



# Food security and nutrition

*Emerging insights and perspectives for advancing the transformation of Africa's seed sector*

ISSD AFRICA BRIEFS:

**BRIEF 1: Terminology**

**BRIEF 2: Initiative**

**BRIEFS 3-7: Five ambitions**

**BRIEF 8: Enabling environment**

**BRIEF  
3**

## Ambition

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**Integrated Seed Sector Development in Africa (ISSD Africa) is an international Community of Practice (CoP) working to alleviate the problem of farmers' limited access to quality seed. Its vision is a vibrant, pluralistic, and market-oriented seed sector in Africa. The CoP unites diverse organizations that are inspired in their work by ISSD's guiding principles; they promote pluralism in the seed sector, recognize the value of formal, intermediary, and informal seed systems, take an evidence-driven approach, and pursue multiple desired food system and seed sector outcomes.**

This document supports and complements the third ISSD communiqué. It is one in a series of eight briefs.

**Brief 1 – Terminology**, defines the foundational concepts informing the communiqué and accompanying briefs.

**Brief 2 – Initiative**, introduces ISSD Africa, the ISSD Africa Conference, and their association with the African Seed and Biotechnology Programme of the African Union Commission.

**Briefs 3-7** capture the **five ambitions** for seed sector transformation in Africa. **Brief 8 – Enabling environment**, shares cross-cutting insights into stewarding transformation.

This brief presents insights generated from individual sessions of the ISSD Africa Conference, laying the foundation for developing perspectives and strategies for pursuing the ambition of food security and nutrition. This document refers to and thereby acknowledges the ISSD Africa Conference sessions, ISSD Africa topics and/or other regional initiatives and hosting organization(s) that contributed to the development and formulation of individual insights.

### ISSD Africa Conference: sessions, insights, ambitions, and perspectives

Concluding the third phase of ISSD Africa, 170 seed professionals met in Kigali from 17 to 19 October 2022 for the ISSD Africa Conference, where they shared and discussed outcomes of the CoP's action research activities. This took place over the course of eight sessions, corresponding with ISSD Africa's eight topics, and was complemented by seven additional sessions on topics proposed by other continental and regional initiatives.

Each of the sessions provided specific insights. A committee comprising participants from diverse backgrounds, expertise, and areas of engagement in the seed sector, prepared a synthesis of emerging insights and perspectives. These have been grouped into five ambitions that provide direction and shape a vision for seed sector transformation in the coming years. These ambitions are food security and nutrition, equity and inclusion, competitiveness, climate change adaptation, and resilience to shocks and stresses. The third ISSD communiqué has been compiled to share these perspectives for advancing seed sector transformation in Africa.

### Call for action

ISSD Africa aimed to document the outcomes of the conference in the communiqué and briefs as accessible formats for policymakers, practitioners, and researchers active in and concerned with the transformation of Africa's seed sector. ISSD Africa strives to inspire these readers and encourage their use, exchange, and discussion of the perspectives and insights shared. It is ISSD Africa's hope that the communiqué and briefs support reflection on and guidance of organizations, programmes, and individual professionals in contributing to the transformation of the seed sector with the ultimate goal to improve farmers' access to and use of quality seed of improved varieties.

**ISSD Africa encourages your further reading of its communiqués, briefs, and other knowledge products, and participation in the Community of Practice.**

For more information, visit [www.ISSDafrica.org](http://www.ISSDafrica.org)

# Ambition

**The seed sector increases the availability, accessibility, and utilization of quality seed of improved, locally adapted, and farmer-preferred varieties in the production of sufficient food of a wide portfolio of crops for diverse and healthy diets.**

## **PERSPECTIVE 1: Invest, professionalize, and collaborate in increasing farmers' seed security**

Food security does not exist without seed security. Farmers need physical and financial access to sufficient quantities of quality seed of adapted and preferred varieties at the right time. Physical access means that the right amount of seed is available, while financial access means that farmers can afford the seed. To achieve this, multiple issues need to be addressed simultaneously. The following key areas require attention: demand-driven genetic improvement of a wide range of crops; sustainable models for early generation seed (EGS) supply; implementation of functional seed quality assurance systems; combatting of seed counterfeiting; and seed demand forecasting. A healthy seed sector is critical for bringing the benefits from global investments in genetic innovation to farmers and their fields. However, technical, institutional, and systemic constraints hamper delivery. These constraints include, for example, the struggle to obtain a sufficient EGS supply, or to operationalize seed quality assurance systems in a cost-effective manner.

