

# GLOBAL SUPPORTING SEED SYSTEMS FOR DEVELOPMENT ACTIVITY FY21 ANNUAL REPORT

October 1, 2020 – September 30, 2021



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**Photo credit:** David Snyder (CRS)

### **DISCLAIMER**

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## Acronyms and Abbreviations

The Alliance	Alliance of Bioversity International and CIAT
AE	Agri Experience
AGRA	Alliance for a Green Revolution in Africa
CBSP	Community-based seed production
CGIAR	Consultative Group on International Agricultural Research
CSA	Central Statistical Agency
DiNER	Diversity for Nutrition and Enhanced Resilience
EGS	Early Generation Seed
EHAR	Emergency, Humanitarian Aid and Resilience
gFSC	Global Food Security Cluster
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IFDC	International Fertilizer Development Center
INRAB	Institut Nationale des Recherches Agricoles du Benin
INERA	Institut National pour l'Etude et la Recherche Agronomiques
KALRO	Kenya Agricultural & Livestock Research Organization
KEPHIS	Kenya Plant Health Inspectorate Services
NARS	National Agricultural Research System
OI	Opportunity International
PABRA	Pan-Africa Bean Research Alliance
PIA	Participatory Impact Assessment
QDS	Quality Declared Seed
R-SSSA	Rapid-SSSA
S34D	Feed the Future Global Supporting Seed Systems for Development activity
SVF	seed voucher fair
SMS	Short Message Service (text message)
SSA	Sub-Saharan Africa
SSSA	Seed System Security Assessment
STAK	Seed Trade Association of Kenya
TASAI	The African Seed Access Index
TOSCI	Tanzania Official Seed Certification Institute
WCDI	Wageningen - Center for Development Innovation

# I. Executive Summary

## Introduction

The Feed the Future Global Supporting Seed Systems for Development activity (S34D) is a five-year Leader with Associates Award, funded by Feed the Future Initiative through the Bureau for Resilience and Food Security (RFS) and by USAID through the Bureau for Humanitarian Assistance (BHA). Catholic Relief Services (CRS) is leading this consortium with support from partners that include: Agri Experience (AE), the Alliance of Bioversity International and CIAT (the Alliance), Pan-African Bean Research Alliance (PABRA), and Opportunity International (OI). S34D's Life of Activity (LOA) runs from August 2018 through August 2023.

The overarching goal of S34D is to improve the functioning of national seed sectors in focus countries in an *inclusive* manner: this 'inclusive' approach aims to support all farmers, including women farmers and youth. S34D aims to meet the activity goals by increasing the capacity of the formal and informal seed systems and humanitarian and relief programming to sustainably offer quality, affordable seeds of a range of crops (**Objective 1**) and increasing collaboration and coordination among all seed systems actors and actions (**Objective 2**).

This activity is unique in that the overall strategy proposes to generate a broader view and integration of the seed systems to promote resilience in two ways. **Objective 1** works across formal, informal and emergency seed sectors to enhance the resilience of people and livelihoods through increasing farmers' access to improved seeds for a range of crops, including climate-resilient varieties. **Objective 2** builds the resilience of seed systems through interactions and synergies among formal and informal seed systems and humanitarian seed interventions. This integrated approach is further strengthened by cross-cutting IRs that seek to improve policies and practices that support pluralistic, resilient seed systems, rather than focusing on individual parts of each system. An important aspect of the activity is to gain a better understanding about how seed systems interact and where there may be positive or negative market interactions. In the case of detrimental actions, S34D intends to develop interventions to address market distortions.

## FY21 achievements

S34D was able to reach many more participants than initially targeted. This is primarily due to several trainings that were conducted remotely due to ongoing pandemic covid-19. Similarly, due to expected delays on the ground and mobility restrictions, as well as a few incidents with consultants dropping out due to ill health and/or death, a few activities could not be completed within the fiscal year. But overall, S34D was able to accomplish several tasks.

First, under the formal sector, S34D validated and completed the Uganda seed profile (findings disseminated and shared with the USAID Uganda), continued working with the Seed Control and Certification Institute in Zambia on the e-learning training course for private and public seed inspectors. Over the past year SCCI trained 147 seed inspectors (35 women) from Zambia, Malawi and Mozambique via Zoom. 134 of them took the exam and from those 113 passed (26 women) the tests. An earlier OI activity from FY 19 and 20, financing potential reports for Niger, Kenya, Uganda, Malawi and Tanzania, was presented to USAID, validated and disseminated. In Kenya, IFDC piloted a micro-franchise last mile model with FreshCo Seed Company and reached 203 farmers (154 women), 24 agro-dealers (7 women), 27 CBO leaders (3 women) and 15, only men, motorcycle riders.

Second, under the informal sector, the Alliance piloted the second season of the niche market business model and CRS used the Point of Sales (PoS) survey to gauge variety performance and farmers' feedback on adoption of high-yielding varieties of bean in Kenya. The Alliance and PABRA, in collaboration with

INERA, conducted an informal seed systems assessment in the DRC. Although, the assessment is yet to be finalized, it identified two potential models for testing and scaling.

Third, under the emergency and resilience seed sector, a fragile state seed intervention was conducted in the DRC and Haiti, and seed fair recommendations from Southern Africa were implemented with support from S34D under a Bill and Melinda Gates Foundation-funded project in Uganda. Nine international NGOs tested the Rapid SSSA (R-SSSA) in seven countries. A study on designing seed vouchers and fairs for resilience and/or long-term programming was completed, and the report is under review by USAID.

Under the cross-cutting activities, Agri Experience completed the 'stop bad seed' campaign in Tanzania and shared the report with TOSCI and USAID Tanzania. Agri Experience continued working on piloting the standard seed protocols with 67 outgrowers, KEPHIS, and seed groups Inyamandu, Tegemeo and TANAFACO Seeds. 106 MT of OPV sorghum, green gram and cowpea were sampled and tested in the pilot under standard seed. Sticker labels have been issued for 2.3 MT of standard seed which is now ready for sale. CRS and Oxfam Novib partnered together to conduct an empirical study to assess operational efficiency of seed producer groups in Vietnam, Zambia, Uganda, Guatemala and Niger. The report is forthcoming early FY22.

Under the Ethiopia Mission buy-in, CRS and NML completed two sets of six seed regulatory system maps: one set for the current seed law and one set for the proposed changes in the seed law. From a literature review, and analyses of different seed indices available, S34D concluded that very little is known about forage seed system. S34D advanced with national partners in Ethiopia to develop a framework that assesses forage seed system and collect data from partners to produce a forage seed system dashboard. In addition, S34D completed the forage seed system and feed reserve study for Ethiopia that proposed three economically viable business models for outer years. The findings were disseminated through a global webinar. Furthermore, S34D developed a stellar seed demand forecasting assessment for Ethiopia. Although demand forecasting is a normal and regular exercise in Ethiopia, to date there was no document nor manual nor tool that shows or describes how the process is carried out with various stakeholders on the ground. S34D expects the recommendations that were generated and validated subsequently would serve as a tool to modernize the forecasting approach in Ethiopia.

Several key learning questions from the S34D learning agenda were explored this year. The MEL chapter details those. Similarly, on the dissemination front, S34D led several global webinars, validation workshops, published blogs on the Agrilinks website, and reports to the DEC.

S34D engaged with several USAID Missions to conduct outreach and develop concept notes for potential activities under FY22. This resulted in a second buy-in from USAID Ethiopia, and potential new activities in Zambia, Cambodia, Timor-Leste, Sudan, and Guatemala. In FY22, S34D expects to deepen these relationships and expand S34D's horizon for the outer years.

Achieved outputs versus the planned outputs by activity can be found in **Annex A**. The FY21 Environmental Status Report can be found in **Annex B**.

## 2. Accomplishments versus targets

S34D Indicator	Indicator Name	FY21 Target	FY21 Achievement	% Target Achieved	Reasons for Deviation
OUT- 1	Number of seed actors trained	140	493	352%	Greater participation in last-mile prototype by IFDC in Kenya and smallholder participating in standard seed protocol piloting by Agri Experience in Kenya. As the SCCI Zambia zoom training was remote, more seed inspectors could be trained from neighboring countries.
OUT-2	Number of individuals participating (FtF EG.3.2)	430	812	189%	Greater participation in last-mile prototype by IFDC in Kenya and smallholder participating in standard seed protocol piloting by Agri Experience in Kenya. For the niche market model, more farmers participated from both western and eastern Kenya counties.
OUT-4	Number of models	3-2	2	100%	1 dropped off as Burundi activity was cancelled. Thus, the targets were revised, and we are stating 100% target achieved.
OUT-5	Number of studies that have fulfilled all criteria	9 5	1	20%	4 out of 9 dropped off because Burundi activity and the Covid19 assessments in Ethiopia were cancelled. Therefore, target achieved is 20%. The other studies are completed but pending validation and dissemination workshops / webinars before they can be counted.
OUT-6	Number of tool kits developed	7	0	0%	These tools have been developed or are in advanced stage. However, they are pending validation and dissemination and hence could not be accounted for as completed.
OUT-10	Number of seed policy road-maps developed	8 6	0	0%	2 had to be dropped off as activity in Myanmar was cancelled. The remaining 6 seed regulatory system roadmaps in Ethiopia are completed. They are also validated in small groups (following covid protocols) in Ethiopia. However, we would like to conduct a broader workshop dissemination remotely with all the national stakeholders in November, followed by a global dissemination through an Agrilinks webinar in early December. Once those are done, we could say the maps are completed.
OUT-11	Number of inclusive seed policy dialogues facilitated	9 3	2	67%	4 had to be dropped off as RIMI was discontinued and the activity in Myanmar was cancelled. Three were dropped off as the activity to create a policy hub was cancelled. We replaced the covid alerts in Ethiopia with the policy and directives activity, adding 1 target. This means the revised target was 3, out of which 2 dialogues are facilitated – one on standard seed protocol by AE, and one on last-mile uberization in Kenya / niche market by the Alliance.
OUT-12	Number of evidence-based seed policy briefings developed	4	1	25%	They are in advanced stage and is targeted to be finished by Q1 FY22. For the global case study with Oxfam Novib the scope increased from 3 to 5 countries and took up additional time for the analyses.
OUT-14	Number of tools and technologies generated and/or augmented on seed supply and quality	3 2	1	50%	Even though the RIMI tool for Tanzania was finished, due to dropping of the activity, the target is changed from 3 to 2. S34D finished developing the seed demand forecasting analyses template / tool for Ethiopia. The other tool, forage seed informatic framework is well-advanced. It is targeted to be disseminated in FY22-Q1.
OUT-15	Number of feeds received and /or forwarded	100	744	744%	More number of farmers responded to the SMS code for RIMI in Tanzania than expected. S34D also collected farmer feedback from both western and eastern counties in Kenya on the niche market model (dissemination of HIB varieties).



## 3. Summary of Accomplishment by Sub IR

### 3.1 Formal Seed Sector activities

#### IR 1.1 Constraints in formal seed systems identified and mitigated

In this year, the focus of the formal sector work included finalizing the (i) Uganda seed sector profile, (ii) making further progress on the testing of standard seed protocols with the private sector (reported in *CCIR 1.2.3 Implement and pilot Standard Seed Protocol in Kenya*), (iii) disseminating the two reports on seed financing potential in Niger and Sub-Saharan Africa, (iv) developing digital training materials for seed inspectors to reduce costs and mitigate the effects of COVID-19, and (v) finalize work on developing last mile strategies for local seed sales.

*Continue from FY20 – Activity 0.1 Develop country profiles and framework for engagement in Kenya, Uganda. To complete the Kenya profile, this activity will continue in FY22.*

**Achievements:** This year, S34D presented the Uganda seed profile to the national stakeholders, USAID Uganda and USAID Washington. Feedback was incorporated in the final report. This report, the profile, focused on four aspects of the seed sector in Uganda and the interactions between them – the (i) formal seed system, (ii) semi-formal<sup>1</sup> or Quality Declared Seed system, (iii) informal seed system, and (iv) emergency seed provisioning. It examined current strategies for seed sector development and made recommendations for ways in which more integrated, mutually supportive seed systems could be promoted at the broad, sectoral level, to increase smallholder farmers' access to quality seed of improved varieties.

When viewing the full range of staple food crops grown by farmers in Uganda, the majority (85-89%)<sup>2</sup> of seed planted by smallholder farmers came from informal sources, i.e., farmer-saved seed, and seed from neighbors and local markets. Informal sector seed includes seed of both improved varieties, which is recycled seed from an earlier generation of formal sector seed, and local varieties. The remaining 11-15% of seed planted by smallholders is certified seed purchased through the formal sector seed system. Formal seed is typically purchased from seed companies and agrodealers but can be purchased by governments and institutions and then provided for free or on a subsidized basis, through government schemes and donor-funded projects. Quality declared seed, (QDS) is considered formal seed, as it is a recognized seed class and is derived from a known source of foundation seed.

Seed of improved varieties that are preferred by farmers commonly flow from the formal sector to the informal seed sector, illustrating the interaction between the two seed systems. The formal seed system is highly differentiated by crop and by seed type (hybrid versus non-hybrid) and focuses largely on hybrid seed for maize and vegetables. Use of formal sector seed by farmers can rise to over 80% for commercial vegetables and 30-40% for maize in high production areas. Therefore, the seed market is highly segmented.

As a means of encouraging more farmers to buy quality seed, the national seed policy was changed in 2014 to allow the production of Quality Declared Seed (QDS), a less stringent seed class than certified seed. This has led to several efforts from the development community to establish farmer seed producer groups to grow and sell QDS seed for potato, beans, soybean, rice and groundnut. QDS has direct traceability to certified foundation seed but requires fewer inspections and has less rigorous production requirements and can therefore be supplied at lower cost to farmers. Typically, QDS is produced through semi-commercial methods, most commonly with technical and financial support from publicly funded projects.

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<sup>1</sup> Semi-formal in the sense that QDS is a recognized and legal seed class but is often produced within a less formal inspection and production system, often with a more informal, farmer-based business model.

