SEED SYSTEMS GROUP

Because *All* Farmers Deserve Good Seed

Seed Systems Group @5

A Summary of SSG's Work During the Period 2019-2024

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September 2024

SSG Vision

Seed Systems Group is driven by the belief that an Africa free from hunger is achievable in our lifetime.

SSG Mission Statement

Seed Systems Group (SSG) is an African-based non-profit, technical assistance organization headquartered in Nairobi, Kenya and Lomé, Togo. SSG's mission is to ensure that every farmer across Africa has access to affordable, high-quality seed for a wide range of nutritious food crops.

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Message from the Board Chair

It has been a fast-paced five years since the inception of Seed Systems Group in 2019. Establishing and growing an organization with a bold and noble vision based on a few people with the zeal and commitment to make good seed a reality for farmers in neglected countries and communities has been a privilege. The pace and progress have been exhilarating, and there is no doubt that this was the right thing to do.

The need for enhancing local seed systems in countries and communities that have not had significant investments or that have been subject to repeated emergency seed interventions was long overdue. The Seed Systems Group took up this challenge with minimal resources but with a great vision and mission. The simple vision statement, "Because all farmers deserve good seed," encapsulates the *raison d'être* of SSG, while the modus operandi of supporting varietal development, stimulating private sector seed production, raising farmer awareness and energizing commercial sales networks is the way this will be achieved.

We always knew that successful implementation of SSG's vision and mission depended on three things: good people, right partnerships and supporting donors. The organization has engaged a cohort of exceptional people for the technical and administrative positions needed to efficiently operationalize the seed sector programs across 15 countries. From the initial three staff members, SSG has grown to 25 professionals working full time or as consulting country coordinators, with two regional offices – Nairobi and Lome.

The partnerships that SSG has formed are on two levels. The first is with the in-country implementers of the seed programs, including governments, public research institutes, and private seed companies. These public-private partnerships are the means of creating functional seed systems to deliver quality improved seed to farmers. The second significant partnership is with co-implementers, of whom Farm Inputs Promotion – Africa (FIPS) and CGIAR (notably CIMMYT and IITA) have enabled SSG to go further and do more, especially with farmer awareness and Village Based Advisors, and variety availability and seed technology, respectively. These partnerships are cherished and recognized as essential to making progress in achieving our vision.

None of the activities of SSG or the positive impacts made in seed sector development could have been achieved without the support of like-minded donors joining in, such as IFAD, USAID and AGRA. This work is long-term and costly, but absolutely necessary because it transforms farmers' capacity to produce and improve community livelihoods. SSG has established a policy that 70 % of all donor funds received will flow-through to implementing partners, which shows our commitment to making sure real positive change occurs in the field and in the seed sector.

While five years is a relatively short time in this space, as Chairman of SSG, I am pleased and proud of what has been achieved. We have made an impact, as the contents of this publication will show. Although there is still a tremendous amount still to be done and countries yet to be engaged, like Central Africa Republic, Benin, Cameroon and Angola, the foundation has been laid and the principles of operation proven. Thus, we look forward to continued and greater achievements in seed systems development across the beautiful continent of Africa.

Dr. Namanga Ngongi
Board Chairperson

Message from the President

We established Seed Systems Group (SSG) in 2019, first registering the organization as a public charity (501c3) in the US State of Delaware on February 8, and then obtaining our registration from the Government of Kenya under the Companies Act on June 20, 2019.

SSG's purpose from day one was clear: To extend the benefits of higher-yielding, climate resilient seed to farmers who had been left behind in the initial phase of seed systems development in Africa, led by the Alliance for a Green Revolution in Africa (AGRA). Many of us had participated in that first phase of work and were keenly aware of the ways it had changed the lives of millions of farmers across approximately 15 African countries over the previous decade. Those experiences convinced us to do whatever we could to take Africa's Seed Revolution to the rest of the continent, beginning with 15 countries we believed would benefit from and welcome our assistance.

But first, we needed a plan.

To develop a country's seed systems plan is an audacious undertaking. To do so in 15 countries simultaneously borders on the impossible. Driven by a spirit of "If not us, then whom, and if not now, when?", we approached three world-class institutions we knew would understand: The Rockefeller Foundation, AGRA, and Cornell University.

By early 2020, the first draft of our five-year, 15-country, $95 million business plan was complete. Literally everything was built into that plan, from country budgets to organograms. We were ready to move.

Then, Boom! - Everyone knows what happened next, to SSG, all of our target countries, and the entire world: the COVID-19 pandemic. By end-2020, SSG's funds were nearly exhausted, we had implemented no field-based activity, and the small Nairobi team was on the verge of disbanding.

Then, one evening as we were about to leave the office, the phone rang. It was Bernadette Mukonyora, country director for the International Fund for Agriculture Development (IFAD) for Eritrea and South Sudan, asking if we were interested in taking on a regional response to the impact of the pandemic on farmer access to improved seed in the Greater Horn of Africa. Sometimes dreams do come true…

The IFAD program led in 2022 to a similar initiative funded by Canada's International Development Research Center (IDRC) in Togo and Madagascar, and then in 2022 Cornell University's Innovation Lab for Crop Improvement (ILCI) engaged us to focus on millet and cowpea seed systems development in Senegal and Malawi. Later that year, IITA and USAID's Accelerated Innovations Delivery Initiative for the Great Lakes added Burundi and DR Congo to our portfolio. In mid-2023, AGRA announced it would be adding Burundi, Cote d'Ivoire, Sierra Leone, and Togo to its program area, beginning with a seed systems development initiative led by SSG. Toward the end of 2023, SSG and CIMMYT were selected to implement the Vision for Adapted Crops and Soils (VACS) Seed Systems Activity in Kenya, Ghana, Senegal (where SSG is the lead), Tanzania, Malawi, and Zambia (where CIMMYT leads).

The World Bank's Somalia Crisis Response Program then provided support to expand SSG's partnership with Somalia's Ministry of Agriculture and Irrigation and reach many more farmers. Likewise in 2023, the Sall Family Foundation began supporting SSG's work across all countries, with an emphasis on getting improved crop varieties of a range of important food crops "off the shelf" and into the hands of farmers.

It has been quite a journey. Everywhere SSG has been enabled to operate, farmers and governments alike have welcomed our partnership, vindicating our original assertion that "All farmers deserve good seed."

Implementing multiple initiatives in multiple left-behind countries and communities is demanding work, both intellectually and physically. Fittingly, SSG's teams in West/Central and East/Southern Africa are composed of senior scientists and professionals with decades of experience but also young, energetic breeders and social scientists eager to learn and prove their worth.

The exciting mix of forces driving SSG makes for an infectious, purpose-driven organization. This has led to numerous, unexpected spill-in partnerships such as those described above, and others. None, however, has been more impactful than our collaboration with Farm Input Promotions (FIPS) Africa, which joined forces with SSG from the get-go through support from the Seeds of Change Foundation. FIPS's incredibly dedicated team members have worked with us on the ground and trained farmer outreach specialists in every country. By allowing tens of thousands of farmers to grow improved varieties on their own farms in the first year of operation in each new country, FIPS's Village Based Advisor/Small Pack methodology has infused SSG's seed systems expertise with an energy and immediacy that would otherwise be missing.

Other far-reaching partnerships we have established include those with:

- African Seed Trade Association (AFSTA)
- AGRA's Center for Excellence in Seed Systems (CESSA)
- AgriExperience Ltd.
- Burness Communications
- Centro Internacional de la Papa (CIP)
- Central African Council for Agricultural Research and Development (CORAF)
- International Institute for Tropical Agriculture (IITA)
- Inter-Governmental Authority on Development (IGAD)
- Kenya Agriculture and Livestock Research Organization (KALRO)
- Sathguru Consulting, Ltd.
- The African Seed Access Index (TASAI)
- Value chains for Inclusive Transformation of Agriculture (VITA)

It gives me great pride to say that these highly respected groups have cheerfully teamed up with SSG to get better seed to farmers in left-behind countries and communities of Africa. We are grateful for their spirit of collaboration.

In the field of seed systems development, perhaps no more potent force can be found than the partnership between public breeding institutes and private seed companies based on their mutual understanding of farmer demand for better lives through better seed. Nurturing and growing these partnerships is one of SSG's core principles, because we know they will continue to flourish long after our contribution has come to an end. Just focusing on those collaborations which have resulted in the production of hybrid maize seed for the first ever in the country's history, we count Burundi, DR Congo, Eritrea, Madagascar, Somalia, South Sudan, and Togo.

The summation of our efforts in these and the other countries described in this report has resulted in:

- 3,891 tons (MT) of certified seed produced (sufficient to plant approximately 170,000 hectares)
- 720,933 farmers reached with improved seed
- 63 new varieties officially released
- 10 M.Sc. fellowships awarded

Of far greater importance than these figures reveal, however, is the tremendous sense of hope for a better future SSG's team and our partners have imparted to farmers and of national seed systems actors in 15 countries which are no longer left behind in Africa's drive to sustainably increase crop productivity through the cultivation of improved, locally adapted crop varieties.

This, by any measure, is incredibly compelling, transformative work, and we are grateful for the opportunity to do it.

Onward!

