Africa is a member of the SADC. The Plant Improvement Act of 2018 is in line with the SADC Harmonized Seed Regulatory System (HSRS). The government became a signatory to the SADC HSRS in 2023.
13. Status of national biosafety frameworks for plant breeding and seed production	10.00	The laws governing agricultural biotechnology include the Genetically Modified Organisms Act (GMO Act; Act No. 15 of 1997), the Genetically Modified Organisms Amendment Act (Act No. 23 of 2006), and the Genetically Modified Organisms Act Regulations (No. R. 120 of 2010). Policy, operating procedures, permit systems and advisory and regulatory committees are all functioning. There are concerns about the government's decision to include new breeding techniques and gene editing under the GMO Act.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	5.00	The Draft Regulations for the Plant Improvement Act of 2018 and the Plant Breeders Act of 2018 recognize farmers' varieties and FMSS. The Regulations allow for vulnerable household, subsistence, and smallholder producers to save, reuse, or exchange seed within their category, and if producing seed below the prescribed maximum quantities. These exceptions only apply to a few crops.
15. Adequacy of seed inspection services	10.00	In 2022, South Africa had 320 private seed inspectors and samplers. They are authorized by SANSOR, which is the national designated authority for seed inspection and certification. The private seed inspection system is effective and efficient.

Indicator	Score (out of 10)	Description of performance
16. Adequacy of government efforts to combat counterfeit seed	10.00	Counterfeit seed is not a problem in South Africa. The measures to address counterfeit seed are outlined in the Plant Improvement Act of 1976 and the Plant Breeders Act of 1976, and their Regulations. The SANSOR inspectors have the same legal status as government inspectors to investigate transgressions under both laws. Over time, there have been very few transgressions because farmers, mostly large-scale commercial, are not willing to risk planting 'counterfeit' seed to save money.
17. Adequacy of national seed trade association	9.50	The SANSOR is the national association in South Africa. The association is also the national designated authority for seed inspection for certification. The overall rating of SANSOR was 9.50/10 and compiled of the following sub-scores: activity on important seed sector issues -10/10, managerial capacity -10/10, and governance and democracy -10/10, providing value to members -10/10, effectiveness in advocacy -10/10, and ability to mobilize resources -9/10.
FINAL SSPI SCORE	8.62	Highest scores: in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

South Africa has the most advance formal seed sector in Africa. All policies and regulations are in place to promote a conducive enabling environment for private sector growth. The research and breeding programs are private sector driven and on par with developed countries. However, the seed sector primarily serves the needs of large-scale commercial farmers who form the bulk of the seed market and largely leaves out smallholder farmers most of whom are located in the rural parts of the country, primarily in the Eastern Cape, Limpopo, and KwaZulu-Natal provinces.

For the seed sector to sustain the current growth momentum, the following issue needs to be addressed:

- Contrary to most of the world, the South African Government has decided to regulate research and development, and products from New Breeding Techniques (NBTs) under the Genetically Modified Organisms Act (Act 15 of 1997). The private sector has challenged the decision, stating that products from NBTs are not different from the products created through normal breeding techniques, do not make use of recombinant DNA, and do not entail the insertion of foreign DNA. There is international scientific consensus that products from NBTs should be judged and regulated on a case-by-case basis, but not to the same extent as GM products. The outcome of the appeal and resulting NBTs regulation process in South Africa can be an opportunity or limiting factor.
- Seeds should be marketed in smaller package sizes that better meet the needs of smallholder farmers.

Data for the SSPI South Africa report was collected by:

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Seed Sector Performance Index (SSPI) Country Brief – SOUTH SUDAN

OVERVIEW OF THE SEED SECTOR

The South Sudan seed sector is in the nascent stage of development and is dominated by the informal seed system, which produces over 90% of the seed used in the country. The main government entities in the seed sector are the Ministry of Agriculture and Food Security (MAFS), which oversees breeding, variety development as well seed certification, and the University of Juba, which has several breeding programs. The four priority crops, as identified by the local seed industry experts are sorghum, groundnut, maize, and sesame. Combined, these four crops account for 93% of area harvested to field crops. South Sudan is a member of the East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA).

Overall country score (out of 10):		2.61
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Sorghum	700,041	37%
Sesame	588,929	31%
Groundnut	265,604	14%
Maize	207,174	11%
Total		93%
Total arable land:		2.3947 million ha
Population:		12,118,379
Number of farming households:		2,315,015
Contribution of agriculture to GDP:		36%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	4.00	The National Variety Release Committee is comprised of members from the MAFS, universities, seed companies, and farmers' associations. The variety release process is guided by the South Sudan Variety Release Guidelines, which were amended in 2019 and which outline the minimum testing requirements, the application process for variety release, the composition of the variety release committee, and the procedures followed by the committee. In the absence of a Seed Law, tests for Distinctness, Uniformity, and Stability (DUS) and Value for Cultivation and Use (VCU) tests are not conducted.
2. Number of varieties released in last 3 years	2.14	During the 2020-2022 period, nine varieties of the four crops were released: four for maize and five for sorghum.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	1.67	Most research activities in South Sudan concentrate on adaptive trials of varieties already released in Kenya, Sudan, and Uganda. In 2023, there were four active breeders for the four crops: two for sorghum and two for maize. There were no breeders for groundnut or sesame. The adequacy of the number of breeders was given a score of 3/10 on average across the four crops because there are no active breeders for sesame and groundnuts. Funding for breeding programs was given a rating of 1/10 because government funding for the programs is inadequate. The adequacy of basic research infrastructure was rated 1/10 because there is no standard research facility in the country. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	1.00	The management of Plant genetic resources is under the MAFS. However, the Ministry does not have any programs related to the collection, maintenance, and characterization of plant genetics.
5. Adequacy of Early Generation Seed (EGS)	4.56	The MAFS and seed companies are the sources of EGS for the priority crops in South Sudan. Adequacy of the quantity of EGS was given a score of 2/10 due to limited production capacity. The quality of EGS was given a rating of 3.5/10 because, while physical purity and viability are good, genetic purity is often unknown. The timeliness of delivery of EGS was rated 4.5/10 with some functioning system for sorghum, groundnut, and maize seed heavy delays for sesame seed. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.49	In 2022, there were eight varieties of the four priority crops on the market: two for sorghum, two for groundnut, two for maize, and two for sesame.
7. Utilization of quality commercial seed by farmers	3.40	In 2022, reported production volumes were: 1,082 MT of sorghum seed, 600 MT of groundnut seed, 2,850 MT of maize seed, and 350 MT of sesame seed. When including seed imports and exports below (indicator 8), the total amount of available seed meets 26% of national seed requirement for sorghum seed, 7% for groundnut seed, 78% for maize seed, and 40% for sesame seed.
8. Clarity and enforcement of seed import/export regulations	2.00	There are no regulations to guide seed importation and exportation in South Sudan. In 2022, the volume of imports for the four crops was: 3,500 MT of sorghum seed, 800 MT of groundnut seed, 3,000 MT of maize seed, and 450 MT of sesame seed.
9. Adequacy of agro-dealer networks	3.00	In 2022, there were 35 agro-dealers in the country. Most of them were based in Juba and the different state capitals. The Ministry of Trade is responsible for issuing trading licenses, while the Ministry of Agriculture and Food Security registers agro-dealers in South Sudan.
10. Availability of seed in small package sizes	2.50	Of the four priority crops 20% for sorghum seed, 5% for groundnut seed, 25% for maize seed, and 75% for sesame seed was sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	3.00	There is no seed law in South Sudan. Existing policy instruments are the Draft Seeds and Plant Varieties Provisional Order of 2021, and the South Sudan Varieties Release Guidelines of 2019 which are in use and describe the process for variety release and registration.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	4.00	South Sudan is a member of the COMESA, the EAC and the IGAD. The draft Seeds and Plant Varieties Provisional Order of 2021 is harmonized with the COMESA Seed Trade Harmonized Regulations.
13. Status of national biosafety frameworks for plant breeding and seed production	0.00	South Sudan does not have a national agricultural biosafety framework.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	2.00	The draft seed policy recognizes the FMSS.
15. Adequacy of seed inspection services	2.00	In 2022, South Sudan had 15 public seed inspectors under MAFS. However, the absence of a national seed law and regulations constrains efforts on seed quality assurance.
16. Adequacy of government efforts to combat counterfeit seed	2.00	The government measures vary between States. Some states conduct germination tests of imported seeds or seeds procured by Non-Governmental Organizations (NGOs). If the seeds have low germination rates, they are disposed of.
17. Adequacy of national seed trade association	5.67	The Seed Trade Association of South Sudan (STASS) is the national umbrella for the private-sector seed industry. The overall rating of STASS was 5.67/10 and compiled of the following sub-scores: engagement in advocacy -8/10, activity on important seed sector issues -6/10, providing value to members -6/10, ability to mobilize resources -6/10, managerial ability -6/10, democracy in elections -4/10, and governance – 4/10.
FINAL SSPI SCORE	2.61	Highest scores: In EAC: Tanzania, 7.25 In IGAD: Kenya, 7.13 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Over 95% of the total area of South Sudan (64,688,300 ha) is considered suitable for agriculture, 50% of which is prime agricultural land. However, to date only 4% of the arable land has been cultivated continuously. Thus, the country has vast, largely untapped agricultural potential. The seed sector in South Sudan is in the nascent stage of growth, dominated by NGOs and international relief organizations that distribute free seed to farmers, a young private sector, the absence of a legal and regulatory framework, a lack of a formal variety release process, weak national breeding programs, and inadequacies in the seed distribution system. A bright spot amidst these challenges is the Seed Trade Association of South Sudan (STASS), which is vibrant and active. For the seed sector to advance from the nascent stage of development, the following issues should be addressed:

- Finalizing and passing the draft Seeds and Plant Varieties Provisional Order into law. And thereafter develop and pass regulations to implement the Order.
- Implementing the key provisions in the Seeds and Plant Varieties Provisional Order, once it is passed. The main provision is the establishment of a national designated authority to implement the law.
- Increasing funding to the breeding programs under MAFS and the University of Juba, to increase their capacity in variety development.
- Strengthening the internal seed quality control systems within the local seed companies.

Data for the SSPI South Sudan report was collected by:

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Seed Sector Performance Index (SSPI) Country Brief – SUDAN

OVERVIEW OF THE SEED SECTOR

Sudan's seed sector is affected by the ongoing conflict in the country. Before the conflict, the industry was in the early growth stage of development. The General Seed Administration (GSA) is the national seed authority responsible for variety registration, and seed inspection and certification. The Agricultural Research Corporation (ARC) and some private seed companies conduct breeding and variety development. The four priority crops, as identified by local seed industry experts, are sorghum, millet, wheat, and groundnut. Combined, these four crops account for 73% of area harvested to field crops. Further, these are the main food crops that undergo seed certification. Sudan is a member of the Common Market for Eastern and Southern Africa (COMESA) and the Intergovernmental Authority on Development (IGAD).

Overall country score
(out of 10):

4.66

Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Sorghum	10,147,479	40%
Groundnut	3,344,000	17%
Millet	3,343,000	14%
Wheat	275,000	2%
Total		73%



Total arable land:

20.9948 million ha



Population:

49,197,555



Number of farming households:

MD



Contribution of agriculture to GDP:

5.03%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	5.00	The variety release and registration process is managed by the National Seed Council, which also sets the variety release fees. The low score is assigned because variety release guidelines are not applied consistently, in part because the system is new and not yet fully understood by all seed industry players.
2. Number of varieties released in last 3 years	2.29	During the 2020-2022 period, 10 varieties were approved for release for the four priority crops: three sorghum varieties, five millet varieties, and two groundnut varieties. Due to the ongoing conflict, these varieties are yet to be formally released.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	4.58	In 2022, ARC had 29 breeders for the four crops: 10 sorghum breeders, eight millet breeders, eight wheat breeders, and three groundnut breeders. The adequacy of the number of breeders was given a score of 5.25/10. The adequacy of funding for breeding programs was given a rating of 2.75/10, as government funding does not meet current research needs. The adequacy of basic research infrastructure was rated 5.75/10. based on the fact that, while there are breeding facilities across the country, only the wheat breeding program receives adequate infrastructure support. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	8.00	The ARC is the national entity in charge of plant genetic resources in Sudan. The ARC manages three gene banks, all of which are well-maintained. The ARC actively coordinates the collection, characterization, and storage of plant genetic resources in line with the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

Indicator	Score (out of 10)	Description of performance
5. Adequacy of Early Generation Seed (EGS)	5.08	The main sources of EGS are the crop breeding programs of the ARC Seed Unit and private seed companies. The adequacy of the quantity of EGS was given a score of 4.50/10, reflecting the instability of seed production in the country. There are no agreements between seed companies and the ARC, making it difficult to forecast the quantities needed. Excess EGS, originally produced at a high cost, is distributed as grain. The quality of EGS was given a rating of 5.5/10, because due to a shortage of personnel, the seed regulatory agency does not apply quality assurance standards consistently across all crops. The timeliness of delivery of EGS was rated 5.25/10 because of delays in supplying EGS on time. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	2.34	In 2022, there were 20 varieties of the four crops on the market: six sorghum varieties, three millet varieties, seven wheat varieties, and four groundnut varieties.
7. Utilization of quality commercial seed by farmers	1.89	In 2022, reported production volumes were 21,106 MT of sorghum seed, 4,102 MT of millet seed, 24,508 MT of wheat seed, and 1,999 MT of groundnut seed. These volumes met 29% of the national requirement for sorghum seed, 3% of the national seed requirements for millet seed, 62% of the national requirements for wheat seed, and 1% of the groundnut seed requirements.
8. Clarity and enforcement of seed import/export regulations	5.00	The procedures for seed importation and exportation are clear and involve multiple entities including the Seed Authority, Standards and Metrology Department, Quarantine Department, Customs, and Biosafety agencies. These multiple steps lead to an increase in the cost of seed trade. There were no reported seed imports or exports for the four priority crops in 2022.
9. Adequacy of agro-dealer networks	3.00	The number of agro-dealers in Sudan is not known.
10. Availability of seed in small package sizes	0.00	In 2022, none of the seed of the four priority crops was sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	9.00	The seed policy instruments in Sudan are the National Seed Policy of 2022, the Seed Act of 2010, and the Seed Regulations of 2012. The policy has been signed by the Minister of Agriculture and a committee has been put in place to implement it. The country has a new draft seed law and seed regulations and a draft variety rights protection law.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	6.00	Sudan is a member of the COMESA. The country embarked on the harmonization of the national seed instruments with the COMESA Seed Trade Harmonization Regulations in 2014 but the process is yet to be completed. To speed up the process the draft instruments have been aligned with the COMESA Seed Trade Harmonization Regulations so that when they are approved, they will not require further alignment.
13. Status of national biosafety frameworks for plant breeding and seed production	8.00	The National Biosafety Law No. 15 of 2010 regulates activities related to the production of genetically modified organisms (GMOs). It established the National Biosafety Council, which is constrained by insufficient personnel and infrastructure. Sudan commercialized GMO cotton varieties in 2012.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	6.00	The Seed Policy of 2022 recognizes farmers' varieties, although they will not be subjected to the same stringent quality standards and regulations as other seed classes. The intention is to incorporate farmers' varieties in the new draft seed law and seed regulations. Several NGOs promote FMSS.
15. Adequacy of seed inspection services	4.00	In 2022, Sudan had 31 public seed inspectors and they are inadequate. They were constrained by a lack of resources to carry out certification activities.
16. Adequacy of government efforts to combat counterfeit seed	3.00	Penalties for the production and sale of counterfeit seed are listed in Article 31 of the Seed Law of 2010 and include fines and imprisonment. The sale of counterfeit seed may also be punished by the Sudan Standards and Meteorology Organization, which monitors product quality. The low score reflects that the seed inspectors in charge of implementing the law are not properly equipped to carry out their mandate.
17. Adequacy of national seed trade association	6.00	The Sudan Seed Trade Association (SSTA) is the national seed trade association in the country. SSTA received an overall rating of 6/10.
FINAL SSPI SCORE	4.66	Highest scores: in COMESA: Zambia, 7.89 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

The ongoing conflict in Sudan is making it difficult to implement programs to develop the country's formal seed sector. The following issues should be prioritized once the situation allows for their implementation:

- Enhancing the implementation of the National Seed Policy (2022) and using it to attract private sector investment into the industry.
- Strengthening of plant breeders' rights to foster the release of hybrid varieties as opposed to continued reliance on open-pollinated varieties.
- Strengthening the capacity of the General Seed Administration in all aspects of national seed quality control, including combatting counterfeit seeds.

Data for the SSPI report for Sudan was collected by:

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Seed Sector Performance Index (SSPI) Country Brief – TANZANIA

OVERVIEW OF THE SEED SECTOR

Tanzania's seed industry is in the growth stage. The formal seed sector is regulated by the Tanzania Official Seed Certification Institute (TOSCI), which is the National Designated Authority within the Ministry of Agriculture (MoA). TOSCI also serves as the secretariat of the National Variety Release Committee (NVRC), which evaluates applications for the release of improved crop varieties. The Tanzania Agricultural Research Institute (TARI) oversees public breeding initiatives. The four priority crops identified by the local seed industry experts are maize, rice, bean, and sunflower. Combined, these four crops account for 71% of area harvested to field crops. Further, these are the only food crops that undergo seed certification. Tanzania is a member of the East African Community (EAC) and the Southern African Development Community (SADC).

Overall country score (out of 10):		7.25
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	4,900,000	42%
Bean	1,100,000	10%
Sunflower	1,100,000	10%
Rice	1,700,000	9%
Total		71%
 Total arable land:		13.5025 million ha
 Population:		63,852,892
 Number of farming households:		8,251,010
 Contribution of agriculture to GDP:		34%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	8.00	Variety release and registration are guided by the Tanzania Official Seed Certification Institute (TOSCI). The evaluation is conducted by the National Variety Release Committee (NVRC) of the National Seed Committee. The process takes 24 months, although some breeders report slightly longer processing times. The high score reflects that, overall, the process is clear and organized.
2. Number of varieties released in last 3 years	4.00	During the 2020 – 2022 period, 22 new varieties of the four crops were released: 11 maize varieties, two rice varieties, and nine bean varieties. No new sunflower varieties were released. Given that the seed sector is quite advanced, these figures are low.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	4.83	In 2022, the Tanzania Agricultural Research Institute (TARI) employed 33 active breeders for the four crops: 20 maize, 10 rice, three bean and three sunflower breeders. The adequacy of the number of breeders was given a score of 6.5/10 because several breeders have left TARI over the last few years. The adequacy of funding for breeding programs was given a rating of 4/10. The low funding has affected the availability of research infrastructure, which was rated 4/10. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	8.00	The National Plant Genetic Resource Centre (NPGRC) is responsible for the collection, characterization, and maintenance of plant genetic resources in Tanzania. The institute's main challenge is a lack of sufficient resources to carry out its mandate.

Indicator	Score (out of 10)	Description of performance
5. Adequacy of Early Generation Seed (EGS)	7.33	The main public sources of EGS for the four priority crops are TARI and the Agricultural Seed Agency (ASA). The two entities produce and maintain their own EGS. In addition, some private seed companies maintain EGS for their own varieties. The adequacy of the quantity of EGS was rated 8/10, signaling that the available quantity nearly meets demand. The quality of EGS was also rated 8/10, because TOSCI controls the quality of the seed produced. The timeliness of delivery of EGS was rated 6/10, even though seed companies forecast their demand for EGS. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	7.01	In 2022, there were 88 varieties available on the market for the four crops was 88: 61 maize varieties, 3 rice varieties, 14 bean varieties, and 18 sunflower varieties.
7. Utilization of quality commercial seed by farmers	3.03	In 2022, reported production volumes were 27,192 MT for maize seed, 577 MT for rice seed, 363 MT for bean seed, and 2,192 MT for sunflower seed. When including seed imports and exports below (indicator 8), the total amount available seed meets 31% of national seed requirement for maize, 1% for sorghum seed, 3% for bean seed, and 100% for sunflower seed.
8. Clarity and enforcement of seed import/export regulations	8.00	The process for seed importation and exportation is clear. The government has set up a “one-stop-shop” to obtain all required documents, including import/export permits. In 2022 the reported volumes of imports were 10,549 MT of maize seed, 1 MT of rice seed, 24 MT of bean seed, and 138 MT of sunflower seed.
9. Adequacy of agro-dealer networks	8.00	In 2022, Tanzania had approximately 8,000 agro-dealers. The agro-dealers were all registered by TOSCI and are located across the country.
10. Availability of seed in small package sizes	9.89	Of the four focus crops, 99% of maize, 100% of rice, 87% of bean and 99.4% of sunflower seeds were sold in small packages of 2 kg and less.
11. Status of national seed policy instruments	9.00	The seed policy instruments in Tanzania include: - National Agriculture Policy of 2013, which covers the seed sector. - Seed Act 2003, with amendments made in 2014. - Seed Regulations of 2017, with amendments made in 2020. - Plant Health Act of 2020 - Seeds (Control of Quality Declared Seed) Regulations of 2020.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	A member of the Southern African Development Community, Tanzania acceded to the SADC Harmonized Seed Regulatory Systems (HSRS) in 2021. Domestication is ongoing with partial implementation through the SADC variety release system. Tanzania is also a member of the East African Community (EAC) and is implementing harmonized EAC seed protocols, which allow for the duty-free import of seed from the regional block.
13. Status of national biosafety frameworks for plant breeding and seed production	7.00	Tanzania's National Biosafety Framework is based on the Environmental Management Act of 2004 and the Biosafety Regulations of 2009 and Amendments of 2015. All are operational. The Commission for Science and Technology (COSTECH) regulates biotechnology, including GMOs.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	9.00	FMSS are referenced under the Seed Act of 2003 and Regulations of 2007. The Quality Declared Seed (QDS) system, which is regulated by the Regulations of 2020 also covers aspects of FMSS. TOSCI oversees the operations of this system.
15. Adequacy of seed inspection services	7.00	In 2022, Tanzania had 45 public seed inspectors, (29 male and 16 female).
16. Adequacy of government efforts to combat counterfeit seed	8.00	The Seed Act of 2003 and Regulation of 2007 guide efforts to combat the production and sale of counterfeit seed. Measures used by TOSCI include electronic tags on seed packages, regular inspections of seed sold by agro-dealers, penalties of up to USD 21,000 for offences, and awareness-raising among the public.
17. Adequacy of national seed trade association	7.17	The country's seed trade association is the Tanzania Seed Trade Association (TASTA), whose members include seed producers and distributors. TASTA received an overall rating of 7.17/10, comprised of the following sub-scores: managerial ability – 10/10, activity on important seed sector issues – 8/10, governance and democracy – 6/10, providing value to members – 8/10, ability to mobilize resources – 7/10, effectiveness in advocacy – 7/10
FINAL SSPI SCORE	7.25	Highest scores: in EAC: Tanzania, 7.25 in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Agriculture in Tanzania contributes 28% of the country's gross domestic product (GDP) and employs over two-thirds of the population.³⁰ While most of the land is suitable for agriculture, the country has a considerable variation in farming systems due to its diverse climatic and agro-ecological conditions. These conditions, together with limited use of improved technologies, constrain crop production and the development of the formal seed sector. For the seed sector to grow further, the following issues should be prioritized:

- Increasing funding for public breeding programs to enable them to produce and maintain varieties adapted to the varying agro-ecologies of the country.
- Raising awareness of the importance of improved varieties to farmers.
- Increasing funding to TOSCI to improve capacity for national seed quality assurance activities.

Data collection for the SSPI Tanzania report was by:

Baldwin Shuma

CEO, Tanzania Seed Trade Association (TASTA)

³⁰ https://www.usaid.gov/sites/default/files/2023-09/Tanzania%20Agriculture%20Factsheet_1.pdf Accessed 23 February 2023.