<sup>2</sup> Primary data collected from 3 regions in 2013 show that 89% of seed planted by farmers is sourced from informal sources, whereas the figure provided in the 2018 Seed Strategy is 85%.

Whilst this approach has been successful in the project context, volumes of QDS seed remain relatively low, ranging from approximately 2,000 – 4,000 MT annually in recent years for all crops, varying according to specific projects for specific crops such as beans and rice. There is little evidence of QDS production being sustainable on a commercial basis, due to weak links to foundation seed and lack of commercial capacity within farmer groups. Although QDS is part of the formal seed system, since it is produced to meet defined quality standards and subject to regulatory oversight, it is often referred to as “semi-formal” because QDS cannot be produced by registered seed companies and therefore is mainly multiplied by farmer seed producer groups.

The formal seed sector provides certified seed, which follows a more rigorous certification process and a clear labelling system. Commercial seed companies mainly focus on the production and sale of hybrid maize, OPV maize, hybrid vegetables, with a lesser provision for beans and sorghum. In 2017, the Ugandan formal seed sector produced approximately 22,000 MT of maize seed, of which 80% was hybrid and 20% OPV, as their main income generating products. Commercial seed companies also produced other crops, including beans at approximately 4,000 MT/ year, sorghum and rice at volumes that vary but may range up to 1,000 – 2,000 thousand MT/ year, and lower levels of other crops. There has also been a recent interest in African indigenous vegetable seed. The production levels of the non-hybrid seeds are however, at a much lower volume.

Based on the results of the seed sector review, within the Ugandan seed system, there has been a gradual erosion of the quality of certified seed which has been caused by several issues. There have been concerted efforts by Government and the emergency / humanitarian aid sector to provide subsidized and free certified seed to farmers who are deemed unable to afford these high producing seed. This demand along with a weak regulatory system, an under-funded Government inspection service and challenges within the foundation seed production has led to a major problem with seed quality and the rise of low quality or counterfeit seed. The “fake seed”, problem in Uganda has become endemic and this challenge is, at least partly, driven by the high and short term demands for certified seed from both Government and the humanitarian aid system. Although the team tried early on to apply a gender and youth lens, due to limited disaggregated existing data, this was not feasible.

**Learnings:** The seed sector profile report provides a series of recommendations in ways to mitigate the effects of low quality and fake seed in the formal system. These require both system wide upgrades into the early generation aspects of the system and an increased integration of public and private with regard to seed inspection and enforcement of seed regulations by the certifying agency. At the same time, the Government and the range of humanitarian and development organizations, should review their policies for distribution of free seed and consider longer term interventions that support the semi-formal and formal seed systems rather than work against it.

*Continue from FY19 – Activity 1.1.1.5: Explore new financing options to enable seed firms to expand their access and use of financial service providers (FSPs) to promote greater investment in seed production and sales in Kenya, Malawi, Tanzania, and Uganda.*

*Continue from FY20 – Activity 1.1.1.9: Develop an inventory of financial services to expand financing for seed sales from seed companies in Niger (RFS).*

**Achievements:** Two S34D reports were completed during the fiscal year, “Financial Service Provider Inventory Scan for Niger<sup>3</sup>” and “The Financing Potential of the Seed Sector in Sub-Saharan Africa<sup>4</sup>.” These reports provide country-level assessments of the supply-side financing gaps and opportunities within the agricultural financial services sector, specifically for the purpose of expanding access to financing for the seed sector. While the Niger report is a standalone paper, the regional report provides a regional overview as well as country-specific information for Kenya, Malawi, Tanzania, and Uganda.

<sup>3</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00X7PZ.pdf](https://pdf.usaid.gov/pdf_docs/PA00X7PZ.pdf)

<sup>4</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00X894.pdf](https://pdf.usaid.gov/pdf_docs/PA00X894.pdf)

S34D was able to formally present these reports to USAID representatives in DC, Kenya, Malawi, Niger, Tanzania, and Uganda in early March 2021.

**Learning:** Key findings from the reports included a strong potential demand for finance from the seed sector actors in Niger estimated to be \$6.5 million USD. Across the board, the design of agricultural loan products does not adequately meet the capital needs of seed sector actors, which inhibits demand for formal financial products from farmers and seed sector agribusinesses. Recommendations from both reports included providing technical assistance to financial service providers to design agricultural loan products specific to the capital needs of seed sector actors. S34D prepared a learning brief<sup>5</sup> on gender and seed financing based on OI’s reports. The overall learning suggests there is some movement in reaching women and male and female youth with agriculture-focused financial services, but much more is needed to ensure women as well as male and female youth can access and benefit equitably from seed-targeted financial services. A couple of the recommendations from this learning brief show that there is a need for: 1. Gender and Age Disaggregated Data, 2. more well-designed gender-inclusive financial products, 3. women and male/female youth awareness of available financial products.

### Sub IR 1.1.2 Seed availability of climate – smart crops increased, through enhancing EGS capacities of firms and producers

There were no activities implemented under this Sub IR.

### Sub IR 1.1.3 Capacities of local seed actors strengthened

**Continue from FY20 - Activity 1.1.3.1 (FY20 1.1.1.6): Digital training of seed inspectors and samplers in Zambia (core).** To complete the e-learning platform, this activity will continue in FY22.

**Achievements:** The seed industry appreciated the innovative approach of conducting seed inspectors’ training using virtual platforms. Virtual training has attracted more participants than physical trainings which SCCI conducted in the past. With previous funding from Feed the Future Initiative and USAID in FY20, the Southern Africa Seed Trade Project and S34D supported SCCI in setting up their seed inspectors’ training via the Zoom platform. Although the virtual learning relies on the availability of good internet connectivity, the SCCI conducted three virtual trainings during FY21 using Zoom for Zambian, Mozambican and Malawian (seed inspectors) participants (**Table 1**). An assessment was conducted for each training by administering an exam and in all cases more than 84% pass rate was recorded with only a few individuals from both Malawi and Mozambique not able to take part in the exams. For Zambia, the training consisted of one week of online training while the second week was designed for physical practical training in the field. The field practical sessions were meant to ensure that theories learnt during virtual learning were internalized by participants. The participants took in-person exams in Lusaka centrally.

**Table 1: Number of Seed Inspectors trained across Zambia, Malawi and Mozambique in FY21.**

Country	Total trained	Public sector	Private sector	Male	Female	Number examined	Number passed exams	Dates training conducted
Mozambique	29	20 (8F)	9 (0F)	21	8	18 (4F)	17 (3F)	19-23 Oct 2020
Malawi	21	12 (3F)	9 (0F)	18	3	19 (2F)	18 (2F)	26-30 Oct 2020
Zambia	97 (20 <35 y.o.)	22(6F)	75(18F)	73	24	97(24F)	78 (21F)	12 April -7 May 2021
<b>Totals</b>	<b>147</b>	<b>54 (17F)</b>	<b>93 (18F)</b>	<b>112</b>	<b>35</b>	<b>134 (30F)</b>	<b>113 (26F)</b>	

<sup>5</sup> S34D FY21 SAR: [https://pdf.usaid.gov/pdf\\_docs/PA00XVC3.pdf](https://pdf.usaid.gov/pdf_docs/PA00XVC3.pdf)

The SCCI is developing an online e-learning platform which will facilitate training of seed inspectors online as opposed to using Zoom. The seed inspectors E-learning platform that is being developed, covers all crops of importance in Zambia. These include maize, sunflower, beans, soybean, wheat, rice, sorghum, groundnuts, sweet potato, pasture legumes, such as dolichos lablab and sun hemp, pasture grasses, cotton and cassava. The development process has several phases, key of which is the development of Instructional Design Worksheets (IDWs). Out of the 22 target IDWs, 8 have been finalized and are being moved from the IDW to the software E-Learning modules which is needed prior to uploading them onto the platform, the Learning Management System (LMS). **Table 2** below indicates the status of all the 22 IDWs as of the end of FY21. Most of the IDWs are expected to be finalized in the first quarter of FY22.

**Table 2: Status of Instructional Design Worksheets development**

Unit Number	Unit Title	Specific Crops	IDW status
1	Seed Industry: Context and Concepts	-	Completed
2	Seed Certification and Legislation	-	Completed
3	Basics of Plant Breeding	-	Completed
4.1	Variety Registration and Protection procedures	-	80% Complete
4.2	Principles of Seed Field Inspections	-	Less than 50% Complete
4.3	Procedures of Seed Field Inspections	-	80% Complete
4.4	Seed Testing	-	50 -80% complete
4.5	Control Growing: Pre and Post Control	-	50 -80% complete
5	Principles of Seed Multiplication	-	Completed
6.1	Seed Multiplication: Legumes	(1) Bean (2) Soybean	80% Complete
6.2	Seed Multiplication: Maize	(3) Maize	50 -80% complete
6.3	Seed Multiplication: Other Cereals	(4) Wheat (5) Rice	Less than 50% Complete
6.4	Seed Multiplication: Cotton	(6) Cotton	50 -80% complete
6.5	Seed Multiplication: Sorghum	(7) Sorghum	Completed
6.6	Seed Multiplication: Root and Tuber	(8) Cassava (9) Sweet potato	Completed
6.7	Seed Multiplication: Oil crops	(10) Groundnut (11) Sunflower	80% Complete
6.8	Seed Multiplication: Pasture Legumes	(12) <i>Dolichos</i> (13) Sunn hemp	50 -80% complete
6.9	Seed Multiplication: Pasture Grasses	(14) <i>Chloris gayana</i> (15) <i>Panicum maximum</i>	50 -80% complete
7.1	Principles of Seed Sampling	-	80% Complete
7.2	Procedures of Seed Sampling	-	50 -80% complete
8.1	Seed Processing, Labelling and Blending	-	Completed
8.2	Seed Storage	-	Completed

The digital course is being set up to give participants, men, women and youth, access to content for a period of 3 months. It will allow participants to continue from one module to the next automatically, allowing each learner to do so at their own pace, which accommodates household and workplace responsibilities. The digital course has been streamlined to include only need-to-know information and essential additional resources. The digital training materials accommodate those with limited disabilities by including text, audio and transcripts of the audio. The content player also includes accessibility functions to further support the visually impaired. To encourage gender equality both male and female

course teachers (artwork and audio) have been included. Seed inspectors and farmers are portrayed in balance with their male counterparts.

**Learning:** Participants in the trainings sometimes encountered challenges in following training sessions due to poor internet connectivity in their locations. The work of developing IDWs has taken a bit more time than anticipated due to the unfamiliarity with the e-learning technical design requirements. Despite that, SCCI has completed 8 units, has almost completed 12 more, and in only two does substantial work remain.

Sub IR 1.1.4 Sustainable models with private sector players to supply quality EGS and QDS to a range of suppliers piloted and scaled using innovative financing

*Continue from FY20 - Activity 1.1.4.1: Last mile prototype: micro-franchise model roll out in Kenya (core).*

**Achievements:** The micro-franchise model prototype was rolled out during the short rain season in the semi-arid lowlands of Tharaka Nithi in Eastern Kenya. The prototype targeted improved service delivery to farmers with improved seeds of non-maize cereal crops, such as sorghum, millet, beans, green gram, groundnut. The model consists of an anchor organization, like a seed firm that specializes in multiplication and distributing wide portfolio of crops suitable for local agro-ecologies. The anchor in turn is linked with a network of rural based micro-franchised entrepreneurs (MFE) to supply seeds to farmers at the last mile. This MFE model offered an opportunity to a seed firm to try out an innovative approach of getting their branded seeds (certified seeds) to farmers directly through the micro-franchises (input dealers), thus expanding the demand for and supply of improved varieties of non-maize crops, as preferred by the local communities and agro-ecologies. FreshCo Seeds was identified as an ideal anchor organization for piloting this model, as they were seeking to expand their non-maize crop portfolio of crops in the region. FreshCo's product portfolio also aligns with S34D's activity crop focus on legumes (cowpeas, beans, soybeans, green gram), and climate change tolerant, drought-tolerant varieties (sorghum, finger millet), and a wide variety of other crops that are important to small holder farmers.

During the short rainy season (October 2020 – January 2021), S34D was able to jointly conduct training activities with FreshCo, 24 agro-dealers (7 women), 27 CBO leaders (3 women) and 15 motorcycle riders (0 women). The farmers selected a field from a lead farmer and used that field as a demonstration field during the training activities during field days. S34D reached 203 farmers (154 women) during these field days. The following set of training and field days activities were implemented: i) capacity building of micro-franchises on sharing knowledge about improved varieties available for crops suitable for the local agro-ecologies, semi-arid region in Eastern Kenya, ii) hands-on training to motorcycle riders (boda-boda riders) engaged by the agro-dealers on basic seed handling practices for safe delivery, basic knowledge on seed varieties and iii) in partnership with the local agricultural officers (county level) and local MFE who set up their own demonstration plots at the farmer's fields to disseminate technologies (improved legumes and non-maize cereals varieties) through field days.

**Learnings:** FreshCo received positive responses from MFEs and farmers by engaging directly through a series of hands-on, targeted trainings and demonstration of specific seed varieties in farmer's fields. The micro-franchise model offered opportunities to FreshCo to engage with more agro-dealers and farmers, whom they would not have targeted had they only dealt with their town-based network of wholesalers. Previously, customer feedback was limited to what the wholesalers told FreshCo. Now they received firsthand feedback from last-mile farmers and MFEs, who tried FreshCo's certified seed varieties suitable

for that agro-ecological zone. This is helping FreshCo to adjust their messaging to accommodate farmer feedback, e.g. training needs. Another positive outcome for FreshCo was that this pilot offered them, through meetings and awareness, a platform to link with a network of MFEs, just before the short rainy season. This resulted in twice the normal sales for their branded seed; FreshCo sold all their Katumani Bean 56 (Kat-B56) stock after overwhelming response to their trainings. The firm reported selling 4 MT of cowpeas, 5 MT of Kat X56, and 4 MT of green gram N26, including 3 MT of Sorghum Gadam, in a region that they had not previously targeted. This gives them confidence to increase their seed production in subsequent seasons and expand activities in the areas that they had previously not targeted.