**INSIGHT:  
There are many hurdles to the sustainable flow of new improved varieties**

These constraints should be addressed - for example, by improving early generation seed supply and seed quality assurance systems; developing and implementing instruments for intellectual property right protection; incentivizing public-

private partnerships; and supporting stakeholders in increasing their professionalism.

## **PERSPECTIVE 2: Broaden the diversity of crops for which quality seed is produced**

Both rural and urban consumers in Africa use and appreciate a diversity of crops in their diets. Beyond the main staple crops, indigenous crops are important for nutrition and cultural reasons. Innovative, localized, and inclusive approaches for enhancing seed supply of those crops are needed to ensure that quality seed of improved and locally preferred varieties of these crops becomes available. This includes vegetatively propagated crops like roots, tubers, and bananas (RTBs), since in many countries these are critical for food security.

**INSIGHT:  
There is a need for pluralism in the seed sector**

Variations exist in the commercial potential of different crops. Hence, different models for seed production and distribution are needed to respond to these variations, working with e.g., seed companies, small and medium enterprises (SMEs), seed producer cooperatives, and farmer seed enterprises. Quality seed production and distribution for highly commercial crops will be managed by the private sector. Subsistence and traditional crops will require public efforts to produce and distribute quality seed. Public breeders should make their varieties available through whichever channel reliably sustains farmers' access. They should not exclusively offer varieties through a single channel, especially when it has yet to prove its effectiveness.

## **PERSPECTIVE 3: Link variety development programmes with nutrition research**

Variety development programmes and biofortification can contribute to reaching nutritional goals by increasing the nutritional value of traditional crops. Varieties should be evaluated for traits like taste, cooking time, and shelf-life, at the same time as for high yield, drought tolerance, and pest and disease resistance. Whilst this by nature is challenging, joint programming of researchers and other stakeholders in the health and agricultural sector with complementary expertise, may be able to reach these goals together. Greater awareness is required on the importance of diverse and healthy diets underpinned by diverse and sustainable agricultural production systems.

**INSIGHT:  
Radical shifts in diet for nutritional reasons is very difficult**

Past projects have shown that the introduction of unfamiliar healthy crops into traditional diets is difficult. It may be more effective to promote the consumption of (healthy) traditional crops and to further improve these.

Furthermore, it has been shown that varieties are unlikely to be adopted by farmers or purchased by consumers for nutritional reasons only.

**INSIGHT:  
There is a missing link between agriculture and health professionals**

There is little evidence regarding what is (or is not) effective in programming for nutrition; there are insufficient data and a lack of thorough monitoring and evaluation systems. Additional research on the benefits of crops, crop diversity, and their impact on public health is needed. Findings should enable practitioners to improve their project designs and measure project outcomes.

### **PERSPECTIVE 4:** **Develop improved varieties of traditional crops in an inclusive manner**

Crop improvement programmes should focus on traditional crops and not be limited to the major food crops. Traditional food crops are essential for farmers to meet local food and nutritional demands. Indigenous species are locally important and adapted to traditional farming systems. They can often be produced with limited inputs, under harsh conditions, and are a fall-back option when other crops fail. Investment in participatory variety development and enhancement is needed to ensure traditional crops continue to be part of local diets and production systems, contributing to food security and nutrition.

The aim should be inclusive and decentralized crop variety development. Inclusivity means that the needs of diverse (and vulnerable) consumers are considered; for example, giving particular attention to gender. Decentralized means that local needs are considered; for example, conducting trials in a variety of environments. In such cases, plant breeders would likely need to seek inputs from other disciplines during variety development.

**INSIGHT:**  
**Impactful plant breeding requires a transdisciplinary approach with all parties involved having to overcome interdisciplinary barriers to working together**

The current organization of variety development programmes of public agricultural research institutes is driven by plant breeders. Yet, diverse demands for variety traits, including not only productivity, but other consumer preferences such as nutrition, taste, cooking time, and climate resilience need to be considered too. Collaboration with nutritionists or gender experts

may provide this level of depth.

**INSIGHT:**  
**Variety development also lacks breadth in the diversity of crops addressed**

Traditional food crops are often overlooked in inter-/national public and private research programmes, while they can support nutritional security and stable yields especially in harsh environments.

### **PERSPECTIVE 5:** **Create sustainable models to secure early generation seed supply**

Access to sufficient quantities of quality EGS is a key requirement for quality seed production, regardless of whether seed is multiplied by private, public, or farmer seed enterprises. New business models for sustainable EGS supply need to be tested, reviewed, consolidated, and scaled. Complementary roles of CGIAR, national agricultural research systems (NARS), and the private sector should be reconsidered and redefined. Critical issues to consider are EGS demand forecasting, quality assurance of EGS, equitable access to EGS for different categories of seed producers, and the sustainable supply of less profitable seed crops.