Seed Sector Performance Index (SSPI) Country Brief – TOGO

OVERVIEW OF THE SEED SECTOR

The seed industry in Togo is in the emerging growth stage. It is dominated by the informal system but is evolving towards a more organized and regulated formal system. The *Direction des Semences Agricoles et Plantes* (DSP) is the government entity in charge of seed certification and quality control. Seed producers are mainly smallholder farmers, under community-based seed production arrangements. The seed produced is of open-pollinated varieties of maize, other cereals, and some legumes and is inspected and certified by the DSP. Seed produced by farmers who use their saved seed is quality declared seed (QDS). Under the formal sector, there are four multi-national seed companies in the country and no local companies. In addition, 7 seed producer groups mainly focus on legume crops. The four priority crops, as identified by the local seed industry experts are maize, rice, sorghum, and soya bean. Combined, these four crops account for 66% of area harvested to field crops. Togo is a member of the Economic Community of West African States (ECOWAS).

Overall country score (out of 10):		5.58
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	750,000	43%
Sorghum	320,000	18%
Rice	91,093	5%
Soyabean	3,904	0.2%
Total		66.2%
Total arable land:		2.650 million ha
Population:		8,703,961
Number of farming households:		567,397
Contribution of agriculture to GDP:		18.32%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	5.00	Togo has a simple and reliable variety registration system. The <i>Conseil National des Semences</i> (CNS) is the decision-making body for the approval of varieties. The evaluation of varieties for release is carried out by the <i>Comité technique d'homologation des espèces et variétés</i> (CTHEV). The length of variety release is, on average, 24 months.
2. Number of varieties released in last 3 years	3.57	During the 2020 - 2022 period, a total of 19 varieties of the four crops were released: seven maize varieties, five rice varieties, three sorghum varieties, and four soya bean varieties.

Indicator	Score (out of 10)	Description of performance
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	4.33	The <i>Institut Togolais de Recherche Agronomique</i> (ITRA) has four active breeders for the four crops: one each for maize, rice, sorghum, and soya bean. The adequacy of the number of breeders was given a score of 5/10 across the four crops. The adequacy of funding to the breeding programs was given a rating of 4/10 indicating that government funding for research programs is inadequate. However, some of the breeding programs receive some external funding. The infrastructure for breeding programs was rated at /10 because the plots available for research are not developed, storage stores are insufficient and the only cold room that exists for research for medium and long-term conservation needs is not functional. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	4.00	The ITRA is mandated to conduct activities on plant genetic conservation and utilization in Togo. Unfortunately, all collections were lost when the ITRA's cold room ceased to function. However, reconstruction work is underway.
5. Adequacy of Early Generation Seed (EGS)	6.58	The main sources of EGS in Togo are ITRA and a private company. Adequacy of the quantity of EGS supplied was given a score of 5.50/10 on average across the four crops. The two institutions cover EGS needs for the varieties for three of the four crops in each season, and there is a balance of EGSs not sold. However, the ITRA is the only supplier of EGS for the fourth crop, sorghum, and at times does not meet the seed producers' requirements. The quality of EGS supplied was given a rating of 6.75/10. Seed production is controlled by the DSP through the three field inspection visits and analyses at the laboratory according to ISTA standards. This guarantees the quality of the EGSs offered. Timeliness of delivery of EGS supplied was rated at 7.5/10. ITRA has EGS production centers in almost all regions of the country. In addition, the private seed company is in the center of the country where seed users converge easily. However, since EGS for sorghum is produced in the far north of the country, applicants in the south encounter delays in their order to reach them. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	1.99	In 2022, there were 15 varieties of the four priority crops on the market: seven for maize, two for rice, three for sorghum, and three for soya bean.
7. Utilization of quality commercial seed by farmers	8.32	In 2022, reported production volumes were: 786 MT of maize seed, 412 MT of rice seed, 1 MT of cowpea seed, and 4,107 MT of soya bean seed. When including seed imports and exports below (indicator 8), the total amount of available seed meets 26% of national seed requirement for maize seed, 48% for rice seed, 0% for sorghum seed, and 100% for soya bean seed.
8. Clarity and enforcement of seed import/export regulations	8.00	The provisions for the export and import of seeds are very clearly defined and operators comply with them in most cases. The procedure is simple and effective. In 2022, 60 MT of maize seed were imported, and 0.6 MT of soya bean seed were exported.
9. Adequacy of agro-dealer networks	5.00	In 2022, Togo had 40 agro-dealers. Out of the 40 agro-dealers, 10 were large distribution companies and 30 were small distributors in the small towns and villages of Togo.
10. Availability of seed in small package sizes	0.65	Of the four priority crops, only 15% of maize seed, 5% of rice seed, 25% of sorghum seed, and 5% of soya bean seed are sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	10.00	Togo's seed sector is guided by <i>Politique Nationale Semencière</i> of 2010. It is operationalized through several Ministerial Ordinances, and regulations.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	9.00	Togo is a member of the Economic Community of West African States (ECOWAS). The seed policy instruments are aligned to the harmonized ECOWAS-UEMOA-CILS Seed Regulations.
13. Status of national biosafety frameworks for plant breeding and seed production	6.00	Law No. 2009-001 of January 06, 2009, is the national biosafety law for Togo. However, the law is not well-known among the actors and is not being implemented.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	4.00	FMSS in Togo are recognized in the national seed regulations. However, this pertains to farm-saved seeds that are produced for private use and are not marketed. Togo has opted for a formal seed system with regulations that are aligned with regional and international practices.

Indicator	Score (out of 10)	Description of performance
15. Adequacy of seed inspection services	6.00	In 2022, Togo had 12 public seed inspectors. There were two inspectors in each of the six agricultural regions of the country. However, since these inspectors are not yet sworn in, they do not have all the legal powers to act. In addition, they do not have the mandatory professional seed inspector card.
16. Adequacy of government efforts to combat counterfeit seed	7.00	Combating the production and sale of counterfeit seed is guided by <i>Arrêté N° 090/19/MAPAH/Cab/SG du 17 avril 2019</i> on penalties for violations of the regulations on seeds and seedlings and <i>Décret N° 2014-124/PR</i> that establishes the technical regulations for the production, quality control and certification of seeds and seedlings. Measures taken include surveillance in the marketing of seed, monitoring of changes in stocks of certified seed, and decommissioning of plots and lots that do not comply with the standards set by technical regulations.
17. Adequacy of national seed trade association	5.33	The <i>Réseau National des Producteurs de semences certifiées</i> is the largest seed marketing association in Togo. The overall performance of the association was rated 5.30/10 and comprised of the following sub-scores: effectiveness in advocacy – 6/10, managerial ability – 6/10, providing value to members – 6/10, governance and democracy – 6/10, ability to mobilize resources – 4/10, and activities on important seed sector issues – 4/10.
FINAL SSPI SCORE	5.58	Highest scores: in ECOWAS: Nigeria, 6.29 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

The seed sector in Togo has undergone significant transformation to improve the quality and availability of seeds to farmers. The government of Togo, often in partnership with international organizations and NGOs, has implemented policies and programs to strengthen the seed sector. Some of these programs have focused on enhancing the production and distribution of high-quality, certified seeds that are more resilient to pests, diseases, and varying climatic conditions. Other efforts have targeted building a better regulated seed system, including improving seed certification processes, quality control measures, and the legal and regulatory framework governing the seed industry. While important progress have been made in these areas, challenges remain that limit the range and volumes of improved seed available to the country's farmers. For the seed sector to sustain the current growth momentum, the following issues need to be addressed:

- Enhancing the development and commercialization of high-performance varieties that are adapted to Togo's agroecological conditions.
- Increasing budget allocation to the *Direction des Semences Agricoles et Plantes* (DSP) to enhance seed quality control.
- Promoting the use of small seed packages to encourage smallholder farmers to try out new crop varieties.

Data for the SSPI Togo report was collected by:

Bouab Kpanté

Direction des Semences Agricoles et Plantes (DSP), Togo.

Seed Sector Performance Index (SSPI) Country Brief – TUNISIA

OVERVIEW OF THE SEED SECTOR

The seed industry in Tunisia is in the late growth stage. The Department of Crop Production in the Ministry of Agriculture is responsible for regulating the seed sector. The four priority crops, as identified by local seed industry experts, are durum wheat, barley, soft wheat, and triticale. Combined, these four crops account for 63% of area harvested to field crops. Further, these are the only food crops that undergo seed certification. Tunisia is a member of the *Union du Maghreb Arabe* (UMA) and the Common Market for Eastern and Southern Africa (COMESA).

Overall country score (out of 10):		5.77
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Durum wheat	600,000	32%
Barley	450,000	23%
Soft wheat	130,000	7%
Triticale	20,000	1%
Total		63%
Total arable land:		2.8313 million ha
Population:		11,976,182
Number of farming households:		240,000
Contribution of agriculture to GDP:		10.09%

SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	8.00	Tunisia's procedures for the evaluation and registration of new varieties are known and clarified for all operators, stakeholders, and applicants for registration. Information is periodically organized for the benefit of seed companies and applicants for registration. The length of variety release is 30 months.
2. Number of varieties released in last 3 years	1.71	During the 2020 to 2022 period, a total of 6 varieties were released: three durum wheat, one barley, and two soft wheat varieties.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	4.17	In 2022, the <i>Institut National de la Recherche Agricole de Tunis</i> (INRAT) employed 17 active breeders for the four crops: eight for durum wheat, four for barley, four for soft wheat and one for triticale. The adequacy of the number of breeders was given a score of 4.25/10, reflecting that, while the number of wheat breeders is adequate, barley and triticale breeders are too few to meet the needs of Tunisia's current needs. The adequacy of funding for breeding programs was given a rating of 3.25/10 on the basis that funding for varietal improvement is insufficient across all crops. The adequacy of research infrastructure was rated 5/10, reflecting that the available infrastructure has deteriorated. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	6.00	INRAT and the <i>Banque Nationale des Gènes</i> (BNG; national gene bank) oversee plant genetic conservation and utilization in Tunisia.
5. Adequacy of Early Generation Seed (EGS)	7.67	INRAT is the main source of EGS in Tunisia. The adequacy of the quantity of EGS scored 7/10, signaling that the required quantities are usually available. The quality of EGS was rated 9/10, because EGS undergoes mandatory and systematic quality control in line with national and international regulations. The timeliness of delivery of EGS was rated 7/10, indicating an improvement in delivery times due to a combination of factors, including better equipment and training for technicians. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	2.77	In 2022, there were 26 varieties of the four priority crops on the market: 13 durum wheat varieties, seven barley varieties, five soft wheat varieties, and one triticale variety.
7. Utilization of quality commercial seed by farmers	2.48	In 2022, reported production volumes were 32,000 MT of durum wheat seed, 1,550 MT of barley seed, and 780 MT of soft wheat seed. These volumes met 29% of the national requirement of durum wheat seed, 26% for barley seed, and 3% for soft wheat seed. No triticale seed was produced in 2022.
8. Clarity and enforcement of seed import/export regulations	9.00	Although there were no seed imports or exports in 2022, the procedures and regulations are very clear both for seed companies and for regulatory bodies.
9. Adequacy of agro-dealer networks	7.00	In 2022, the country had 18 agro-dealers. Most distribution points are located near or in rural production areas.
10. Availability of seed in small package sizes	0.00	In 2022, none of four focus crops was sold in small packages of 2 kg and less.
11. Status of national seed policy instruments	10.00	<i>Loi N° 99-42 du 10 mai 1999</i> , provides overall guidance to the seed sector. It is operationalized through 10 decrees and 2 Ministerial Orders.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	Tunisia is a member of the Common Market for Eastern and Southern Africa (COMESA). The seed policy instruments are aligned with the COMESA Seed Trade Harmonization Regulations.
13. Status of national biosafety frameworks for plant breeding and seed production	5.00	A national biosafety framework is currently under development.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	3.00	FMSS are recognized by the government but are not included in seed policy instruments.
15. Adequacy of seed inspection services	8.00	Tunisia has nine public seed inspectors. Although the number is low, they are well trained and organized, and can carry out their work efficiently.
16. Adequacy of government efforts to combat counterfeit seed	8.00	Regulations against the production and sale of counterfeit seeds are guided by <i>Loi N° 42-99 du 10 Mai 1999</i> , <i>Loi N° 36-2001 du 17 Avril 2001</i> , <i>Loi N° 50-2007 du 23 juillet 2007</i> , and <i>Décret N° 2009-418 du 16 Février 2009</i> , which set up the National Council to Fight Counterfeiting. The relevant departments in the Ministries of Agriculture and Commerce conduct regular inspections, including of imports, and investigate reports of counterfeit seeds. Punitive measures include fines ranging from 1,000 to 50,000 dinars and prison terms ranging from 1 to 12 months.
17. Adequacy of national seed trade association	7.33	The <i>Chambre Syndicale du Commerce des Semences et Plants</i> (UTICA) is the seed trade association of Tunisia. UTICA received an overall rating of 7.33/10, comprised of the following sub-scores: activities on important seed sector issues – 8/10, managerial ability – 8/10, governance and democracy – 8/10, ability to mobilize resources – 8/10, advocacy – 5/10, providing value to members – 5/10.
FINAL SSPI SCORE	5.77	Highest scores: in COMESA: Zambia, 7.89 in UMA: Tunisia, 5.77 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Agriculture in Tunisia accounts for 16% of the country's workforce and 12% of the country's GDP.³¹ Although two-thirds of Tunisia is suitable for farming, agricultural production does not meet the current food needs of the country. For the seed sector to sustain the current growth momentum, the following issues need to be addressed:

- Enhancing the availability of improved seed to farmers.
- Enhancing the adoption rate of certified seed.
- Availing quality seed to farmers at reasonable prices.

Data collection for the SSPI Tunisia report was by:

Chammakhi Kacem

Deputy Director, Crop Production in the Ministry of Agriculture, Tunisia.

³¹ <https://www.trade.gov/country-commercial-guides/tunisia-agricultural-sectors> Accessed 23 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – UGANDA

OVERVIEW OF THE SEED SECTOR

Uganda's seed industry is in the growth stage of development. It is characterized by the formal seed system, semi-formal or Quality Declared Seed system (QDS), and informal seed system. The formal and semi-formal systems are regulated by the National Seed Certification Service (NSCS), Department of Crop Inspection and Certification, Directorate of Crop Resources in the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), under separate regulatory regimes. However, the seed certification process for QDS is less rigorous than for certified seed. There are about 30 active seed companies in the formal sector, most of which are locally owned. A few regional and multi-national seed companies import seed. The four priority crops, identified by the local seed industry experts, are maize, cassava, bean, and banana. Combined, they account for 75% of area harvested to field crops. Uganda is a member of the Common Market for Eastern and Southern Africa (COMESA), the Intergovernmental Authority on Development (IGAD), and the East African Community (EAC).

Overall country score (out of 10):		6.47
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	1,700,000	25%
Cassava	810,084	18%
Bean	73,0817	16%
Banana	730,817	16%
Total		75%
Total arable land:		6.9 million ha
Population:		45,853, 778
Number of farming households:		7,000,000
Contribution of agriculture to GDP:		25%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	7.00	Variety release is conducted by the National Variety Release Committee and is guided by the Seed Regulations. Candidate varieties are evaluated based on Distinctness, Uniformity, and Stability (DUS) tests and National Performance Trials (NPTs). The application fees are scheduled in the Seed Regulations. The average duration for variety release is 14 months.
2. Number of varieties released in last 3 years	1.29	Between 2020 and 2022, only three maize varieties were released, among the four crops. The number is low because the National Variety Release Committee did not meet for several years due to the COVID-19 restrictions.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	6.58	In 2022, NARO had 19 breeders for the four crops: five maize breeders, three bean breeders, four cassava breeders, and seven banana breeders. Satisfaction with the number of breeders was given a score of 7.5/10 across the four crops, indicating that the numbers are almost adequate for the country's breeding needs. The funding for breeding programs was given a rating of 5.75/10 given that funding is identified as the main constraint facing the programs. The adequacy of basic research infrastructure for breeding programs was rated at 6.5/10. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	7.00	The Plant Genetic Resource Centre (PGRC) under NARO manages the national gene bank. It carries out <i>in-situ</i> conservation and has <i>ex-situ</i> conservation national botanical gardens. PGRC is responsible for the collection, characterization, and storage of plant genetic resources in the country. The entity also works closely with community seed banks.
5. Adequacy of Early Generation Seed (EGS)	7.75	The main sources of EGS for maize and bean seed are the NARO, the NARO Holdings Limited (NHL), and local and foreign private seed companies. Adequacy of the quantity of EGS supplied was given a score of 8.75/10 across the four crops. The availability of EGS for maize and bean is generally high as the NARO, through the NHL, has started implementing a program of pre-ordering of EGS. The quality of EGS was given a rating of 8/10, while timeliness of delivery was rated at 9/10 because EGS for cereals and legumes are usually obtainable within 6 months. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	5.31	In 2022, there were 62 varieties of the four crops on the market: 27 for maize, 14 for bean, 5 for cassava, and 16 for banana.
7. Utilization of quality commercial seed by farmers	2.06	In 2022, reported seed production volumes were 6,640 MT for maize, 1,063 MT for bean, 130,000 MT cassava, and 95,000 MT banana. When including seed imports and exports below (indicator 8), the total amount of available seed met 36% of national seed requirement for maize, 2% for bean, 1% for cassava, and 14% for banana.
8. Clarity and enforcement of seed import/export regulations	9.00	The seed import and export process are both very clearly defined, and the importers and exporters abide by the guidelines and requirements. In 2022, 3,798 MT of maize seed was imported into Uganda, while 2,218 MT of maize seed and 200 MT of cassava seed were exported.
9. Adequacy of agro-dealer networks	6.00	In 2022, Uganda had 1,008 registered agro-dealers. These were registered by MAAIF and were spread across most districts in the country.
10. Availability of seed in small package sizes	4.95	Of the four priority crops, only 53% for maize, and 28% for bean were sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	9.00	Uganda's seed sector is guided by the Uganda Seed Policy 2018. Other instruments include the Uganda National Seed Strategy (2018/19 - 2022/23), the Seeds and Plant Act 2006, the Plant Variety Protection Act 2017, the Plant Protection and Health Act 2016, the Seeds and Plant Regulations 2017, the Seeds, and Plant Act (Quality Declared Seed Regulations) 2019, and the draft Plant Variety Protection Regulations.
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	9.00	Seed Regulations (2017) are harmonized with the COMESA Seed Trade Harmonization Regulations and implementation is in progress.
13. Status of national biosafety frameworks for plant breeding and seed production	6.00	The National Biosafety and Biotechnology Policy was passed in 2008, and the National Guidelines for Containment for Biotechnology Research were developed in 2007. The National Biosafety Bill is under review by a multi-sectoral committee that was charged with conducting a regulatory impact assessment and drafting of the principles of the law. This multi-sectoral committee is established as a technical committee under the Uganda National Council of Science and Technology (UNCST) Act and is coordinated by the Office of the Prime Minister.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	9.00	FMSS are recognized in the Seed and Plant Act of 2006. FMSS are also recognized in the Quality Declared Seed (QDS) seed class of the QDS Regulations (2019) that regulate the production, quality control, and marketing of QDS in the country.
15. Adequacy of seed inspection services	6.00	In 2022, Uganda had 21 public seed inspectors under NSCS. In addition, the government had trained 104 para-inspectors who were district agricultural officers who were trained to conduct certain tasks related to quality control of seed in their respective districts.
16. Adequacy of government efforts to combat counterfeit seed	6.00	The National Seed Certification Service (NSCS) undertakes the following measures to address the challenge of counterfeit seed: enforcement by the seed inspectors and agricultural police, monitoring and surveillance of the market and seed processing facilities, use of tamper-proof labels, regular sensitization of the public, and registration and training of seed dealers

Indicator	Score (out of 10)	Description of performance
17. Adequacy of national seed trade association	8.00	The Uganda Seed Trade Association (USTA) is the national seed association whose members consist of registered seed companies. The overall rating of USTA was 8/10 and comprised of the following sub-scores: activity on important seed sector issues -8/10, providing value to members -8/10, managerial capacity -8/10, effectiveness in advocacy -8/10, democracy in elections and governance -8/10, and ability to mobilize resources -8/10.
FINAL SSPI SCORE	6.47	Highest scores: In EAC: Tanzania, 7.25 In IGAD: Kenya, 7.13 in COMESA: Zambia, 7.89 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Other than the variety release process that was interrupted by the COVID-19 pandemic, Uganda's pluralistic seed sector is developing steadily. Key policy instruments are in place and the private sector is highly competitive. For the seed sector to move to the late growth stage, the following issues need to be addressed:

- Increasing efforts by NARO to produce adequate EGS and promote newly developed varieties that are available for commercialization
- Funding the National Variety Release Committee to meet, as per the Regulations, and preside over the release of newly developed varieties.
- Increasing funding to enable the NSCS to sufficiently enforce compliance to standards and regulations
- Increasing efforts to raise awareness of the benefits of certified seed among farmers.

Data for the SSPI Uganda report was collected by:

Dr. Mary Teddy Asio

Assistant Commissioner, Seed Inspection and Certification; Head, National Seed Certification Service (NSCS)

Seed Sector Performance Index (SSPI) Country Brief – ZAMBIA

OVERVIEW OF THE SEED SECTOR

Zambia's seed industry is in the mature stage. The formal seed sector is liberalized, with the private sector taking a leading role in most of the formal seed trade under the regulation of the National Seed Authority (NSA). The Seed Control and Certification Institute (SCCI) in the Ministry of Agriculture (MoA) is the national designated authority. The SCCI also serves as the secretariat of the Variety Release Committee (VRC), which evaluates applications for the release of improved crop varieties. The four priority crops, as identified by local seed industry experts, are maize, soya bean, wheat, and rice. Combined, these four crops account for 76% of area harvested to field crops. Zambia is a member of the Common Market for Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC).

Overall country score (out of 10):		7.89
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	1,507,441	54%
Soya bean	424,440	18%
Rice	46,969	2%
Wheat	33,568	2%
Total		76%
Total arable land:		3.8 million ha
Population:		20,216,029
Number of farming households:		1,756,342
Contribution of agriculture to GDP:		20%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	9.00	Zambia's varietal release process is clearly documented with guidelines for different crop species. The process stipulates the cost involved, the length of the application process, the quantity of sample seed required based on crop species, and the parameters assessed. The average length of the process is 24 months.
2. Number of varieties released in last 3 years	9.52	During the 2020 – 2022 period, 88 varieties were released for the four crops: 69 maize, nine soya bean, six wheat, and four rice varieties.
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	7.17	In 2022, Zambia had 28 active breeders for the four crops: 10 maize, eight soya bean, five wheat, and five rice breeders. The adequacy of the number of breeders was given a score of 6.5/10, indicating that the current number of breeders, although relatively high, does not fully meet the research needs of the seed sector for the priority crops. The adequacy of funding for the breeding programs was given a rating of 7.5/10. The government and cooperating partners, such as the International Maize and Wheat Improvement Centre (CIMMYT), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and the Japan International Cooperation Agency (JICA) provide funding for crop breeding, although the amount of funding does not always meet the need. The adequacy of the equipment and infrastructure for the breeding programs was rated 7.5/10. Crop-specific ratings are available in Appendix 1.