The training programs conducted by seed firms usually focused only on maize. This MFE pilot provided opportunities for the agro-dealers to look beyond maize and obtain first-hand information on seeds of improved varieties from FreshCo for their agro-ecologies.

The benefit for the MFEs in the pilot was that they were directly linked to the seed firms, allowing them to receive better prices, and source more crop seed varieties. Previously, these MFEs relied on town-based distributors and wholesalers. The MFE also welcomed the hands-on basic training on seed handling practices given to bike riders through the pilot. Keeping bike riders engaged in last mile seed delivery is difficult unless bike riders are employed through the MFEs. This is key in any future last mile mechanism, as this would ensure effective and timely product and knowledge transfers to last mile clientele.

## 3.2 Informal Seed Sector activities

### IR 1.2 Strengthened capacity of informal seed systems to offer a broader range of affordable, improved quality seed

S34D focused on two activities in the informal seed system. One activity was a collaboration with EHAR in the Eastern DRC that explored insights drawn from emergency practitioners working with informal traders, private sector and research (INERA). This activity also conducted an assessment with informal seed and planting material traders. The other activity was the second year, second season survey of the niche market business model in Kenya with motorbike riders, agrodealers, and seed companies. The first season report was completed<sup>6</sup>. Subsequently, stakeholder validation meetings were held where findings of the assessment and survey were discussed. Previous years' work in Tanzania on the analysis of the yellow bean corridor was completed and the report had been made public<sup>7</sup>.

#### Sub IR 1.2.4 Last mile delivery solutions through non-traditional partners and ICT strengthened

*Continue from FY20 - 1.2.4.1 (CCIR 2.3.1): Finalize Point-of-Sale pilot for the niche business model in Kenya, and disseminate the final second season report to complete the pilot in Kenya (core).*

**Achievements:** After the first season of this pilot in FY20, in FY21 the Alliance conducted and finalized the point-of-sale pilot for the niche market business model in Kitui, Machakos and Makueni counties in eastern Kenya. In September 2020, a baseline survey was conducted among 11 agrodealers. During the pilot, 334 (152 female, 182 male) farmers, 13 agro-dealers and 21 motorbike riders (*Bodaboda*) were interviewed. Post-harvest (February-March 2020) follow up interviews were conducted with 170 farmers (61 women) to ascertain their experience with the high iron bean variety, Nyota. A stakeholder validation workshop was held virtually on the 21<sup>st</sup> of May 2021 to present the preliminary findings and collect additional feedback. The completed second season report has been drafted. Nyota variety was preferred by men and women for its top attributes of high yield, early maturity, and high iron and zinc content. Male farmers (62 percent) purchased the Nyota variety more than the female farmers. The follow-up feedback survey among 205 farmers who bought Nyota showed that farmers were happy with the production of the variety relative to others even though the rains were erratic. Further, 79% (80% of women and 78% of men) said that they would use *Bodaboda* services in the future for seed access and complementary inputs. However, farmers identified gaps that could hamper Nyota seed uptake. These include i) limited awareness of the seed delivery services offered by *Bodaboda*; ii) difficulty in finding supplies for Nyota seed from local agro-dealers, and iii) the higher cost of the 2 kg pack of Nyota seed.

**Learning:** *Boda boda* riders play major role in seed and agro-input distribution either as convenient means or to reach remote farmers. They have a 'mutual' relationship with agro-dealers. Their validation of the niche market business model in seed delivery would benefit from a comprehensive cost-benefit analysis that brings to fore any potential economic and financial benefits to seed companies, agrodealers, *Bodaboda* and farmers, facilitate to professionalize the *boda-boda* systems and would inform policy implications on use of *Bodaboda* for last mile delivery of seed and complementary inputs. It was not clear from the learning if this model reduced women energy use and time commitment in accessing seed. Alliance/PABRA will plan a cost benefit analysis to shed light on reduced energy use and time commitment by farmers as they seek access to seed of improved varieties like Nyota.

<sup>6</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00XV64.pdf](https://pdf.usaid.gov/pdf_docs/PA00XV64.pdf)

<sup>7</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00XS8V.pdf](https://pdf.usaid.gov/pdf_docs/PA00XS8V.pdf)

### 3.3. Emergency, Humanitarian Aid and Resilience programming activities

Emergency, Humanitarian Aid and Resilience (EHAR) activities fall under IR 1.3 and IR 2.2. As such, the EHAR portfolio aims to strengthen the capacity of humanitarian actors to design and implement appropriate and impactful emergency seed intervention (IR 1.3) and to strengthen the interface between humanitarian and developmental programming for resilient, market-based seed systems (IR 2.2.).

#### IR 1.3 Strengthened capacity of emergency and humanitarian aid programs to respond effectively to acute and chronic stresses

EHAR capacity-strengthening activities are implemented alongside the Agriculture Working Group of the Global Food Security Cluster (gFSC)<sup>8</sup>, which was established in 2020 with inputs from S34D. The gFSC Agriculture Working Group is comprised of key actors involved in emergency agricultural interventions, including FAO, WFP, USAID, EU, and approximately 20 international NGOs. The Agriculture Working Group is also linked to the national and sub-national Food Security Clusters in over 30 emergency countries. As such, the gFSC Agriculture Working Group provides a solid support base and dissemination channel for the work of S34D's EHAR activities.

The effectiveness of working alongside the gFSC Agriculture Working Group for capacity strengthening is well-illustrated by the field testing of the Rapid Seed System Security Assessment (R-SSSA) tool developed under Activity 1.3.3.1. Nine gFSC Agriculture Working Group members took part in the pilots, and the process itself helped to develop their understanding of seed systems and their capacity for seed security assessments. In the case of IRC, their experience in taking part in the pilot R-SSSA prompted them to initiate their own internal review of emergency seed interventions to help improve their capacity.

#### Sub IR 1.3.1 Select emergency and humanitarian past actions assessed: focus on farmer evaluation, new varieties, and markets (local and formal)

Under this Sub IR, the S34D and CRS Uganda tested nine actions based on the recommendations from the 'Diversity for Nutrition and Enhanced Resilience (DiNER) Fairs and Voucher Programming: Evaluation and Learning in the Southern Africa Region' report (forthcoming). S34D supported CRS Uganda to develop and implement an actionable plan as part of a BMGF-funded project that was awarded to CRS Uganda to respond to floods in Eastern Uganda. Based on lessons emerging from the cash transfer and market studies completed to date, and the (on-going) FY19/20 DiNER evaluations in Southern African region, S34D developed an actionable plan under FY20 activity 1.3.1.4. This actionable plan was implemented in the BMGF-funded project in Uganda. The report of this work in Uganda was completed<sup>9</sup>.

**New Activity 1.3.1.1. Participatory Impact Assessment (PIA) of emergency seed interventions (OFDA core).** This activity will continue in FY22.

**Achievements:** This activity is being implemented in collaboration with the Global Food Security Cluster, specifically World Vision International. S34D will conduct assessments of selected emergency seed interventions implemented by CRS and World Vision in Uganda and Mozambique. Preparatory

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<sup>8</sup> See [https://fscluster.org/fsc\\_agriculture\\_wg/workinggroup/agriculture-working-group-0](https://fscluster.org/fsc_agriculture_wg/workinggroup/agriculture-working-group-0)

<sup>9</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00XS93.pdf](https://pdf.usaid.gov/pdf_docs/PA00XS93.pdf)



meetings have taken place with relevant CRS and WVI country staff. USAID Washington and S34D are currently in discussion with USAID Mozambique. S34D hopes to obtain concurrence in early FY22. Two international PIA experts have been contracted: one will undertake fieldwork in both countries, and the other will provide additional remote support. The process of recruiting and contracting national consultants and local fieldwork assistants is on-going in both Uganda and Mozambique. A Technical Oversight Team, which includes a gender advisor, has been established with the Evaluation Unit of FAO, who will use a similar methodology to undertake their own assessments in South Sudan and the DRC, the results of which will be incorporated into a synthesis report once the various assessments have been completed. Special attention will be given to any differences in impact in relation to women and youth; where appropriate, data will be collected from men and women separately, noting any differences in age, so that gender and age-based differences can be captured.

**Learning:** Given the widespread popularity of emergency seed interventions among donors and implementing partners, combined with a notable lack of evidence about their effectiveness, it is crucial that this activity is undertaken to the highest standards possible to ensure the credibility of the results.

### Sub IR 1.3.3 Tools and information systems to enhance emergency seed security responses

*Continue from FY20 - Activity 1.3.3.1 Develop tools for rapid, remote seed security assessments (core). This activity will continue in FY22<sup>10</sup>.*

**Achievements:** Field testing of the S34D developed Rapid Seed System Security Assessment (R-SSSA) was undertaken between September 2020 and May 2021. Nine organizations tested the R-SSSA in seven countries (**Table 3**).

**Table 3. International organizations who tested the RSSA in seven countries.**

Country	Organization	Dates
Myanmar	Solidarités	28 Sep - 23 Oct 2019
Uganda	Food for the Hungry	March 2020
South Sudan	IRC	February 2020
South Sudan	Samaritan's Purse	February 2020
Niger	IRC	March 2020
DRC	Samaritan's Purse	February 2020
DRC	CRS	February 2020
NE Nigeria	Mercy Corps/NRC	Jan-Feb 2020
Kenya	Concern/ACTED	November 2019

On June 9<sup>th</sup> and 11<sup>th</sup>, S34D co-hosted a remote workshop with the Agricultural Working Group of the Global Food Security Cluster to review the pilot phase for the R-SSSA. The presentations, discussions and break-out groups reviewed the results of the pilots, analysed the findings, and provided recommendations for the R-SSSA methodology and toolkit. A gender learning brief consolidated gender learning related to the R-SSSA.

<sup>10</sup> In S34D FY22 work plan under activity 1.3.3.5 Strengthen Capacity for Rapid Seed System Security Assessments

**Learning:** One of the findings of the pilot exercise was that there is significant demand among international NGO's for a rapid, simple, and less resource intensive seed system assessment than the standard SSSA. The R-SSSA exercise also enhanced participating organizations' understanding of seed systems thinking and seed systems in their intervention areas. Participants suggested modifications to the different tools in the R-SSSA toolkit but they agreed on maintaining the overall structure of the assessment. Few participants were able to complete the R-SSSA within the suggested 10-day time period so we are examining different means of accelerating the process. If not deemed sufficiently rapid, stakeholders may suggest a name change.

Many participants felt that R-SSSA training was inadequate and requested more materials and technical support. The methodology document currently only provides a skeletal training outline (complemented by materials and videos from seedsystem.org). S34D relied on each partner to build out trainings from the outline for each R-SSSA conducted and results were mixed. S34D will work on developing more complete capacity building materials and support further capacity building efforts in FY22.

Time savings in the pilot were not as significant as initially envisioned. This raises the question of whether the methodology should be defined as "rapid". Nevertheless, participants appreciated the simplicity of the approach - it is not resource intensive, is relatively easy to implement, and can be mobilized quickly during an emergency. Additional time and resources can be saved by automating the data analysis.

Expanding the sample size is recommended to enable analysis of results disaggregated by gender. The R-SSSA methodology recommended a reduced sample size as a means of accelerating the assessment. Most partners in the pilot were confident in their results from the smaller sample size. Nevertheless, with the small sample size, it was difficult to conduct a disaggregated analysis of population segments (particularly gender). A larger sample size would enable further breakdown of the results.

Of the possible response options laid out by partners, only two directly targeted women. This raises the question - did gender-related findings influence how the other responses would be implemented? Involvement of gender specialists in addition to gender sensitivity training would help ensure greater gender responsiveness in the response options.

The approach was also designed to work remotely, however no household interviews were conducted remotely and only a handful of key informant interviews were undertaken by phone. There was a variety of constraints to phone interviews including lack of cell phone ownership, spotty networks, low batteries, and informants (particularly vendors) being distracted. Considering these constraints, an entirely remote approach appears infeasible. At best, R-SSSA's can use mixed methods (remote and in-person) to gather primary data.

Continued support from seed system experts should be made available to organizations conducting R-SSSAs. Many partners had limited knowledge and experience with seed systems. They benefited from S34D and their HQ technical experts particularly in terms of interpretation of results and response analysis.

## 3.4 Integration and Collaboration between sectors

### IR 2.1 Strengthened interface and collaboration between formal and informal seed systems

Sub IR 2.1.1. Local seed network strategies (to interface, collaborate, and leverage) and local capacities are assessed.

There were no activities implemented under his Sub IR.

Sub IR 2.1.2. Crop and seed platforms that link formal and informal seed systems are catalyzed and supported

There were no activities implemented under his Sub IR.

Sub IR 2.1.3 Formal sector suppliers and NARs / breeders leveraged and linked with local farming communities and professionalized informal seed sellers

*NEW Activity 2.1.3.1. Establish farm-based bean seed enterprises in Burundi (OFDA core).*

This activity was cancelled, as S34D was not able to use central funds in Burundi.

Sub IR 2.1.4 Effects of market-based interventions on seed market operations and last mile delivery systems are assessed.

There were no activities implemented under his Sub IR.

### IR 2.2 Strengthened interface and collaboration between development and relief to resilient and market-based seed systems

In contexts that are subject to recurrent shocks and chronic stressors, seed-related interventions for building resilience must bridge the divide between humanitarian and development assistance. A common theme across the four activities undertaken under IR 2.2 is to understand how and how effectively different types of market-based programming (as understood from a humanitarian perspective)<sup>11</sup> can support and strengthen market development (as understood from a development perspective) within seed systems. Activity 2.2.2.1 reviewed different types of seed voucher and fair (SVF) interventions and concluded that SVFs alone are insufficient to build sustainable market linkages. Whilst it is assumed that cash-based interventions might be more effective than voucher-based interventions in promoting seed market development, preliminary results from Activity 2.2.3.1 suggest that there are a number of barriers that prevent the widespread implementation of cash transfers for seed security. Activity 2.2.2.2 revealed insights into the role of informal traders in emergency seed provisioning in fragile states, and found that some NGOs are merely using traders rather than supporting them. This missed opportunity for support to seed market development in fragile states has been explored in greater depth in DRC (Activity 2.2.3.2) which recommends enhancing the resilience of informal seed systems by linking informal traders to the national agricultural research institute and by building their knowledge about seed and varietal management, particularly for women and youth traders.