Joe DeVries

President, Seed Systems Group

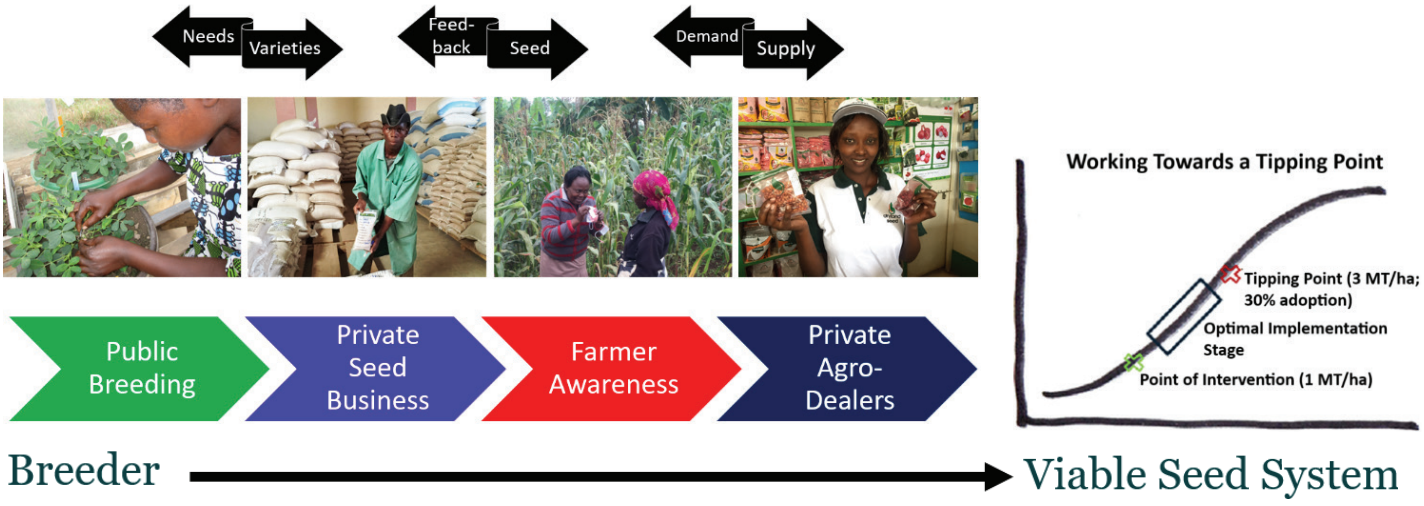
Background and Introduction

Recent reviews of progress towards food security in Africa have invariably identified functioning national seed systems as essential for sustained impact at farmer and country-wide levels. High rates of population growth across the continent result in constantly increasing demand for food, and the only reliable way of ensuring its delivery, locally, is by increasing productivity in farmers' fields. In this context, the need for farmer access to seed of high-yielding, climate resilient varieties is unquestionable.

Seed Systems Group, a non-profit, technical and financial assistance organization based in Nairobi, Kenya and Lomé, Togo, is dedicated to establishing regular, dependable supply of improved seed in African countries and communities that have been left behind in this critical innovation. SSG employs its knowledge of African crop breeding and seed production and delivery systems to give farmers access to seed of varieties which can lift them out of hunger and absolute poverty and help jump-start local economic development.

During the period of June 2019, through February 2021, SSG technical staff, working with crop specialists from Cornell University, traveled to 15 African countries and met with agricultural leaders, crop scientists, farmers, and seed producers to develop national seed systems development strategies. Today, SSG is managing seed systems development initiatives in 15 countries. SSG employs a "public-private, producer" model (depicted below) for initiating and nurturing seed systems that ensures continued growth without outside intervention once national tipping points for sustainable growth of the seed sector have been reached, normally after five to seven years of support.

This report attempts to highlight SSG's experiences to-date in Burundi, Cote d'Ivoire, DR Congo, Djibouti, Eritrea, Ghana, Guinea-Bissau, Kenya, Madagascar, Malawi, Senegal, Sierra Leone, Somalia, South Sudan, and Togo.



SSG Activities

Burundi

Burundi's population is estimated at 12.6 million, approximately 90% of which is engaged in agriculture. The main food crops include beans, bananas, sweet potatoes, cassava, maize, rice, sorghum, and coffee (a major export crop). Burundi's farmers have very limited access to improved seeds due to reliance on informal seed systems and inadequate basic and certified seed production and distribution. According to the World Food Programme, 52% of Burundi's children under the age of five (approximately 5.6 million children) suffer from chronic malnutrition.

The Government of Burundi has intervened by promoting certified seeds and hybrid maize seed production, farmer training, crop breeding, strengthening of seed regulatory systems, and improving access to financial services. By tackling these challenges, Burundi aims to enhance its seed supply system, boost agricultural productivity, and improve food security.

SSG is a partner in the Accelerated Innovation and Delivery Initiative (AID-I), a multiple-stakeholder initiative funded by USAID and implemented by International Institute of Tropical Agriculture (IITA). The overall goal of AID-I is to significantly increase food security and rural economic development in the country. Since AID-I's inception, **360,608 farmers have accessed improved seed together with crop advisory services, 3.8 MT of EGS of hybrid maize and beans has been produced and supplied to seed producers, and 66.5 MT of certified seed produced.** Through AID-I, SSG has supported emerging seed companies

Figure 1. Mme Régine KABIRORI alongside the crop she produced from a small pack (100g) of hybrid maize seed in Kirundo Province.

Figure 2. Rufutamadeni variety beans. Farmer reported doubling their yields

Figure 3. COOP Eden seed company CEO, Richard Hatungimana, discusses foundation seed production with ISABU (Burundi) seed specialist

to access maize hybrid parental seed and produce hybrid maize seed for the first time in Burundi's history.

SSG is also implementing an AGRA-funded initiative '*Inclusive Seed Systems Development in Burundi,*' whose overall objective is to accelerate and scale up production and delivery of improved, climate resilient seed. Similar to the AID-I, the aim is to strengthen national seed supply chains. Training sessions have been conducted to build the capacity of seed producers and help establish them as seed companies to effectively meet the country's certified seed demand.

Going forward, basic and certified seed production activities will be intensified, and quality seed will be promoted among farmers across the country through the use of VBAs and small packs. **By mid-2025, SSG and its partners aim to produce over 200 MT of hybrid maize seed, beans and rice, produce and avail to seed producers 12 MT of EGS, recruit and train 300 VBAs to allow 100,000 additional farmers to grow improved seed. SSG also aims to train and operationalize at least 12 agro-dealers to improve access to improved seed for smallholder farmers.**

Figure 4. SSG's John MacRobert explains hybrid maize seed production techniques to seed production managers in Burundi.

SSG Activities

Cote d'Ivoire

Figure 5. A visit to rice demo plot at Daloa

Cote d'Ivoire is situated in coastal West Africa with a population estimated at 29 million. d'Ivoire's agricultural sector is a vital pillar of the economy contributing more than 25% of the GDP and employing about 70% of the working population. The main food crops are rice, maize, cassava, yams, and plantains.

The majority of improved seed accessed by Ivoirian farmers is supplied through government-managed programs which reach only a small fraction of farmers. In 2023, for example, the Emergency Food Production Program (2PAU)[1] distributed 366 MT of rice and maize seeds to approximately 9,000 farmers. But Cote d'Ivoire is home to several million farm families. Hence, the seed supply gap is enormous.

SSG is currently undertaking the initial phase of a seed systems development initiative funded by AGRA and focused on three key crops: rice, maize, and cowpea. This intervention commenced with a thorough analysis of the seed sector, particularly focusing on food crops. The insights from this study were pivotal in shaping SSG's actions. SSG's work encompasses nine regions including Poro, Gbêkê, Tonkpi, Haut-Sassandra, Indenié-Djuablin, San-Pedro, Agnébi-Tiassa, Kabadougou, and Nawa.

SSG is providing support for research to identify new varieties that cater to the needs of the farming population. SSG's goal is to produce 24 MT of EGS of newly developed varieties, including 6 MT of cowpea, 8 MT of rice, and 10 MT of maize. This endeavor aims to bolster the availability of EGS to address the persistent shortage experienced by seed producers.

As part of this initiative, SSG is offering technical and financial assistance to two seed companies: BILOHF and GRACI, to multiply and make available a total of 1,150 MT of certified seeds. BILOHF will produce 700 MT of certified rice seeds and 100 MT of certified maize seeds, while GRACI will produce 300 MT of certified rice seeds, 30 MT of maize seeds, and 20 MT of certified cowpea seeds.

Figure 6. Variety collection by GRACI.

1 https://cote-divoire.emergentally.com/activities/1

Figure 7. FMB Maize variety foundation seed production field at Ferkessédougou research station Cote d'Ivoire.

Additionally, SSG has joined forces with ANADER (the national agricultural extension agency) to promote high-performing new crop varieties as yet unknown by farmers. This effort involves utilizing the VBA/small pack methodology to increase farmer demand for seed of improved crop varieties. Through a collaborative approach, which includes researchers, producers, and Ministry of Agriculture agents, SSG aims to cultivate a shared sense of responsibility and progress. **SSG plans to supply a total of 100,000 small packs** (100 g each for rice and 50g for maize) to farmers containing seeds of new varieties to smallholder farmers in the project areas. **To-date, 13,000 small packets of rice seeds of Orylux 6 and IR 841 varieties have been distributed to farmers. Cote d'Ivoire's public agricultural research institute, CNRA, has also been supported to test new varieties of rice, maize, and cowpea.**

Going forward, SSG will continue to facilitate research aimed at identifying high-performance crop varieties and crop management practices, promote the outcomes among farmers via VBAs, and strengthen collaboration with international agricultural research centers. It will also assist seed companies to improve their production and marketing systems and ensure compliance with seed production standards. In order to encourage farmers to adopt high-yielding crop varieties, SSG will support the establishment of 10 rural agro-dealers, help in establishing ten more agro-dealers and strengthen the technical capabilities of public seed inspectors.

Figure 8. Maize variety collection of the maize program at Ferkessedougou

SSG Activities

DR Congo

Figure 9: Harvested hybrid maize grown by Agri-Force seed company

Democratic Republic of Congo (DRC), a country with an estimated population of 109 million, has approximately 80 million hectares of land suitable for farming. Agriculture plays a central role in DRC's economy. Eighty percent of DRC's population depends on agriculture, which accounts for 45.7% of the GDP. However, issues including climate change, traditional cultural practices, civilian and military conflicts, and lack of crop breeding and seed supply chains prevent DRC's agricultural potential from being realized. As a result, DRC is a major importer of food products.

DRC is home to an estimated 6 million farm households cultivating an area of 6 to 8 million hectares and produce cassava, maize, rice, beans, cowpea, groundnut and soybean. Banana is also cultivated for home consumption and commercial use. There is food and nutritional insecurity in the DRC, and children suffer from critical and chronic malnutrition.