Indicator	Score (out of 10)	Description of performance
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	9.00	The Zambia Agricultural Research Institute (ZARI) carries out <i>in-situ</i> and <i>ex-situ</i> conservation and collects plants for indigenous crops and their wild relatives. It stores seed for all crops in Zambia and other SADC member countries. Although ZARI can carry out its duties relatively well, securing consistent funding remains a challenge.
5. Adequacy of Early Generation Seed (EGS)	7.67	Private seed companies produce and maintain their own EGS in Zambia, while ZARI produces EGS for public varieties. The adequacy of the quantity of EGS was given a score of 7.75/10. Maize EGS is available and sufficient to meet local and export demands, and soya bean and wheat seed are both sufficient for local seed production. The quality of EGS was given a rating of 7.50/10, indicating high scores for maize seed, as well as soya bean and wheat seed. The quality of seed is high in part because of quality control and also because many farmers who plant these crops demand high quality seeds. In contrast, rice seed tends to be low quality, as seed companies have few incentives to produce better quality rice seed. Timeliness of delivery of EGS was rated 7.75/10, on the basis that seed is readily available throughout the year for all the crops except for rice, which is insufficient at times. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	8.78	In 2022, there were 139 varieties of the four crops on the market: 113 maize varieties, 11 soya bean varieties, 12 wheat varieties, and three rice varieties.
7. Utilization of quality commercial seed by farmers	9.46	In 2022, reported production volumes were 30,149 MT for maize seed, 42,444 MT for soya bean seed, 4,028 MT for wheat seed, and 3,288 MT for rice seed. These volumes meet 100% of the national requirement for maize and wheat seed and cover 83% of the same for soya bean seed and 18% for rice seed.
8. Clarity and enforcement of seed import/export regulations	9.00	The process for seed importation and exportation is well organized, including an online platform for processing seed import permits, which lists the licensing requirements and relevant fees. In 2022, the volumes of imports reported were 6,767 MT of maize seed, 15,528 MT of soya bean seed, 26 MT of wheat seed, and 544 MT of rice seed. The volumes of exports reported were 23,484 MT of maize seed, 89 MT of soya bean seed, 90 MT of wheat seed, and 9 MT of rice seed.
9. Adequacy of agro-dealer networks	6.00	Zambia has 4,000 agro-dealers. They are registered by the Ministry of Agriculture and located across the country. Most agro-dealers are concentrated in the major towns while there are a few in the rural areas.
10. Availability of seed in small package sizes	1.60	Of the four priority crops, 20% of maize seed and rice, and 5% of wheat seed were sold in small packages of 2kg and less.
11. Status of national seed policy instruments	10.00	All important seed policy instruments are in place and are up to date. They include: • Plant Variety and Seeds Act (CAP 236) – first introduced in 1995. • Plant Breeder's Rights Act (Number 18 of 2007) • Plant Pests and Diseases Act (Cap 233) of 1964
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	9.00	Zambia is a member of the COMESA and the SADC regions and adheres to the COMESA Seed Trade Harmonization Regulations as well as the SADC Harmonized Seed Regulatory System.
13. Status of national biosafety frameworks for plant breeding and seed production	7.00	The Biosafety Act, 2007 (No. 10 of 2007) is the law governing agricultural biotechnology in Zambia. The Act is in operation and controls the importation of genetically modified organisms in seed and other agricultural commodities.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	8.00	FMSS are being considered in the ongoing seed policy development process. FMSS is recognized in the Plant Variety and Seeds Act Volume 14 of the Laws of Zambia. Small-scale farmers are trained as seed growers and seed regulations are relaxed with specific seed schemes for Quality Declared Seed (QDS) to help them meet standards. They are supported in seed production through training, advisory, and licensing.
15. Adequacy of seed inspection services	8.00	In 2022, Zambia had 87 seed inspectors who include both public and private inspectors. SCCI oversees seed inspection and ensures that both public and private seed inspection services comply with OECD international seed schemes. The inspectors are overall effective but at times cannot reach all parts of the country.

Indicator	Score (out of 10)	Description of performance
16. Adequacy of government efforts to combat counterfeit seed	7.00	The Plant Variety and Seeds Act (CAP 236), the Copyrights and Performance Rights Act (CAP 406 of the Laws of Zambia), and The Merchandise Mark Act, CAP 405 of the Laws of Zambia, outline penalties for violating government quality assurance standards. Measures taken include regular monitoring of hot spot areas before planting, use of secure labels with unique serial numbers, outreach to consumers on how to identify genuine seed, and licensing of seed sellers in outlying areas. Penalties include loss of license and prison sentence.
17. Adequacy of national seed trade association	8.00	The Zambia Seed Trade Association (ZSTA) is the country's seed trade association. ZSTA received an overall rating of 8/10, comprised of the following sub-scores: managerial ability – 8/10, activity on important seed sector issues- 8/10, governance and democracy – 8/10, providing value to members – 8/10, ability to mobilize resources – 8/10, and effectiveness in advocacy – 8/10.
FINAL SSPI SCORE	7.89	Highest scores: in COMESA: Zambia, 7.89 in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Zambia's agricultural sector contributes 19% of the country's GDP and employs three quarters of the population.³² While most of the land is suitable for crop production, only 15% is currently under cultivation. Availability of ample water resources presents an opportunity for increased crop production. For the seed sector to sustain the current growth momentum, the following issues need to be addressed:

- Increasing the number of inspectors so that all seed field for all crops can be inspected at the proper time.
- Increasing funding for seed inspection to counter the sale of counterfeit seed in rural areas, especially for maize.
- Using digital tools to register agro-dealers and monitor seed stocks, origin, and sales.
- Licensing of mobile seed traders and their storage facilities to improve access to seed in rural areas.

Data collection for the SSPI Zambia report was by:

Brian Chisunka

Senior Seeds Officer, Seed Control and Certification Institute in the Ministry of Agriculture

³² <https://www.trade.gov/country-commercial-guides/zambia-agriculture> Accessed 23 February 2024.

Seed Sector Performance Index (SSPI) Country Brief – ZIMBABWE

OVERVIEW OF THE SEED SECTOR

The seed industry in Zimbabwe is in the mature stage. It consists of the formal and informal systems. The players in the informal system include non-governmental organizations (NGOs), development agencies, and community seed banks. The formal sector is structured and regulated by the Seed Services Institute (SSI), which is the National Designated Authority within the Ministry of Lands, Agriculture, Fisheries, Water and Rural Development (MLAFW&RD). SSI also serves as the secretariat to the National Variety Release Committee (NVRC), which evaluates applications for the release of improved crop varieties. The other important government entity is the Crop Breeding Institute (CBI), which is the main public agricultural research institute in charge of breeding and variety development. The four priority crops, as identified by the local seed industry experts are maize, sorghum, soya bean, and wheat. Combined, these four crops account for 75% of area harvested to field crops. Zimbabwe is a member of the Common Market for Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC).

Overall country score (out of 10):		7.21
Focus crop	Area harvested (ha)	% of total area harvested to cereals, pulses, and oils
Maize	1,900,754	58%
Sorghum	321,216	11%
Wheat	80,883	4%
Soya bean	51,488	2%
Total		75%
Total arable land:		4.0 million ha
Population:		15,993,524
Number of farming households:		2,800,000
Contribution of agriculture to GDP:		8.85%



SSPI PERFORMANCE

Indicator	Score (out of 10)	Description of performance
1. Quality of variety release and registration process	9.00	Zimbabwe's varietal release system aims to ensure that only distinct, uniform, and stable varieties enter the country's agricultural markets. Varieties to be marketed should also have attained a threshold level for minimum Value for Cultivation and Use (VCU). The public and private breeders are all well-informed about the variety release process. On average it takes about 18 months to release a new variety.
2. Number of varieties released in last 3 years	5.71	During the 2020 and 2022 period, 34 varieties of the four crops were released: 24 maize varieties, three sorghum varieties, six soya bean varieties, and one wheat variety.

Indicator	Score (out of 10)	Description of performance
3. Adequacy of national agricultural research institutes' (NARIs) breeding programs	5.33	In 2022, there were 47 active breeders (in both public and private entities) for the four crops: 24 for maize, nine for sorghum, eight for soya bean, and six for wheat. Satisfaction with the adequacy of the number of breeders was given a score of 5.5/10, on average across the four crops, because of the high attrition rate for the public breeders. Adequacy of funding to the breeding programs was given a rating of 5.5/10 because funding for public breeding programs is inadequate. The adequacy of the equipment and infrastructure at the breeding programs was rated at 5/10 because research laboratories need to be modernized and staffed with adequate technicians. Crop-specific ratings are available in Appendix 1.
4. Status of the national program coordinating Plant Genetic Resources for Food and Agriculture (PGRFA) activities	7.00	The Genetic Resources and Biotechnology Institute is responsible for the collection, characterization, and maintenance of plant genetic resources in Zimbabwe. The institute's main challenge is inadequate resources to carry out its mandate.
5. Adequacy of Early Generation Seed (EGS)	8.92	Most seed companies produce and maintain their own EGS in Zimbabwe. Consequently, satisfaction with the quantity of EGS produced was given a score of 9/10 as most companies produce enough to meet their needs. The quality of EGS produced was given a rating of 8.75/10 and the timeliness of delivery of EGS was rated 9/10. The high ratings are because the seed companies develop their production programs in advance and SSI oversees quality control of the seed that is produced. Crop-specific ratings are available in Appendix 1.
6. Availability of crop varietal choice to farmers	6.73	In 2022, there were 82 varieties of the four crops on the market: 57 for maize, nine for sorghum, eight for soyabean, and eight for wheat.
7. Utilization of quality commercial seed by farmers	10.00	In 2022, recorded production volumes were: 50,480 MT for maize seed, 4,487 MT for sorghum seed, 8,750 MT for soya bean seed, and 12,459 MT for wheat seed. The total available seed meets the national requirement for the four crops.
8. Clarity and enforcement of seed import/export regulations	7.00	The process for seed importation and exportation is very clear. The government has established a one-stop shop for the issuance of import/export permits. In 2022, the volume of imports was: 651 MT of maize seed, 987 MT of sorghum seed, 350 MT of soya bean seed, and 10.2 MT of wheat seed. The volume of exports was: 1,603 MT of maize seed, 8.2 MT of sorghum seed, 375 MT of soya bean seed, and 11 MT of wheat seed.
9. Adequacy of agro-dealer networks	7.00	In 2022, Zimbabwe had 1,091 agro-dealers that were distributed throughout the country especially agricultural zones. The Agricultural Marketing Authority (AMA) is mandated to register agro-dealers.
10. Availability of seed in small package sizes	1.26	Of the four priority crops, only 15% of maize seed, and 20% of sorghum seed were sold in small packages of 2 kg or less.
11. Status of national seed policy instruments	9.00	Zimbabwe does not have a national seed policy; instead, the seed sector is guided by the National Development Strategy 1: 2021-2025. Efforts to develop a national seed policy have been hindered by a lack of resources. Other relevant instruments include the Seed Act, the principal legislation that regulates seed production and seed sector players; the Plant Breeders' Rights Act, which established the national plant variety protection system and breeders' rights related to varieties; the Seed Regulations of 1971, which sets out minimum quality standards for seed testing; the Seed (Certification Scheme) Notice, 2000, which guides varietal certification and variety release. The latter instrument is aligned with the COMESA Seed Trade Harmonization Regulations (2014).
12. Status of alignment of national seed policy instruments with harmonized regional seed regulations	8.00	Zimbabwe is a member of the COMESA and the SADC. Statutory Instrument 142 (of 2016), an amendment to align the country's seed regulations with the COMESA Seed Trade Harmonization Regulations has been accepted but not fully implemented. Zimbabwe acceded to the SADC Harmonized Seed Regulatory Systems (HSRS) in 2021. Domestication is ongoing simultaneously with partial implementation through the SADC variety release system.
13. Status of national biosafety frameworks for plant breeding and seed production	8.00	The National Biotechnology Authority of Zimbabwe (NBA) Act of 2006 [Chap. 14: 31] governs agriculture biotechnology in Zimbabwe. The framework has been adopted and is operational. However, there is a need to improve capacity for implementation.
14. Status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments	5.00	FMSS are being considered in the ongoing seed policy development process. FMSS are captured as one of the specific objectives captured in the concept guiding seed policy development.

Indicator	Score (out of 10)	Description of performance
15. Adequacy of seed inspection services	8.00	In 2022, Zimbabwe had 105 seed inspectors, of whom 24 were public and 81 were private inspectors. The SSI oversees seed inspection and ensures that both public and private seed inspection services comply with OECD international Seed Schemes. The SSI has improved the effectiveness of seed inspectors by introducing e-certification services.
16. Adequacy of government efforts to combat counterfeit seed	8.00	The different seed industry legal and regulatory instruments all outline penalties for violating government quality control standards. Specific government measures include: (i) licensing of all seed sellers (agro-dealers), (ii) regular monitoring of all seed houses to ensure seed is distributed through licensed agro-dealers only, (iii) market surveillance (spot checks) on seed trade outlets country-wide by the seed authority together with the police and authorized seed inspectors from private sector, (iv) SSI is reinforcing the use of temper-proof seed labels guided by the OECD Seed Schemes, (v) pre-controlling all seed production fields by evaluating samples of parental lines for trueness to type, and (vi) post-control evaluations for certified seed on the market
17. Adequacy of national seed trade association	8.67	The Zimbabwe Seed Association (ZSA) is a vibrant industry association with membership comprising both seed houses (seed companies) and seed distributors. The overall rating of ZSA was 8.67 and comprised of the following sub-scores: managerial ability – 10/10, activity on important seed sector issues -9/10, governance, and democracy – 9/10, providing value to members -9/10, ability to mobilize resources -8/10, and effectiveness in advocacy -7/10.
FINAL SSPI SCORE	7.21	Highest scores: in COMESA: Zambia, 7.89 in SADC: South Africa, 8.62 in Africa: South Africa, 8.62

PRIORITY INTERVENTIONS

Zimbabwe's formal seed system is in the growth-to-mature stage of development, characterized by well-established breeding programs, established seed policy environment, a sizeable segment of small- and medium-sized seed companies, and a robust agro-dealer network. The seed sector is driven by well-established private companies that are supported by strong breeding programs and enabling seed policy instruments. The private-sector activity is highly competitive, with multinational and domestic seed companies producing a wide array of high-quality seeds distributed. Nevertheless, the sector is currently facing challenges due to the country's deteriorating macroeconomic conditions, which have resulted in a lack of funding for some government-supported services. To prevent a decline in the sector, it is crucial to address key priority areas:

- Bolstering financial support for public breeding programs to ensure continued development and distribution of improved seed varieties.
- Reassessing the effects of government subsidy programs for seeds and agricultural inputs to mitigate any adverse impacts these may have on the functionality and competitiveness of the seed market.

Data for the SSPI Zimbabwe report was collected by:

Edmore Mtetwa

Head of the Seed Services Institute in the Ministry of Lands, Agriculture, Fisheries, Water, and Rural Development.



Section 4: SSPI findings by indicator

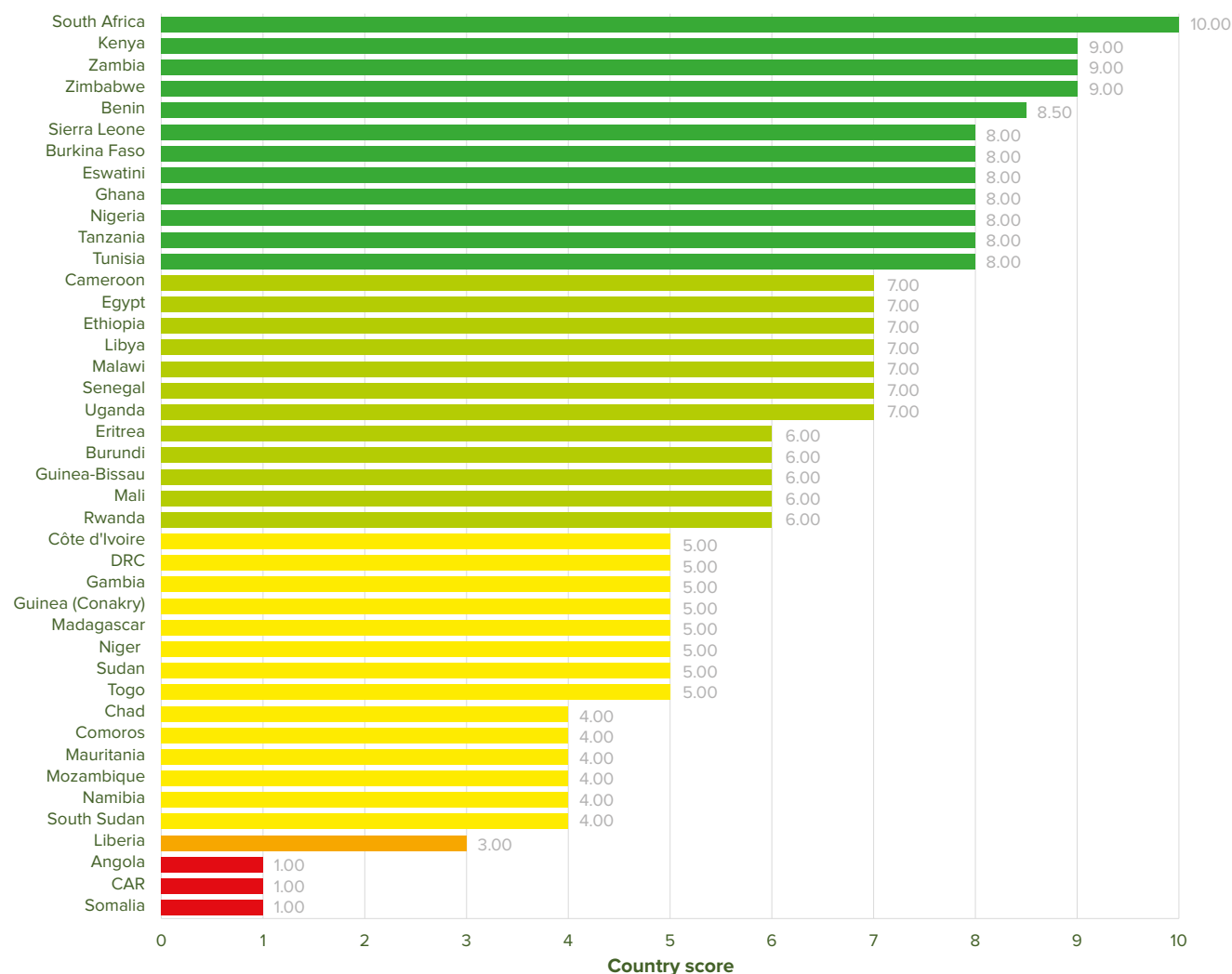
This section of the report summarizes findings by indicator. We rank countries based on the performance for each indicator and highlight emerging trends and lessons.

Indicator 1: Quality of the variety release and registration process

Plant variety release is the process in which new varieties undergo tests for Value for Cultivation and Use (VCU) and Distinctness, Uniformity, and Stability (DUS). Varieties that perform satisfactorily in these tests are approved for release by the relevant authorities. A vibrant seed sector has a functional variety release system that is well understood by the relevant actors and is followed diligently.

This indicator measures the extent to which the variety release and registration process is clearly defined, understood, and followed by both public and private breeders and regulatory agencies. Figure 5 shows the scores of the 42 countries that have variety release processes.

FIGURE 5: QUALITY OF VARIETY RELEASE AND REGISTRATION PROCESS



NB: The following countries with a rating of zero were not included in the chart: Botswana, The Republic of the Congo, Djibouti, Lesotho, and Seychelles

Of the 47 countries surveyed, 12 countries scored “excellent” (between 8 and 10), indicating that their variety release systems are clearly defined in the seed regulatory instruments and are well understood by public and private breeders and relevant government officials. These systems are managed by a variety release committee that, for the most part, meets regularly.

A total of 12 countries scored “good” (between 6 and less than 8). In these countries, the variety release systems are clearly defined but are not followed fully. In several instances, the process has recently been put in place and is still evolving, such as in Rwanda.

Fourteen countries scored “fair” (between 4 and less than 6). In these countries, the variety release process is not yet fully operational. For example, in Eritrea, the Gambia, and Mozambique, the process is outlined in the regulatory instruments but is not well understood and/or followed completely by the relevant actors. Other countries in this group are the Comoros and Namibia, where the variety release process is relatively new.

Only one country, Liberia, scored “poor” (3). In Liberia, the Liberia Seed Development and Certification Agency (SDCA) Act prescribes the process for variety release, but the government is yet to fund the establishment of the SDCA, which has the mandate for variety release.

Three countries – Angola, the Central African Republic, and Somalia, scored “extremely poor” (1). In Angola, the policy instruments outline the processes for variety release and registration, but they are not functional. The five countries that have no variety release process at all scored 0. These are Botswana, the Republic of the Congo, Djibouti, Lesotho, and Seychelles.

Indicator 2: Number of varieties released in the last 3 years

The number of varieties released is a good measure of the functioning of the variety development and release system. The greater the number of varieties released in a country, the higher the chances of enhancing smallholders’ access to improved seed. In addition to higher yields, new varieties often carry desired traits such as climate smartness, disease/pest resistance, and nutrition enhancements. That said, for these varieties to become more accessible to farmers, the release of new varieties needs to be supported by the bulking and commercialization of Early Generation Seed.

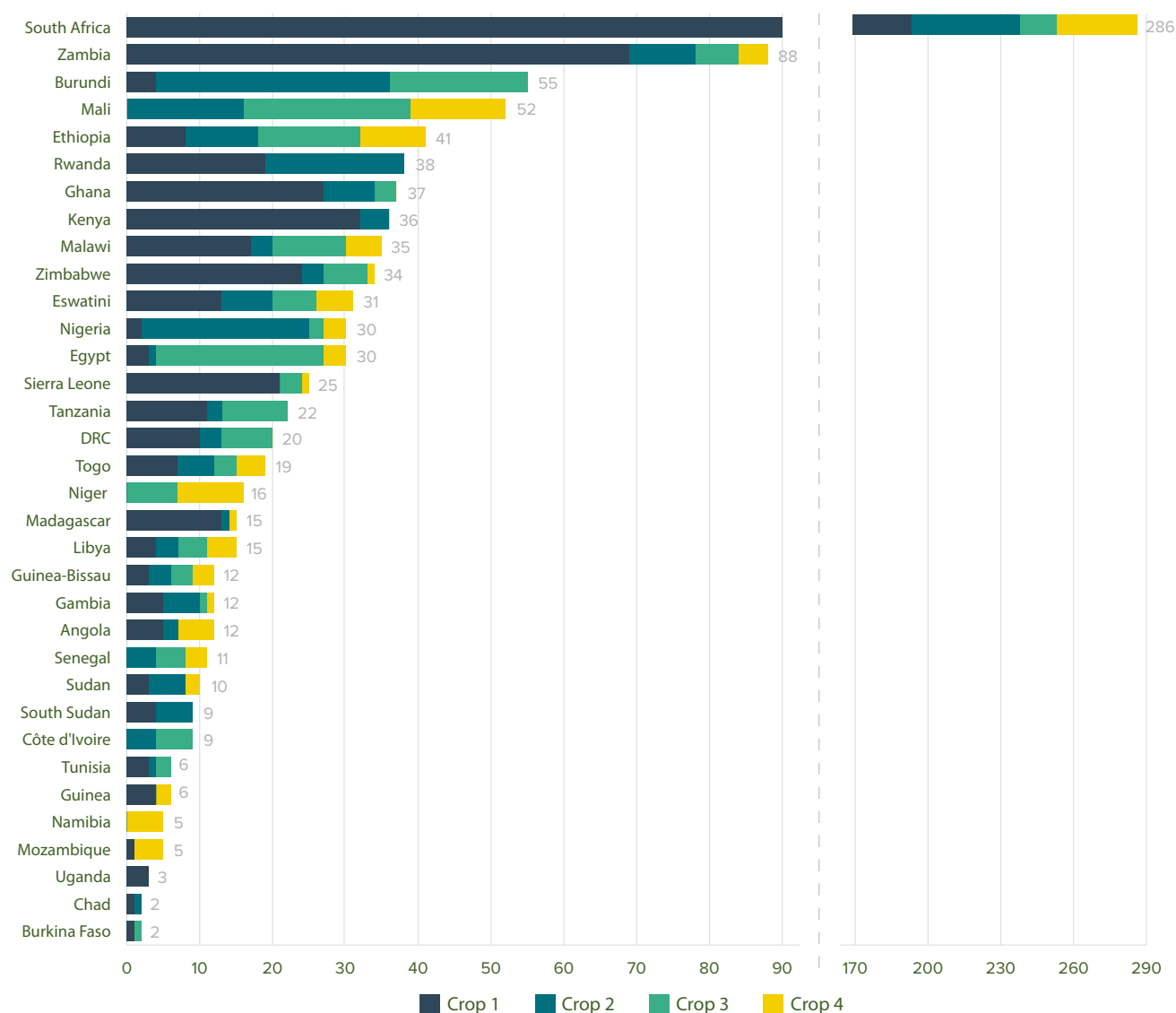
Figure 6 shows the number of varieties released for the four priority crops released by the countries surveyed during the three-year period of 2020-2022. The colors represent each country’s four focus crops; that is, the same color does not represent the same crop.³³ Four countries released more than 50 varieties for the four priority crops between 2020 and 2022: South Africa (286), Zambia (88), Burundi (55), and Mali (52). These countries were all rated “excellent.” Four countries (Ethiopia, Rwanda, Ghana, and Kenya) were rated “good;” during the 2020-2022 period they released between 36 and 49 varieties for the four priority crops. Seven countries (Malawi, Zimbabwe, Eswatini, Nigeria, Egypt, Sierra Leone, and Tanzania) were rated “fair;” they released between 22 and 35 varieties during the three-year period. Twelve countries were rated “poor” and released between 8 and 21 varieties, while 20 countries released between 0 and 7 varieties and were rated “extremely poor”.