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<sup>11</sup> For more on market-based programming, see <https://www.calpnetwork.org/wp-content/uploads/2020/09/mbp-framework2may2017final-2.pdf>

## **Sub IR 2.2.2 Emergency and humanitarian responses that link relief to development, especially links to private sector and formal and biodiverse suppliers are developed and promoted.**

### *NEW Activity 2.2.2.1 Design seed vouchers & fairs (SVFs) for resilience and/or long-term programming (core).*

**Achievements:** This activity aimed to identify whether seed vouchers, seed voucher fairs, and their variants implemented through emergency and/or resilience programming can promote seed market development as part of longer-term programming (2-5 years). In addition to an initial literature review, five case study interventions were identified for detailed follow-up, including a review of documentation and stakeholder interviews. The draft findings were disseminated and validated through the CRS Markets Community of Practice Conference, held in July 2021. A comprehensive report was submitted to USAID for review, including actionable plans based on the lessons that emerged from the study, including 20+ years of seed vouchers and fairs across a wide variety of actors.

**Learning:** The main learning from this activity was that neither seed voucher fairs (SVFs) or Diversity for Nutrition and Enhanced Resilience (DiNER) fairs alone are sufficient to build sustainable market linkages. While SVFs and DiNER fairs have potential to temporarily increase vulnerable farmers' purchasing power, they can be used as a complement to other interventions in many ways. For example, DiNER fairs in Guatemala have been paired with cash transfers that allow for more flexible purchase options and last-mile agro-input dealers that can continue to provide sustainable access to high quality seeds. Interviews were conducted with traders and agro-input dealers who had participated in SVFs and revealed that many vendors benefitted from participation following the end of project funding. Some were able to expand the number of sales points while others were hoping for more SVFs to be funded. Overall, vendors did hope to continue serving project participants, but complementary interventions are necessary to establish more secure market connections. There is already substantial guidance on addressing gender to ensure women benefit from SVF and DiNER approaches; when exploring complementary interventions, there is a need to explore if their design needs to be adapted to ensure women and youth benefit equitably as buyers and sellers of seed.

### *NEW Activity 2.2.2.2 Support the emergence of enhanced and resilient seed sectors in fragile states, e.g. in DRC, South Sudan, Haiti (core). This activity will continue in FY22.*

**Achievements:** Data collection has been completed in DRC and Haiti, and the Haiti case study report has been drafted. While S34D is waiting for USAID South Sudan concurrence, a detailed scope of work has been agreed with the Wageningen Center for Development Innovation (WC DI) who will undertake the South Sudan case study under a partnership arrangement co-funded by Feed the Future and USAID under S34D and by the Dutch government under the WC DI Food Security and Nutrition Resilience Program (FNS-REPRO). An S34D Fragile States team workshop was held in September to present the preliminary findings from the literature review and from the DRC and Haiti case studies, with our WC DI partners providing additional insights from South Sudan.

**Learning:** A range of emergency seed interventions are being implemented through various modalities in all three case study countries. Community-based seed production (CBSP) was found to be common across all three countries, but there were issues with the quality of foundation seed, appropriate quality standards, and quality control. In Haiti, the local NGO supporting CBSP was told to reduce its production (possibly due to competition with lucrative government contracts). It is clearly possible to provide the training necessary for CBSP in areas of stability or "islands of peace" within fragile states. In South Sudan, CBSP groups are multiplying locally preferred varieties, not necessarily improved varieties, and the importance of local varieties needs to be more widely recognized. In DRC, some of the CBSP groups have become fledgling private seed companies. A seed market development opportunity exists to link traders with CBSP groups / emerging seed companies so that traders buy CBSP seed and then sell

direct to other farmers. Rather than buying and re-distributing seed and planting material, NGOs can provide training, capacity support and business linkages to CBSP groups / fledgling seed companies; capacity support and business linkages for traders; and cash / voucher support to enhance purchasing power of farmers.

One of the themes that emerged from the workshop was the role of informal traders vis a vis NGOs in seed provisioning in fragile states. In Haiti, the Madam Sarah informal traders seem to be a missed opportunity, whereas in the DRC, NGOs are working closely with informal traders. However, it was not clear whether the NGOs are merely ‘using’ the traders, or if they are ‘supporting’ them or helping to ‘develop’ their businesses<sup>12</sup>. There is no doubt that traders play a pivotal role in ensuring the resilience of informal seed systems – as such, they can be seen as a driver of seed security. But the data from the DRC appears to suggest that they would prefer to have business support than seed aid, suggesting that seed aid is perhaps undermining their businesses. Also in the DRC, it was noted that farmer seed producer groups sell good quality seed to traders and that some traders sell seed to NGOs. It is not yet clear whether this seed market being driven by donor-funded emergency seed distribution programs, or if it is a genuine demand for seed by farmers.

Key learnings from the Haiti case study include the important role of government in regulating seed markets. Unlike other fragile states, Haiti does not have a law governing certified seed or breeder rights. Many of the stakeholders interviewed called for a seed law to regulate these critical markets as an important first step. However, the current low level of government capacity to define, pass and subsequently enforce seed regulations, presents a major challenge that may require an alternative approach.

In general, the teams found that the key informants did not have very detailed information to respond to questions relating to vulnerability in the sense of powerlessness and marginalization. Moving forward, it will be important to explore these notions of vulnerability as they exist in fragile states. In addition to women, youth and people with disabilities, other types of vulnerable groups in fragile states include indigenous peoples, certain religious or ethnic groups, displaced households, returning soldiers, etc. The South Sudan case study will explore these multifaceted notions of vulnerability in more detail regarding seed system resilience.

### **Sub IR 2.2.3 Emergency and development seed programs to capture market opportunities are leveraged.**

S34D completed two reports, one for Nicaragua<sup>13</sup> and one for Guatemala<sup>14</sup>, under the FY20 activity 2.2.2.3 ‘Completion of DiNER studies in Southern Africa and Latin America’. S34D collaborated with CRS Nicaragua and Guatemala on these two assessments.

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<sup>12</sup> Within market-based programming, there is a distinction between interventions that use markets, those that support markets, and those that develop markets. See [https://www.crs.org/sites/default/files/tools-research/market\\_support\\_scoping\\_study\\_2may2017\\_final\\_email-web\\_0.pdf](https://www.crs.org/sites/default/files/tools-research/market_support_scoping_study_2may2017_final_email-web_0.pdf)

<sup>13</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00XS9H.pdf](https://pdf.usaid.gov/pdf_docs/PA00XS9H.pdf)

<sup>14</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00XVQD.pdf](https://pdf.usaid.gov/pdf_docs/PA00XVQD.pdf)

**NEW Activity 2.2.3.1** *Develop and test market-based emergency seed security interventions (core). This activity will continue in FY22.*

**Achievements:** A consultant has been contracted to lead a review of recent emergency cash transfer interventions for seed security, which will provide an update to the 2019 S34D report.<sup>15</sup> A call for information has been widely publicized in four languages through various networks and fora. The feedback to date has been compiled into a database of over 20 interventions which are currently being followed up on to determine which are appropriate to include as case studies in the review. The case studies will note whether there were any differences by gender and/or age in terms of overall outcomes and spending patterns.

**Learning:** Despite earlier indications that cash-based seed security assistance had perhaps increased in recent years, this does not appear to be the case. This misperception is thought to be due to the fact that the term “cash” tends to be used as a short-hand for cash and voucher assistance (CVA) among humanitarian actors. Many of the responses to the call for information referred to voucher-based assistance rather than cash per se.

The review is also exploring the barriers that prevent the use of cash transfers for seed security. One of the barriers is the issue of seed quality assurance. Another barrier reported by key informants is donor restrictions on the use of cash. Both points will be explored in greater detail by the review. Among the most common cases of cash transfers for seed security identified so far involve the use of cash for the purchase of vegetable seeds, often alongside direct distribution, or voucher-based provisioning of staple food crop seeds. Vegetable seeds tend to be imported and are generally available in sealed packets, so there are fewer concerns about seed quality.

**New Activity 2.2.3.2.** *Assess the role of market pull to enhance resilience of seed supply and respond to emergency needs under informal seed systems in South and North Kivu in DRC (core).*

**Achievements:** With existing South and North Kivu partners, the Alliance-PABRA was able to finalize the assessment of the role of the market pull to enhance resilience of seed supply in Eastern DRC. In collaboration with INERA, the team was able to collect and collate data from over 484 bean (77 men and 407 women) and 377 cassava (94 men and 283 women) traders spread across North (291 bean and 208 cassava traders) and South Kivu (193 beans and 169 cassava traders). 25 traders in North and 8 in South Kivu traded in both bean and cassava. Across the two commodities, the majority of the traders were between 30 and 45 years. A validation workshop bringing together the core team in the two provinces also took place and enabled incorporation of feedback complementary to collected data. The analysis brings out two seed supply models that can be tested to unlock existing opportunities: A formal (INERA) to informal seed supply system that allows INERA and Alliance-PABRA provide technical support to the pre-identified informal traders and local seed and planting material producers. The second one is a complete formal seed supply model involving INERA, formal seed companies, decentralized seed shops (agrodealers), culminating into farmers and or informal traders. Both models will receive technical support from Alliance-PABRA and INERA and other capacity enhancements and services to realize their full potential in growing the seed supply systems that can also support humanitarian efforts in the provinces. Interested humanitarian organizations, gauging from the interviews conducted and programming plans, will also be engaged in the support they can potentially offer to these stakeholders. A set of local seed entrepreneurs and informal planting material and potential seed traders (20 male, 10 females, 50% youth) were identified for the subsequent follow up activity in the FY22 involving testing of seed delivery models.

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<sup>15</sup> Study on cash transfers for seed security in humanitarian settings’ by Jules Keane, Dina Brick and Louise Sperling. See [https://pdf.usaid.gov/pdf\\_docs/PA00WH2D.pdf](https://pdf.usaid.gov/pdf_docs/PA00WH2D.pdf)

**Learning:** Seed (and planting material) of improved varieties are available through the informal systems in the two Kivus. There is a need, however, to partner more with all key stakeholders to improve the use of quality seed in more systematic and professional way. The study did identify the informal seed traders (of bean and cassava planting material) as critical to the process of information sharing amongst farmers. In exploring this potential came the revelation of lower participation of women and youth in the overall potential seed and planting material trade. Additionally, where they were active, their ability to make sales like their male (and older) counterparts was diminished due to multiple reasons including lack of access to capital and business skills. The lack of regular training on seed business and multiple taxes were some of the key concerns raised as impediments to unlocking benefits for the marginalized.

The Kivus, being major food production hubs in the DRC, could play a significant role in the country's food situation and humanitarian efforts if the capacity of informal seed traders is enhanced. There is a need to support women and female youth to overcome barriers to resource access and grow their seed businesses. Collaboration with NGOs and aligning their seed programming will help to address systemic challenges facing the actors and build more sustainable seed systems. Proposed actions including seed business models explained above and their capacity to unlock the potential in youth and women seed traders as in meeting smallholder seed needs will be critical. These models derive their importance from the observations of existing high potential to grow incomes and jobs from bean and cassava enterprises and across the gender and youth dynamic.

### 3.5. Cross-cutting Activities

Many of the cross-cutting policy and information flow activities in FY21 were designed for Ethiopia. These activities ranged from assessments for systemic capacity such as, seed demand forecasting, to developing informatics in forage seed system – an area critical for climate adaptation but largely ignored. Global case studies witnessed new partnerships – in this case, with Oxfam Novib – to cover empirical data and understanding on how seed producer groups operate in five countries (Vietnam, Niger, Zambia, Uganda, and Guatemala) across three continents (Asia, Africa, and Meso-America). Coupled with the efforts from Agri-Experience with establishing an alternate seed quality assurance mechanism – Standard Seed Certification protocols – in Kenya, the policy activities spanned many crops, and therefore provide a rich learning base for designing interventions and planning in the near term.

#### CCIR-I Improved effective policy implementation and regulatory formulation for pluralistic seed systems

##### CCIR I.1 Develop country specific seed policy road maps

Under this Sub IR, S34D completed the FY20 activity CCIR I.1.1 global policy review report<sup>16</sup>. This report was also published in the agronomy section of an open-source journal, MDPI<sup>17</sup>.

**Mission Funded Activity CCIR I.1.1 Develop and compare regulatory system maps in Ethiopia (Mission).** *This activity will continue in FY22*

**Achievements:** 6 regulatory system maps (RSM) for the seed sector were completed for the current seed laws in Ethiopia. Another 6 maps were completed based on proposed changes in the seed laws. These six dimensions are (1) public varietal research, development, and transfer; (2) seed dealer and venue registration; (3) seed variety registration and release; (4) plant variety protection; (5) seed certification and quality assurance; and (6) anti-counterfeiting and consumer protection. The goal is to foster transparency on how the seed regulatory arena functions so that private entities have knowledge on how to abide by these regulations to establish businesses in the country. Additionally, having two side-by-side analyses of the same dimensions help to compare what might be expected to change as a result of the differences in current versus new seed laws. Understanding this pivotal point aids in capturing and measuring changes in impact due to legal changes in seed sector in the future. To create the regulatory systems maps, S34D undertook desk research and analysis of Ethiopian seed policies, laws and regulations. This was supplemented with field visits and remote consultations in Ethiopia, conducted by local legal consultant in Addis Ababa with remote assistance and support from New Markets Lab (NML) and CRS.