Figure 10. 1.5 ha of WE2101 hybrid production by Mimosa seed company in Haut Katanga, DRC

With funding from USAID's Accelerated Innovations Delivery Initiative (AID-I), SSG is helping to develop seed production and supply systems in South Kivu and Haut-Katanga Provinces. The focus is on hybrid maize and beans – the two most widely grown crops in both regions. In South Kivu, SSG is working in partnership with the public agricultural research institute, INERA-Mulungu, and three seed enterprises (i.e., AgriForce, Ets Munga and Espoir pour l'humanite), with financial support from Feed for the Future (USAID). At INERA-Mulungu, SSG funded a maize hybrid variety trial wherein one, WE5117 and WE2106, performed well (over 10 MT/ha) and was selected. SSG then supported production by INERA of parental lines CML566, CML395 and CML593. SSG also conducted capacity building of INERA technicians on hybrid maize production technology. SSG supported private seed companies Agri-Force, Ets Munga and Espoir pour l'Humanite in: (1) Assembling and distributing 100 g packs of improved bean variety HM21-7 and Bazooka maize hybrid for supply to farmers by local NGOs RIKOLTO and SARCAF to enhance adoption and stimulate seed sales; (2) Production of F1 hybrid maize WE5117 seed and of HM21-7 bean seeds; (3) Creating farmer awareness through VBAs, mega demonstration plots, and farmer field days; and (4) Training seed company personnel on hybrid maize and bean seed production technologies, seed business management, marketing, processing, treatment and storage.

Figure 11. One of the best performing varieties, WE2115 by INERA Kipopo

In Haut-Katanga Province, SSG works in partnership with INERA-Kipopo, Bon Berger and Mimosa seed companies. SSG has assisted INERA-Kipopo to: (1) Set up hybrid maize and bean variety trials at Kipopo Station; (2) Installed hybrid maize and bean demonstration plots; and (3) Produced Maharagi soybean EGS at Kanyameshi, in Kipushi Territory. SSG also trained INERA technicians on hybrid maize production technology.

Along with producing F1 hybrid maize WE5117, Maka, and WE2101 seed as well as commercial bean D6 Kenya seed, SSG also collaborated with seed companies (Bon Berger and MIMOSA) to raise farmer awareness through demonstration plots and provide training on small packs, VBA methodology, and hybrid maize production technology.

1 MT of maize hybrid basic seed has been produced in South Kivu. Eight INERA Mulungu and Kipopo technicians have been trained on hybrid maize production technology. Likewise, eight personnel from seed companies in South Kivu and Haut-Katanga were trained on hybrid maize production technology. A total of 231,664 small packs of beans and hybrid maize Bazooka seeds have been prepared and distributed to farmers. 59 MT of F1 hybrid maize WE5117 and 36.5 MT of certified bean HM21-7 seeds have been produced by SSG-supported seed companies in South Kivu. Additionally, 4.2 MT of F1 hybrid maize WE5117 seed, and 3.3 MT of certified bean D6 Kenya seed have been produced by the companies in Haut Katanga.

Future priorities in DRC included follow-up on hybrid maize and bean variety trials in South Kivu and Haut-Katanga. The production of EGS and certified hybrid maize and bean seeds will also continue in both provinces. More focus will be placed on farmer awareness creation through VBAs and small pack distributions, demonstration plots, farmer field days, radio broadcasts and seed fairs. Lastly, agro-dealer training and development will take place in both regions to reinforce seed commercialization.

Figure 12. Bean seed production site at AgriForce, variety HM 21-7 under production in 4 ha

SSG Activities

Djibouti

Djibouti is a desert country of approximately 1 million people located to the north of Somalia, at the mouth of the Red Sea. Djibouti is classified as low-middle-income country. The poverty rate stands at 79% of the population, with 42% living in extreme poverty. The proportion of stunted children under 5 years is estimated at 18.7%.

Djibouti imports more than 80% of its food from neighboring countries (mainly Ethiopia) or from

Figure 13. Main area of SSG project in Djibouti.

Europe. Domestic food production is carried out by an estimated 2,000 farmers focusing on vegetable crops and forage for their livestock. All crops are grown under irrigation as rainfall is scant and unpredictable. Djiboutian farmers mostly depend on poor quality seeds of obsolete varieties introduced through donor aid. Development of the livestock, crop, and agro-processing sectors would greatly help in Djibouti's economic growth and poverty reduction. The solution is to avail improved seeds and teach farmers better crop management practices.

This situation prompted IFAD to provide SSG with funds to partner with the Ministry of Agriculture, Water, Fisheries and Livestock (Directorate of Agriculture and Forestry) and the Ministry of Higher Education through the Committee on the Elimination of Racial Discrimination (CERD). A regional component on seed policy improvement was also conducted in collaboration with the Intergovernmental Authority on Development (IGAD), and the entire project funded by International Fund for Agricultural Development (IFAD). In this context SSG worked with the partners to identify the key success factors to help Djibouti's farmers increase local food supplies.

Directorate of Agriculture and Forestry (DAF) and CERD have young, highly motivated technical teams who worked with SSG to develop a national system of variety selection and seed production in Djibouti.

Figure 14. Tomato variety trial by CERD in Damerjog, Djibouti.

The Djibouti seed systems initiative is designed to:

1) Introduce and test improved vegetable crop varieties (tomato, onion, eggplant, okra, and pepper) and drought-tolerant forage crop species;

2) Produce foundation and certified seeds of the best varieties of these vegetables and forages; and,

3) Promote the cultivation of improved crop varieties and forage crops through Village Based Advisors (VBAs).

SSG linked up with WorldVeg, the leading international institution on vegetable crop research, to provide seeds and capacity building to Djibouti scientists and farmers. Through this partnership, WorldVeg and SSG introduced high-yielding, stress-tolerant varieties of tomato, eggplant, onion and okra for local testing using formal experimental designs. They also conducted training modules on production, processing and quality management of vegetable seed.

In 2022, 50 Village Based Advisors were trained and helped distribute 6,000 small packs of seeds to 982 farmers. DAF technical staff produced approximately 10 kg of improved tomato seed, while farmers produced approximately 2 kg. Farmer feedback on the new seed was highly positive.

Ten farmers have been selected and trained as seed

Figure 15. SSG team with pastoralists and improved forage crops in Damerjog, Djibouti.

Figure 16. Seed packs assembled by the Ministry of Agriculture of Djibouti.

producers after testing improved varieties on their plots. One tomato variety was selected from field trials and farmer demonstrations, and the selected seed growers have undertaken to increase the seeds on their own. Farmer seed producers were trained on seed extraction and drying and obtained several kilograms of seed to continue their own seed production.

The development of a seed system is a multi-step venture which must be carefully crafted with the buy-in of local actors, especially in a very arid environment like Djibouti's. SSG's intervention in Djibouti has demonstrated the importance of aligning key actors in public-private-producer partnerships for farmers to access improved seeds. The enthusiasm of Djibouti farmers accessing truly improved seeds for the first time is a key step towards the establishment and growth of a farmer demand-driven seed supply system that needs to be sustained.

Based on the progress made during phase one of this work, IFAD agreed to support a second phase. A new phase of work commenced in August 2024 with a SSG mission to identify activities, sites, actors and emerging training needs in forage crop seed production and management. Seed will be sourced from the International Livestock Research Institute (ILRI) and tested in several sites beginning in September 2024.

Figure 17. Production of tomato by Djibouti farmers under IFAD supported project.

SSG Activities

Eritrea

Eritrea is a country in the Horn of Africa characterized by diverse agro-climatic zones from sea-level to 2200 m, and from desert to humid zones. The population of Eritrea is estimated at 3.8 million. While the vast majority of Eritreans are engaged in agriculture, food insecurity is a frequent problem due to the high climate risk index and low yields from traditional crop varieties.

Sorghum and millet are the principal crops of the country planted on 334,000 ha in 2022 and accounting for almost half the total crop production. Other crops of importance are maize, wheat, tef, fava bean, red kidney bean, green gram and cowpea. Yields of all crops have remained low but with small increases over the last decade. The seed sector has seen minimal investment and farmers remain largely reliant on informal supplies of landrace varieties.

The urgent need for improved varieties and good seed has provided a perfect opportunity for SSG to partner with the Ministry of Agriculture's National Agricultural Research Institute (NARI), Agricultural Extension Department (AED) and Seed Development Unit through a program funded by IFAD. The first phase of the collaboration targeted capacity building, wheat and maize variety testing, seed production and dissemination. **In two years**

Figure 18. SSG seed specialists with NARI researchers in hybrid maize trials

Figure 19. NARI seed technician with production of hybrid maize parent line.

Figure 20. Wheat farmer in the Eritrean highlands provides feedback on new varieties supplied in small packs.

(2021 and 2022), 971 MT of certified seed was produced, of which 781 MT was wheat, and the remainder included sorghum, millet, barley, beans and chickpea. In addition, 56,000 small packs of improved varieties of these crops were produced and distributed to 24,930 farmers.

A notable development in Eritrea was the introduction and rapid scale-up of an early maturing maize hybrid. During 2022 and 2023 field trials with eight maize hybrids introduced from CIMMYT revealed one variety, DLSH103, as being best suited to the main maize growing environments of Eritrea. Parent seed of this hybrid were imported in early 2023 and NARI breeders began production of pre-basic and basic seed at the Halhale Research Station. With this basic seed, the first three-way hybrid seed was produced on a 1 ha pilot field planted in October 2023. In May 2024, 2.6 MT of F1 maize hybrid seed was produced and distributed to farmers through AED for planting in June. A further 20 ha of certified seed was planted with 42 farmers in June 2024, with an expected harvest of 80 MT seed. During the 2024 main season NARI is producing additional parent seed, with the target of achieving 350 MT of certified seed in the coming years.

The focus of the Ministry of Agriculture on the production of maize hybrid seed has been outstanding. The feedback from farmers who have received the seed to grow in their own fields has been encouraging to the extent that there is a groundswell of demand for this improved variety.

Going forward, SSG is excited to continue working with NARI breeding teams and AED seed production and extension teams to continue to produce and promote new varieties of Eritrea's main food crops, including maize, wheat, sorghum, millet, and grain legumes.

SSG Activities

Ghana

Ghana, a country with an estimated population of 31 million, is bordered by Côte d'Ivoire, Burkina Faso, and Togo. Agriculture is a key sector of Ghana's economy, along with oil, gas and mining, contributing to an estimated PIB of $74 billion in 2023. Ghana's agriculture is characterized by small-scale farms (70% are less than 10 ha).

Ghana's seed sector is growing, with an estimated value of $9.29 million in 2024. Although the sector has expanded over the past decade, only 30% of farmers used improved varieties in 2022. Challenges include shrinking per capita arable land, but this will likely boost demand for seed of higher-yielding crop varieties.

The northern part of the country is characterized by a short, single rainy season that begins in July and ends in October. The average annual rainfall is 1111 mm, and the average annual temperature varies between 25 and 35.5°C. The major crops farmed in Northern Ghana include maize, cassava, millet and sorghum.