Between 2020 and 2022, a total of 13 countries did not release any varieties for the four crops and scored 0. Of these, five countries (Benin, Cameroon, Central African Republic, the Comoros, Eritrea, and Mauritania) have functional variety release systems. However, the other five countries (Botswana, the Republic of the

³³ Refer to Table 4 for the names of the four crops for each country.

Congo, Djibouti, Lesotho, and Seychelles) do not have a system for variety release. In Liberia the variety release process is not operational while in Somalia, both variety development and release processes are being developed.

FIGURE 6: VARIETY RELEASES, 2020-2022



In most countries, variety releases are dominated by maize. Between 2020 and 2022, maize variety releases accounted for at least 70% of the variety releases for the four crops in the following countries: Burkina Faso (24 of 33), Egypt (23 of 30), Ghana (27 of 37), Kenya (32 of 36), Nigeria (23 of 30), Zambia (69 of 88), and Zimbabwe (24 of 34).

Only 12 of the 47 countries surveyed released one or more varieties for all four priority crops over the 2020-2022 period: Egypt, Ethiopia, Eswatini, Gambia, Guinea-Bissau, Libya, Malawi, Nigeria, South Africa, Togo, Zambia, and Zimbabwe. This signals that the remaining 35 countries are either under-investing in breeding programs for key food crops or that the breeders encounter challenges in the variety release process.

In several countries, regional catalogues serve as an important source of new varieties. For example, 60% of all maize varieties released in Uganda in 2022 came from the COMESA catalogue. Similarly, 92% of the maize varieties released in Mozambique in 2021 came from the SADC catalogue. The variety release processes in Angola and Eswatini are also dependent on outputs from the SADC catalogue. Table 10 provides an overview of the regional variety list processes³⁴ (Feed the Future 2022).

TABLE 10: COMPARISON OF REGIONAL VARIETY LIST PROCESSES AND CATALOGUES

Variables	COMESA	ECOWAS	SADC
Name of regional instrument	COMESA Seed Trade Harmonization Regulations, 2014	<i>Règlement C/Reg.4/05/2008 Portant Harmonisation des Règles Régissant le Contrôle de Qualité, la Certification et La Commercialisation des Semences Végétales et Plantes dans l'espace CEDEAO.</i>	Technical agreements on the harmonization of seed regulations in the SADC region: Seed variety release, seed certification and quality assurance, quarantine, and phytosanitary measures for seed. Gaborone, Botswana. 2012
Requirements for inclusion in regional catalogue	Submission of DUS and VCU data from at least two COMESA member states.	No additional test, but the national seed authorities are required to share the DUS data during the Regional Committee meetings. The data is used when the Committee decides whether to add a new variety to the Catalogue.	Automatic release in 3rd country since additional tests are not required.
Process for inclusion of varieties in the regional catalogue	The owner of the variety must apply for the variety to be included in the COMESA Variety Catalogue.	Varieties released in any member state are automatically eligible for addition to the ECOWAS Catalogue of Plant Species if they follow ECOWAS guidelines.	Applications are initiated at the country level with the NSAs, which then transmit applications with relevant evaluation data to the SADC Seed Center.
Entity in charge of the catalogue	COMESA Secretariat	<i>Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles (CORAF)</i>	SADC Seed Center
Cost to maintain variety annually	US\$ 350 for one-off registration US\$ 200 annual maintenance fee	\$0	\$0, although the SADC Seed Center has indicated that they intend to charge fees once the operating systems are running smoothly.
Crops in the Catalogue	12 crops: bean, cassava, cotton, groundnut, Irish potato, maize, pearl millet, rice, sorghum, soya bean, sunflower, and wheat	20 crops: cotton, cowpea, eggplant, groundnut, Irish potato, maize, pearl millet, sorghum, maize, okra, onion, pepper, sweet potato, rice, sesame, soya bean, sunflower, tomato, wheat, and yam	8 crops: bean, cotton, groundnut, Irish potato, maize, sorghum, soya bean, and wheat
Number of varieties in the catalogue (Oct 2023)	96	1,807	109

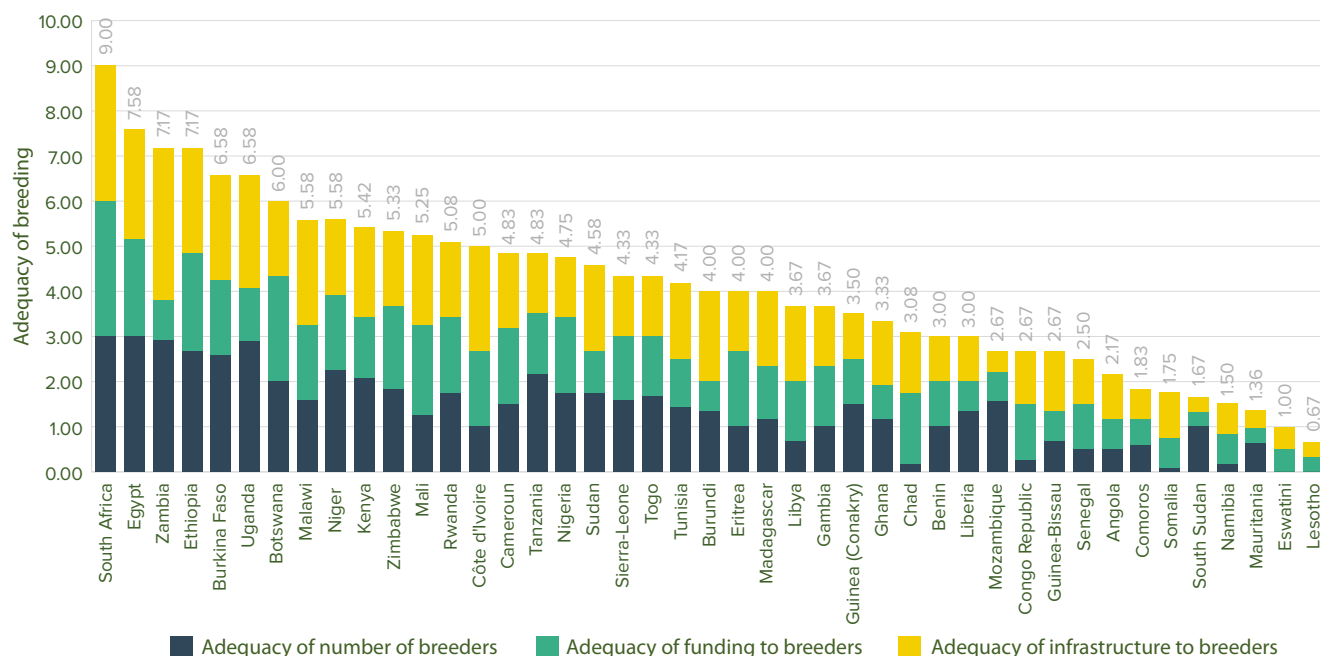
Indicator 3: Adequacy of national agricultural research institutes

A functioning seed system needs vibrant breeding programs to develop improved varieties that respond to farmer and consumer needs. This indicator assesses three key aspects of the national agricultural research institute(s) (NARI), namely, the adequacy of the number of breeders for the priority crops, the adequacy of funding for breeding programs, and the quality of the breeding (research) infrastructure. In short, the indicator assesses the extent to which public research institutions have adequate human resources and infrastructure to support variety development and release processes in the country.

³⁴ Sources: COMESA, ECOWAS and SADC seed regulations and USAID, Syngenta Foundation for Sustainable Agriculture and New Markets Lab. 2022. Check-Back Report on Regional Registration of Public Varieties. Feed the Future.

Figure 7 shows the performance of each country's NARIs. The score is comprised of measurements across the three aspects listed above. Each aspect was scored for each of the four priority crops, and the three scores were averaged to generate the scores provided in Figure 7. Out of the 47 countries surveyed, only one country – South Africa – scored “excellent” (9) on all three aspects.

FIGURE 7: ADEQUACY OF NATIONAL AGRICULTURAL RESEARCH INSTITUTES' (NARIS) BREEDING PROGRAMS



NB: The following countries with a rating of zero were not included in the chart: Lesotho, Central Africa Republic, Djibouti, and Seychelles

Six countries (Egypt, Zambia, Ethiopia, Burkina Faso, Uganda, and Botswana) scored “good” (between 6 and less than 8). For these countries, the average rating for the adequacy of breeders was 7.5, while the average rating for funding to breeding programs was 5, and the average rating for the adequacy of breeding infrastructure was 6.7. Most of the funding for breeding programs in these countries is public and is supplemented by additional support from external donors and projects.

Seventeen countries scored “fair” (between 4 and less than 6). The average rating for the adequacy of breeders was 4.8, while the average rating for funding of research was 4.4, and the average rating for the adequacy of breeding infrastructure was 5.2. In these countries, public funding for breeding programs is inadequate and often delayed, leaving many programs overly reliant on donor funding.

Thirteen countries scored “poor” (between 2 and less than 4). These countries cited more challenges with the adequacy of breeders, whose average rating was 2.8, while the average rating for funding for research was 3, and the average rating for the quality of breeding infrastructure was 3.4. In these countries, the number of breeders is low, and the breeding programs rely mostly on funding from external sources. Breeding infrastructure is obsolete, dilapidated, or both.

Seven countries scored “extremely poor” (between 0 and less than 2). These countries had severe challenges with the number of breeders, whose average rating was 1.3, while the rating for funding of research was 1.4, and the average rating for basic breeding infrastructure was 1.6. Most of these countries have very few breeders and rely on erratic donor funding. Their basic breeding infrastructure needs to be replaced or is lacking altogether.

Angola, Eswatini, Lesotho, Mauritania, and Somalia do not have any active breeding programs for the four priority crops. The available breeders, if any, are seed technicians, who mainly conduct adaptive trials for varieties developed and released by other countries or CGIAR centers. With the exception of Seychelles, which does not have any breeding programs, the most commonly cited challenge in these countries is inadequate funding.

Indicator 4: Status of the national program on Plant Genetic Resources for Food and Agriculture

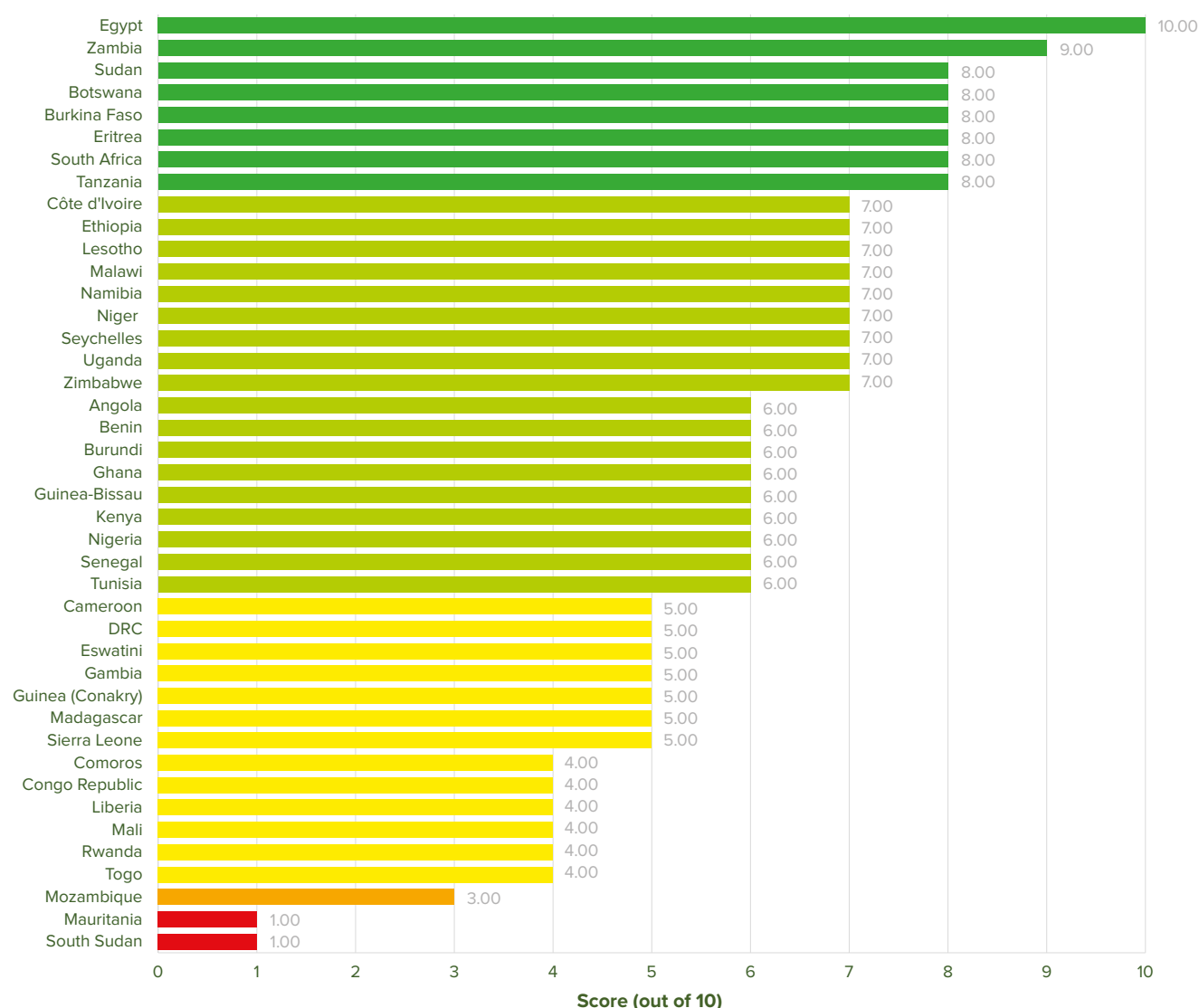
The conservation of plant genetic resources maintains the genetic diversity of plants with known or potential value for crop improvement by present and future generations. This indicator assesses the existence and functioning of a national program (which may include an institute, department, or agency) mandated to carry out or coordinate activities related to Plant Genetic Resources for Food and Agriculture (PGRFA). These entities are responsible for the collection, characterization, conservation, and supply of plant genetic resources (germplasm) in the country and undertake both *in-situ* conservation in national gene banks and *ex-situ* conservation in botanical gardens. Figure 8 shows the country scores out of 10, ranked from highest to lowest.

Thirty-nine out of the 47 countries surveyed have a national program that coordinates PGRFA activities. These programs are coordinated by a government entity. In 15 countries, the entity is a stand-alone or semi-autonomous government institution, for example, the *Centro Nacional de Recursos Fitogenéticos* (National Center for Plant Genetic Resources) in Angola, the Plant Genetic Resource Research Institute in Ghana, the Ethiopian Biodiversity Institute, the National Botanic Research Institute in Namibia, the Malawi Plant Genetic Resources Centre, or the National Gene Bank Agriculture Research Center in Egypt. In the other 22 countries, the entity is a department or unit in the Ministry of Agriculture or in the National Agricultural Research Institution. The major challenge faced by these entities is the lack of sufficient funding, which limits their capacity to collect, characterize, and conserve plant genetic resources.

Mozambique scored “poor” (3) because it does not have an effective national program for *in-situ* conservation. The *Centro Nacional de Recursos Fitogenéticos* (National Center for Plant Genetic Resources) has a basic gene bank that undertakes *ex-situ* conservation but is constrained in the maintenance and multiplication of accessions.

Two countries, South Sudan, and Mauritania scored “extremely poor” (1). Mauritania has no government entity responsible for PGRFA activities, but seed reserves are kept in the cold room of the *Centre National de Recherche Agronomique et de Développement Agricole*. South Sudan has no active PGRFA program, but relevant activities are coordinated by the Ministry of Agriculture and Food Security. Five countries (Central African Republic, Chad, Djibouti, Libya, and Somalia) scored 0, either because they do not have a designated entity that oversees PGRFA activities or any entity that carries out this function.

FIGURE 8: STATUS OF NATIONAL PROGRAM ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE (SCORES OUT OF 10).

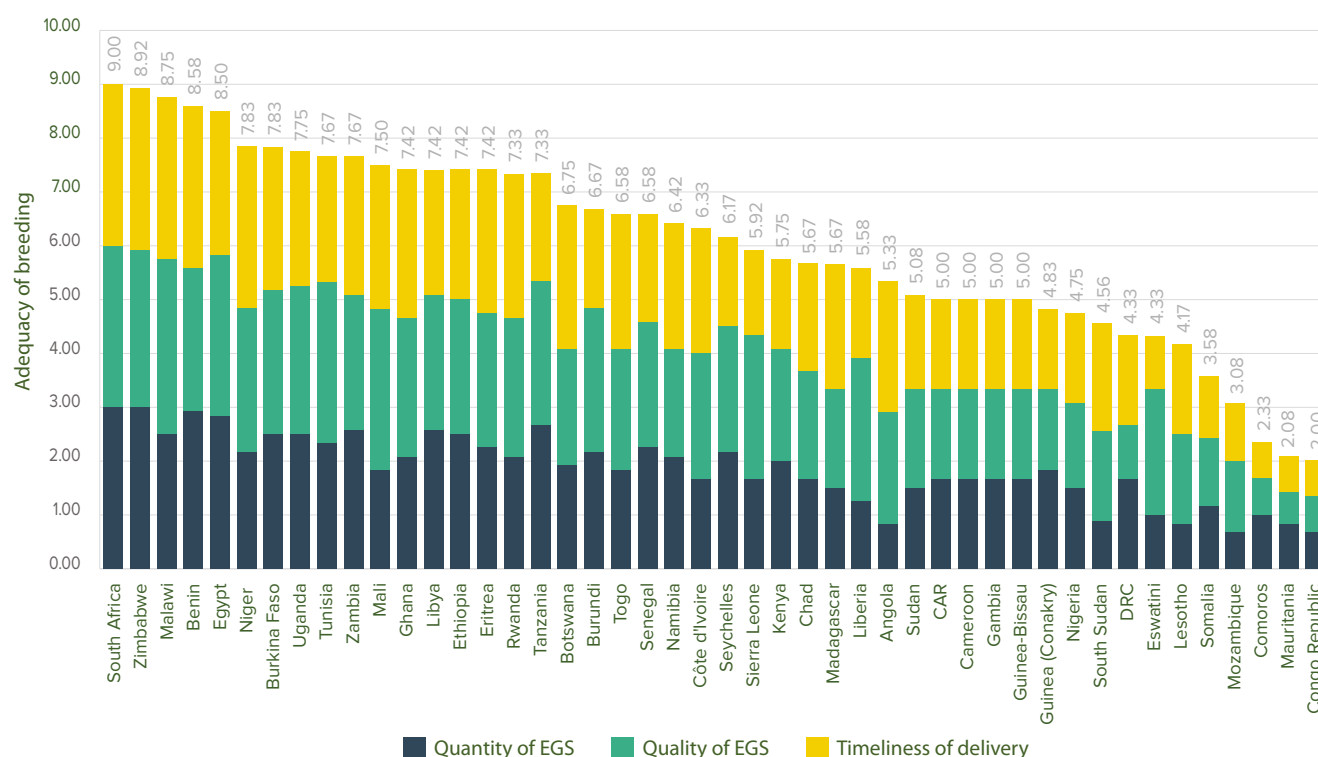


NB: The following countries had a score of zero and are not presented in the chart: Chad, Central African Republic, Djibouti, Libya, and Somalia

Indicator 5: Adequacy of Early Generation Seed (EGS)

Seed companies use EGS (also known as foundation or basic seed) to produce certified seed to sell to farmers. In many African countries, limited access to EGS from public research institutions constricts the ability of seed companies to scale up production. This indicator evaluates three critical aspects of access to EGS, namely, the quantity and quality of EGS, and the timeliness of its delivery. The three scores were averaged to generate the composite scores shown in Figure 9.

FIGURE 9: ADEQUACY OF EARLY GENERATION SEED (SCORES OUT OF 10)



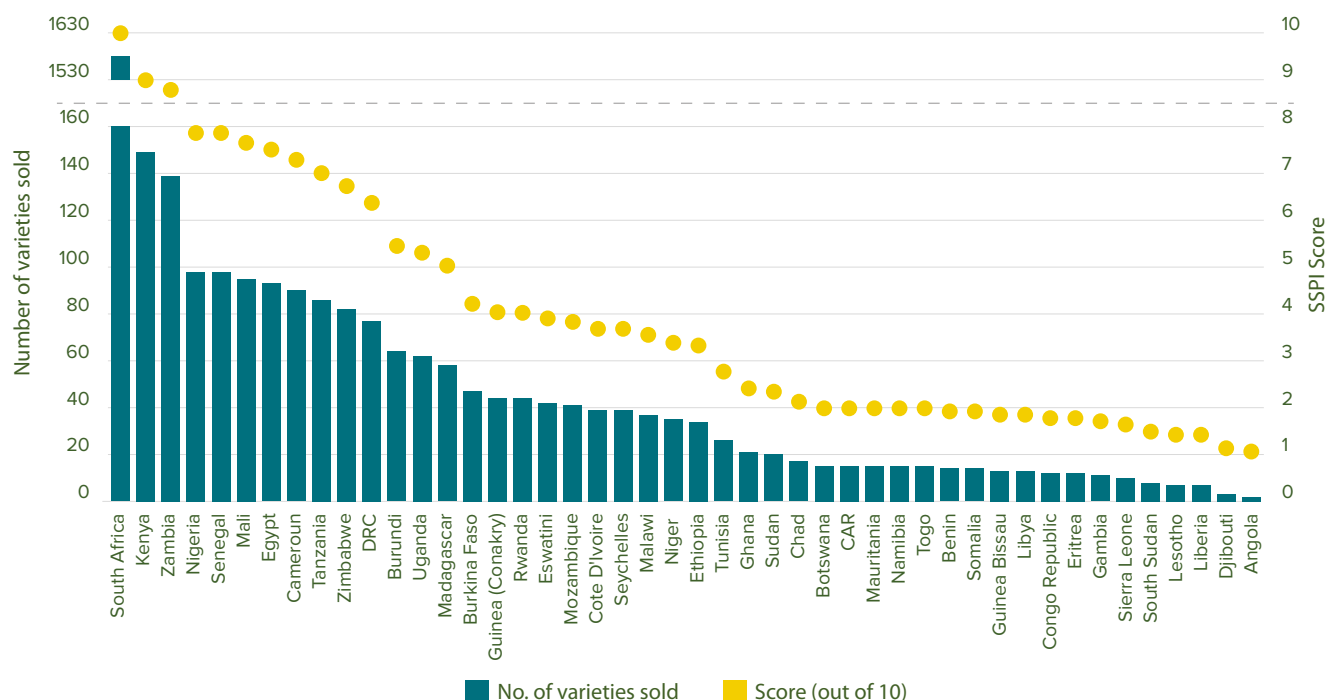
All three aspects of EGS have a strong positive correlation with the availability of resources for breeding and variety maintenance in the country. Countries with limited resources perform poorly on all three sub-indicators, while countries with well-resourced institutions perform well in all areas. Out of the 47 countries, 5 countries (South Africa, Zimbabwe, Malawi, Benin, and Egypt) scored “excellent” (between 8 and 10). These countries have high-quality EGS, with an average rating of 8.9. The quantities of EGS in these countries largely meet seed producers’ needs and were rated, on average, 8.6. Finally, the timeliness of delivery of the EGS to end-users was given an average rating of 8.8.