**Learning:** Overall, the RSMs were very well received, and both private and public stakeholders found them to be a very useful tool. The RSMs depict the details of relevant rules and regulations, and most of the consulted stakeholders were unsure of the regulatory processes related to the key dimensions, including some of the changes that will be ushered in with the new proclamation. The public-sector stakeholders mentioned that they sometimes engage in popularization of legal frameworks among stakeholders through in-person and media-based trainings programs. These institutions mentioned that, even in such instances, there remain vast information gaps. For example, during the consultations seed companies noted that they had believed they were required to own land prior to being granted a CoC, yet the Council of Ministers Seed Regulation No.375/2016 (2016 Seed Regulation) only requires access to land, which can be leased, borrowed, or accessed through outgrower farmers. Further, the variety

<sup>16</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00XVCI.pdf](https://pdf.usaid.gov/pdf_docs/PA00XVCI.pdf)

<sup>17</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00XVC6.pdf](https://pdf.usaid.gov/pdf_docs/PA00XVC6.pdf)



registration and release processes are unclear, and, in many instances, the stakeholder experiences differ from what is set out under the law. S34D found there is a need to popularize the Plant Variety Protection (PVP) laws, as many of the stakeholders were not aware that the PVP laws had been operationalized. Stakeholders thus found the RSMs would be of immense relevance in streamlining regulatory processes related to key legal domains along the seed value chain.

As next steps, S34D would conduct an in-country dissemination/sensitization through a remote online discussion session, followed by a global webinar to disseminate and share the final output. S34D is also conducting discussions to embed the RSMs with a suitable and relevant in-country partner for further deployment and uptake.

**CCIR 1.2 Practices to expand and liberalize seed quality possibilities are implemented and developed; market outlets and venues expanded; counterfeit seed issues addressed; free seed distribution restricted.**

**NEW Activity CCIR 1.2.1 Compare seed clubs and QDS Producers: South-South Learning; compare with Niger Federation of millet growers (core).**

**Achievements:** Farmers have always played the key role in seed production, varietal maintenance, and serving local and regional communities with agro-ecologically adapted varieties that are demanded in the market. However, the operational efficiencies, structure and management of these groups across countries have not been examined in a systematic manner. This activity attempts to fill in that gap by drawing cases from twenty-one seed producer groups across five countries – Vietnam, Uganda, Zambia, Niger, Guatemala - spanning three continents (Asia, Africa, and central America) and nine crops (rice, potato, sweet potato, beans, cowpea, millets, soybean, groundnut, maize, and sorghum).

Field work in all the countries is completed. Data gathered and analyzed. Report writing is continuing. Validation with in-country partners is continuing. Dissemination of results is anticipated in November 2021. The survey instruments that investigated operational efficiencies of seed producer groups included questions on specific roles of gender and youth in – seed production, monitoring, inspection, marketing etc.

**Learning:** Despite different countries and regions, the empirical analyses show several common themes across all seed producer groups. Regardless of the crop-variety they specialize in, these producer groups usually produce seed for one or two varieties at the household level and up to 3 or 4 varieties at the group/club level. All groups, irrespective of size and composition, supply a significant amount of seed to the local markets. With much care for reputation and branding, these groups have at least one sub-group common across board, and that is seed monitoring and inspection. Internal quality control committee or sub-group is a key common feature across all seed clubs in this study. This exemplifies, whether formal seed inspection is occurring or not, the clubs / groups are producing high-quality assured seed, often using producer-labels to ensure quality.

The market ultimately dictates what determines the crop-seed varieties produced by all groups, and more importantly, each group responds to market signals by changing their portfolios. Over time, they ceased to produce some varieties and increased others. Typically markets demand those varieties that are clean and not susceptible to any diseases, have stable yield, adapted to climate change conditions, such as shorter rains, and have shorter cooking time catering to taste preferences for consumers.

There are two key challenges across all 21 clubs in five countries. First, each seed producer group has issues accessing quality early generation seed (EGS) on time. In most cases, the EGS was provided at little to no cost by either local research institutions, development projects, and/or seed companies. However, this support (which tended to be free so the groups could multiply seeds) was not a continuous one. Second, all groups are challenged with labelling their products. Often the producers are not well-aware how labelling could work. In many cases even if they knew and wanted to, they were

unable to do so due to lack of labelling material and equipment (such as sewing machines). Cost of packaging seeds adds to the constraint.

The role of women varied between countries. Except for Vietnam, women played main roles in the other countries. For example, in sub-Saharan Africa, for Uganda, Zambia, and Niger, women played roles in seed production and were members of several sub-committees such as planning, and marketing seed produced.

*Continue from FY20 - Activity CCIR 1.2.3 Implement and pilot Standard Seed Protocol in Kenya (core). This activity continues in FY22.*

**Achievements:** Standard Seed Protocols for 10 crops were developed through consultations between the Kenya Plant Health Inspectorate Service (KEPHIS), private seed companies, breeders from public research institutions and other interested partners such as the Alliance for a Green Revolution in Africa (AGRA). These crops are: cowpea, green grams, soybean, groundnut, common beans (in dryland locations), OPV sorghum, finger millet, cassava, sweet potato, and indigenous vegetables (Amaranthus, African Black Nightshade, Crotalaria, Spider Plant, Jute Mallow).

Standard seed production was then piloted with three seed producers for cowpea, green grams, groundnuts and sorghum, and a fourth tried to register a sweet potato crop but was not successful. Two of the pilot seed producers successfully registered as seed entities, a pre-requisite to becoming a recognized formal seed producer in Kenya. A total of 79 outgrowers were trained in standard seed certification by KEPHIS, and good seed crop agronomic practices by Agri Experience. These 67 outgrowers come from the following three seed producing entities: Inyamandu CBO - 18, Tegemeo Cereals Enterprise Ltd – 32, and Taitaveta Nafaka Farmers' Cooperative Society (TANAFACO Seeds) - 17, and registered seed field crops for inspection by KEPHIS. However, due to severe drought in the coastal region of Kenya TANAFACO, which is based in Taveta, lost all its seed crop. The remaining 50 outgrowers had their seed crop inspected and 16 of the 18 outgrowers passed both field and lab inspections. Two farmer fields of Inyamandu failed the field inspections due to weeds. All Tegemeo outgrower fields passed the field inspections, and all green gram crop has been passed up to the lab certifications. Lab results are being awaited for the sorghum crop. In terms of volume, 106 MT of OPV sorghum, green gram and cowpea were sampled and tested in the pilot under standard seed. Sticker labels have been issued for 2.3 MT of standard seed which is now ready for sale.

While it was planned to support a female-led seed producer in FY21, called Biam, to produce sweet potato vines, the producer showed little interest in seed production, even after participating in the introductory KEPHIS training on Standard Seed. Interestingly though, a female-led established seed company, Leldet, independently produced Standard Seed common bean. Therefore, S34D will target to work closely with Leldet in FY22 because it has many individual women producers and would like to expand seed production to other crops such as sorghum and pigeon peas.

KEPHIS revised the number of times for multiplying standard seed to include 2 generations, i.e. Standard Seed 1 and Standard Seed 2. This means that more cycles of quality seed can be produced from standard seed progeny of certified 2. This is in addition to other revisions that had been made which included reduction of isolation distance, number of field inspections to at least one, purity percentages (which were reduced, but meet basic standards), allowable off-type plants, and minimum germination percentage.

**Learnings:** While one of the key goals of the pilot was to formally bring informal seed producers into the formal seed production arena, the learning curve among these producers is very steep, as they have

to learn everything from securing the right parent seed for the target agroecologies, to the optimal seed production volumes, to marketing. This has been a steep learning curve and the new seed producers need a lot of support and encouragement to become permanent players in the formal seed market.

Standard seed offers a less stringent route to seed production of often neglected crops. The reduced stringency to seed certification was an incentive to encourage seed companies to produce Standard seed. However, seed companies have a unique rationale to making the decision to produce a different seed class, and we are now seeing more interest moving forward, three seasons later. Adoption takes a long time as seed businesses need to weigh the options and make rational decisions.

Low seed productivity has generally been observed among the seed producers, this differs starkly from the prescribed seed volumes by the variety developers. Factors contributing to the low seed volumes could include poor agronomy for seed production, inadequate application of inputs, poor positioning of varieties etc. This is an area to be explored, because depressed yields would further discourage adoption of formal high-quality seed by farmers.

The fact that private seed companies are already crowding in to produce standard seed outside the pilot shows a systemic change, where companies that recognize the viability of standard seed will take the initiative to produce it, even outside project funding.

CCIR 1.3 Linkages and coordination of seed development efforts through consolidation of data and evidence are strengthened

**NEW Activity** *CCIR 1.3.1 Develop policy brief on seed registry in Benin (core).*

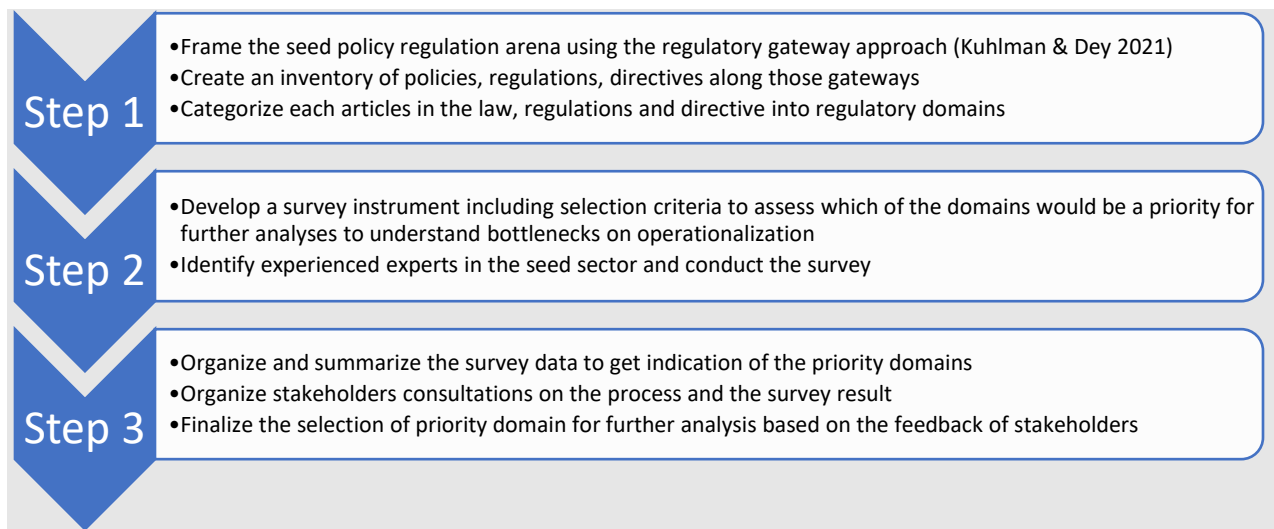
**Achievements:** A local consultant supported S34D with the field work and interviews. Two survey instruments were developed – one for the policy makers Institut National des Recherches Agricoles du Benin (INRAB), and the other for the farmers. Interviews were held and data were collected. The survey data is currently being analyzed, and doubts are validated / clarified with in-country respondents.

**NEW Activity** *CCIR 1.3.2 Assess and evaluate the policy and regulatory barriers with specific stress (saline-drought) tolerant varieties in Myanmar (core).*

This activity was cancelled, because S34D could not use central funds in Myanmar.

**NEW Activity** *CCIR 1.3.3 Facilitate and initiate implementation of seed policies and directives in Ethiopia (Mission). This activity will continue in FY22.*

**Achievements:** Using the seed regulatory value chain concept from existing literature, the study framed the various seed policies, laws, regulations, and directives on seed sector in Ethiopia into a few key domains: variety release; variety registration; EGS production and management; seed quality assurance; standards and procedures; seed certification process; seed labeling; seed marketing. The following steps were taken to narrow down to one key domain for the purposes of this study. The objective is to analyze the reasons why practices based on directives and policies for a domain is not undertaken across all regions in the country.



**Learning:** The three steps above led to prioritization of seed certification and labelling as the key issue to focus on for this analysis. A few reasons for that as discussed amongst the stakeholders are as follows:

- There is wide difference among regions in terms of implementing seed certification and labeling regulations and procedures;
- There are several complaints from producers mainly related to cost of packaging and labeling;
- It is an area where regulatory authorities show their power, which is often abused and liable to corruption;
- There is no prior study focusing on certification and labeling compared to other issues of seed sector regulation leading to gaps in understanding how labeling actually works for certification (and for intermediary seed system – such as QDS);
- The analysis may open a door for an innovative approach to overcome the current problems.

As next steps, S34D will choose a sample of woredas and zones to assess the bottlenecks and why labelling cannot be done per the directives issued in the country. Structured surveys will be designed to interview administrative and expert stakeholders in the field. This may also entail field work in kebeles and woredas. The analyses will first be vetted through a remote stakeholder workshop and then results will be disseminated via a webinar on MS Teams.

## **CCIR-2 Established enhanced quality information flows for seed systems**

CCIR 2.2 Tools and technologies to capture quality information about seed supply in a geo-referenced manner are developed.

**Mission Funded Activity** *CCIR 2.2.1 Develop forage informatic dashboard using seed data and metrics and a policy brief on forage seed systems in Ethiopia (Mission). This activity will continue in FY22.*

**Achievements:** To build national capacity and strengthen institutions, S34D hired a team of national experts through an Ethiopian consultancy service. The team conducted a literature review, and analyses

of different seed indices available (example - TASAI<sup>18</sup>) to determine that very little is known about forage seed system. Using learnings from the forage seed sector, a set of indicators were identified as “must- haves” to assess movement and progress on forage seed system. The team designed a survey instrument to gather the data against the key indicators identified. The focus was to gather gender and age disaggregated data wherever possible and relevant. Currently data is being gathered from various partners and stakeholders on the ground. Once all data is collected, the results from the analysis will be shared and then disseminated.