Pearl millet is an important crop for farmers in Ghana's Northern regions yet is not among the national priority crops. As a result, research and seed production of millet has been very limited. In fact, Ghana's agency in charge of seed quality control has never recorded any request for millet seed certification.

Figure 21. Map of Ghana with the three Northern regions.

With funding from USAID's "Vision for Adapted Crops and Soils" (VACS), SSG has undertaken a project known as "VACS Quick Wins Seed Systems Activity" in partnership with CIMMYT in a number

Figure 22. Pearl millet on demonstration plot, Lawra upper West region.

of countries including Ghana where the focus crop is pearl millet.

SSG is supporting activities in northern Ghana to revitalize pearl millet production, thereby improving food security and reducing poverty. The overall objective of the project is to accelerate and expand the production and delivery of improved, climate-resistant varieties of pearl millet over a 3-year period beginning in June, 2024.

To operationalize the VACS Seed Systems Activity in Northern Ghana SSG is working with the Savanna Agricultural Research Institute (SARI), which is responsible for the production of EGS, while local private seed companies Antika and IWAD are responsible for multiplication of certified seed. Regional extension teams under the Ministry of Food and Agriculture (MOFA) are responsible for farmer awareness building, employing the VBA/ small pack methodology to quickly introduce farmers to new varieties of pearl millet.

In this first year of the project, partners have received support from SSG to begin production of EGS, certified seed, and distribution of small packs for raising farmer awareness. SARI's pearl millet breeder, Dr Peter Asungru, has established two plots of EGS of pearl millet seed: a WAAP-Naara variety on 0.9 acres and NAAD-Kohblug on 1.2 acres. **A total of 1,195 small packs of 30 g of pearl millet seed were distributed in June, 2024 in the three northern regions. Meanwhile, 45 Kg of EGS was supplied to seed companies to produce certified seed of two improved pearl millet varieties. 12 hectares of pearl millet of the NAAD-Kohblug variety were planted by ANTIKA, while 2 hectares of WAAP-Naara variety were planted by IWAD.**

SSG will continue working with partners in ensuring the target of making 60,000 small packs available to farmers is achieved. SSG and its partners will employ extensive monitoring/evaluation and data gathering from demonstration plots and ensure VBAs from selected villages are trained. Ultimately, SSG expects improved pearl millet seed, including hybrid pearl millet seed, is broadly accessible by millet farmers through local agro-dealers.

Figure 23. Early generation seed production of (WAAPP – N variety of pearl millet at CSIR-SARI-Manga station in Upper East region.

Figure 24. Higher yielding farmer preferred pearl millet variety

SSG Activities

Guinea-Bissau

Guinea-Bissau is a country of 2.1 million people located south of Senegal. Guinea-Bissau is ranked as the world's 12th poorest country. 54% of people live in rural areas. 28% of children under five are malnourished. Agriculture accounts for approximately 50% of Guinea-Bissau's GDP, and is the principal occupation of 75% of the population. Cashew nut production accounts for 95% of the country's export revenue.

The main food crop is rice, planted on 120,000 ha, yet Guinea-Bissau currently imports approximately 60% of its total annual rice consumption of 320,000 MT, indicating a major opportunity for import substitution in rice grain if farmers would be supported to increase their rice yields. Other important crops include groundnut (109,000 ha), sorghum (35,000 ha), maize (20,000 ha), millet (20,000 ha), and cowpea (5,000 ha). Nearly 100% of Guinea-Bissau's agricultural production comes from small-scale farmers, who cultivate small plots and produce subsistence-level yields. The majority of farmers live under conditions of absolute poverty, which can be attributed to the very low yields they obtain (averages of 1 MT/ha for maize, 1.3 MT/ha for sorghum, 0.8 MT/ha for millet, and 1.7 MT/ha for rice). Low productivity in Guinea-Bissau, however, can be reversed through provision of improved seed and related technologies to farmers which can enable them to intensify their crop production practices.

Figure 25. Improved sorghum variety trial.

Figure 26. INPA technical team based at Contuboel, Guinea-Bissau plus Joe DeVries, President, SSG.

Figure 27. Farmers and researchers in participatory variety selection of rice in Guinea-Bissau

In 2024, SSG developed a new initiative intended to transform crop production in Guinea-Bissau through empowerment of local actors with a farmer demand-based public private model of seed systems development. The initiative is being co-implemented with the World Food Programme (WFP) office in Bissau.

The proposed public-private model for seed systems development will include: (1) Crop breeding and early generation seed supply in Guinea-Bissau by the national agricultural research institute (INPA), (2) Development of private seed companies by identifying capable individuals to start a reliable seed supply activity using new varieties, and (3) Building farmer awareness through working with NGOs in transmitting knowledge and raising improved variety adoption by farmers.

To this end, SSG, WFP and INPA entered into an MoU, while SSG signed a separate MoU with Institut de l'Economie Rurale (IER), the agricultural research institute in Mali, for varietal introductions. **To date, this collaboration has successfully introduced a total of 69 improved varieties of cowpea, groundnut, maize, sorghum, and rice from Mali to Guinea-Bissau.** SSG then assisted helped the INPA scientists and technicians to organize the planting of variety trials at INPA's Contuboel station, where local staff are managing the field activities under supervision of SSG and WFP. Five capable seed producers (four private seed producers and one public seed production) who are capable of supplying quality seed of new varieties to farmers have been identified. The support they have been given includes training on relevant topics (production, processing, marketing, quality control, and seed business management) from qualified, experienced experts.

WFP Guinea-Bissau and SSG have developed a strategy to upgrade the seed system in Guinea-Bissau so that local farmers will increase their productivity through enhancing the capacity of public research, seed quality assurance and private seed business including production and rural delivery. The two organizations are actively preparing the operational guidelines of the strategy, which will include testing, popularization and dissemination of improved crop varieties throughout Guinea-Bissau.

In the short term, the WFP Guinea-Bissau- SSG collaboration is supporting INPA's revitalization of its research capacity through a designed testing and farmer selection of improved crop varieties, and official release of the best varieties leading to the production of high-quality seeds. Results of the ongoing field work at the INPA Contuboel research station will be analyzed and official records submitted to the Ministry of Agriculture for their ownership by the end of 2024.

Figure 28. Rice nursery ready for transplanting at Contuboel

SSG Activities

Kenya Arid and Semi-Arid Regions

Kenya's arid and semi-arid lands (ASALs) cover about 89% of the country and are home to approximately 16 million people, with an estimated 5 million smallholder farmers. This region includes 29 counties and faces significant agricultural challenges due to marginalization, drought, and poor infrastructure. These regions face significant seed supply challenges, including limited availability and accessibility of certified seeds, poor seed quality, and slow adoption of improved varieties. The informal seed sector dominates, leading to inconsistent seed quality, while the formal sector struggles with high costs and limited distribution networks.

The main crops grown include cereals such as maize, sorghum, and millet; legumes like cowpeas, green grams, and pigeon peas; and root and tuber crops such as cassava and sweet potatoes. Additionally, vegetables (e.g., kale and tomatoes) and fruits (e.g., mangoes and bananas) are also cultivated. These crops are chosen for their drought-resistant properties and adaptability to the harsh climatic conditions of ASALs.

Efforts by the government, NGOs, and international organizations aim to promote certified seed use, improve seed systems, and develop drought-

Figure 29. Irene, SSG Senior Program Officer at Inyamandu's Karembo variety green gram farm, Kitui sub-County

Figure 30. ICBOSM VACS certified seeds display and training during field day in Kitui South

Figure 31. Field visit to improved pigeon pea variety farm Arthi River, Kenya.

tolerant varieties. However, logistical challenges, weak regulatory enforcement, and inadequate extension services hinder progress. Addressing these issues requires coordinated efforts to enhance seed availability, quality, and farmer education in Kenya's ASALs.

In Kenya, SSG is an implementing partner of the USAID-funded **Vision for Adapted Crops and Soils initiative (VACS) Seed Systems Activity,** together with CIMMYT. The VACS Seed Systems initiative focuses on pigeon pea, mung bean, cowpea, pearl millet, finger millet, and amaranth, with the aim of increasing smallholder farmers' awareness and access to recently-developed varieties of these crops. VACS Seed Systems initiative is implemented in several semi-arid counties including Makueni, Machakos, Kitui, Tharaka Nithi, Nakuru, and Busia counties. Interventions include production and dissemination of certified seed of targeted varieties, stimulating and accelerating demand for the targeted varieties in the selected opportunity crops, and building linkages to the input and output markets, and value chains.

Through VACS Seed Systems SSG has supported four private seed companies to produce certified seed and small packs for promotion of new varieties of cowpea, mung bean, pigeon pea and Amaranthus. **During the March-May cropping season, 6,599 small-holder farmers benefited from 11,996 small packs distributed**. **Seed production of the new varieties was initiated by three seed companies and is ongoing.**

Going forward, the ongoing efforts in Kenya under VACS initiative will be intensified in the ASAL regions with a focus on increasing farmer access to climate-adaptive and nutritionally enriched varieties.

SSG Activities

Madagascar

Figure 32. Improved maize variety trial

Figure 33. Madagascar image showing SSG program areas.

Madagascar is a country of 31 million people and an estimated 2.5 million farms. It is an island nation located 500 miles off the coast of Mozambique. Madagascar is an extremely poor country, with more than 92% of its population living on less than $2 per day. In the GHI of 2018, Madagascar was ranked 116th out of 119 countries. More than half of Malagasy children under five years of age are chronically malnourished. Food production in Madagascar is dominated by the cultivation of rice while other food crops include maize, cassava, sorghum (in the South), millet, beans, groundnut, sweet potatoes plus potatoes (Highlands) and a wide variety of vegetables.

Madagascar is plagued by extremely poor road infrastructure, cutting off most of its rural communities isolated from regular trade and services. In such circumstances, decentralized seed production and supply is the only viable strategy for reaching farmers. Compounding this challenge, public crop breeding had nearly ground to a stop prior to SSG's intervention, due to lack of finances.