Nineteen countries scored “good” (between 6 and less than 8). Across these countries, the average rating for the quantity of EGS supplied was 6.6, the average rating for quality was 7.5, and the average rating for the timeliness of delivery was 7.3. These scores point to EGS systems that are fairly effective. Seventeen countries scored “fair” (between 4 and less than 6). In these countries, access to EGS was constrained by limited available quantities of EGS, evidenced by the average rating of 4.4, and/or its late delivery to seed producers, which received an average rating of 5.3. The average rating of the quality of EGS in these countries was 5.2. Five countries (Somalia, Mozambique, the Comoros, Mauritania, and the Republic of the Congo) scored “poor” (between 2 and less than 4). In these countries, access to EGS was constrained by insufficient quantities and its late delivery to seed producers, both rated, on average, at 2.6. The average rating for the quality of the EGS was 2.7. Finally, Djibouti scored 0 because it has no breeding programs and does not produce or import any EGS.

Indicator 6: Availability of crop varietal choice to farmers

This indicator tracks the number of varieties sold to farmers for the four priority crops in the most recent year for which data are available. Figure 10 presents data for 46 of the 47 countries surveyed. The top five countries with the highest number of varieties sold to farmers for the four crops are South Africa (1,592), Kenya (149), Zambia (139), Nigeria (98), and Senegal (98). Broken down by crop (refer to Figure 4), other notable countries with high numbers of varieties on the market for a specific crop are: Zambia (113) and Kenya (100) for maize, Madagascar (46) and Mali (40) for rice, Mali (28) and Nigeria (14) for sorghum, Senegal (36) and Central Africa Republic (8) for groundnut, Kenya (28) and Burundi (21) for bean, and Cameroon (14) and Côte d'Ivoire (10) for cassava. In contrast, in the following six countries, farmers can purchase 10 or fewer varieties of the four priority crops, indicating a very limited choice: Angola (2), Djibouti (3), Lesotho (7), Liberia (7), South Sudan (8), and Sierra Leone (10). Importantly, some countries benefit from varieties available through their respective regional variety catalogues. For example, most of the varieties commercialized in Angola, Eswatini, and Mozambique were obtained through the SADC Harmonized Seed Regulatory System.

FIGURE 10: AVAILABILITY OF CROP VARIETAL CHOICE TO FARMERS



NB: The Comoros is not included in the chart as there were no varieties sold and the score is 0.

Indicator 7: Utilization of quality commercial seed by farmers

This indicator tracks the utilization of quality commercial seed by farmers. It is expressed as the ratio of the quantity of commercial seed produced for the four priority crops to the national seed requirement for the four priority crops. Table 11 shows data for seed utilization rates by crop in 2022 for the 44 countries where data were available. Nine countries met over 80% of the combined average seed requirement for the four priority crops. Two of these, South Africa and Zimbabwe, met 100% of the seed requirement for all four crops. One country met between 60% and less than 80% of the same requirement, while two countries were able to meet between 40% and less than 60% of the combined average requirements. Fourteen countries met between 20% and less than 40% of the combined average requirement, and a further 18 countries met 20% or less of the combined average seed requirement. In summary, 20% of the countries surveyed were able to meet 80% or more of their national seed requirement, while 75% of African countries met less than half of the combined average national seed requirement.

TABLE 11: SEED UTILIZATION BY CROP

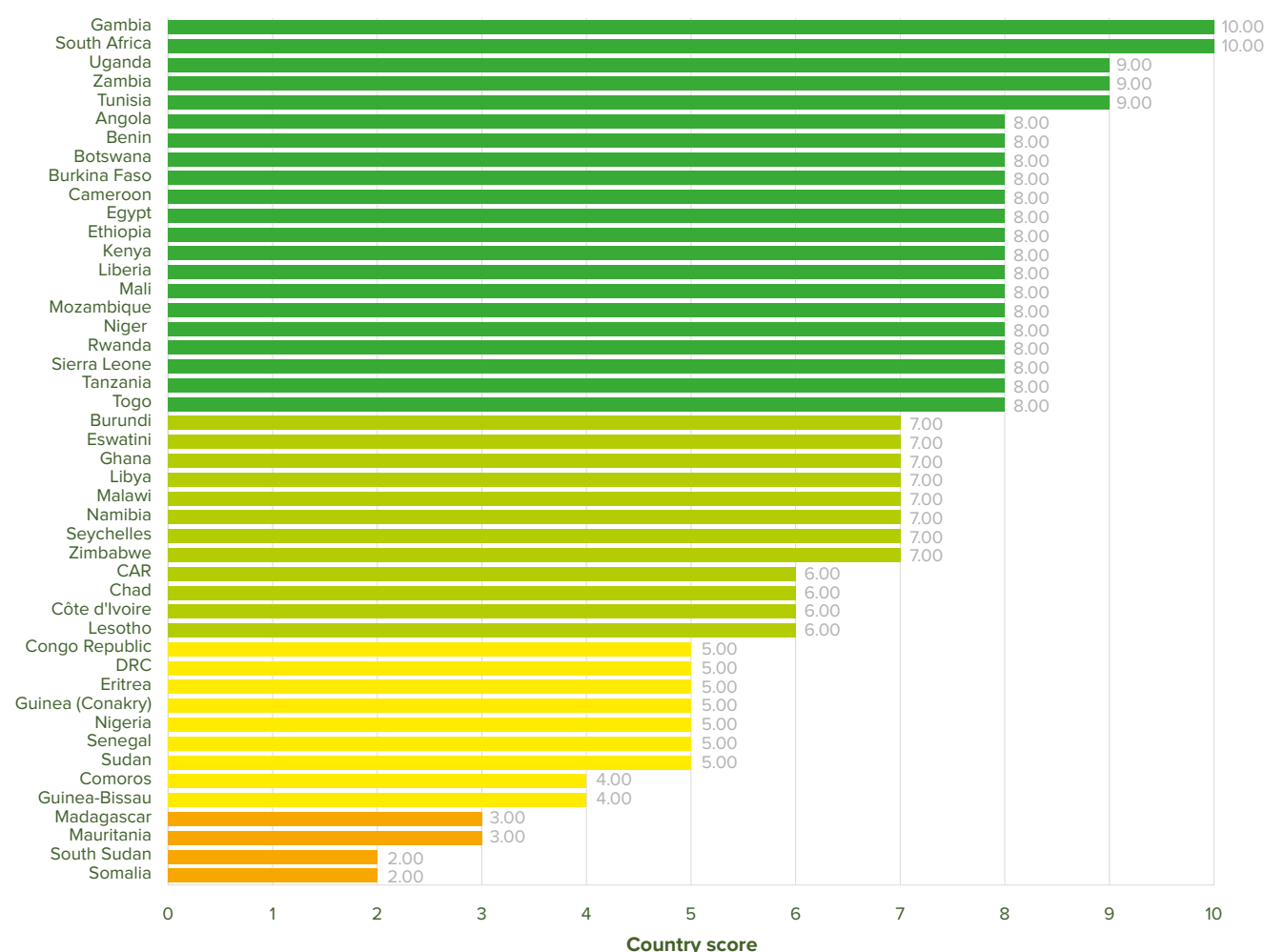
Country	Method for computing seed requirement	Crop 1		Crop 2		Crop 3		Crop 4		Weighted utilization rate
Angola	computed	maize	2%	bean	1%	soya bean	19%	rice	100%	0.19
Benin	country provided	maize	4%	rice	8%	soya bean	16%	cassava	MD	0.52
Botswana	computed	maize	92%	sorghum	68%	cowpea	86%	millet	100%	8.81
Burkina Faso	computed	maize	16%	rice	34%	sorghum	7%	millet	7%	1.17
Burundi	computed	bean	4%	maize	100%	rice	100%	potato	5%	3.19
Cameroon	computed	cassava	17%	rice	13%	maize	27%	sorghum	71%	3.98
CAR	country provided	maize	24%	sorghum	20%	groundnut	9%	bean	23%	1.47
Chad	country provided	sorghum	30%	millet	46%	groundnut	6%	sesame	3%	2.73
Comoros	computed	maize	MD	rice	MD	groundnut	MD	pigeon pea	MD	MD
The Republic of the Congo	computed	cassava	0%	maize	0%	groundnut	0%	banana	33%	0.07
Côte d'Ivoire	computed	rice	9%	maize	0%	yam	MD	cassava	MD	0.23
DRC	computed	cassava	MD	maize	19%	rice	5%	bean	13%	0.76
Djibouti	computed	tomato	55%	onion	31%	melon	13%	citrus	0%	3.63
Egypt	computed	wheat	61%	rice	20%	maize	93%	faba bean	55%	6.36
Eritrea	country provided	sorghum	38%	wheat	51%	barley	25%	millet	34%	3.69
Eswatini	computed	maize	100%	bean	100%	swt potato	0%	groundnut	0%	9.68
Ethiopia	computed	teff	0%	maize	29%	wheat	54%	sorghum	2%	1.96
Gambia	computed	rice	22%	groundnut	8%	maize	67%	millet	MD	1.77
Ghana	computed	maize	100%	rice	100%	soyabean	87%	sorghum	100%	9.91
Guinea (Conakry)	computed	rice	2%	maize	1%	fonio	MD	groundnut	MD	0.13
Guinea-Bissau	computed	rice	100%	maize	100%	millet	86%	sorghum	100%	9.72
Kenya	computed	maize	53%	bean	4%	sorghum	54%	cowpea	1%	3.45
Lesotho	computed	maize	30%	sorghum	MD	wheat	MD	bean	100%	2.48
Liberia	computed	rice	0%	maize	1%	groundnut	MD	cowpea	MD	2.48
Libya	computed	barley	MD	wheat	MD	green peas	MD	broad bean	MD	MD
Madagascar	computed	rice	8%	maize	3%	bean	3%	groundnut	4%	0.67
Malawi	computed	maize	59%	groundnut	19%	soya bean	74%	bean	8%	4.75
Mali	computed	millet	5%	sorghum	21%	maize	20%	rice	18%	1.47
Mauritania	computed	sorghum	0%	rice	54%	maize	0%	cowpea	0%	5.43
Mozambique	computed	maize	16%	cowpea	4%	groundnut	1%	rice	54%	1.63
Namibia	computed	pearl millet	24%	maize	6%	sorghum	100%	cowpea	43%	2.39
Niger	computed	millet	45%	sorghum	9%	cowpea	21%	maize	81%	3.76
Nigeria	computed	rice	27%	maize	29%	sorghum	9%	soya bean	16%	2.11
Rwanda	computed	maize	73%	bean	5%	potato	35%	cassava	0%	2.11
Senegal	computed	groundnut	82%	millet	100%	rice	18%	maize	100%	8.16
Seychelles	computed	banana	MD	pawpaw	MD	eggplant	MD	cassava	MD	MD
Sierra Leone	computed	rice	6%	maize	100%	sorghum	100%	groundnut	30%	1.30
Somalia	computed	maize	6%	sorghum	4%	cowpea	22%	sesame	0%	0.42
South Africa	country provided	maize	100%	soya bean	100%	sunflower	100%	wheat	100%	10.00
South Sudan	computed	sorghum	26%	groundnut	7%	maize	78%	sesame	40%	3.40
Sudan	computed	sorghum	29%	millet	3%	wheat	62%	groundnut	1%	1.89
Tanzania	computed	maize	31%	rice	1%	bean	3%	sunflower	100%	3.03
Togo	country provided	maize	26%	rice	48%	sorghum	0%	soya bean	100%	8.32
Tunisia	computed	durum wheat	39%	barley	26%	soft wheat	3%	triticale	0%	2.48
Uganda	computed	maize	39%	bean	2%	cassava	1%	banana	14%	2.06
Zambia	country provided	maize	100%	soya bean	83%	wheat	100%	rice	18%	9.46
Zimbabwe	country provided	maize	100%	sorghum	100%	soya bean	100%	wheat	100%	10.00

NB: The following countries had missing data and were not included in the chart; Comoros, Libya, and Seychelles. Liberia has not been included since its score of 0.01 is close to zero.

Indicator 8: Status of seed import process

Efficient seed import and export processes extend the seed market beyond national borders. While seed companies benefit from an expanded market, farmers can access additional varieties from the region and beyond. This indicator measures the degree of clarity and consistency in the enforcement of seed import regulations. The regulations provide guidelines for obtaining import documentation, including import permits, phytosanitary certificates, and an International Orange Certificate³⁵, if applicable. The scores presented in Figure 11 below are based on expert opinion.

FIGURE 11: DEGREE OF CLARITY AND ENFORCEMENT OF SEED IMPORTATION PROCESS (SCORE OUT OF 10).



NB: Djibouti has not been included in the chart as the country has a score of 0.

Nearly half (21) of the 47 countries achieved a score of “excellent” on the clarity and enforcement of seed import regulations (between 8 and 10). In these countries, the seed importation regulations are clear, and they are enforced effectively by the relevant government agency. Twelve countries scored “good” (between 6 and less than 8). In these countries, the import regulations are clear, but there is room for improvement through digitization and online processing. In addition, the level of enforcement can also be

³⁵ The International Orange Certificate is issued by a laboratory accredited by the International Seed Testing Association (ISTA) when both sampling from the seed lot and testing of the sample are carried out by the same laboratory.

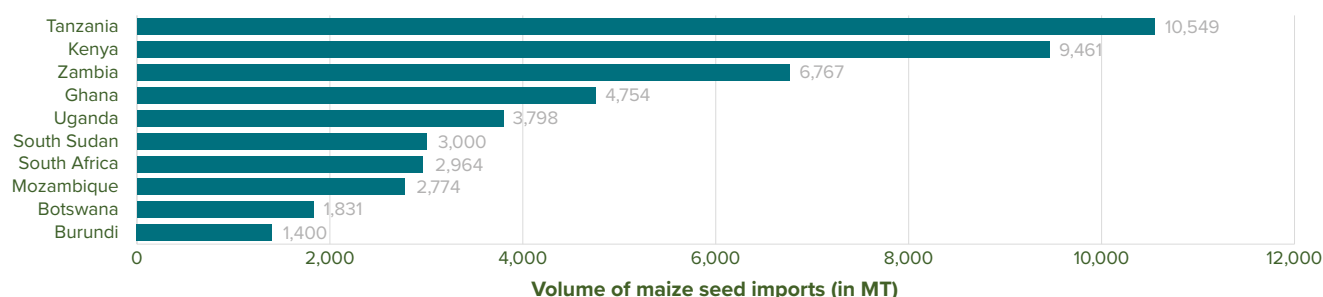
improved. Nine countries (Comoros, Guinea-Bissau, the Republic of the Congo, the Democratic Republic of Congo, Eritrea, Guinea (Conakry), Nigeria, Senegal, and Sudan) scored “fair” (between 4 and less than 6). These countries have guidelines for seed trade, but they are not followed consistently, and/or they are not understood by the seed traders. A further four countries (South Sudan, Somalia, Madagascar, and Mauritania) scored “poor” (between 2 and less than 4). These countries have no formal seed regulations that define procedures for seed trade.

The SSPI data collection also included data on volumes of seed imported and exported, in all countries where such data were available. This information is presented in Figure 12, although it is important to note that, in some countries, government officials indicated that not all seed imports were recorded; depending on the extent of this problem, the data on import volumes presented below may be an under-estimate of the actual volumes.

Seed Imports

In 2022, 34 out of the 47 countries imported seed of at least one of the four priority crops. Figure 12 shows the volumes of maize seed imported by the 10 leading importing countries.³⁶ Except for Ghana, all are located in the COMESA and SADC regions.

FIGURE 12: LEADING MAIZE SEED IMPORTING COUNTRIES (AND VOLUMES) IN 2022



Two other highly traded seeds are sorghum and soya bean seed. The leading importers for the former are Kenya (10,200 MT), South Sudan (3,500 MT), and Zimbabwe (987 MT). Leading importers for the latter are Zambia (15,528 MT), Zimbabwe (350 MT), and Malawi (214 MT).

Indicator 9: Adequacy of agro-dealer networks

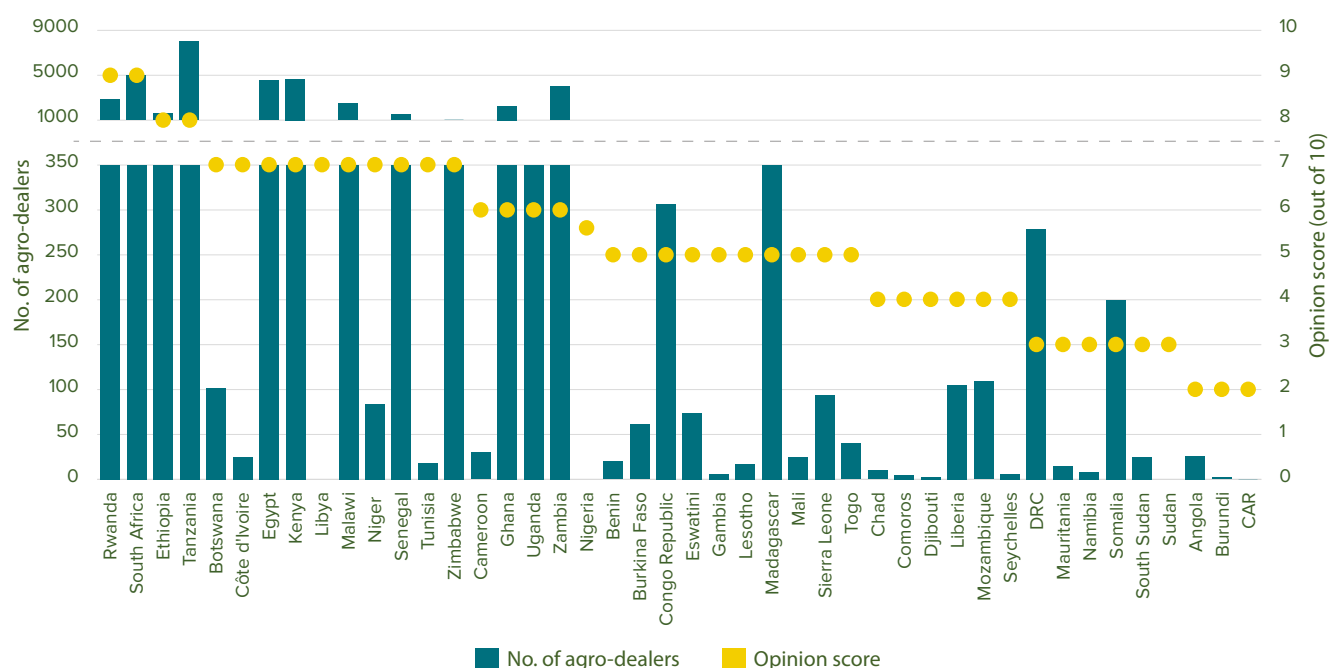
Agro-dealers play a key role in expanding the reach of Africa’s seed distribution systems, connecting seed companies to individual farmers, especially in hard-to-reach rural areas. They include seed sellers, agro-input shops that sell a variety of agricultural inputs, and seed distributors. Agro-dealers are often the main point of sale for certified seed. Two key pieces of information pertaining to the agro-dealer network are the number of agro-dealers and their distribution across urban and rural areas. As we explain in the Methods section, for various reasons, deriving an accurate quantitative measure of the adequacy of agro-dealer networks was not feasible, and the adequacy of the agro-dealer network was instead scored as a qualitative expert opinion. However, wherever available, the individual country briefs do provide data on the number and distribution of agro-dealers in the country.

³⁶ Data on maize are highlighted because maize is the most commonly selected priority crop (Figure 4) and because it is the most traded cereal/legume seed on the continent.

Figure 13 presents the number of agro-dealers in each country along with the expert ratings on the adequacy of the agro-dealer network. The number of registered agro-dealers ranges widely, from 2 in Burundi to approximately 8,000 in Tanzania, although it is important to note that in many countries the exact number of agro-dealers is not known, and the figure represents an estimate obtained from extension services. The countries with the highest number of agro-dealers are Tanzania (8,000), South Africa (5,000), Kenya (4,654), Egypt (4,500), and Zambia (4,000). The Central African Republic, the Republic of the Congo, Eritrea, and Seychelles have no registered agro-dealers, while in Guinea-Bissau, Guinea Conakry, Libya, Nigeria, and Sudan the number of active agro-dealers (even approximately) is not known.

In terms of satisfaction ratings, Rwanda, South Africa, Ethiopia, and Tanzania scored “excellent” (between 8 and 10), signaling an agro-dealer network that functions well overall and meets the needs of farmers. A further 14 countries scored “good” (between 6 and less than 8), indicating the presence of an active agro-dealer network, with some room for improvement in either the number of agro-dealers or their distribution – or both. Seventeen countries scored “fair” (between 4 and less than 6), indicating a reasonable network of agro-dealers, but mainly distributed in the urban areas. Ten countries scored “poor” (between 2 and less than 4), indicating a poor network of agro-dealers, most of which are in the urban areas. Eritrea, Guinea (Conakry), and Guinea – Bissau scored 0, as they do not have any agro-dealers.

FIGURE 13: NUMBER AND ADEQUACY OF AGRO-DEALER NETWORKS

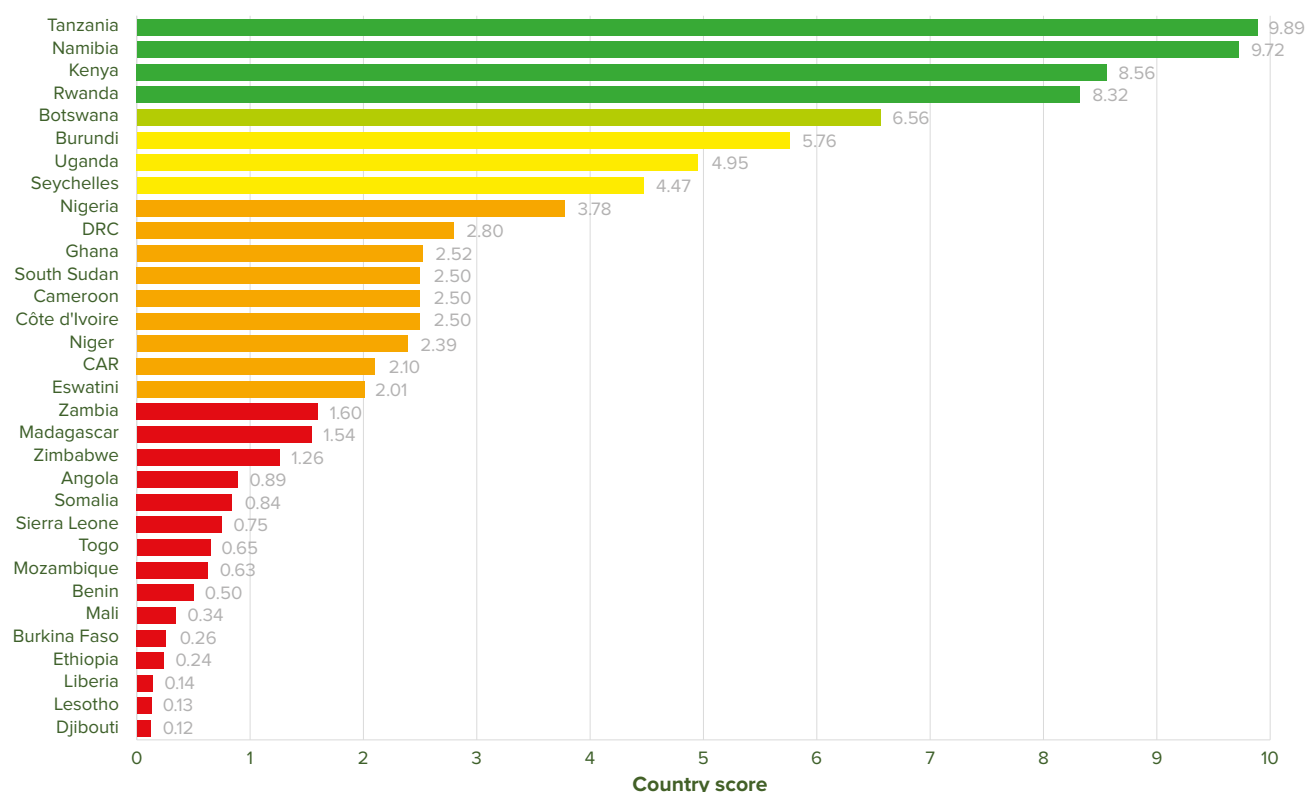


NB: The following countries are not included in the chart as they do not have any agro-dealers and scored 0: Eritrea, Guinea (Conakry), and Guinea-Bissau.