**INSIGHT:**  
**EGS forecasting abilities are poor**

Improvement of the ability to forecast the demand for EGS is critically needed. Forecasting can structure business transactions over multiple years between

NARS, specialized EGS producers, seed companies, and other seed producers. Business planning of specialized EGS producers and their seed company and other producer clients is ineffective without forecasting and commitment to transaction agreements.

**INSIGHT:**  
**EGS supply requires quality assurance**

Management of quality assurance systems of EGS is needed to consolidate emerging configurations in EGS supply.

Wherever responsibilities are transferred from public to private professional entities, EGS quality assurance systems require adaptation, decentralization, and delegation. Regulations and protocols need to be updated and capacities of private professional entities must be developed.

**INSIGHT:**  
**Access to EGS should be equitable**

Equitable access to EGS needs to be provided. All seed producers, parastatals, private seed companies, SMEs, and farmer organizations rely on access

to EGS in multiplying varieties demanded by farmers. At present, more (politically) powerful businesses tend to get prime access. Sustainable supply of quality seed relies upon equitable access for these producers to EGS.

**INSIGHT:**  
**New business models for EGS production are emerging**

Innovative enterprises or partnerships between public and private sectors are needed for the supply of EGS. A new form of specialized EGS enterprise, both commercial and not-for-profit, has emerged in various African

countries. Clients include commercial seed companies and small, medium, and farmer seed enterprises/cooperatives.

New business models need to be reviewed, and lessons learned must be documented for consolidation, scaling, and institutional embedding.

**INSIGHT:**  
**Responsibilities in EGS supply are shifting**

Within the EGS supply chain, NARS are responsible for the production of breeders' seed. They increasingly refrain from direct engagement and instead work through public-private partnerships in producing foundation/basic seed with semi-/autonomous specialized EGS producers (profit/non-profit). This gradual reconfiguration results from a guided withdrawal of donor and government funding to public EGS production. There are implications for EGS forecasting, information management, material transfer, intellectual property, and the relationship between NARS and private stakeholders, which are addressed in different parts of this brief.

**INSIGHT:**  
**EGS value chain development needs an overarching strategy**

Despite progress made, collaboration between NARS and commercial or community-based seed systems continues to be hampered by a lack of accountability and transparency. It highlights the need for an overarching strategy to guide the restructuring of the EGS supply chain for seed and crop production systems. The strategy should not solely target formal commercial seed systems but recognize and support effective and efficient business models in channelling less commercially interesting seed products to farmers.

### **PERSPECTIVE 6:** **Establish functional seed quality assurance systems for all crops**

Effective seed quality assurance systems protect farmers from low quality seed. Practice shows that current seed certification systems are unable to assure seed quality of the diversity of crops that farmers produce. Besides strengthening current formal certification systems, plural quality assurance models need to be developed and implemented for intermediary and farmer-led seed systems, such as quality declared seed. Seed quality requires an appropriate quality control system at seed producer level, regardless of the seed system in which the producer operates. The notion that farm-saved seed is per definition poor quality needs to be changed. Use of farm-saved seed is also the result of limited choice.

**INSIGHT:**  
**There is no one-size-fits-all approach for seed quality assurance**

Because of variations in crops, varieties, and seed systems, quality assurance systems need to be diversified and decentralized to respond to different demands. Seed quality assurance can then move beyond certifying a limited group of improved varieties for just a few food crops. It's important to remember that seed quality assurance serves seed systems and not the other way around.

**INSIGHT:**  
**Economics determine the viability of seed quality assurance systems**

Economics play an important role in determining the effectiveness of seed quality assurance systems. If the quality assurance is too expensive, producers cannot afford certification and farmers cannot afford seed. Still, seed quality is a concern for most crops and underpins food security and nutrition. As it stands, the limited suitability of standard certification for crops for which seed production is less commercially attractive, means that they are predestined for informal seed systems. More economically viable systems of quality assurance can improve the economics of seed production for these crops.

**INSIGHT:**  
**Decentralization of seed quality assurance requires accreditation**

Seed quality inspection and testing is performed by dedicated, skilled, and trained staff of qualified and authorized organizations. These organizations can be both public and private. Quality assurance can be carried out by accredited professionals in commercial service providers (third parties) or seed companies. Some companies already use highly sophisticated technology and procedures (also for traceability) for their internal quality control as they consider quality control a competitive advantage.