However, SSG has tapped into the vision and determination of a small cadre of dedicated crop

Figure 34. Farmers with rice harvested from small packs of new varieties.

scientists and seed producers who have worked closely with farmers to test and select a series of higher-yielding varieties, including **4 disease-resistant potato varieties, 1 bio-fortified maize hybrid, 6 improved bean varieties, 5 new rice varieties and 3 improved groundnut varieties.** These higher-yielding, climate resilient varieties represent real breakthroughs for farmers, provided seed can be delivered to them at-scale through the local, private seed companies and farmer outreach agencies SSG supports.

Figure 35. RELHARF Seed Company is one of five local, private seed producers and marketers supported by SSG in Madagascar.

In Madagascar SSG is implementing an initiative known by its partners as the "Seed Systems Improvement Program for Madagascar" (PASSAM, by its French acronym), which operates in the Central Highlands region of Vakinankaratra and the "Deep South" region of Androy, which has experienced famine conditions in recent years. SSG provides financial and technical support to local actors in crop breeding, seed production, and farmer outreach to increase supply and adoption by smallholder farmers of improved seed of rice, maize, beans, potato, soybean, groundnut, and sorghum.

Through the engagement of 156 Village Based Advisors SSG has so far reached 14,112 farmers with improved seed of rice, potato, beans, and groundnut. The response among farmers has been overwhelming and serves as a poignant reminder that better harvests truly represent the only source of hope most people cling to for a better life for themselves and their children.

In Madagascar, SSG is supporting the growth and development of five private, local seed companies which to-date have produced 136.8 MT of certified seed from 12.1 MT of early generation seed produced by the public research institutes, FOFIFA and FIFAMANOR.

SSG Activities

Malawi

Malawi is bordered by Tanzania to the north and northeast, Mozambique to the east, south, and southwest, and Zambia to the west. Malawi has a population of 21.5 million people and 3.1 million farm families sharing 6.5 million hectares of land, which constitutes 69% of Malawi's total land area.

Beginning in late 2023, SSG received financial support from the Innovation Lab for Crop Improvement (ILCI) to promote three IITA-bred cowpea varieties in Malawi. Collaborating with the Department of Agricultural Research Services (DARS), SSG has provided support to increase stocks of EGS of this variety, while two private seed companies, Mgommera and MUSECO, have been instrumental in producing certified seed, which is then packed into small packs for distribution. These small packs are delivered to the Malawi's Department of Agricultural Extension Services (DAES), which distributes them to farmers for free, allowing them to try the improved variety for the first time.

Early generation seed multiplication for the three target varieties IT82E-16, Mkanakaufiti and Chitedze cowpea 3 were done at Chitedze and Chitala Rese arch Stations in the past season. **To-**

Figure 36. Cowpea certified seed production by Mgommera seed company in Malawi.

Figure 37. Basic seed production at Chitedze Research Station.

date, Chitedze crop breeders have produced 2.25 MT of EGS, including 0.45 MT of Mkanakaufiti, 0.25 MT of Chitedze cowpea 3 and 1.55 MT of IT82E-16. Mgomera seed company has already collected the seed from DARS and MUSECO is yet to collect. From the production, DARS has not yet reached the target planned of 3 MT because of the drought experienced in the past season. **However, Winter EGS production at Kasinthula Research Station is expected to yield 1 MT of each variety by September 2024.**

DARS has recruited 200 Village-Based Advisors (VBAs) to assist with the distribution of these small packs. **Through this initiative, 20,800 small packs were distributed in early 2024, reaching 19,037 farmers.** The promotion of the improved cowpea variety IT82E-16 has seen significant success, providing farmers with access to higher-yielding, disease-resistant seeds that can improve their crop productivity and resilience.

Going forward, the production and distribution of improved cowpea varieties will be intensified, with a target of overcoming infrastructural challenges to ensure wider adoption of these varieties.

Figure 38. Farmer field day.

SSG Activities

Senegal

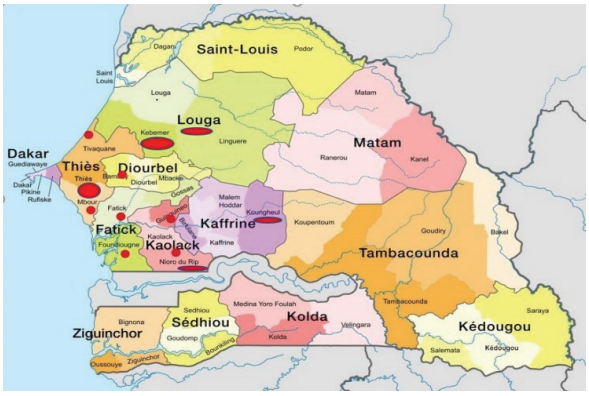


Figure 39. Map of Senegal showing the regions where SSG is operating (red color).

Senegal is located at the westernmost point of Africa. The population of Senegal is estimated at 17.3 million people. Crop production in Senegal is dominated by the cultivation of rice, pearl millet, sorghum, groundnut, cowpeas, cotton and vegetables.

In spite of decades of investment in public crop breeding in Senegal, there are still only two private seed companies producing agronomic crop seed, and very few agro-dealers where farmers can reliably purchase seed. Early generation seed of improved varieties is likewise available in very limited quantities. As a result, farmers have very limited access to quality seed.

It is in this context that SSG, through the USAID-funded "Vision for Adapted Crops and Soils (VACS) Seed Systems Activity", is supporting two private seed companies and Senegal's public agricultural research institute, ISRA, financially and technically to produce seed of recently-bred varieties of pearl millet and cowpea. The intervention of SSG in Senegal in the 6 regions of Thies, Diourbel, Louga, Kaffrine, Fatick, and Kaolack is providing farmers with an opportunity to grow newly developed varieties of these crops, and also to have at their disposal quality seed. The VBA/small seed packet approach being employed in the VACS Seed Systems initiative has the advantage of reaching many farmers with small quantities of seed, and of creating demand quickly for seed companies. It is also an effective method for allowing farmers to test new varieties at low cost and without taking a lot of risk. **To-date, a total of 17,000 farmers have been reached with improved cowpea and pearl millet seeds**. The VACS initiative aims to train 60 VBAs and establish 20 agro dealers across the selected regions.

The testing of the varieties by farmers is ongoing in Senegal to create awareness of new varieties and encourage their wider adoption. Going forward, Senegal will see an expansion of the small pack distribution strategy, with an aim of reaching more farmers with certified seeds of newly bred varieties.

Figure 40. Cowpea seed production (variety Yacine) by SEDAB seed company on 0.5 ha.

SSG Activities

Sierra Leone

Figure 41. Harvesting EGS groundnut at Njala, Sierra Leone; September 2024

Sierra Leone is a coastal West African country which shares borders with Guinea to the north and east, Liberia to the south, and the Atlantic Ocean to the west. The country's population is estimated at 7.5 million. More than three-fifths of the population engages in agricultural production, primarily for the domestic market. Due to very limited access to quality seed of improved varieties, most farmers are limited to subsistence agricultural practices.

Sierra Leone's seed system is dominated by informal exchange of seed among farmers, however, two medium-sized seed companies are also in operation. The system includes seeds and planting materials for a variety of crops, the main crop being rice, which is the nation's staple. Rokupr Agricultural Research Centre (RARC), a national research station, breeds rice to provide breeders' seeds of new varieties, which are then developed

Figure 42. Small packs. Left: From Seed Tech and, Right: African Seed Company of Sierra Leone taking seed labels to another level.

Figure 43 A visit to baby demo hosted by VBA

and distributed to farmers via agricultural extension agents and other field staff. In recent years the formal seed sector has shown growth thanks in part to the Sierra Leone Seed Certification Agency (SLeSCA). SLeSCA has recently established a new seed certification system wherein varieties developed by RARC are registered for release. SLeSCA is also responsible for regulating the quality of all seeds that are being marketed across the country.

Recently, the government has signaled that the public sector will no longer be counted on to lead the seed industry. In its place, the private sector will be asked to take the lead in all the commercial components. In addition to ensuring greater capacity and efficiency in the seed sector, this is aimed at reducing the financial strain that seed systems development places on public coffers.

To-date, however, the private sector's share of supply of high-quality seeds remains limited, despite the government's actions. The development of the sector is confronted with significant obstacles, requiring the support of development partners and the government to overcome them. Limited demand for certified seeds, inadequate infrastructure, limited capacity, and inadequate training, poor marketing strategies, insufficient access to institutional funding, and a lack of data on the seed sector are some of the major issues.

In Sierra Leone SSG is supporting the production of certified seed of high yielding crop varieties by African Seed Company and Seed Tech International. SSG is likewise providing financial support to RARC and Njala Research Station to produce EGS of rice, maize, groundnut, and cowpea.

With this support, African Seed Company and Seed Tech International have prepared and distributed a total of 34,000 small packs of two recently-released rice varieties, NERICA L 19-SUB1 and Orylux 6. Njala Station and RARC are likewise producing EGS on 4.33 ha of groundnut and 0.279 ha of rice, respectively.

Training of farmers and VBAs has been conducted across six districts on the usage and essence of small packs for Port Loko and Bo districts. The training increased the participants' understanding on (1) the principles and practices of seed production, marketing and storage to achieve nutrition and food security, (2) the advantages of acquiring and utilizing high-quality seeds to advance the seed sector and, (3) climate-smart agriculture and how to maintain resilience in the face of climate volatility.

SSG Activities

Somalia

Somalia has a population of 15.9 million with an annual growth rate of approximately 3%. Agriculture contributes 75% of the country's GDP. 83% of Somalia's population is engaged in agriculture. The poverty rate is estimated at 73%, while 25.3% of the children under five years of age are malnourished. Somalia has been plagued by conflict and unrest over the past decades which contributed to breakdown of the national seed production and supply system, as well as agricultural extension. Somalia has no seed policy, law or regulation, and the seed system is largely informal. The main food crops include sorghum, maize, rice, cowpea, and mung bean. Forage crops are also important as a source of animal feed for pastoralists.

SSG activities in Somalia have been implemented in direct partnership with the Ministry of Agriculture and Irrigation (MoAI) and local private seed companies. The geographical areas of operation are the States of Jubaland, Hishabelle, and Southwest. SSG began working in Somalia in May 2021 with funding from IFAD under the regional "*Building Back Better in the Greater Horn of Africa*" initiative, which was renewed for a further two years beginning in July 2024. In addition, SSG has since July 2023 implemented the '*Somalia Seed Systems Rehabilitation Initiative' (SSSRI)*, with funding from the World Bank. The two initiatives have focused on building the capacity of the MoAI and five local private seed companies with the aim of strengthening Somali seed sector. Priority crops include maize, sorghum, cowpea, mung bean, and forages.