Indicator 10: Seed sold in small packages

Most farmers in Sub-Saharan Africa operate on a small scale, so making seed available in small - and therefore more affordable - packages is a good way to increase certified seed adoption rates by this group. The scores, measuring the percentage of seed available in packages of 2 kg or less, are presented in Figure 14.

FIGURE 14: SEED SOLD IN SMALL PACKAGES OF 2 KG OR LESS



NB: The following countries have a score of 0 and therefore excluded from the chart: Chad, the Republic of the Congo, Egypt, Eritrea, Ethiopia, Gambia, Guinea (Conakry), Guinea-Bissau, Malawi, Mauritania, Senegal, Somalia, South Africa, Sudan, and Tunisia.

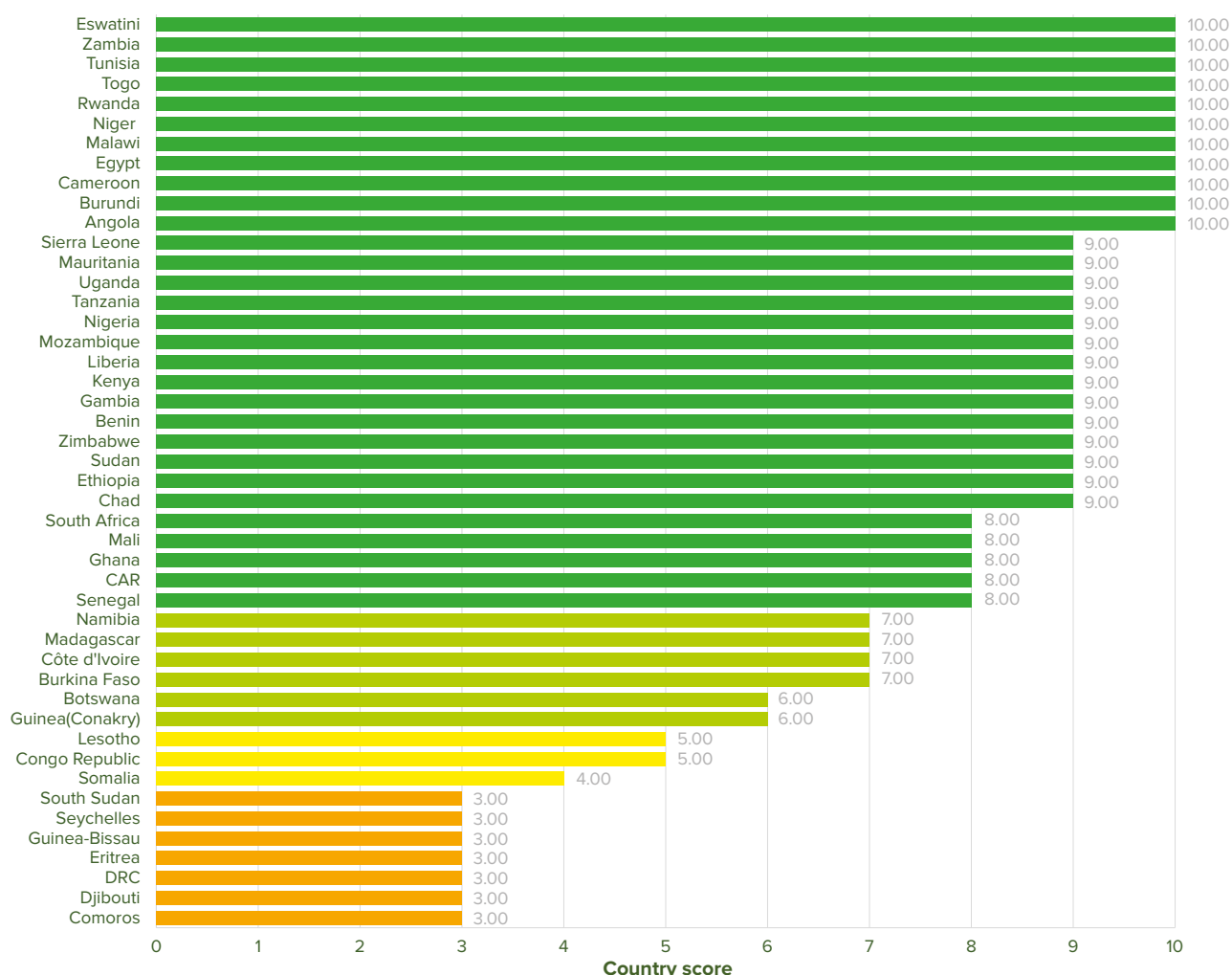
Four countries, Tanzania, Namibia, Rwanda, and Kenya, scored between 8 and 10. In these countries, the proportion of seed sold in small packages of 2 kg or less ranged from 83% to 99%. These high scores reflect deliberate efforts by the private sector to reach small-scale farmers. Botswana scored 6, because 66% of the seed, most of which is imported, is sold in small packages.

In 25 out of 47 countries, less than 30% of the seed for the four priority crops is sold in small packages of 2 kg or less. Furthermore, 30% of the countries (15 out of 47) scored 0, indicating that, for the four priority crops, no seed was sold in small packages of 2 kg or less. In some countries, this is due to government rules for package sizes, such as in Egypt, Ethiopia, and Senegal. In Egypt, the minimum allowed package size is 5 kg. In Ethiopia, the government sets standard package sizes for crops, namely, 12.5 kg for maize, 50 kg for wheat, 15 kg for teff, and 10 kg for sorghum, although some project initiatives are promoting smaller packages. In Senegal, the standard sizes for seed packages are 50 kg for groundnut, 40 kg for rainfed and 80 kg for irrigated rice, 16 kg for maize, and 4 kg for millet. In South Africa, the sale of seed in small packages is also limited, although not due to government regulation: here the private sector sells less than 5% of OPV maize and less than 1% of hybrid maize in small packages, while none of the soya bean, sunflower and wheat seed is sold in packages of 2 kg or less since most of the crop production is carried out by large-scale farmers.

Indicator 11: Status of national seed policy instruments

Well-functioning formal seed sectors have clearly defined legal instruments that are regularly updated. These instruments give structure to the formal seed sector. This indicator tracks the status of the national seed policy instruments (seed policy, law, regulations and decrees) that promote an enabling environment for a competitive seed sector and encourage private sector participation in seed sector development. This indicator tracks the completeness of the relevant seed policy instruments, their status (whether the instruments have been approved or are in the drafting stage), and, if they have been enacted already, whether they are up to date. It does not track the implementation of these instruments.

FIGURE 15: STATUS OF SEED NATIONAL POLICY INSTRUMENTS



NB: Libya is not included in chart as it has a score of 0.

As shown in Figure 15, 30 out of 47 countries scored “excellent” (between 8 and 10), indicating that, at least on paper, these countries have made significant efforts to have up-to-date seed policy instruments that promote competitive seed sectors. In countries that scored 9, some of the seed policy instruments are under review. Examples include Tanzania’s Seed Regulations, 2007, which are being amended to allow for the authorization of private seed inspectors (The United Republic of Tanzania 2007), or Nigeria’s Plant Variety Protection Act (2021), which is yet to be fully implemented (Federal Republic of Nigeria 2021). South Africa scored 8, because the regulations for the Plant Improvement Act 53 of 1976 (Republic of South Africa 1976) are still in use while new regulations are being formulated.

Six countries scored “good” (between 6 and less than 8): in these countries, most policy instruments are up to date, and they are in place. The lack of some policy instruments results in a less enabling environment for the formal seed sector. Somalia, Lesotho, and the Republic of the Congo scored “fair” (between 4 and less than 6): in these countries, a fair number of seed policy instruments are in place. Finally, seven countries scored “poor” (between 2 and less than 4): these countries either have insufficient seed policy instruments or they are outdated, a challenge that negatively impacts all other areas of the seed sector. In Libya, the status of the seed policy instruments is unknown.

Indicator 12: Status of harmonization of national seed policy instruments with regional seed regulations

This indicator measures the extent to which national seed regulations are harmonized with the regulations of the respective regional communities (RECs).³⁷ The main function of the RECs is to minimize trade barriers through the application of common principles and procedures. For seed, the goal of regional harmonization is to facilitate farmers’ access to improved seed across countries. Five RECs - COMESA, EAC, ECCAS, ECOWAS, and SADC - have regional policy instruments for seed:

- **Common Market for Eastern and Southern Africa (COMESA):** COMESA has 21 member states. The COMESA Seed Trade Harmonization Regulations were passed in 2014. They recognize four seed classes - pre-basic seed, basic seed, first-generation certified seed, and second-generation certified seed (COMESA 2014). The COMESA regulations focus mainly on seed certification, variety release and quarantine and phytosanitary measures.
- **Economic Community of Central African States (ECCAS):** ECCAS has 11 member states. It has developed a harmonized seed regulatory framework to guide the production, quality control, certification, and commercialization of seed in member countries (ECCAS 2014). The regulations were developed on the basis of the ECOWAS Regulations. They recognize pre-basic seed classes G1, G2 and G3, basic seed class G4 and certified seed classes R1, R2 and R3. By 2023, the Regulations had been adopted by the Economic and Monetary Community of Central Africa (CEMAC) and the member countries were internalizing them.
- **Economic Community of West African States (ECOWAS):** ECOWAS has 15 member states. The ECOWAS Seed Regulation (Regulation C/REG.4/05/2008 on Harmonization of the Rules governing quality control, certification, and marketing of plant seeds and seedlings in the ECOWAS Region) was passed in 2008 (ECOWAS 2008). The ECOWAS Commission designated CORAF as its technical arm to facilitate and coordinate the implementation of the harmonized regulations in the member states. Member countries implement the ECOWAS regulations through the following regulations and procedures: (i) Executive Regulation Organizing the Regional Catalogue, (ii) Executive Regulation Organizing the Regional Seed Committee, (iii) Executive Regulation on Enabling Technical Regulations, (iv) Executive Regulation on Seed Import/Export, (v) Procedure Manual for Variety Release, (vi) Procedure Manual for Seed Quality Control & Certification and (vii) Regional List of Quarantined Pests and Diseases.
- **Southern African Development Community (SADC):** The SADC has 16 member states. The SADC Harmonized Seed Regulatory System (SADC HSRS) took effect in 2013, when 10 member states signed a Memorandum of Understanding regarding their implementation (Feed the Future, 2016). The SADC HSRS establishes commonly agreed regulatory standards and procedures related to three areas: (i) seed variety release, (ii) seed certification and quality assurance, and (iii) quarantine and phytosanitary measures for seed.

³⁷ Of the 7 RECs in place on the continent, only COMESA, ECCAS, ECOWAS and SADC have harmonized seed regulations.

- **East African Community (EAC):** The EAC has eight member states (Burundi, Democratic Republic of Congo, Kenya, Somalia, South Sudan, Rwanda, Tanzania, and Uganda). Draft versions of the EAC Seed Bill and EAC Seed Regulations dealing with seed certification, plant variety evaluation and release, plant variety protection, as well as a draft of the East African Seed Standards for six crops (maize, sorghum, sunflower, soya bean, groundnut seed, and potato) are currently in the final stages of approval by the East African Legislative Assembly (EALA).

Table 12 shows the RECs with harmonized seed regulations and their member states. For various reasons, countries may belong to more than one REC (shown in bold font). When it comes to harmonizing seed regulations, countries in multiple RECs tend to adopt the instrument most convenient to the country.

TABLE 12: MEMBER STATES IN RECS THAT HAVE HARMONIZED SEED REGULATIONS

REC	Member States
COMESA	Burundi , Comoros, Democratic Republic of Congo , Djibouti, Egypt, Eritrea, Eswatini , Ethiopia, Kenya, Libya, Madagascar , Malawi , Mauritius , Rwanda , Seychelles, Somalia, Sudan, Tunisia, Uganda, Zambia , and Zimbabwe .
ECCAS	Angola , Burundi , Cameroon, the Central African Republic, Chad, The Republic of the Congo, Gabon, Equatorial Guinea, Democratic Republic of Congo , Rwanda , and Sao Tome and Principe
ECOWAS	Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, the Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal, and Togo
SADC	Angola , Botswana, Comoros, Democratic Republic of Congo , Eswatini , Lesotho, Madagascar , Malawi , Mauritius , Mozambique, Namibia, Seychelles, South Africa, United Republic Tanzania, Zambia , and Zimbabwe

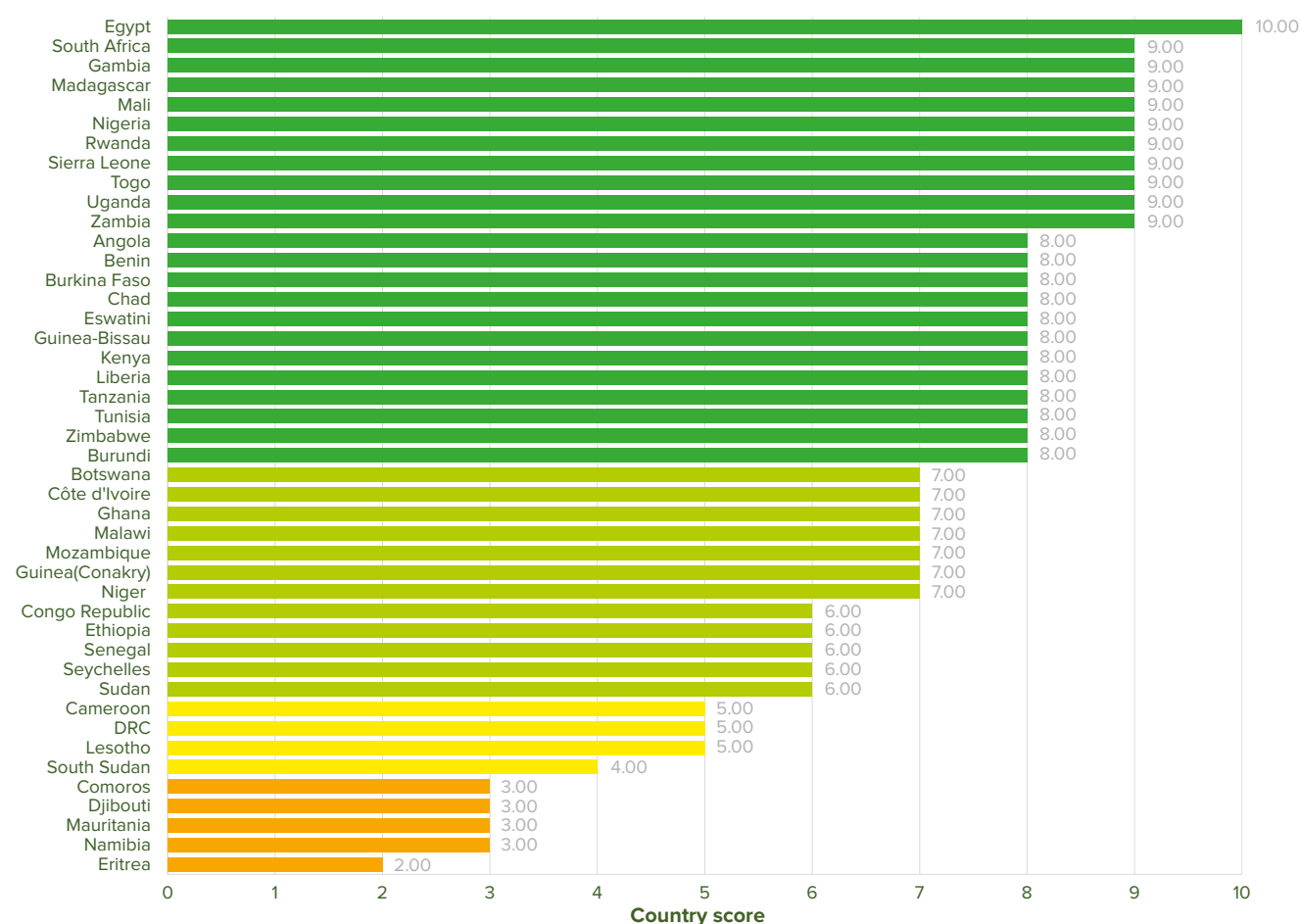
Figure 16 shows countries' status of alignment with the regional regulations. The differences in the scores reflect the countries' current stage of implementation, as assessed by the seed industry experts. Twenty-three countries scored "excellent" (between 8 and 10) on the status of harmonization with their regional REC seed regulations. Egypt led with a score of 10. These countries have all harmonized their national seed regulations with the relevant REC regulations and are implementing them.

Twelve countries scored "good" (between 6 and less than 8). While these countries have harmonized the national laws with the regional regulations, the process is incomplete. For example, in Sudan, the process leading to the harmonization of the national seed instruments with the COMESA Seed Trade Harmonization Regulations started in 2014 but is yet to be completed. In Côte d'Ivoire, the ECOWAS harmonized regulations on seed were published in the Official Gazette in 2013, but certain aspects, such as the establishment of a seed sector support fund, have yet to be implemented.

Four countries scored "fair" (between 4 and less than 6). In these countries the harmonization process is incomplete. For example, in South Sudan, the draft Seeds and Plant Varieties Provisional Order of 2021 is harmonized with the COMESA Seed Trade Harmonization Regulations, but it has not been enacted. Eritrea, Comoros, Djibouti, Mauritania, and Namibia scored "poor" (between 2 and less than 4). Implementation in Mauritania is delayed because the harmonized regulations are not available in Arabic. Comoros is drafting seed policy instruments, while Djibouti is exploring the alignment of its seed policy instruments with the COMESA Seed Trade Harmonization Regulations through IGAD. Namibia has draft seed regulations that are aligned with the SADC Harmonized Seed Regulatory System.

Three countries (Central African Republic, Somalia, and Libya) scored 0, because they have not yet harmonized their national seed laws with their respective REC seed instruments.

FIGURE 16: STATUS OF ALIGNMENT WITH REGIONAL SEED REGULATIONS (0-10)



NB: The following countries are not included in the chart as they have score of 0: Central African Republic, Libya, and Somalia.

Indicator 13: Status of adoption of national biosafety frameworks to guide plant breeding and seed production

The regulation of biosafety has gained importance in many countries because it is closely tied to plant breeding, in particular for seed of Genetically Modified Organisms (GMO). This indicator measures whether a country has adopted national biosafety frameworks, including agricultural biotechnology policies, laws, and/or regulations, and whether these frameworks are operational. According to the International Service for the Acquisition of Agri-biotech Applications (ISAAA) and the African Agricultural Technology Foundation (AATF), in 2023, twelve African countries had ongoing research initiatives, variety evaluation through national performance trials, or approvals for the commercialization of varieties (Table 13).³⁸ A total of eight crops were included in these GMO trials: banana, banana plantain, cassava, cotton, cowpea, maize, rice, sorghum, and potato. The crop traits being researched included insect resistance, disease resistance, nitrogen use efficiency, biofortification, and delayed post-harvest starch deterioration.

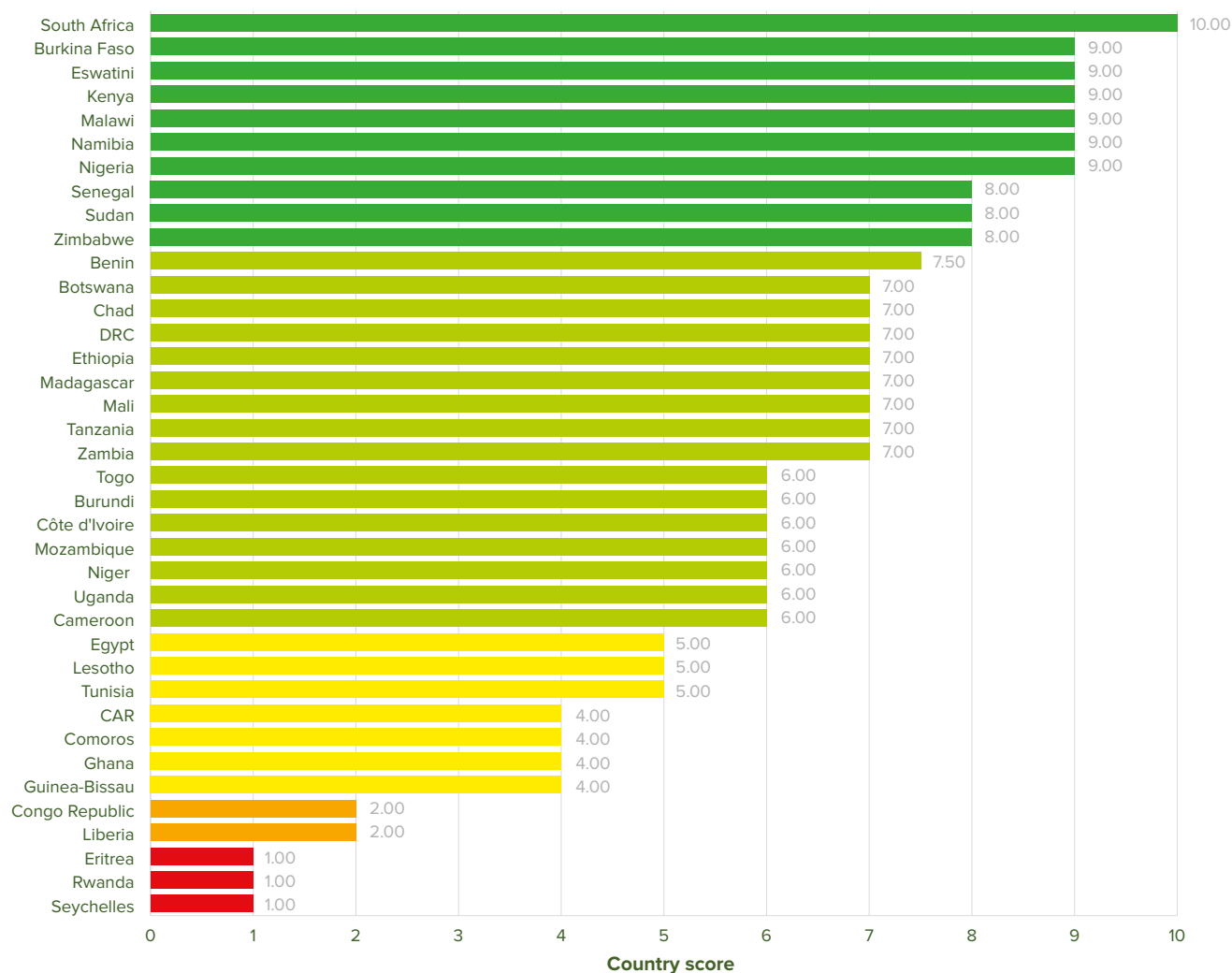
³⁸ Source: <https://africenter.isaaa.org/wp-content/uploads/2021/10/Africa-Biotech-Status-info.FEB-2021.pdf>

TABLE 13: STATUS OF AFRICAN BIOTECHNOLOGY, GM RESEARCH AND COMMERCIALIZATION BY 2023

Country	Confined field trials	National performance trials (variety evaluation trials)	Commercial approval
Burkina Faso	-	cowpea	cotton
Eswatini	-	-	cotton
Ethiopia	-	maize	cotton
Ghana	-	cowpea	-
Kenya	sorghum	cassava	cotton, maize
Malawi	banana plantain, banana	-	cotton
Mozambique	-	maize	cotton
Nigeria	-	maize	cotton, cowpea
Rwanda	cassava	-	
South Africa	-	-	cotton, maize, soya bean
Sudan	-	-	cotton
Uganda	banana, cassava, potato	-	

Source: ISAAA and AATF Regulatory Department

FIGURE 17: STATUS OF ADOPTION OF NATIONAL BIOSAFETY FRAMEWORKS



NB: The following countries have score of 0 and have not been included in the chart; Angola, Djibouti, the Gambia, Guinea (Conakry), Libya, Sierra Leone, Somalia, South Sudan, and Mauritania.