**Learning:** Although there is quite a few development partners working in the forage sub-sector, including the forage seed system, there is hardly any structured information available regarding the forage seed sub-sector.

Furthermore, to gain support and cooperation from partners and stakeholders, the team communicated the goals of this effort to the Ethiopian Forage Seed Consortium; The Ethiopian Seed Association; and to ILRI. These partners have shown enthusiasm and encouragement that this work will indeed fill an important gap in the sector.

**Mission Funded Activity CCIR 2.2.2 Test out recommendations from FY20 technical roadmap, in select zones (10-15) in Ethiopia (Mission).** *This activity will continue in FY22.*

**Achievements:** The seed demand assessment was completed. S34D led a virtual/in-person workshop to validate the findings. The draft report was submitted to USAID for review. As next steps, the recommendations generated as a result of the assessment will be implemented / tested in 10 -15 woredas in FY22. The recommendations are provided below under learnings.

**Learning:**

- Move from paper to digital data collection at all administrative levels.
- Build technical capacity especially at grassroots levels.
- Collect age and sex disaggregated data to assess preferences of women and the youth.
- Collect and share good quality near real-time information on the seed-grain price ratio to increase market transparency.
- Improve the methodology of forecasting (use econometrics to do predictive modeling; big data and micro-level information; near real-time forecasts etc.). Capture shifts in demand.
- Initiate data coordination nodes to exchange both micro and macro level data necessary to support econometric models, in collaboration with the Central Statistical Agency (CSA), Agriculture Transformation Agency (ATA), Ministry of Agriculture (MoA), World Bank (WB), and groups that deal with statistics from space, weather data.
- Put a centralized database in place to increase transparency; strengthen documentation system which also enables online tracking.
- Establish a digital library with data archives across space and time.
- A price setting strategy needs to be re-visited if the country wishes to liberalize the seed sector. As a first step, it can factor in seed quality while setting prices. Seed pricing mechanism should also be checked with grain price.
- Create awareness and develop marketing strategies (for new and existing varieties which have a huge market pull) – farmer segmentation models; WTP approaches; constructive feedback mechanisms.
- Increase transparency in seed demand forecasting, price setting and seed distribution.
- Provide feedback to the farmers regarding the response (if they get the demanded seed) until the seed distribution time. A lack of feedback to the farmers on the status is discouraging them from registering their demand in the future.
- There should be standardized and well-documented adjustments to the data at all levels.

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<sup>18</sup> The Africa Seed Access Index <https://tasai.org/>

- Pilot approaches and case studies with unions who are showing interest in seed demand forecasting (example: Hetosa Unions).
- The EGS forecasting process should be standardized along regions and within regions. Applying uniform approaches and transparency in the process needed.
- Finalize EGS demand forecasting and the decision for its production period not later than the end of February each year.

**Mission Funded Activity CCIR 2.2.3 COVID-19 sub-regional seed assessment alerts in Ethiopia (Mission).**

This activity was cancelled and replaced with activity CCIR 1.3.3. Facilitate and initiate implementation of seed policies and directives in Ethiopia (Mission).

CCIR 2.3 Last mile markets for new and quality-assured seed varieties are enabled by developing, piloting, adapting, and scaling feed-forward and feedback mechanisms that loop farmers' preferences, as well as provide information on new varieties and quality assured seed<sup>19</sup>

**Continue from FY20 - CCIR 2.3.1 (1.2.4.1): Finalize Point-of-Sale pilot for the niche business model in Kenya, and disseminate the final second season report to complete the pilot in Kenya (core).**

**Achievements:** As part of the niche model led by the Alliance-PABRA, CRS conducted the farmer feedback survey in February-March 2021 after the harvest season. 170 farmers (out of 205 registered during planting season – October 2020) responded to the surveys conducted over phone by CRS Kenya staff. 170 feeds (of which 61 were from women farmers) were collected on varietal performance of Nyota and what the farmers did with the grains they produced.

**Learnings:** Farmers reported that Nyota performed very well and matured within the short duration that was expected of the variety. With the grains produced, most farmers consumed them as food and/or saved the grains as potential planting material for next agricultural season. This means that seed companies, when producing certified Nyota or any Open Pollinated Variety (OPV) seeds, need to take into account the frequency with which farmers replenish seed stock from agro-dealers. Many farmers do not buy OPV seed every crop season.

Another key implication for last-mile delivery mechanisms is that a good number of farmers were not aware of how to increase efficiency and improve the business of the bodaboda riders in delivering and distributing Nyota seeds at the last mile. The majority of farmers showed interest in using the boda boda services to deliver seeds. This shows there is market and demand for 'Uber'-ization of improved agricultural inputs, including improved seeds at the last mile in Kenya.

**Continue from FY20 - Activity CCIR 2.3.2: Pilot SMS-based farmer feedback loop on seed quality, known as Stop Bad Seed (Ripoti Mbegu Isiyo Bora - RIMI) in Tanzania (core).**

**Achievements:** By September 30, 2021, a total of 489 SMS messages had been received from farmers, with 131 messages received in the first week when the campaign was ongoing, and the rest (358) received after the campaign stopped airing. This translates to 26.8% received while the campaign was live, and 73.2% received post campaign period. Farmers kept sending messages up to 9 months after campaign stoppage, which means that they save the short code and shows a need for a platform for farmers to record their complaints on low quality or fake seed. Complaints received covered the

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<sup>19</sup> All the feedback mechanisms established will be gender-sensitive, in terms of content analysis as well access and reach to ICT, for a last mile buyer, considering the challenges faced by female clientele.

following topics: poor germination (39%), pests in the seed packet (26%), diseases (25%) and different variety other than the one indicated on the seed packet (10%). A report of this work was completed and shared with the Tanzania Official Seed Certification Institute (TOSCI) and USAID Tanzania.

**Learning:** Farmers made numerous calls to the radio stations asking for general advice on recommended varieties for their regions, agronomic practices and how to identify authentic seed, indicating a need for farmer education. For some farmers, identifying the variety name on the seed packet proved to be a challenge.

## 4. Monitoring, Evaluation, and Learning

The purpose of this section is to provide explanations and answers for the questions identified in the S34D learning agenda (**Section 1.1**), discuss the results of the evaluations conducted to assess achievements of select activities (**Section 1.2**), and provide progress against S34D performance indicators (**Section 1.3**).

### 4.1 Exploring questions in the S34D learning agenda

There are three learning areas explored in FY21. In collaboration with S34D consortium partners, these questions are answered below using learnings derived from implementing the activities.

#### 4.1.1 Learning Agenda: To drive inclusive policies and practices, what type of evidence and processes are needed to accelerate improvements in seed security?

This question is answered through learnings from two S34D case studies. One is the niche-market model piloted by ABC-PABRA in Kenya, and the second is piloting of the Standard Seed protocols in Kenya by S34D partner Agri-Experience.

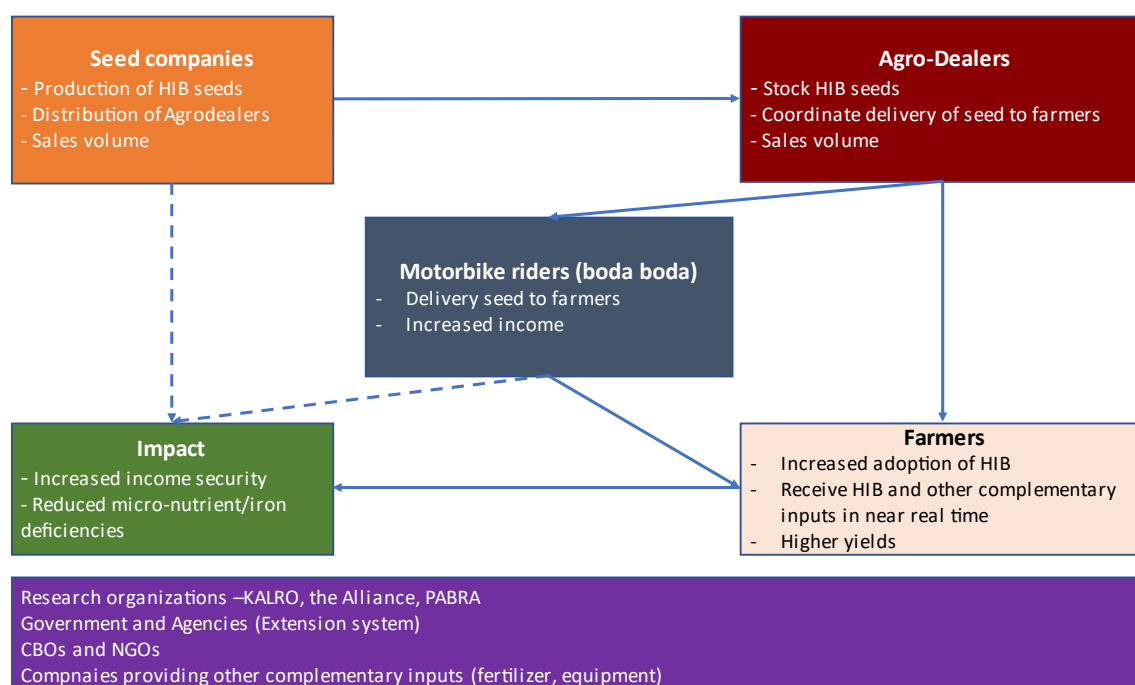
##### **Case Study #1: The last mile bean seed delivery model - learning from the case of high iron bean (HIB niche market) in Kenya**

The Alliance-CIAT/PABRA and Catholic Relief Services (CRS) in collaboration with the Kenya Agricultural and Livestock Research Organization (KALRO), the Kenya Plant Health Inspectorate Services (KEPHIS), Bubayi Products Ltd, and Dryland Seed Limited, piloted the niche market business model. The pilot was carried out in 6 counties Bungoma, Trans-Nzoia, West Pokot in Western Kenya – high rainfall area, and Kitui, Machakos, and Makueni counties of Lower Eastern Kenya – a low rainfall area from September 2019 to October 2020.

Informed by demand and supply market dynamics, seed companies tend to be reluctant to add new crops to their seed portfolio. Subsequently, new varieties of crops such as HIBs with the potential to increase the resilience of farming households take a long time to get into the farmers' hands. There is an urgent need to make the seed system more efficient to enable small-scale farmers to access new quality certified seeds and complementary inputs quickly. The niche market business model provides a possible solution to fill the gap and enable small-scale farmers to access climate-smart and high-yielding bean varieties and growing businesses involved in last-mile seed delivery. The inclusion of non-traditional and efficient methods such as motorbikes (*boda boda*) speeds up varieties/seed access and adoption, especially at the last mile (**Figure 1**).



**Figure I: Model Schematic**



Discussions with KEPHIS indicate a need to have a balanced approach to implement the seed delivery model. Some specific areas to note concerning the riders and potential mobile applications include:

- **Riders:**
  - Use of motorbike riders for purposes of delivery of seeds will not require licensing
  - Agrodealer outlet remains the accountable and responsible entity with the process of delivery
  - Boda boda riders need fiber boxes for the protection of seeds from elements of weather
- **Mobile Application:**
  - An application that enables farmers to order and pay for seed and which at the same time monitors or tracks the volume of seed stocks in the agrodealer<sup>20</sup>.
  - The app should have a provision for farmers to give feedback or call the source of inputs
  - Agrodealers linked to the app should be those licensed by KEPHIS, Pest Control and Products Board (PCPB), and other government agencies
  - The app should be linked to other available digital extension information, e.g., MoA, KALRO, weather updates, etc.
  - The app needs to be approved by KEPHIS so that seeds are delivered to intended targets in original packaging and quality, and that there is no hawking.

<sup>20</sup> The application will help ensure that there is no room for repacking and distribution of fake seed.

- App has to be robust enough to include other farm inputs – seeds, fertilizer, pest control products, and livestock products
- PABRA as the implementing partner needs to pilot the application together with KEPHIS
- A call center component or administration unit is an important player, especially in gathering information from partners and sharing it with farmers and supporting in ordering on behalf of farmers who may not have access to smart phones.

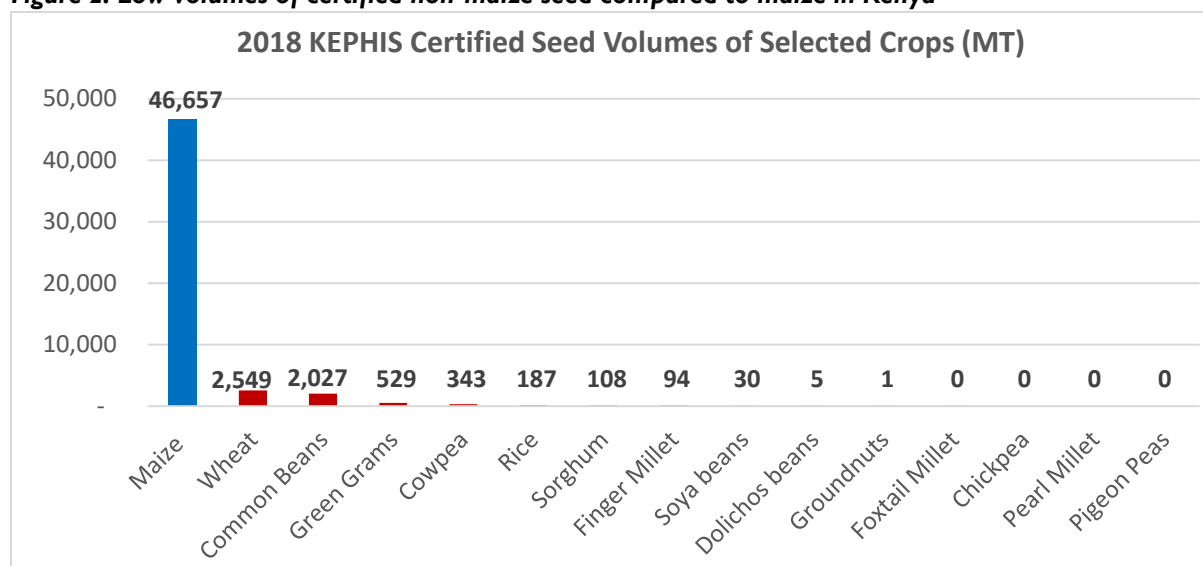
Conversations with the national regulator, KEPHIS, provides an opportunity to open up wide-scale access to these varieties. With the responsibility for quality control vested on the agrodealer last-mile delivery by motor bike riders is optimistic. The agrodealer would assume this responsibility because the Seeds and Plant Varieties Act Cap 326 of the laws of Kenya and its regulations provide for the stockist as the last point of delivery of seed to farmers. Motor bike riders would only offer courier services. KEPHIS agreed to a pilot where motorbike riders can collaborate with agrodealers in delivery of micronutrient rich bean varieties to smallholder farmers at the last mile.