Figure 44. Certified maize production farm by Filsan company

Figure 45. Distribution of small packs in Baidoa, South West State, Somalia

The two initiatives have cumulatively yielded remarkable achievements for the Somali seed sector. **SSG has supported the MoAI to conduct the first crop variety trials in the country since 1994. In partnership with a local private seed company, the MoAI has also produced 6.1 MT of EGS, which has been distributed to private seed companies for use in production of 1,037.8 MT of certified seed for sale to farmers.**

SSG also works to strengthen the capacity of these seed companies to produce quality certified seeds for farmers. This has involved training of staff of the companies in improved seed production technology and business management. These seed companies have engaged 175 contract out-grower farmers and cooperatives in certified seed production. A total of 965 farmers have been engaged as Village Based Advisors (VBAs) in Somalia. The VBAs have been trained on improved crop production, seed technology and dissemination, and digital extension technology to be able to train and guide farmers. SSG is also working on establishing a digital network linking VBAs to famers-extension agents and agrodealers, managed by MoAI.

A total of 96,070 farmers have been reached under the two initiatives through the VBAs in Somalia. This included the first ever production of hybrid maize seed ('Siman') produced in Somalia by Filsan in 2023, with support from SSG.

VBAs have also distributed 223,284 small seed packets (50 g) of improved maize (both OPV and hybrids), sorghum, cowpea and mung bean varieties to farmers for testing on their farms. To

Figure 46. Sorghum Gadam by CSET company, Somalia.

Figure 48. The first ever certified hybrid maize seed production in Somalia (Siman variety) by Filsan seed company

support accessibility of improved seed by farmers, 118 agro-dealers have been engaged by the five seed companies to sell seeds to farmers in rural areas. To support seed activities, SSG has facilitated the purchase of four (4) motor vehicles and nine (9) motorcycles for the MoAI.

SSG has also strengthened the MoAI Research Unit in testing of new crop and forage crop varieties for adaptation and performance in Somalia's agro-ecologies. This involves the establishment of basic seed testing facilities and enhancing three research stations at Jowhar (Hirshabelle), Kismayo (Jubaland), and Baidoa (Southwest). Trials have included hybrid maize (5), sorghum (18), and mung bean (5). The capacity of the MoAI is being further enhanced in plant breeding and seed regulatory services: five MSc fellowships in plant breeding have been awarded: one at Makerere University (Uganda) and four at the University of Nairobi (Kenya).

Through the IFAD-funded "Scaling Sustainable Seed Supply in Somalia" (SSSSS) initiative, SSG and the MoAI will jointly focus on: (1) *Developing and disseminating new crop varieties:* through testing & release of new grain and forage crop varieties, EGS production, capacity building of MoAI for research and seed regulatory affairs, (2) *Strengthening seed supply systems:* through capacity building for private seed companies, seed out-growers and agro-dealers, (3) *Farmer outreach and engagement:* through VBAs and small seed pack distribution, digitized extension services, and (4) *Seed policy engagement and coordination:* involving development of a regional seed forum through IGAD partnership.

Figure 47. Certified seed production farm of Gaalooge seed company, where they have planted cowpea, mungbean, and sorghum

SSG Activities

South Sudan

Figure 49. Sesso 3 Sorghum variety small pack demo in obbo Payam, Magwi

South Sudan is the youngest country in Africa and has a population of 11 million of which 56% are engaged in agriculture. The poverty rate stands at 82%, and an estimated 1.6 million of South Sudan's children under five are malnourished. Sorghum is the main staple food crop in the country, alongside maize, groundnut, millet, cassava, cowpea, rice, beans and sesame.

South Sudan has experienced extended conflict and instability over the past decades. This situation is compounded by a very poor road network which has constrained the national seed production and supply system as well as agricultural extension activities. South Sudan's private seed companies have thus been seriously affected.

SSG's activities in South Sudan began in 2021 under the regional, IFAD-funded initiative "*Building Back Better in the Greater Horn of Africa"*. The geographical area of SSG operations has been the States of Eastern, Central, and Western Equatoria. This initiative focused on production and supply of improved, climate-smart seeds of sorghum, maize (both hybrid and open-pollinated varieties), beans, cowpea and groundnut. With SSG's support, the Directorate of Research of the Ministry of Agriculture and Food Security (MAFS) produced **a total of 6.7 MT of EGS of improved varieties. SSG is also working to strengthen the capacity of four indigenous private seed companies in the country. These seed companies used the EGS produced by MAFS to produce a total of 1,053 MT of certified seed** for onward sale to farmers. The seed companies further engaged rural farmers, including women and youth, in certified seed production as out-growers. Through partnership with two local civil society groups (NGOs), 360 enthusiastic, progressive farmers were engaged as

Figure 50. Groundnut foundation seed crop at Palotaka by MAFS

Figure 51. A VBA with improved bean variety to her left hand side and the local variety on her right side

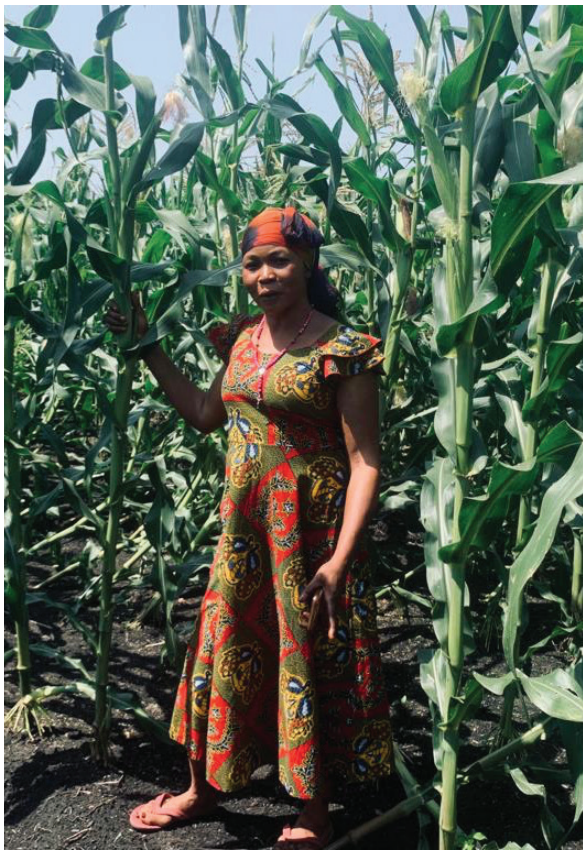


Figure 52. Contracted seed out-grower with her certified seed crop in Nzara.

Village-Based Advisors (VBAs) to train and guide smallholder farmers at local levels in improved agricultural practices. The VBAs were trained to serve as service providers in improved seed technology and dissemination. **Through the VBAs, SSG reached 52,045 farmers with improved seeds of sorghum, maize, beans, cowpea and groundnut. The VBAs distributed 174,230 small seed packets (50 g) of the improved crop varieties for farmers to test on their farms for enhanced adoption and improved seed demand.** The BBB particularly had a strong impact in terms of uptake of improved seed in South Sudan. **One partner seed company, for instance, established three new seed sale outlets to respond to the increased demand, and by March 2022 had sold 55 MT of improved seed to farmers, with a further 200 MT on order.**

The BBB project has been renewed for a further two years beginning July 2024 under the banner '*Scaling Sustainable Seed Supply in South Sudan*' (S6). It will be implemented under the same partnerships, with sorghum, hybrid maize, beans, cowpea and groundnut as focus crops. The geographical area will be extended to include Western Bahr el Ghazal state.

Figure 53. Foundation seed of Kunde Faulu cowpea variety at Rajaf West

Togo

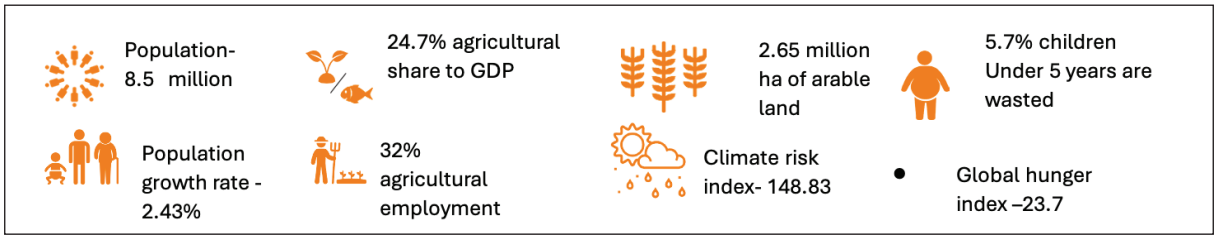


Figure 54. Country snapshot - Togo

Togo is a coastal West African country bordering Ghana, Benin and Burkina Faso with a population of approximately 8.5 million people and a population growth rate of 2.43%. 69% of households in rural areas live below the poverty line. In 2021, the global hunger index for Togo was 23.7. Approximately 5.7% of Togo children under the age of 5 suffer from malnutrition. Agriculture represents more than 40% of Togolese GDP and occupies nearly 65% of its active population. Cultivable land for Togo is estimated at 60% of the country's overall surface area, of which 41% are sown.

Maize is the staple crop in Togo, followed by rice and sorghum. The two main tubers produced in Togo are cassava and yam, cultivated on 298,626 ha and 98,547 ha of land respectively. The three main legume crops are cowpea, groundnut and soybean. A study conducted by SSG in 2022 revealed very low crop yields and levels of adoption of improved varieties. Average yields were 1.2 MT/ha; 1.68 MT/ha; 0.9 MT/ha and 2 MT/ha respectively for maize, rice, sorghum and soybean, with an average use rate of 30% of certified improved seeds.

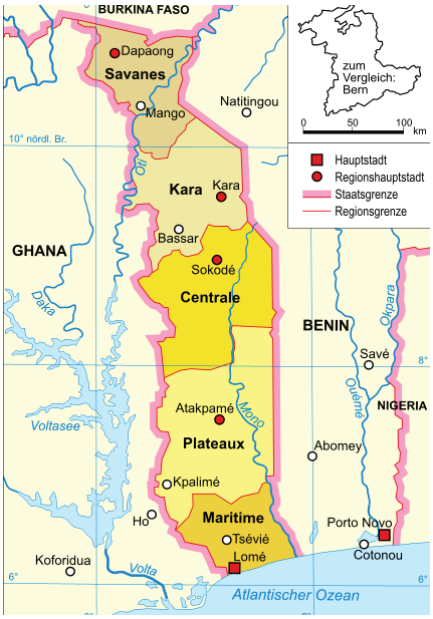


Figure 55. Togo ecological zones.