Figure 17 shows that 64% of the countries surveyed (30 out of 47) have national biosafety frameworks. Of these, 10 countries scored “excellent” (between 8 and 10), indicating that the national frameworks have been adopted and are overseen by national biosafety authorities or committees. A further 16 out of 47 countries scored “good” (between 6 and less than 8). In these countries, the instruments are either not fully implemented, or some of their aspects, such as regulations to operationalize the instruments, are not in place.

Seven countries scored “fair” (between 4 and less than 6). These countries have draft bills awaiting adoption. Two countries – Liberia and the Republic of the Congo - scored “poor” (between 2 and less than 4); both countries are currently drafting biosafety bills. Three countries (Eritrea, Rwanda, and Seychelles) scored “extremely poor” (between 0 and less than 2). These countries do not have a biosafety law, but they do regulate biosafety through other laws. Finally, 10 out of 47 countries have no national biosafety frameworks at present and thus received a score of 0: Angola, Djibouti, the Gambia, Guinea (Conakry), Libya, Mauritania, Sierra Leone, Somalia, and South Sudan.

Indicator 14: Status of Farmer-Managed Seed Systems in national seed policy instruments and institutional arrangements

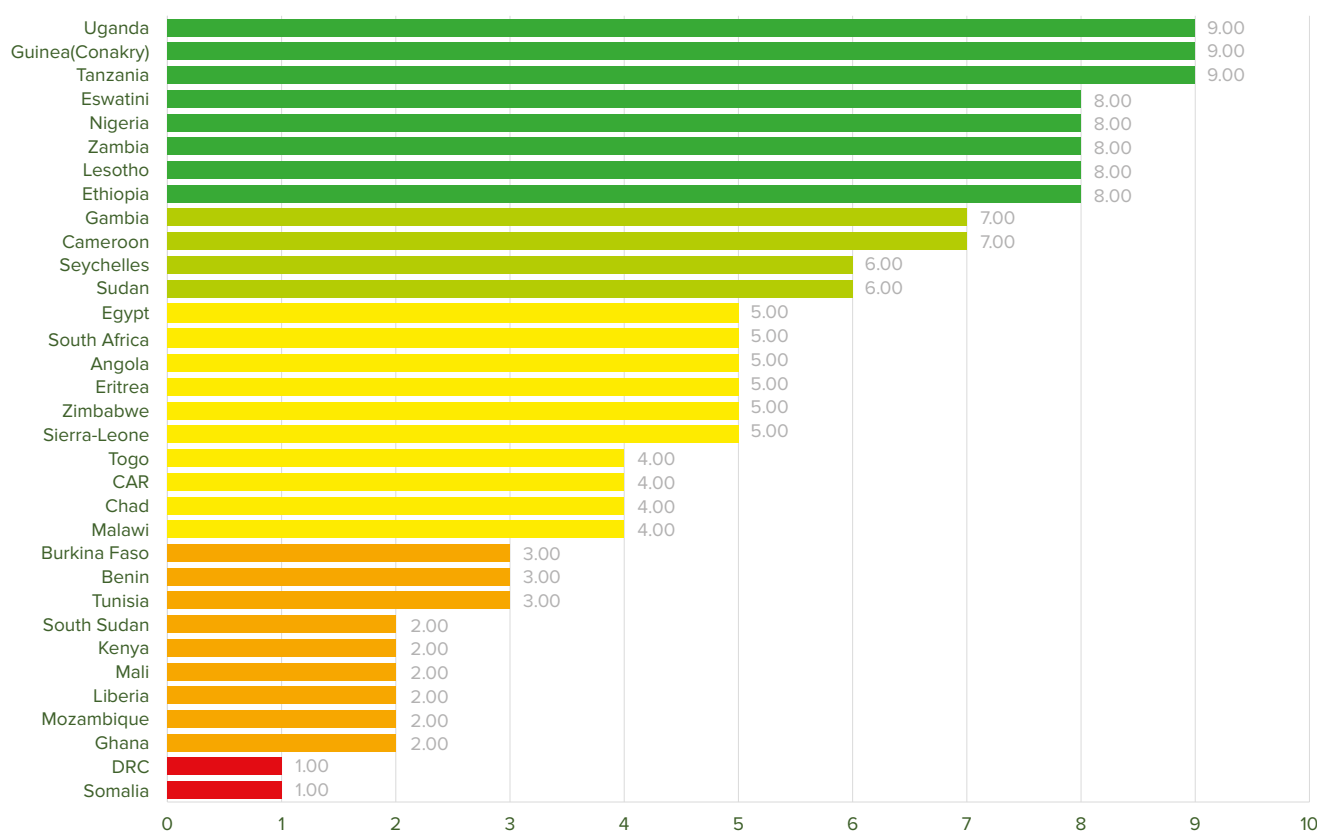
This indicator tracks the status of Farmer-Managed Seed Systems (FMSS) in national seed policy instruments (seed policy, laws, regulations or decrees) and institutional arrangements that promote an enabling environment for a competitive seed sector that encourages private sector and community participation in seed sector development. For a top score, FMSS are recognized in policy instruments and are actively supported.

Eight out of 47 countries scored “excellent” (between 8 and 10) (Figure 18). The highest scoring countries among these not only recognize FMSS in their national seed policy but also have substantive regulations to support FMSS. Pertinent examples are Uganda, where FMSS are recognized through the Seeds and Plant (Quality Declared Seed (QDS)) Regulation of 2019, or Zambia, where small-scale farmers may be trained as seed growers, and seed regulations are relaxed and provide for QDS schemes to help smallholders meet standards.

Four out of 47 countries scored “good” (between 6 and less than 8): Cameroon, the Gambia, Sudan, and Seychelles. In these countries, FMSS are recognized in seed policy instruments, and there are training programs for small-scale farmers as seed growers. Ten countries scored “fair” (between 4 and less than 6). In these countries, FMSS are recognized, but the relevant policy instruments are yet to be implemented or are currently under review. Nine countries scored “poor” (between 2 and less than 4). In these countries, FMSS are not recognized in the policy instruments, but FMSS are slated for inclusion in the latest reviews. For example, in Kenya, the informal seed system is included in the draft seed policy. In Chad, the Seeds and Seedlings of Plant Origin Law recognizes the existence of local or traditional seeds, and plans are underway to register such varieties. In South Africa, the Plant Improvement Regulations allow for vulnerable households, and subsistence and smallholder farmers to save, reuse, or exchange seed of certain crops, if the volume of seed they produce is below certain prescribed limits. In Malawi, while the National Seed Policy recognizes the FMSS in the introduction, the rest of the policy focuses on the formal sector and makes no further mention of FMSS.

The Democratic Republic of Congo and Somalia scored “extremely poor” (between 0 and less than 2). In the Democratic Republic of the Congo, FMSS are not formally supported because the country lacks policy instruments; however, FMSS are promoted by development agencies and other organizations. In Somalia, the establishment of FMSS is a priority for the Ministry of Agriculture and Irrigation, which has allocated a budget for it. Fourteen countries do not recognize FMSS at present, resulting in a score of 0.

FIGURE 18: STATUS OF FARMER-MANAGED SEED SYSTEMS IN NATIONAL SEED POLICY INSTRUMENTS



NB: The following countries with a rating of 0 have been excluded from the chart: Botswana, Burundi, the Republic of the Congo, Comoros, Côte d'Ivoire, Djibouti, Guinea-Bissau, Libya, Madagascar, Mauritania, Namibia, Niger, Rwanda, and Senegal.

Indicator 15: Adequacy of seed inspection services

Seed inspection services ensure that certified commercial seed meets official quality standards. Adequate inspection services require sufficient, well-resourced, inspectors. This indicator assesses the adequacy of a country's seed inspectors. A key metric to assess whether seed inspection services meet the existing need is the number of inspectors. However, as outlined in the Methods section, the number of inspectors is not necessarily an accurate indicator of the adequacy of seed inspection services. The score is therefore based on expert opinion on the adequacy of the seed inspection services in the country.

Although most countries rely on public inspection services, some countries have also instituted private inspection services, and these inspectors are included in the count. The countries with the highest number of seed inspectors are Egypt (900), South Africa (320), Benin (254), Nigeria (152), and Senegal (120). Ten countries have adopted systems for private seed inspection: Burundi, Kenya, Malawi, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Zambia, and Zimbabwe. Notably, South Africa has only private seed inspectors, whose work is coordinated by the South African National Seed Organization (SANSOR).

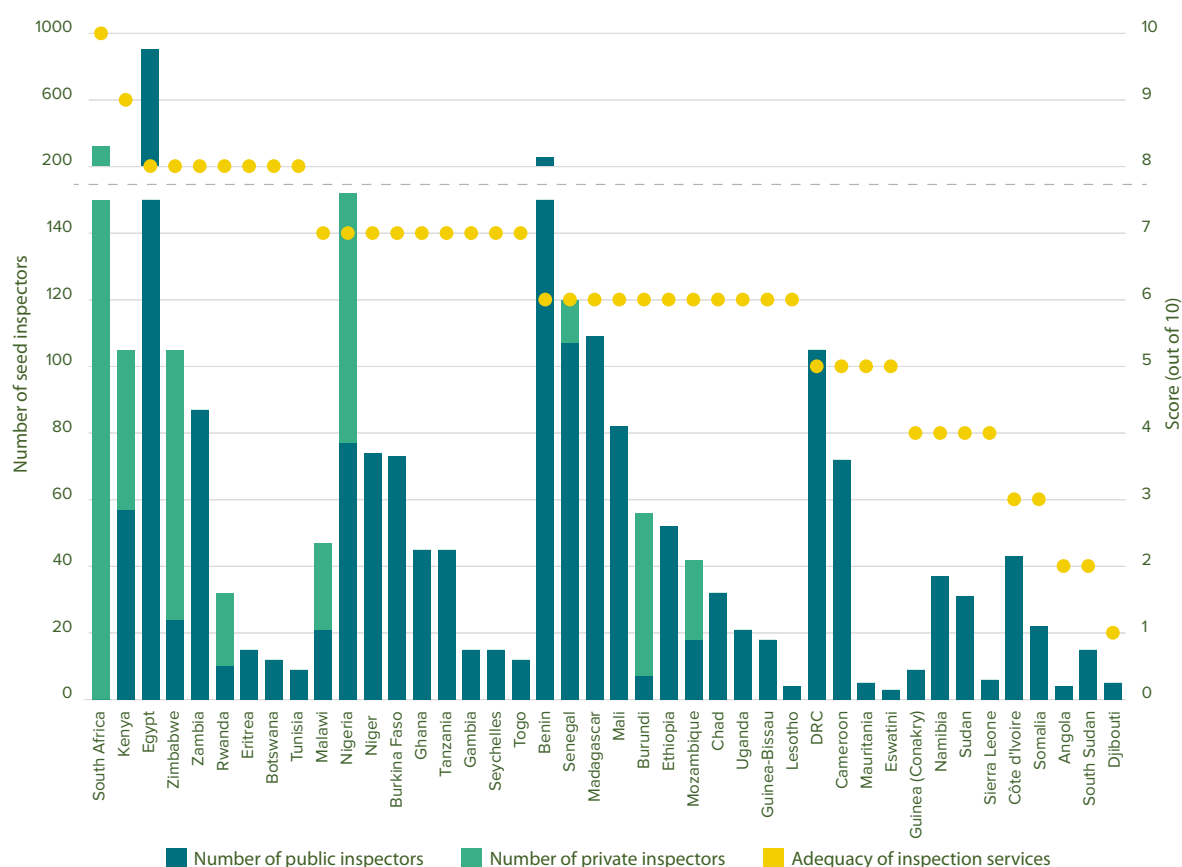
Figure 19 shows the number of inspectors and rating of the adequacy of the seed inspection services. Nine out of the 47 countries surveyed scored "excellent" (between 8 and 10), indicating that seed inspections function well. Twenty countries scored "good" (between 6 and less than 8). In these countries, some aspects of seed inspection do not work well. For example, in Tanzania, TOSCI is raising awareness about its seed regulations; however, the organization is yet to make seed labels available, which affects seed sales. In Togo, although seed inspectors are distributed across the agricultural regions of the country, they are not yet sworn in and hence have no full legal powers to carry out their duties.

A relatively small group of eight countries scored “fair” (between 4 and less than 6). These countries have seed inspection units but are constrained by a lack of personnel or facilities. For example, inspectors in Eswatini and Sierra Leone lack the requisite financial resources and modern digital tools to carry out their work well.

Four countries (Angola, Cote d’Ivoire, Somalia, and South Sudan) scored “poor” (between 2 and less than 4), indicating both a low number of inspectors, who are also curtailed by a lack of resources, such as transportation, to carry out their duties. Five countries - Central African Republic, Comoros, the Republic of the Congo, Liberia, and Libya - do not have any seed inspectors.

In most countries, the main challenge faced by public seed inspection services is inadequate funding and logistics to conduct field inspections. Inspectors often do not have easy means of transportation to remote locations. In addition, the seed inspection services lack sufficient laboratory equipment. A lack of resources is also a constraint in countries that have a very high number of inspectors. Such countries score 5 or 6, due to the lack of facilities and equipment to support the inspectors. This applies to the Democratic Republic of Congo (105 inspectors), Benin (254 inspectors), Madagascar (109 inspectors), and Cameroon (72 inspectors).

FIGURE 19: NUMBER OF SEED INSPECTORS AND ADEQUACY OF SEED INSPECTION SERVICES

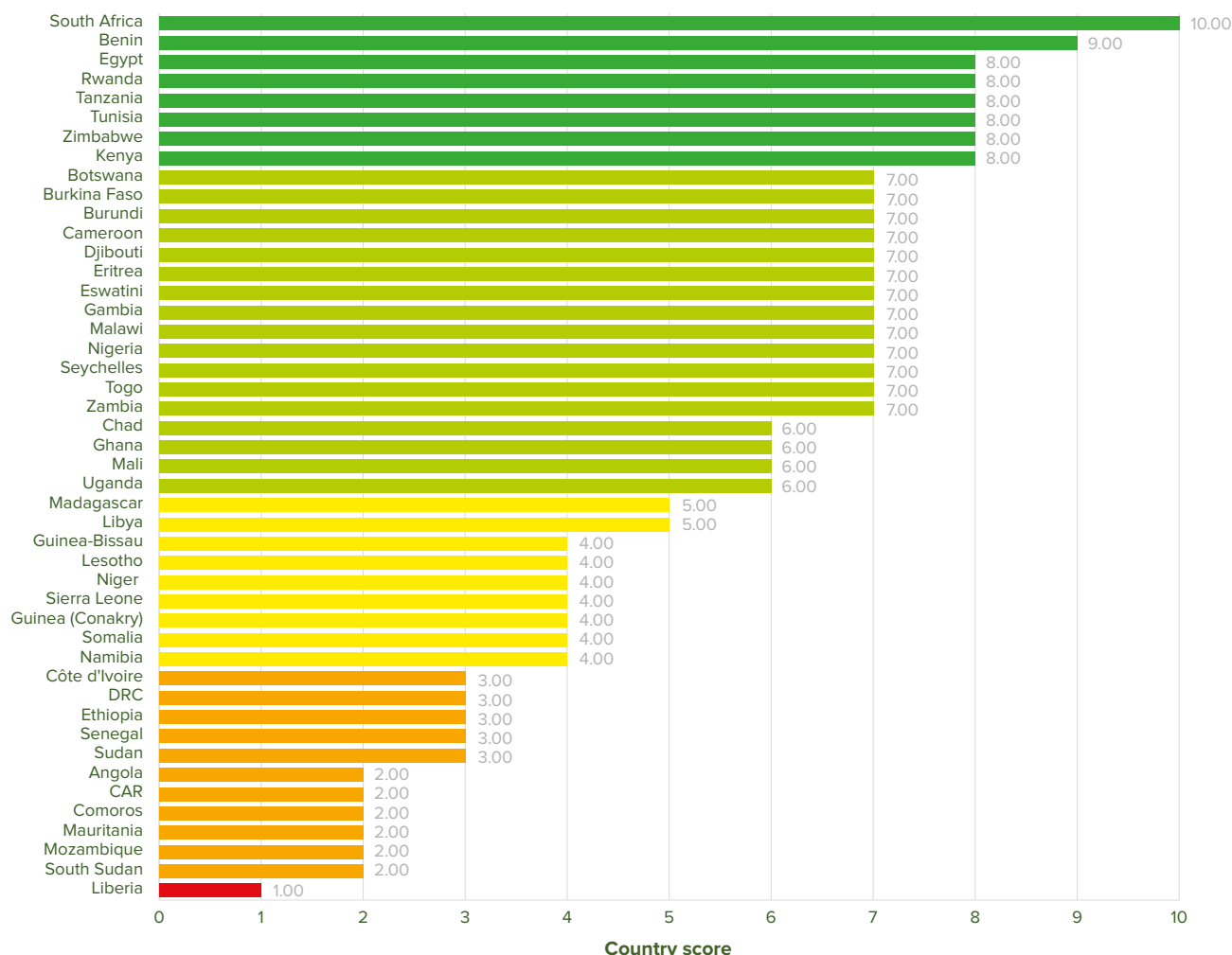


NB: The following countries with a score of 0 have been excluded from the chart: Central African Republic, Comoros, the Republic of the Congo, Liberia, and Libya.

Indicator 16: Adequacy of government efforts to combat counterfeit seed

Counterfeit seed threatens the seed sector because, when farmers discover that they have unknowingly planted grain labeled as certified seed, their confidence in certified seed may be undermined. This, in turn, hinders efforts to increase adoption rates of improved varieties. This indicator rates the adequacy of government efforts to combat counterfeit seed. Figure 20 shows the expert opinion ratings submitted to the SSPI.

FIGURE 20: ADEQUACY OF GOVERNMENT EFFORTS TO COMBAT COUNTERFEIT SEED



NB: The Republic of the Congo has a score of 0 and been excluded from the chart since the country has no measures to combat counterfeit seed.

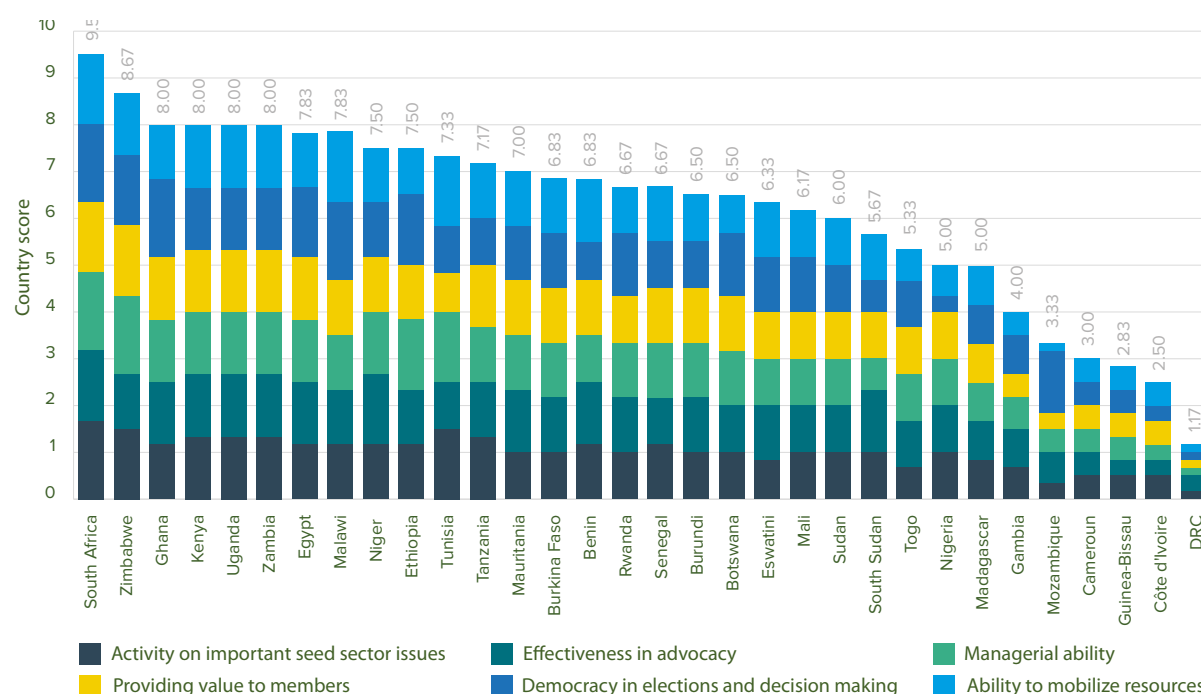
Over half of the countries (25 out of 47) scored 6 or above on this indicator, indicating the existence of concerted efforts to combat the production and sale of counterfeit seed on the continent. Eight countries scored “excellent” (between 8 and 10): South Africa, Benin, Kenya, Rwanda, Tunisia, Zimbabwe, Egypt, and Tanzania. In these countries, regulations concerning seed inspection in the field and warehouses, seed sampling, and seed testing are strictly implemented, giving fewer opportunities for counterfeit seed to enter the seed value chain. Seed that does not meet the standards is rejected and often destroyed. Seed producers or agro-dealers who are caught dealing in counterfeit seed are blacklisted and can no longer operate in the seed business. Other measures employed include surveillance, labels on seed packages linked to an SMS-based verification system, and awareness raising among farmers on how to detect counterfeit seed.

A further seventeen countries scored “good” (between 6 and less than 8), indicating that, successes notwithstanding, counterfeit seed continues to pose a challenge requiring these governments’ urgent attention. In countries such as Zambia and Uganda, the main difficulty lies in enforcement efforts not reaching all parts of the country. Nine countries scored “fair” (between 4 and less than 6), indicating that while the government has structured efforts to combat counterfeit seed, these efforts are not effective due to weak enforcement. Eleven countries scored “poor” (between 2 and less than 4), indicating that the efforts made by the government to control counterfeit seed have been largely ineffective. At the bottom of the list are Liberia and the Republic of the Congo. Liberia scored 1 because the act that regulates quality control is yet to be implemented. The Republic of the Congo was the only country with no measures to combat counterfeit seed and scored 0. Here the seed sector is in the nascent stage of development and is predominantly informal and unregulated.