**INSIGHT:**  
**Seed counterfeiting undermines consumer confidence**

Substandard seed hurts efforts to promote the uptake of quality seed of improved varieties for increasing the productivity of small-scale farmers' fields. This highlights the need for effective, economically viable, decentralized,

and innovative seed quality assurance systems, and the implementation of punitive measures against unscrupulous behaviour.

**PERSPECTIVE 7:**  
**Develop policies supportive of crop and seed system diversity**

Seed-related policies mainly focus on few staple crops (cereals), commercialization, and the formal sector. It is important that policymakers tailor policies to other crops, including small-grain cereals, pulses, oilseeds, and roots, tubers, and bananas (RTBs), as well as intermediary and informal (farmer-led) seed systems. Policies need to enable farmers to practice an agriculture that generates a living income, enhances the resilience of rural and farmer livelihoods, and reinforces household food security and nutrition.

**INSIGHT:**  
**Policy making should be more inclusive**

Historically, policies, regulations, and services have targeted just a few formal commercial seed systems and have, in some cases, gone so far as to outlaw informal exchange among farmers. Whilst

policy making increasingly applies the lens of pluralism, an important next step is the participation and representation of different social groups, including small, medium and large enterprises, and farmer entrepreneurs - men and women of different ages and social statuses - in dialogue on policy options. Considerations of gender and social equity should inform policy, regulation, and instruments of their implementation as well as business practices. Informing decision-makers will, however, require more evidence on the impacts of socially inclusive approaches.

**PERSPECTIVE 8:**  
**Develop policies promoting sustainable agricultural production**

Policies need to support a gradual transition towards sustainable agricultural practices and a reduction of the negative impacts of conventional agriculture on the environment and our food systems. This calls for the development and implementation of market-based and other incentives, which encourage both smallholder and commercial farmers to deploy sustainable agricultural practices contributing to nature-positive agriculture.

**INSIGHT:**  
**Nature-positive agriculture is emerging as an alternative to conventional agriculture**

Conventional agriculture contributes significantly to several global crises: a nutrition crisis, a climate crisis, land degradation, deforestation, and loss of biodiversity. Agricultural production systems need to be transformed to become more sustainable. Nature-positive

agriculture is an emerging alternative to what has become conventional. Promoting ecosystem services, regenerative practices, agroforestry, circular economy, and waste management all contribute to nature-positive agriculture. Production systems move from monocropping and uniformity, to more complex and diverse systems. This requires investment in research and development for new farming practices, with new crops, varieties, varietal traits, and seed systems, as well as an enabling environment with policies and institutional support for fostering and advancing the transition to nature-positive agriculture and associated seed systems.

**INSIGHT:**  
**Nature-positive agriculture requires more diversity to be deployed by seed systems**

Nature-positive agriculture uses more diversity for resilience, risk mitigation, and improved nutrition. Farmers, consequently, will need quality seed and planting materials of new species, including crops, trees, and forages. The shift to nature-positive production

systems requires investment in crop improvement, adapting major crops to new management practices, including crop rotation and intercropping, but also the inclusion of local crops and new varietal traits. Functional seed systems need to deliver this diversity of crops and varieties to farmers. By increasing diversity in production systems, nature-positive agriculture is expected to have a beneficial impact on the environmental sustainability of those production systems, enhance food security, and contribute to healthier diets.

**INSIGHT:**  
**The transition to sustainable agricultural production must be gradual**

Food security and nutrition must be maintained whilst making the transition to sustainable agricultural production. Government support for unsustainable agricultural practices should be halted as soon as possible, but without

risking food insecurity or pushing people into poverty. The monitored introduction and success of market- and non-market incentives for sustainable agricultural practices will support the managed transition to a more sustainable future.

### ISSD Africa conference session references:

The insights presented above emerged during specific sessions of the ISSD Africa Conference, organized by partners in the ISSD Africa CoP and global and regional initiatives. These sessions included:

- **ISSD Africa Topic:** Enhancing seed quality assurance (CIP/CGIAR Research Program on Roots, Tubers and Bananas)
- **ISSD Africa Topic:** Business models for early generation seed (ICRISAT)
- **Initiative:** Are environments truly enabling private companies to invest in the seed sector? (Access to Seeds Index of the World Benchmarking Alliance and Resilience)
- **Initiative:** Seed company strategies targeting smallholder farmers in Africa (Access to Seeds Index of the World Benchmarking Alliance and Resilience)
- **Initiative:** Transforming seed systems to support nature positive agriculture (the Alliance of Bioversity International and CIAT)
- **Initiative:** Delivering genetic gains in farmers' fields: Genetic innovation in the One CGIAR (CGIAR)
- **Initiative:** Community-based seed production and marketing: Experiences and perspectives (Oxfam-Novib)

## Colophon

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