In Togo, SSG is implementing a three-year seed systems development initiative funded by Canada's International Development Research Center (IDRC) covering the period known as "Seed Systems Improvement Program for Togo" (PASSAT, by its French acronym). The main components of this initiative are: (1) Support for research for trials; (2) The development of new varieties and the production of EGS; (3) The production of certified seeds; and (4) The dissemination of these new varieties to smallholder farmers.

Figure 56. Distribution of sample seed packs to VBAs in Central Region.

40 varieties of maize, rice and sorghum were tested on station in the different agro-ecological zones of Togo by the Togolese Institute of Agronomic Research (ITRA). Ten were released, among which

Figure 57. Plot of Zam Zam cowpea variety produced by Le Paysan seed company

are OPEABUROO and LEGACY 2 (hybrid maize), Jasmine 85 and Exbaïka (rice) and Sorvato 8 and 9 (sorghum). A total of 2.3 MT of EGS of improved varieties were produced and made available to seed companies. **Two local private seed companies, Le Paysan and DOMAH, were supported by the project which produced a total of 26.2 MT of certified seeds and 34,443 small packs of new improved varieties. Through the selection and training of 265 Village Based Advisors (VBA) by Togo's public extension agency, ICAT, 38,963 smallholder farmers were supplied with sample seed packs.**

In November 2023, SSG obtained additional funding from Alliance for a Green Revolution in Africa (AGRA) for a duration of 1.5 years. This support made it possible to increase the number of seed companies to four, to extend the project to two new regions, and to recruit and train a total of 16 agro-dealers. With funding from AGRA, SSG now supports the growth and development of four private, Togolese seed companies which have been trained in the production of hybrid maize for the first time in Togo. Through AGRA's support to SSG, ITRA, ICAT, and DSP continue their collaborations in four regions (Plateau-Est, Centrale, Kara and Savanna). Looking ahead, SSG aims to establish a network of agro-dealers to meet the increasing demand for seed of the new varieties in the regions where the project has been implemented.

Figure 58. Production field of hybrid maize of the variety Opeaburoo by DOMAH Seed Company, Kara Region.

Summarized Africa-Wide SSG Outputs

Table 1. Summarized Africa-Wide SSG Outputs

Country	Variety Trials Conducted	Varieties Released	Farmers Reached	Small Packs Supplied	VBAs Recruited and Trained	Early Gen. Seed (MT)	Certified Seed Production (MT)	Training Sessions Sponsored	Agro-dealers Trained	M.Sc. Fellow-ships. Awarded
Burundi	5	-	382,059	632,400	-	10.9	69.5	6	-	-
Cote D'Ivoire	-	-	1,002	13,000	247	6	-	1	10	-
Djibouti	12	4	982	6,000	42	2 kg	10 kg	2	-	-
DR Congo	14	2	87,515	382,152	-	1.7	102	10	28	-
Eritrea	7	1	24,930	56,000	919	3.8	941	6	-	6
Kenya	-	-	20,895	88,788	144	0.5	155	1	-	-
Ghana		-	701	1,205	27	0.5	3.4	2	-	-
Madagascar	84	28	14,112	19,791	268	12.1	136.8	5	-	-
Malawi	-	-	19,037	20,800	200	7.0	33.8	1	-	-
Senegal	-	-	14,017	17,000	50	6	-	2	-	-
Sierra Leone	-	-	16,233	40,000	200	-	-	1	6	-
Somalia	96	3	132,455	380,784	1,734	2	1612.1	10	125	4
South Sudan	10	15	52,045	174,230	360	6.7	1,053	6	-	-
Togo	40	10	38,963	34,433	276	6.8	132.2	6	16	-
TOTAL	**268**	**63**	**804,946**	**1,866,583**	**4,467**	**64 MT**	**4,238.8 MT**	**59**	**185**	**10**

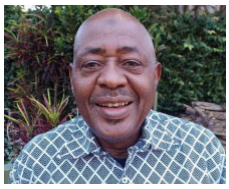
SSG Governance and Leadership

Key Staff

The key roles within the SSG are outlined in the organization's current organogram. Each position is crucial in ensuring the successful implementation of the organization's mission.

Dr. Joseph DeVries, President

Ph.D. in plant breeding and genetics from Cornell University and has been at the forefront of African agricultural development for over 30 years, including in the drought-ravaged Sahel in the 1980s and conflict-torn countries in the 1990s. In 2006, as Deputy Director with The Rockefeller Foundation, he co-founded AGRA, designing and then leading AGRA's flagship $150 m seed initiative. He provides overall leadership to ensure that SSG and partners are working towards a common goal.



Dr. Issoufou Kapran, Vice President Programs - West and Central Africa, Ph.D. in plant breeding from Purdue University. He has developed numerous improved varieties of sorghum in his home country of Niger and, as a program officer with AGRA, helped to develop nearly 50 local private seed companies in 7 African countries. After 10 years at AGRA, he joined ICRISAT to promote the new improved sorghum, millet and groundnut varieties in the West Africa subregion.

Ms. Bridget Kiptanui, Chief Operating Officer, holds a Bachelor's degree in Economics and Sociology and is a Certified Public Accountant (CPA K). She is undergoing an MBA (Finance) program at the Catholic University of Eastern Africa. She has over seventeen years' experience in accountancy, finance and grants' management having served as the Grants and Finance Manager at Living Goods Kenya, Senior Finance Officer at Alliance for Green Revolution in Africa (AGRA) and as Country Accountant at KickStart International. Prior to that, she worked as a Project Accountant at VSF-Suisse. Bridget is an expert in project/donor funded Financial Management having worked with USAID, European Union (ECHO), Bill & Melinda Gates Foundation and the Rockefeller Foundation funded projects among other international donors.

She provides professional management of SSG's budgets, financial resources, assets, systems/processes, financial reporting, audits, and regulatory compliance in accordance with applicable financial reporting & auditing standards and appropriate legislation.

Dr. Tchala Noudifoulè, Regional Coordinator West & Central Africa. Dr. Tchala holds a Ph.D. in plant breeding from the West Africa Centre for Crop Improvement, WACCI (University of Ghana, Legon), a Master's degree in Plant Protection and Breeding at the University of Ouagadougou (Université Joseph Ki-Zerbo) and a BSc degree in Agronomy from the University of Lomé. Prior to joining SSG, he was the Director of the Littoral agronomic research Center (Centre de Recherche Agronomique du Littoral – CRAL) of the Togolese Institute for Agricultural Research (Institut Togolais de Recherche Agronomique – ITRA). He joined ITRA as an Agronomist in 2009 and in 2019 and was later appointed the leader of the National maize program where he served as a maize breeder

Ms. Irene Mughi, Senior Program Officer, holds a M.Sc. in Plant breeding and seed systems from Makerere University and a Bachelor of Science degree in Agriculture (Crop Science major) from the University of Nairobi. She is currently undergoing a PhD program in Plant Breeding and Genetics at the University of Nairobi. Irene has experience in plant breeding majorly in bean breeding. She has previously worked as a research assistant at Kenya Agricultural and Livestock Research Organization (KALRO) and at International Centre for Fertilizer Improvement (IFDC). She has experience in agricultural research-breeding and office administration.

Board of Directors

SSG has a Board of Directors consisting of 3 members (the chairperson, the treasurer, and the secretary) responsible for establishing management policies, overseeing the governance of the organization, and making critical decisions.

Dr. Namanga Ngongi, Board Chairperson, Ph.D. in Agronomy/Crop Science from Cornell University. He was the president of the Alliance for a Green Revolution in Africa (AGRA) from 2007-2012. He has diverse professional experience at national and international levels in areas related to agriculture, food security and management of international organizations. In 1980, he was appointed Representative to the United Nations (UN) food agencies in Rome. He joined the World Food Program (WFP) in 1984 and became Deputy Executive Director in 1994. In 2001 he was appointed Special Representative of the UN Secretary General to the Democratic Republic of Congo and led the peace keeping mission (MONUC) for two years.

Dr. Wilson Songa, Board Treasurer, Ph.D. in Plant Pathology from the University of Reading, UK. He is a Senior Advisor for Strategy and Partnerships at Syngenta Foundation for Sustainable Agriculture. He has over 19 years of experience in the agriculture sector, particularly in national agricultural research systems and at senior management at various institutions and government ministries, representing Kenya in various capacities at local, regional, and global agriculture sector committees and forums. He has served as Agriculture Secretary and Principal Secretary in the Kenyan Ministry of Agriculture, Managing Director of Kenya's Horticultural Crops Development Authority, and as CEO and Secretary of the Pest Control Products Board. He has also held various senior leadership and research roles at the Kenya Plant Health Inspectorate Services (KEPHIS) and at the Kenya Agricultural Research Institute (KARI). Dr. Songa has served on the board of various organizations including TechnoServe Kenya, Agriculture and Climate Risk Enterprise, and the Technical Centre for Agricultural and Rural Cooperation in the Netherlands.

Ms. Aline O'Connor, Board Secretary, MBA in Finance from the University of Chicago and a Bachelor of Arts degree from Georgetown University. Ms. O'Connor is the Founder and Director of Agri Experience, Ltd. a Nairobi-based consulting firm focused on seed systems development in Africa and developing a new generation of African seed sector specialists on the continent. Prior to Agri Experience, she was the CEO and co-founder of Channel Bio Corporation, a large American seed company. Her work in Africa since 2007 has taken her to 17 countries and 150+ field visits with African seed companies, including as a consultant for AGRA's Program for Africa's Seed Systems, the Bill and Melinda Gates Foundation, and various projects funded by UKAID and USAID. Ms. O'Connor taught for six years at the University of Nairobi's Seed Enterprise Management Institute (SEMIs) and for seven years in the PhD crop breeding program at the University of Legon (Ghana) at the West African Center for Crop Improvement. In addition to 28+ years in the seed sector, she spent 10 years in the international commercial finance sector, rising to the level of Vice President at First Chicago Corporation, now part of J.P. Morgan. She has served on the Investment Committee of the African Seed Investment Fund, the Investment Sub-Committee of AgDevCo's Smallholder Development Unit, and on the Board of Directors of Georgetown University, Washington, D.C.