Indicator 17: Adequacy of the national seed trade associations

This indicator measures the performance of the national seed trade association in a country. Well-functioning national seed trade associations represent the interests of the industry and play a key role in engaging with the government. The scoring is based on six performance measures of the association: (i) activity on important seed sector issues, (ii) democracy and governance, (iii) effectiveness in advocacy, (iv) managerial ability, (v) provision of value to members, and (vi) ability to mobilize resources. The overall score shown in Figure 21 below is the average of the six scores.

FIGURE 21: ADEQUACY OF NATIONAL SEED TRADE ASSOCIATION



NB: The following countries had no seed association and were therefore excluded from the chart; Angola, Central African Republic, Chad, the Comoros, the Republic of the Congo, Djibouti, Eritrea, Guinea (Conakry), Lesotho, Liberia, Libya, Namibia, Seychelles, Sierra-Leone, and Somalia.

Of the 47 countries surveyed, 33 have national seed associations. Seed trade associations generally serve as the voice of the private sector, but in many countries, members include a range of seed industry actors, such as private seed companies, seed dealers, research institutions, and NGOs involved in seed sector development.

Considering the six aspects measured across the 33 national seed trade associations, the measure with the highest average score (6.24) was “democracy in elections and decision-making,” followed by “effectiveness in advocacy” (6.15), “managerial ability,” (6.15), “providing value to members,” (5.94), “activity on important seed sector issues,” (5.85). Seed trade associations scored lowest on “ability to mobilize resources” (5.79), indicating that many of these associations face financial challenges. The names and ratings of the seed trade associations are presented in Appendix 2.

Out of the 47 countries surveyed, 6 scored “excellent” (between 8 and 10). The South African National Seed Organization (SANSOR) had the highest score (9.5), followed by Zimbabwe (8.7), Ghana (8.0), Kenya (8.0), Uganda (8.0), and Zambia (8.0). These associations are all actively involved in seed sector matters, regularly engage with their respective national governments, and, through these and other services, provide value to their members.

Sixteen countries scored “good” (between 6 and less than 8), indicating seed trade associations that function reasonably well with some room for improvement in certain areas. Five countries scored “fair” (between 4 and less than 6), while 4 countries scored “poor” (between 2 and less than 4). Finally, the seed trade association in the Democratic Republic of Congo scored 1.17 (“extremely poor”).

The 15 countries with no national seed trade associations scored 0. These are Angola, Central African Republic, Chad, the Comoros, the Republic of the Congo, Djibouti, Eritrea, Guinea (Conakry), Lesotho, Liberia, Libya, Namibia, Seychelles, Sierra Leone, and Somalia.

Seventy-two percent of the national seed associations, (23 out of 32) are members of the African Seed Trade Association (AFSTA).³⁹ The nine national seed associations that were not members of AFSTA in 2023 were from Botswana, Cameroon, the Democratic Republic of Congo, Eswatini, Gambia, Guinea-Bissau, Mauritania, Mozambique, and Togo.

³⁹ Source: Charles Nyachae, AFSTA. Personal communication, 2 October 2023.

The image shows three bean plants at different stages of growth, emerging from dark brown soil. The plant on the left is the smallest, with two leaves. The middle plant is slightly taller, with two leaves and a small stem. The plant on the right is the tallest, with two leaves and a long, thin stem. The background is a solid green color, and there are several large, light green, semi-transparent silhouettes of leaves scattered across it. The text 'Section 5: Conclusions' is written in white on a yellow background in the bottom left corner.

Section 5: Conclusions

In evaluating the state of seed systems across the 47 surveyed African countries, this report has outlined a broad spectrum of positive and negative aspects in these countries' seed systems and regulatory frameworks. The insights gathered from multiple indicators reflect the reality of a continent whose seed systems and policies are as varied as its ecosystems.

South Africa emerges as a paragon in the study, consistently ranking at the top of most indicators. This suggests a robust, well-structured seed sector, characterized by effective variety release protocols, extensive breeding programs, and a sophisticated national agricultural research system, where private and public sector breeders complement one another. These attributes signal an environment suited for agricultural innovation, with positive implications for food security and economic development in the region. In stark contrast, several countries, including the Republic of the Congo, Djibouti and Comoros, demonstrate significant lacunae in their seed system infrastructures. A notable absence of formalized variety release processes has resulted in a null score on several fronts for these nations, indicating a potential for stagnation in agricultural productivity and innovation.

The release of new crop varieties, an important measure of a seed system's vitality, showcases a disparate reality. Some countries have made commendable progress, releasing numerous varieties that promise enhanced yields and traits desirable in the face of climate change and food security challenges. However, others have not released any new varieties, indicating a lack of – or too little – capacity in the area of research and development.

The report also sheds light on the critical role played by regional seed catalogues and the harmonization of seed regulations, especially for countries with less developed breeding programs. These regional frameworks are instrumental in providing access to quality seed, underscoring the importance of collaboration and shared resources in strengthening agricultural outcomes across borders.

Agricultural research institutes and the frameworks guiding them face a host of challenges, from insufficient human capital to inadequate funding and outdated infrastructure. The report's findings on biosafety frameworks also reveal that, while some countries have made strides towards creating robust regulatory environments for genetically modified seed, others are yet to develop or operationalize such policies.

Counterfeit seed poses a significant threat to agricultural productivity and farmer trust. The report notes that while efforts to curb this issue are in place in many countries, their effectiveness varies, and in some cases, non-existent measures allow counterfeit seed to proliferate, undermining the entire seed value chain.

Moreover, the accessibility and choice of seed varieties available to farmers, particularly to the smallholders who form the backbone of many African economies, is critical for crop diversification and resilience. Here too, the picture is mixed, with some countries providing a wide array of choices and others falling short, often due to logistical and regulatory challenges that hinder the flow of quality seed from breeders to farmers.

Looking at the overall scores, 12 countries scored “excellent” or “good” at more than 6 and less than 10. Nineteen countries scored “fair” (between 4 and less than 6). A smaller group of 16 countries scored less than 4. While most countries were performing well, it should be noted that some of the lowest-scoring countries do not have favorable conditions for crop production and depend on other sectors, such as livestock or tourism. Others are in post-conflict situations.

There is good news and bad news for every country. That is, no country scores highly on all 17 indicators. Likewise, none of the countries has low scores on all indicators. For example, five of the ten lowest-scoring countries score highly on at least one of the policy-related indicators, such as the existence of national seed policy instruments and/or the alignment of those instruments with their respective regional harmonized regulations. The lowest scores given to five of the seven highest-scoring countries was for the availability of seed in small packages.

In sum, the report's findings stress an urgent need for increased investment in seed systems, improved regulatory frameworks, and a push towards regional harmonization to bolster agricultural productivity and sustainability. For countries falling behind, a concerted effort to revamp their seed sector infrastructure is crucial. This could involve enhancing the functionality of variety release processes, strengthening agricultural research capacities, ensuring the availability of quality seed, and expanding efforts to combat counterfeit seed. The goal is to create a more uniform landscape of competitive seed systems that can drive food security across the continent, especially in light of the African Continental Free Trade Agreement that will reduce barriers to cross border trade.

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Appendices

Appendix 1: Ratings of NARIs and adequacy of Early Generation Seed

TABLE 14: ADEQUACY OF NATIONAL AGRICULTURAL RESEARCH INSTITUTES' BREEDING PROGRAMS

Country	Adequacy of numbers of breeders					Adequacy of funding of breeders					Adequacy of basic research infrastructure of breeders					Overall rating (out of 10)
	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	Crop 1	Crop 2	Crop 3	Crop 4	Avg	
Angola	2	1	2	1	1.50	2	2	2	2	2.00	3	3	3	3	3.00	2.17
Benin	3	3	3	3	3.00	3	3	3	3	3.00	3	3	3	3	3.00	3.00
Botswana	6	6	6	6	6.00	7	7	7	7	7.00	5	5	5	5	5.00	6.00
Burkina Faso	8	8	8	7	7.75	5	5	5	5	5.00	7	7	7	7	7.00	6.58
Burundi	4	4	4	4	4.00	2	2	2	2	2.00	6	6	6	6	6.00	4.00
Cameroon	5	5	5	3	4.50	5	5	5	5	5.00	5	5	5	5	5.00	4.83
Central African Republic	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0.00
Chad	1	0	0	1	0.50	5	5	4	5	4.75	4	4	4	4	4.00	3.08
Comoros	4	1	1	1	1.75	4	1	1	1	1.75	4	1	2	1	2.00	1.83
The Republic of the Congo	1	1	1	0	0.75	4	3	4	4	3.75	4	3	3	4	3.50	2.67
Côte d'Ivoire	3	3	3	3	3.00	5	5	5	5	5.00	7	7	7	7	7.00	5.00
Democratic Republic of Congo	5	5	5	5	5.00	3	3	3	3	3.00	3	3	3	3	3.00	3.67
Djibouti	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0.00
Egypt	9	9	9	9	9.00	7	7	7	5	6.50	8	8	8	5	7.25	7.58
Eritrea	3	3	3	3	3.00	5	5	5	5	5.00	4	4	4	4	4.00	4.00
Eswatini	MD	MD	MD	MD	MD	1	1	1	1	1.00	1	1	1	1	1.00	1.00
Ethiopia	7	9	7	9	8.00	5	7	7	7	6.50	7	7	7	7	7.00	7.17
Gambia	4	4	4	0	3.00	4	4	4	4	4.00	4	4	4	4	4.00	3.67
Ghana	5	5	2	2	3.50	3	2	2	2	2.25	4	5	4	4	4.25	3.33
Guinea (Conakry)	5	5	3	5	4.50	3	3	3	3	3.00	3	3	3	3	3.00	3.50
Guinea-Bissau	2	2	2	2	2.00	2	2	2	2	2.00	4	4	4	4	4.00	2.67

Country	Adequacy of numbers of breeders					Adequacy of funding of breeders					Adequacy of basic research infrastructure of breeders					Overall rating (out of 10)
	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	
Kenya	8	6	6	5	6.25	6	5	3	2	4.00	7	6	6	5	6.00	5.42
Lesotho	0	0	0	0	0.00	1	1	1	1	1.00	1	1	1	1	1.00	0.67
Liberia	7	3	3	3	4.00	2	2	2	2	2.00	3	3	3	3	3.00	3.00
Libya	8	0	0	0	2.00	4	4	4	4	4.00	5	5	5	5	5.00	3.67
Madagascar	5	3	3	3	3.50	5	3	3	3	3.50	5	5	5	5	5.00	4.00
Malawi	4	5	5	5	4.75	5	5	5	5	5.00	7	7	7	7	7.00	5.58
Mali	2	5	2	6	3.75	6	6	6	6	6.00	6	6	6	6	6.00	5.25
Mauritania	2	2	2		2.00	1	1	1	1	1.00	1	2	1	1	1.25	1.36
Mozambique	8	2	2	8	5.00	2	1	1	2	1.50	2	1	1	2	1.50	2.67
Namibia	0	0	1	1	0.50	2	2	2	2	2.00	2	2	2	2	2.00	1.50
Niger	6	6	6	9	6.75	5	5	5	5	5.00	5	5	5	5	5.00	5.58
Nigeria	3	9	3	6	5.25	5	5	5	5	5.00	4	4	4	4	4.00	4.75
Rwanda	5	5	5	6	5.25	5	5	5	5	5.00	5	5	5	5	5.00	5.08
Senegal	2	1	2	1	1.50	3	3	3	3	3.00	3	3	3	3	3.00	2.50
Seychelles	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0.00
Sierra-Leone	8	3	5	3	4.75	5	4	4	4	4.25	4	4	4	4	4.00	4.33
Somalia	1	0	0	0	0.25	2	2	2	2	2.00	3	3	3	3	3.00	1.75
South Africa	9	9	9	9	9.00	9	9	9	9	9.00	9	9	9	9	9.00	9.00
South Sudan	5	1	5	1	3.00	1	2	1	0	1.00	1	1	1	1	1.00	1.67
Sudan	5	5	7	4	5.25	3	3	3	2	2.75	6	6	7	4	5.75	4.58
Tanzania	8	6	4	8	6.50	4	4	4	4	4.00	4	4	4	4	4.00	4.83
Togo	5	5	5	5	5.00	4	4	4	4	4.00	4	4	4	4	4.00	4.33
Tunisia	7	3	5	2	4.25	5	3	3	2	3.25	5	5	5	5	5.00	4.17
Uganda	8	7	7	8	7.50	5	6	6	6	5.75	6	6	7	7	6.50	6.58
Zambia	7	7	6	6	6.50	8	8	7	7	7.50	8	8	7	7	7.50	7.17
Zimbabwe	7	5	5	5	5.50	6	5	5	6	5.50	5	5	5	5	5.00	5.33

TABLE 15: ADEQUACY OF EARLY GENERATION SEED (EGS)

Country	Quantity of EGS supplied					Quality of EGS					Timeliness of delivery of EGS					Overall adequacy of EGS
	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	
Angola	5	3	1	1	2.50	7	6	6	6	6.25	8	7	7	7	7.25	5.33
Benin	9	9	9	8	8.75	8	8	8	8	8.00	9	9	9	9	9.00	8.58
Botswana	6	6	6	5	5.75	8	6	6	6	6.50	8	8	8	8	8.00	6.75
Burkina Faso	8	8	7	7	7.50	8	8	8	8	8.00	8	8	8	8	8.00	7.83
Burundi	6	6	8	6	6.50	8	8	8	8	8.00	4	6	6	6	5.50	6.67
Cameroon	5	5	5	5	5.00	5	5	5	5	5.00	5	5	5	5	5.00	5.00
Central African Republic	5	5	5	5	5.00	5	5	5	5	5.00	5	5	5	5	5	5.00
Chad	5	5	5	5	5.00	6	6	6	6	6.00	6	6	6	6	6.00	5.67
Comoros	4	2	3	3	3.00	2	2	2	2	2.00	2	2	2	2	2.00	2.33
The Republic of the Congo	2	2	2	2	2.00	2	2	2	2	2.00	2	2	2	2	2.00	2.00
Côte d'Ivoire	5	5	5	5	5.00	7	7	7	7	7.00	7	7	7	7	7.00	6.33
Democratic Republic of Congo	5	5	5	5	5.00	3	3	3	3	3.00	5	5	5	5	5.00	4.33
Djibouti	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0.00
Egypt	8	10	10	6	8.50	9	9	9	9	9.00	8	8	8	8	8.00	8.50
Eritrea	7	8	6	6	6.75	8	8	8	6	7.50	8	8	8	8	8.00	7.42
Eswatini	3	3	3	3	3.00	7	7	7	7	7.00	3	3	3	3	3.00	4.33
Ethiopia	7	8	8	7	7.50	7	8	7	8	7.50	7	7	8	7	7.25	7.42
Gambia	5	5	5	5	5.00	5	5	5	5	5.00	5	5	5	5	5.00	5.00
Ghana	2	9	9	5	6.25	9	8	8	6	7.75	8	9	8	8	8.25	7.42
Guinea (Conakry)	7	7	3	5	5.50	5	5	3	5	4.50	5	5	3	5	4.50	4.83
Guinea-Bissau	5	5	5	5	5.00	5	5	5	5	5.00	5	5	5	5	5.00	5.00
Kenya	7	6	6	5	6.00	7	6	6	6	6.25	5	5	5	5	5.00	5.75
Lesotho	3	MD	MD	2	2.50	5	MD	MD	5	5.00	5	MD	MD	5	5.00	4.17
Liberia	7	5	1	2	3.75	8	8	8	8	8.00	5	5	5	5	5.00	5.58

Country	Quantity of EGS supplied					Quality of EGS					Timeliness of delivery of EGS					Overall adequacy of EGS
	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	Crop 1	Crop 2	Crop 3	Crop 4	Avg.	
Libya	7	8	8	8	7.75	8	8	7	7	7.50	7	7	7	7	7.00	7.42
Madagascar	5	3	5	5	4.50	7	5	5	5	5.50	7	7	7	7	7.00	5.67
Malawi	7	9	7	7	7.50	10	9	10	10	9.75	9	9	9	9	9.00	8.75
Mali	4	6	6	6	5.50	9	9	9	9	9.00	8	8	8	8	8.00	7.50
Mauritania	1	7	1	1	2.50	0	7	0	0	1.75	0	8	0	0	2.00	2.08
Mozambique	3	1	1	3	2.00	6	2	3	5	4.00	5	2	2	4	3.25	3.08
Namibia	6	4	7	8	6.25	5	5	7	7	6.00	7	7	7	7	7.00	6.42
Niger	7	6	6	7	6.50	8	8	7	9	8.00	9	9	9	9	9.00	7.83
Nigeria	5	6	3	4	4.50	5	6	4	4	4.75	5	5	5	5	5.00	4.75
Rwanda	8	7	5	5	6.25	7	8	8	8	7.75	9	8	7	8	8.00	7.33
Senegal	3	9	7	8	6.75	7	7	7	7	7.00	3	7	7	7	6.00	6.58
Seychelles	5	7	7	7	6.50	7	7	7	7	7.00	5	5	5	5	5.00	6.17
Sierra-Leone	7	5	4	4	5.00	8	8	8	8	8.00	7	4	4	4	4.75	5.92
Somalia	8	6	0	0	3.50	8	7	0	0	3.75	7	7	0	0	3.50	3.58
South Africa	9	9	9	9	9.00	9	9	9	9	9.00	9	9	9	9	9.00	9.00
South Sudan	2	2	4	MD	2.67	5	4	6	MD	5.00	6	6	6	MD	6.00	4.56
Sudan	5	3	7	3	4.50	5	5	7	5	5.50	5	5	7	4	5.25	5.08
Tanzania	8	8	8	8	8.00	8	8	8	8	8.00	6	6	6	6	6.00	7.33
Togo	6	6	4	6	5.50	7	7	7	6	6.75	8	8	6	8	7.50	6.58
Tunisia	7	7	7	7	7.00	9	9	9	9	9.00	7	7	7	7	7.00	7.67
Uganda	9	9	5	7	7.50	9	9	7	8	8.25	9	9	6	6	7.50	7.75
Zambia	9	9	8	5	7.75	9	8	8	5	7.50	9	9	8	5	7.75	7.67
Zimbabwe	9	8	10	9	9.00	9	8	9	9	8.75	9	9	9	9	9.00	8.92

Appendix 2: Ratings of seed trade associations

TABLE 16: RATINGS OF SEED TRADE ASSOCIATIONS

Country	Name of Seed Trade Association	Activity on important seed sector issues	Effectiveness in advocacy	Managerial ability	Providing value to members	Democracy in elections and decision making	Ability to mobilize resources	Average performance
Benin	Association Nationale des Semenciers du Bénin (AnaSeB)	7	8	6	7	5	8	6.83
Botswana	Botswana Agro Suppliers Association (BASA)	6	6	7	7	8	5	6.50
Burkina Faso	Union Nationale des sociétés coopératives de Producteurs de Semences du Burkina (UNIS-BF)	6	7	7	7	7	7	6.83
Burundi	<i>Collectif des Compagnies et Coopératives de Production des Semences du Burundi (COPROSEBU)</i>	6	7	7	7	6	6	6.50
Cameroon	Association of Seed Traders of Cameroon (ACOSEC)	3	3	3	3	3	3	3.00
Côte d'Ivoire	<i>Association Nationale des Semenciers de Côte d'Ivoire (ANASEMCI)</i>	3	2	2	3	2	3	2.50
Democratic Republic of Congo	<i>Union Nationale des Producteurs Agricoles du Congo (UNAGRICO)</i>	1	2	1	1	1	1	1.17
Egypt	The Egyptian Association for the Seed Industry	7	8	8	8	9	7	7.83
Eswatini	Eswatini National Seed Trade Association	5	7	6	6	7	7	6.33
Ethiopia	Ethiopian Seed Association (ESA)	7	7	9	7	9	6	7.50
Gambia	National Seed Growers' Association (NSGA)	4	5	4	3	5	3	4.00
Ghana	National Seed Trade Association of Ghana (NASTAG)	7	8	8	8	10	7	8.00
Guinea-Bissau	Anapa Socoven Proagri	3	2	3	3	3	3	2.83
Kenya	Seed Trade Association of Kenya (STAK)	8	8	8	8	8	8	8.00
Madagascar	F3M (Fikambanana Malagasy Misehatra Masomboly : Interprofession de la filière semence)	5	5	5	5	5	5	5.00

Country	Name of Seed Trade Association	Activity on important seed sector issues	Effectiveness in advocacy	Managerial ability	Providing value to members	Democracy in elections and decision making	Ability to mobilize resources	Average performance
Malawi	Seed Trade Association of Malawi (STAM)	7	7	7	7	10	9	7.83
Mali	Association Semencière du Mali (ASSEMA)	6	6	6	6	7	6	6.17
Mauritania	Interprofessional seeds and seedlings of Mauritania (ISPM)	6	8	7	7	7	7	7.00
Mozambique	Mozambique Seed Trade Association (MOSTA) and Association for Promotion of Seed Sector (APROSE)	2	4	3	2	8	1	3.33
Niger	Association des Producteurs Privés de Semences du Niger (APPSN)	7	9	8	7	7	7	7.50
Nigeria	Seed Entrepreneurs Association of Nigeria (SEEDAN)	6	6	6	6	2	4	5.00
Rwanda	National Seed Association of Rwanda (NSAR)	6	7	7	6	8	6	6.67
Senegal	Union National Interprofessionnelle des Semences (UNIS)	7	6	7	7	6	7	6.67
South Africa	South African Seed Organization (SANSOR)	10	9	10	9	10	9	9.50
South Sudan	Seed Trade Association of South Sudan (STASS)	6	8	4	6	4	6	5.67
Sudan	Sudan Seed Trade Association (SSTA)	6	6	6	6	6	6	6.00
Tanzania	Tanzania Seed Trade Association (TASTA)	8	7	7	8	6	7	7.17
Togo	Réseau National des Producteurs de semences certifiées	4	6	6	6	6	4	5.33
Tunisia	Chambre Syndicale du commerce des semences et plantes (UTICA)	9	6	9	5	6	9	7.33
Uganda	Uganda Seed Traders Association (USTA)	8	8	8	8	8	8	8.00
Zambia	Zambia Seed Traders Association (ZASTA)	8	8	8	8	8	8	8.00
Zimbabwe	Zimbabwe Seed Association (ZSA)	9	7	10	9	9	8	8.67
		6.03	6.34	6.34	6.13	6.44	5.97	

Appendix 3: Regional Validation workshop participants

No.	Participants	Organization	Country
1.	Catherine Langat	Africa Seed Trade Association (AFSTA)	Kenya
2.	Jane Ininda	AGRA	Kenya
3.	George Bigirwa	AGRA	Kenya
4.	Aggie Asimwe Konde	AGRA	Kenya
5.	John Mukuka	Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA), Common Market for Eastern and Southern Africa (COMESA)	Zambia
6.	Samy Sallam	Central Agency for Seed Certification (CASC) and SSPI Regional Seed industry expert	Egypt
7.	Yacouba Diallo	Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles (CORAF)	Senegal
8.	Abdulrazak Ibrahim	Forum for Agricultural Research in Africa (FARA)	Ghana
9.	Simon Maina	Kenya Plant Health Inspectorate Service (KEPHIS)	Kenya
10.	Claid Mujaju	Ministry of Lands, Agriculture, Fisheries and Rural Development	Zimbabwe
11.	Folarin Okelola	National Agricultural Seed Council (NASC)	Nigeria
12.	Joe Devries	Seed Systems Group	Kenya
13.	Paul Senghor	SSPI Regional seed industry expert	Senegal
14.	Christophe Asanzi	SSPI Regional Seed industry expert	DRC
15.	John Mburu	SSPI Regional expert/ University of Nairobi	Kenya
16.	Michael Waithaka	TASAI	Kenya
17.	Ed Mabaya	TASAI	USA
18.	Brian Damba	TASAI	Zimbabwe
19.	Jackie Sawe	TASAI	Kenya
20.	Mainza Mugoya	TASAI	Uganda

African
Union



TASAI

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