- Facilitation process with KALRO and KEPHIS
  - The process did include sharing of first season findings from the Western Kenya pilot. Details included the variety preferences by gender, challenges in the value chain like timely seed availability, seed prices and motorbike rider concerns e.g., licensing and formal organization. Other areas presented were farmers' willingness to try out the new varieties versus the complementary business performance (which increased) among agrodealers and the seed company in the pilot.
  - Addressing farmer-level awareness of agricultural inputs through collaborative efforts builds a more sustainable seed demand regime. It can catalyze while enhancing productivity increases and market systems development. KALRO and KEPHIS hold significant mandates in driving smallholder access to seed and should embrace integrated approaches within the law that avail the much needed, farmer-preferred seed close to the farmer and at its best quality.
- Access to early generation seed (EGS) for bean seed can be a significant driver of robust success in farmers' access to and utilization of improved varieties. Greater evidence-building is needed on challenges associated with EGS supply and practical solutions from the KALRO side (and the seed company side). This documentation will deflate any potential risks in low or no supply of farmer-preferred varieties to seed companies and subsequently, farmers
  - Smallholder farmers use multiple channels to source high-quality seeds, including markets. There is a need to explore sustainable linkages between the formal and informal systems. These two can avail quality seeds or, at best, start the adoption journey for farmer-preferred improved varieties in sufficient amounts
  - Streamlined production and marketing are critical for the seed companies continued pull of seed (and KALRO). Access to better markets for grain can be an excellent incentive for farmers to get a steady supply of certified seed from the agrodealer outlets. Seed companies equally desire a sustainable supply of early generation seed from the research system to guarantee seed reaches the farmers. Linkages between farmers, grain aggregators, and off-takers should be considered.

## Case Study # 2: Kenya Standard Seed Certification Pilot

Kenya is facing two challenges in ensuring quality assured seeds of a wide array of crop-varieties. First, how to authorize the private sector to carry out part of the certification processes while still maintaining KEPHIS oversight and audit authority. Second, how to increase the production of non-hybrid seed, including non-maize seed, to boost seed volumes for crops such as legumes, roots and tubers, and small cereal crops, which together account for less than 15% of total seed certified (KEPHIS Annual Reports, 2012-2018) as shown in **Figure 2**, which includes the seed volumes for 2018<sup>21</sup>.

**Figure 2: Low volumes of certified non-maize seed compared to maize in Kenya**



Source: KEPHIS Annual Report

The seed laws in Kenya does not allow for the production and distribution of seed under the Quality Declared Seed (QDS) class. Possible reasons for that include:

- 1) Kenya law focuses on registered seed merchants as seed producers, allowing them to produce and sell seed anywhere in Kenya and to export seed, whereas seed companies are excluded from the QDS approach;
- 2) Kenya's optimal seed production locations are often far from farmer locations, and QDS limits seed distribution to narrowly defined locations close to the seed producer;
- 3) KEPHIS advocates for full certification to ensure that high quality seed is availed to farmers, versus the QDS approach under which only relatively small volumes of seed are tested; and
- 4) there is very little hard evidence from countries employing the QDS approach that QDS seed makes meaningful additional volumes of high-quality seed available to farmers on a sustained basis.

The seed law requires that seed sold and labelled as seed (i.e., formal sector seed) must be produced by a registered seed entity and undergo the full certification process. In the past, certification has been applied with the same rigor for hybrid seed such as hybrid maize seed and – at the other end of the spectrum – for planting material for self-pollinating and root and tuber crops. Following learning trips to

<sup>21</sup> The proportions of maize and non-maize seed are not materially different for 2019 and 2020, although the exact KEPHIS data has not been released yet.

South Africa and Zambia, the Ministry of Agriculture revised Kenya’s Seeds Regulations (December 2016). Two key changes in the regulations were to: 1) make legal provision for the eventual inclusion of authorized inspectors in the system; and 2) enhance the definition of Standard Seed to upgrade it to a new certified seed class – meeting mandated quality standards but with slightly relaxed requirements for field inspections. Under the new definition, “*Standard Seed*” means seed that has met the minimum laboratory and post control standards for categories of crop as set by KEPHIS and is a progeny of certified 2<sup>nd</sup> generation or certified Standard Seed or by declaration by the Cabinet Secretary”.

It is important to emphasize that the main goal of formalizing the Standard Seed certification class was to address the very low volumes of seed of these important self-pollinating and root and tuber crops, as shown in **Figure 2**, which are crucial for food and nutrition security and are becoming increasingly important as rotation crops.

**Table 4** summarizes the key changes in the quality assurance standards under the new Standard Seed work and **Table 5** outlines the certification steps included under Standard Seed.

**Table 4: Key changes made in certification of Standard Seed vs. Certified Seed**

Crop	C2 standards			‘Standard Seed’ standards		
	Isolation dist. (m)	% off-types	Lab standards (%)	Isolation dist. (m)	% off-types	Lab standards (%)
Cowpea	25	0	Purity - 99 Germ. - 80	15	3	Purity - 99 Germ. - 80
Green grams	25	-	Purity - 99 Germ. - 80	15	4	Purity - 98 Germ. - 80
Soybeans	4	2	Purity - 98 Germ. - 75	2	4	Purity - 98 Germ. - 75
Groundnuts	-	-	Purity - 97 Germ. - 80	2	4	Purity - 99 Germ. - 80
Common beans	25	2	Purity - 99 Germ. - 80	15	4	Purity - 99 Germ. - 80
OPV sorghum	200	2	Purity - 95 Germ. - 80	100	4	Purity - 97 Germ. - 80
Finger millet	4	6/100m <sup>2</sup>	Purity - 95 Germ. - 80	2	10/100m <sup>2</sup>	Purity - 97 Germ. - 80
Cassava	-	-	-	10	0	-
Sweet potato	-	-	-	3	7	-
Amaranthus	-	-	Purity - 98 Germ. - 75	100	5	Purity - 98 Germ. - 75
African Nightshade	-	-	-	25	5	Purity - 95 Germ. - 65
Crotolaria/Sunhemp	-	-	-	10	5	Purity - 95 Germ. - 65
Spider plant	-	-	-	25	4	Purity - 95 Germ. - 65
Jute Mallow	-	-	-	15	4	Purity - 95 Germ. - 70

Source: KEPHIS

**Table 5: Certification requirements for Standard Seed production**

#	Certification Step
1.	Registration as seed producer with KEPHIS, except for sweet potato vine producers
2.	Seed production training
3.	Seed crop registration
4.	Seed inspection
5.	Processing inspection
6.	Seed sampling
7.	Seed lab testing
8.	Seed packaging
9.	Seed labelling

### **S34D Facilitation led by Agri Experience:**

AE met on multiple occasions with KEPHIS management to discuss the best approach to operationalize Standard Seed. KEPHIS was concerned about the low seed volumes of non-maize crops, and stressed that the approach used to certify vegetable seed was similar to Standard Seed, hence the implementation should not be difficult. An initial stakeholder meeting was held in July 2019 to:

1. Explain that the Seeds Regulations amendment of 2016 now permitted Standard Seed as a certified seed class, with less rigor compared to the current certification approach but still adhering to minimum seed quality standards;
2. Agree on which crops were facing the challenge of low seed volumes, and which crops had potential for seed to be produced under Standard Seed certification without compromising the quality or increasing the risk of diseases;
3. Clearly outline the selection criteria for crops to be included under the Standard Seed approach; and
4. Begin to develop the protocols for Standard Seed certification for ten selected crops (see **Table 7**).

Participating stakeholders included KEPHIS staff, crop breeders from research institutions such as the Kenya Agricultural Livestock and Research Organization (KALRO), and staff from CGIAR Centers, the Alliance for a Green Revolution in Africa (AGRA), Syngenta Foundation, STAK, and private seed companies. The criteria utilized for the selection of top priority Standard Seed crops is shown in **Table 6** below.

**Table 6: Criteria for Selecting Standard Seed Crops (not in order of priority)**

#	Criteria for selection
1	Area planted
2	Demand for seed
3	Availability of EGS
4	Availability of released varieties
5	Number of seed companies licensed/commercializing
6	Potential for breeding support
7	Climate smart attributes
8	Type of propagation – vegetative/seed
9	Potential to produce seed
10	Commercial value
11	Susceptibility to pests and diseases
12	Relative importance for food and nutrition security (nationally and regionally)

Source: KEPHIS

Using the criteria above, twenty crops were initially identified as possible crops for Standard Seed certification. After further deliberation the list was narrowed down to the ten crops listed in **Table 7**.

**Table 7: Crops identified for initial Standard Seed pilot**

#	Crop
1.	Cowpea
2.	Green gram
3.	Soybean
4.	Groundnut
5.	Common beans (in dryland locations)
6.	OPV sorghum
7.	Finger millet
8.	Cassava
9.	Sweet potato
10.	Indigenous vegetables (Amaranthus, African Black Nightshade, Croton, Spider Plant, Jute Mallow)

Source: KEPHIS

### **Protocol preparations**

Initially Standard Seed was supposed to be produced from Certified 2 parental seed, which would be the last generation of multiplication. This approach led to serious discussion among stakeholders as experienced growers of common bean seed thought there would be no real advantage in growing Standard Seed as opposed to normal certified seed. As a result, KEPHIS revised the parental material definition to include Standard Seed 1 and 2, hence Standard Seed could be further multiplied from Standard Seed 1, allowing for two generations of multiplication under Standard Seed versus a single generation.

Following a series of internal meetings within KEPHIS from May to August 2020, it was decided that protocols would be developed for the 10 crops. The development of the protocols was supported by S34D. These protocols would serve as the actual standards used to carry out field and laboratory inspections of the selected crops.

The new protocols were vetted by stakeholders in September 2020, revised and shared in readiness for piloting starting in the short rains of 2020.

Several participating seed companies and outgrowers such as Leldet, Faida Seeds, Inyamandu CBO, Tegemeo Cereals Enterprise Ltd and Taitaveta Nafaka Farmers' Cooperative Society (TANAFACO) expressed interest in participating in the upcoming Standard Seed pilot program under KEPHIS and S34D sponsorship, focusing on common bean, cowpea, green gram, sorghum, groundnut and sweet potato.

### Standard Seed pilot goals

The aim of the Standard Seed pilot was to determine at a highly practical level how the revisions to protocols from certified seed to Standard Seed would be applied by seed producers and if the seed quality would still meet the prescribed quality standards.

During the stakeholder meeting of July 2019, concerns were expressed on whether Standard Seed would compromise the high-quality seed standards that are maintained in Kenya, which have made Kenyan seed attractive for the export market. It was therefore agreed that the pilot would be used to check against seed quality first, and foremost capture any revisions to the protocol that comprise quality so that these could be revised. Second, the pilot would establish if there were any advantage to seed production brought about by the revisions in standards and protocols. Following metrics were tracked:

- Number of new seed entities (producers) registered as Standard Seed producers
- Volume of seed certified as “Standard Seed”
- Number of Standard Seed growers trained
- Number of hectares under cultivation to produce Standard Seeds

Further, the metrics are disaggregated by sex and age when appropriate. Cost of seed production, price of standard seed received in market, gross and net revenue will be collected in FY22. **Table 8** lists the crops and varieties planned to be produced under the Standard Seed pilot.

**Table 8. Standard Seed crops and varieties**

#	Crop	Varieties
1.	Cowpea	K 80
2.	Green grams	(i) Karembo (ii) N 26 (iii) KS 20
3	Sorghum	(i) Mtama I (ii) EUS 10
4	Groundnuts	DOVE
5	Common beans	(i) KK8 (ii) Chelalang (iii) CLP2

Source: S34D 2021

Note: groundnut seed crop was affected by drought, causing complete failure.

### Standard Seed Pilot

The pilot activity focused on attracting new seed production entities to register as seed companies and engage sustainably in production of Standard seed. S34D led by AE, supported farmer groups that

committed to producing Standard Seed: Inyamandu CBO, Tegemeo Cereals Enterprise Ltd, Taitaveta Nafaka Farmers' Cooperative Society (TANAFACO) and Burton and Bamber.

Under Kenyan law, all seed producers have to register as seed merchants – a prerequisite in Kenya for formal seed production except for those producing seed of vegetatively propagated crops. As a result, S34D support included renewing the registration<sup>22</sup> of one group (Inyamandu CBO) and supported new registrations as seed merchants for two new seed producers (Tegemeo and TANAFACO). The remaining company planned to produce sweet potato vines and this activity did not require registration as a seed merchant.

The two new seed merchants successfully met the requirements for registration by April 2021 and went on to register fields for Standard Seed production. The fourth group, Burton and Bamber, as noted earlier, planned to produce sweet potato vines and did not need to be registered as a seed merchant, as that step is exempt for Standard Seed production of root and tuber crops.<sup>23</sup>

The pilot results were very mixed, but the disappointing results were due to either drought or the KEPHIS MIS challenge with one company; other results show notable successes.