SSG Investments during the period 2019-2024

SSG has received from its donors a total of US$16,101,692 during the period 2019 to 2024. 70% of this amount is used in the implementation of the projects in the various countries while the remaining 30% is for operation costs. We have conducted field-based activities in 15 countries, and feasibility studies and seed systems analyses in 14 countries, expanding our footprint to a total of 29 countries. Figure 59, Figure 60, and Figure 61 below show budget amount per project country, investment by project components, and the donors for each country, respectively.

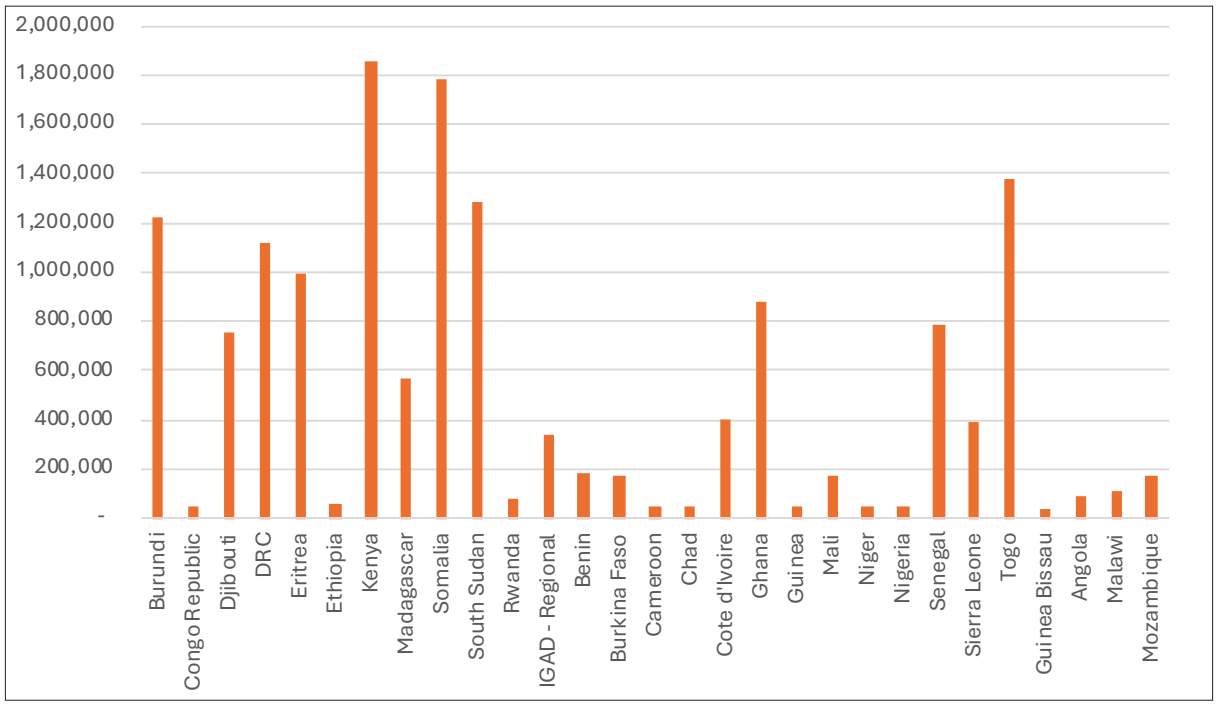


Figure 59: SSG investment per country

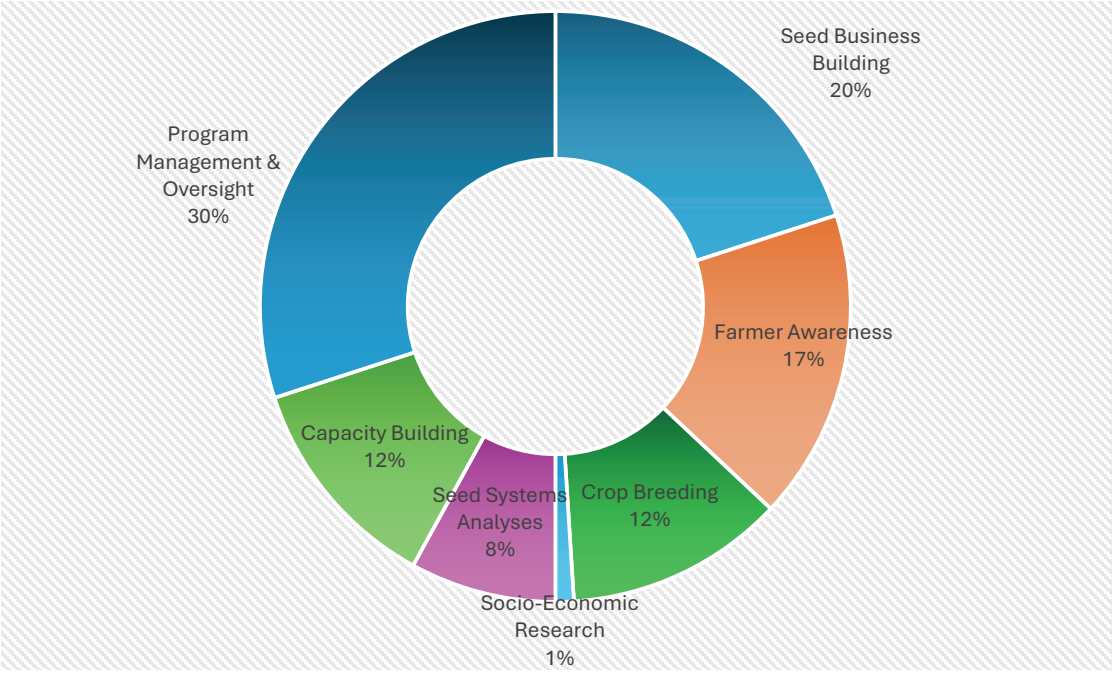


Figure 60: Investment by components

SSG collaborates with various partners to implement these components. The partners for the key project components are presented in Table 2 below.

Table 2: Partners for the key project components by country

#	Country	Crop Breeding (EGS Production)	Seed Business Building (Certified Seed Production)	Farmer Awareness Creation
1	Burundi	• ISABU (Institut des Sciences Agronomiques du Burundi)	• Coop Eden • Coop Hagurukadufushanye • Entreprise Semencière de Mabuga (ESM) • ABPRC (Institut des Apotres du Bon Pasteur Et de La Reine du) • SETRACO (Seed Trade Company Ltd) • IIZIM: "Ikigo c'Imbuto Zirobanuye I Muyaga" (Improved Seed Center of Muyaga) • Society Ikoraneza	• DGMAVAE (the General Directorate of Mobilization for Self-Development and Agricultural Extension) • VBAs
2	Cote d'Ivoire	• CNRA (Centre National de Recherche Agronomique de Côte d'Ivoire)	• BILOHF • GRACI	• ANADER (National Extension Service for Rural Development) • VBAs
3	Djibouti	• Djibouti- MoA • WorldVeg • ILRI (International Livestock Research Institute)	• Individual Seed Producers	• VBAs
4	DR Congo	• INERA (Institut National d'Études et de Recherches Agronomiques)	• AgriForce • ETS Munga • EPH SARL • Bon Berger • MImosa	• Local NGOs (RIKOLTO & SARCAF) • Bon Berger • MIMOSA • VBAs

#	Country	Crop Breeding (EGS Production)	Seed Business Building (Certified Seed Production)	Farmer Awareness Creation
5	Eritrea	• MoA- National Agricultural Research Institute (NARI) • CIMMYT		• MoA- Agricultural Extension Department • VBAs
6	Ghana	• SARI (Savanna Agricultural Research Institute)	• IWAD Seed Company • ANTIKA Seed Company	• Regional extension teams under MOFA: Extension division UWR Extension division UER Extension division NER
7	Guinea-Bissau	• INPA (Instituto Nacional de Pesquisa Agraria) • IER (Institut de l'Economie Rurale)		• VBAs
8	Kenya	• KALRO • KEPHIS	• Chemeron Ltd • Dryland Seed Limited • Tegemeo Cereals Enterprise Limited • Inyamandu CBO	• FIPS-Africa • VBAs
9	Madagascar	• FIFAMANOR • FOFIFA	• AGRISEM • PhileoL • RELHARF • DREA • LOVA CMS • ANKAZO	• MBF (Mohammed Al Barwani Foundation) • AINA • FIFATA • MoA Extension • VBAs
10	Malawi	• MoA-DARS (Department of Agricultural Research Services)	• Mgommera • MUSECO	• MoA- Department of Agricultural Extension Services (DAES) • VBAs

#	Country	Crop Breeding (EGS Production)	Seed Business Building (Certified Seed Production)	Farmer Awareness Creation
12	Senegal	• ISRA (Senegal's public agricultural research institute)	• SEDAB Seed Company • Fatou SARR	• VBAs • RESOPP (Réseau des Organisations Paysannes Et Pastorales du Sénégal)
13	Sierra Leone	• NARC-SLARI (Njala Agricultural Research Center-Sierra Leone Agricultural Research Institute • RARC (Rokupr Agricultural Research Centre)	• African Seed Company • Seed Tech International	• MoA Extension • VBAs
14	Somalia	• Somalia- Ministry of Agriculture and Irrigation • Filsan Seed Co. On behalf of MoAI	• Filsan Seed Co. Ltd • CSET • Horn Agro • Kulmiye • Gaalooge	• MoAI Extension • VBAs
15	South Sudan	• MAFS (Directorate of Research Ministry of Agriculture and Food Security)	• Pro-Seed • Seed Grow • Green Horizon • Agroganics • Smart Seed	• Base Net • Farm Stew • VBAs
16	Togo	• ITRA (Institut Togolais de Recherche Agronomique)	• DOMAH • Le Paysan • SPPID • ETS Talipak	• ICAT (Initiative for Climate Action Transparency) • VBAs

Figure 61: Donors for each country during the period 2019 to 2024

Supported by:

In partnership with:

SEED SYSTEMS
GROUP

Because *All* Farmers Deserve Good Seed

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