**Table 9** shows the crops registered and status of certification for the S34D-supported seed producers.

**Table 9: Summary of S34D-supported pilot entities Standard Seed performance**

Seed Producer	County	Crop/Variety	Acreage (Ha)	Outcome
Inyamandu CBO	Kitui	Green grams - Karembo Cowpeas – K80	30.58	All seed lots passed field & lab test
TANAFACO	Taita Taveta	Sorghum - EUSS10 Groundnuts - Dove Green gram - KS20	39	All seed crops affected by drought
Tegemeo	Tharaka Nithi	Sorghum- Mtama I GG – N26	110	All seed crops passed both field inspections and lab tests
Burton and Bamber	Machakos	Sweet potato	2	Failed to register seed crop with KEPHIS (MIS incompatibility with prescribed process for Root & Tuber crops)

Source: S34D 2021

<sup>22</sup> The requirements for registration include agreements with breeding institutions for access to parent seed of the varieties to be produced. This was a challenge as such agreements take time, and by the time the short rains ended, neither of the two new seed merchants had completed the registration process. This made it necessary to extend the pilot to the long rains (March-May) of 2021. It is to be noted that for the dry land areas where the three producers are located, the short rains season is a more dependable season for crop production than the long rains.

<sup>23</sup> However, due to severe drought that affected most of the Kenyan coast, TANAFACO lost all its seed crops. However, the management information system (MIS) used by KEPHIS for seed certification could not skip that first step, hence the seed producer tried twice to register fields for their sweet potato crop without success. This is an issue that has been brought to the attention of senior KEPHIS leadership as a challenge that needs to be addressed. In the short term, KEPHIS recommends carrying out Standard Seed certification for roots and tubers manually, as they figure out how to fix the system.



**Seed production data:**

S34D tracked the costs incurred during production of Standard Seed by the seed entities involved in the pilot. In FY22, S34D will continue tracking selling price, to establish the revenue (and therefore net margin) obtained from pilot Standard Seed sales. **Table 10** shows average production costs by seed outgrowers of Inyamandu CBO and **Table 11** shows the production data.

**Table 10: Average seed cost of goods sold for Inyamandu CBO cowpea and green grams**

	Cost of Land & Inputs	Total cost of Transport	Total Cost of Labour	Total Cost of Inspections	Total Cost of Packaging & Labels	Grand Total
<b>Cost per hectare (USD)</b>	509	49	363	59	34	1,014

Source: S34D 2021

Note: The cost of goods sold includes the total of certified seed production costs, S34D-supported costs of KEPHIS certification, and label costs. The production cost for cowpea and green grams is the same.

**Table 11. Production per hectare for seed crops in Standard Seed pilot**

Seed merchant	Crop seed	Area in ha	Yield in Kg	Production per unit area kg/ha	Production per unit area MT/ha
Inyamandu	Cowpea	3.68	787	213.86	0.214
	Green gram	16.7	1,496	89.58	0.09
Tegemeo	Green gram	77.4	57,521	743.17	0.743
	Sorghum	32.6	47,008	1441.96	1.442

Source: S34D 2021

### **Pilot Results:**

At the end of the pilot period, the pilot companies achieved 106 MT of seed of cowpea, green grams and sorghum which was submitted and passed lab tests.

Very importantly, in addition to the pilot entities two private seed companies registered 196.6 ha of common bean for certification, and close to 46MT has been certified to date.

The three fully registered seed entities have expressed their intention to continue production of Standard Seed in FY22. We will track how many continue, number of crops and volumes produced.

The pilot successfully supported production by new market entrants of Standard Seed of three crops: cowpea, green gram, and sorghum. In addition, Standard Seed of common bean was produced by two well-established seed companies outside the pilot (KEPHIS communication). The hectareage of seed planted outside the pilot was significant, which indicates confidence from mainstream seed companies in the Standard Seed certification approach.

The pilot also resulted in automatic changes made by KEPHIS to expand the progeny of Standard Seed, by adding Standard Seed 1 and 2. This will give seed companies more impetus to produce Standard Seed. Throughout the pilot, KEPHIS inspectors had to be sensitized on the new seed class as their approach to certification was still rooted in the past system, and new knowledge was gained by KEPHIS about the challenges with the KEPHIS MIS system for producers of root and tuber crops. The pilot was therefore a learning opportunity for KEPHIS inspectors as well.

One of the critical adjustments that we made was to include training of the seed outgrowers in both Standard Seed certification requirements as well as general agronomic practices. In addition, there was intensive coaching by both KEPHIS and Agri Experience through S34D to ensure the fields passed the one crucial field inspection. The end result was that the pilot activity added three new, fully registered seed producing entities into the formal seed production arena in Kenya, and they are focused on crops for which there is very high demand and low supply of formal sector seed.

The approach to the Standard Seed pilot focused on involving seed system permanent market actors (private sector entrants and the regulator); additional production by experienced seed companies has already begun, increasing the likelihood of sustainability for this important systemic change.

### **Key takeaways from two case studies**

The two examples above demonstrate how S34D partners (ABC-PABRA and AE) respectively navigated complex policy and regulatory dialogues with national regulatory agencies to push the seed policy frontier forward such that new technologies which are also climate-smart could reach farmers at the last mile. Both examples also illustrate ways to build a stronger interface between formal and informal seed system actors. Furthermore, a closer examination reveals new employment opportunities could be generated for youth in both cases.

However, implementing protocols and changing policies require time, and is thus a process that runs many phases. More than one agricultural season to validate pilots is a necessity. Similarly, estimating economic analyses on whether production and distribution will be sustainable is crucial. Generating evidence and sharing those with regulators and policymakers, as S34D has done, to convince new pathways require merit and patience. Finally, these examples although piloted in Kenya, provide a template for other sub-Saharan countries who are acting on a transformative agenda and are willing to put new climate-smart technologies in the hands of farmers.

#### **4.1.2 Learning Agenda: What is the profile of seed security actions that leads to resilience? *Lessons from community-based seed production in fragile states***

Three key features of seed systems that enable their resilience are: (i) a diversity of crops and varieties; (ii) a diversity of seed sources and acquisition channels; and (iii) appropriate seed and varietal management practices.

Lessons from the on-going FY21 Fragile States activity (2.2.2.2) illustrate ways in which seed security interventions can build seed system resilience by enhancing these features. In this learning story, we focus on one particular seed security intervention; that of community based seed production (CBSP). CBSP interventions were found across all three case study countries, as highlighted above in Section 3.4 (Activity 2.2.2.2). Here we explore the ways in which CBSP can potentially contribute towards greater resilience in the informal seed system within which it exists, and we also briefly explore the resilience of the CBSP model itself, based on the three features above.

**The role of CBSP in supporting and promoting a diversity of crops and varieties:** Both the range and types of crops and varieties being multiplied through CBSP are clearly key in this respect. The focus tends to be on improved varieties, and – provided that the varieties selected for multiplication are appropriate to the local agro-ecology and local preferences - CBSP can usefully introduce new varieties into a local area and enhance local diversity. However, there are some notable cases of donor-funded CBSP that have failed to consider the appropriateness of the selected variety; for example, the use of Serena sorghum by the UNICEF-supported Maridi Farmers' Association in southern Sudan in the early 1990's. Serena is an improved, short duration variety with a high tannin content to reduce the incidence of bird damage which is a major problem with early-maturing varieties. However, the tannin also gives the sorghum a slightly bitter taste and it was not adopted by local farmers for this reason, despite repeated distributions of relief seed over many years.

In the case of CRS-supported CBSP groups in Jonglei State, South Sudan, CBSP farmers are multiplying local varieties of sorghum and groundnut, and the seed produced is generally sold to NGOs who then distribute it to farmers. Given on-going bad experiences with inappropriate improved varieties in South Sudan, many would argue that the value of local varieties needs to be more widely recognized, particularly given that South Sudan is known to have a unique diversity of sorghum varieties that are well-adapted to marginal fertility conditions and can withstand water-logging, diseases, and insect pest infestation, as well as the endemic parasitic weed, Striga. The assumption that improved varieties are superior to local varieties is often misplaced.

The purpose of CBSP interventions in fragile states is generally to promote improved varieties, to make seed available for relief seed distribution programs, and to provide an income-generating opportunity to the CBSP group members.<sup>24</sup> CBSP therefore tends to focus on producing large quantities of quality seed of high-yielding varieties. Provided that the varieties are new to the local area and locally appropriate, then CBSP usefully enhances varietal diversity and thus resilience. Over time, however, once the varieties in question have become widely adopted, then they can no longer be considered to be 'new' or to be increasing diversity. To continue to promote diversity CBSP groups must introduce other new varieties once the original varieties have been widely adopted.

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<sup>24</sup> This model is sustainable only for as long as there are donor-funded NGOs creating a demand for seed. We do not address the question of sustainability in detail here.

Another way of enhancing resilience is through maintaining the existing diversity of locally adapted varieties, as in the Jonglei case above. Experienced, well-established CBSP groups might consider focusing on those crops and varieties that farmers find most difficult to maintain, i.e. crops with low multiplication rates, crops that are cross-pollinating rather than self-pollinating, and varieties (of any crop) that are early maturing. The seeds of such crops and varieties are likely to be in demand from farmers in the local area, thus allowing for an alternative business model in which CBSP farmers sell direct to local farmers and experienced informal seed traders who supply to other farmers, rather than relying solely on NGO purchases.

**Diversity of seed sources and acquisition channels:** The main ways in which farmers acquire seed are: (a) by saving their own seed from one season to the next; (b) by relying on their social networks to obtain seed from friends, neighbors and relatives, often in exchange for labour or grain or a token gift; (c) by purchasing seed from local markets or from local traders (sometimes on a credit basis, to be repaid at harvest); (d) by purchasing seed from agro-input dealers; or (e) by receiving seed from government schemes or NGO projects (including relief seed provisioning). If a CBSP group is able to provide seed to farmers in the local area, then this effectively provides another source of seed and thus contributes to more resilient seed systems. However, this may not always be the case due to the many different models that exist for CBSP.

Literature and interviews from all three case study countries suggest that it is sometimes difficult to distinguish community-based seed production from farmer groups that function as contract growers. In the case of DRC and also South Sudan, some CBSP groups have emerged as fledgling seed companies. Although many types of CBSP groups or fledgling seed company are able to sell their seed directly to local farmers, their marketing efforts are often more geared towards a smaller number of institutional buyers who are capable of purchasing larger quantities of seed. In the case of contract grower groups, the contract and licensing laws (where they exist) may prevent the sale of seed outside the contract, and – even where the terms of the contract are not as stringent - a group might be expected to provide a specific quantity of seed to the contractor and may not have enough seed to be able to sell to others.

**Seed and varietal management practices appropriate to the context:** Management practices contribute towards the quality of seed and varieties, and there are different quality standards for different seed systems. In informal seed systems, quality is judged subjectively by the farmer based on visual appearance and their knowledge about and level of trust in the particular source – often an individual farmer or trader who is known to practice what are locally considered to be good seed and varietal management practices. In formal seed systems, seed quality is measured objectively and is regulated through the certification process, involving known-source seed, field inspections and laboratory seed testing. CBSP is often considered to be part of the semi-formal seed system, in which farmers are trained in good seed and varietal management practices, and formal sector controls are applied to varying degrees. Formal sector controls generally do not work well in fragile states; in Haiti, for example, the seed law has yet to be passed, and the national seed service has neither the capacity nor the funding to carry out its mandate for quality control. Perhaps the most resilient aspect of CBSP management practices is the knowledge that is gained by participating farmers, allowing them to enhance their own seed and varietal management practices.

**The resilience of the CBSP model itself:** The crop and varietal diversity of CBSP is determined by the ways in which specific interventions are designed. Whilst it may be challenging for farmer groups to manage more than three or four different crops and varieties at once, it should be possible (and indeed necessary) to change the crops and varieties over time, after there has been widespread adoption of

particular varieties (and to abandon varieties that are not adopted because they do not meet farmer preferences). The selection of crops and varieties for multiplication is of paramount importance, and it is necessary to monitor their subsequent adoption (or not) by farmers.

The acquisition of source seed is among the biggest challenges of CBSP. Where CBSP seed management practices require that foundation seed is used for multiplication, this can only be provided by the national research system. The reliance on this single source of seed for multiplication reduces the resilience of CBSP. In the case of DRC, the national research institute lacks the capacity to produce quality foundation seed in sufficient quantities. In South Sudan, there is a complete lack of foundation seed, and no effective regulatory framework or seed law. In Jonglei State, CRS engages state government agriculture staff to support physical seed certification and field inspection for quality standards for the CBSP groups. This provides a good example of seed and varietal management practices that are appropriate to the context, and an important lesson that should be applied to CBSP elsewhere.

#### 4.1.3 Learning Agenda: Which mechanisms or interfaces enabled greater number of women smallholder farmers (and youth) to sell, access, and purchase quality seeds, and more frequently?

The S34D activity developed a set of rapid tools for assessing Seed System Security (R-SSSA) in 2020 and piloted them in seven countries in 2021. The R-SSSA builds on the existing SSSA tools. The R-SSSA toolkit focused its gender-related questions within the focus group discussion tool as did the SSSA. **Table 12** provides an overview of eight pilot studies.

**Table 12: Overview of Pilots**

S/N	Implementing agency	Location	FGD		Household Surveys – respondents	Agriculture experts	Seed vendors
			# Groups	Group typology			
1	CRS	Democratic Republic of Congo	28	Men, Women, Mixed Youth	84 (F:60%, M:40%, PLWD 4%, MHH 82%, FHH17%)	8	5
2	Samaritans Purse	South Sudan	4	Female, Male	30 (F:77%, M: 23%, Y:27%)	2	6
3	International Rescue Committee	South Sudan	15	Including :1 farmer group; 2 women groups, 2 lead farmers group	495 (F: 62%, M: 38% FHH: 54% MHH: 44%, CHH 2%, PLWD HH: 16%)	5	15
4	ACTED	Kenya	N/A		23 (52% female, 65% youth, 4% PLWD, 91% male-headed)		2
5	IRC	Niger	54	Women, Mixed	413 (F: 39%)	53	36
6	Samaritan Purse	DRC	4	Mixed, men, women, youth	31 (F:32%, M: 68%)	2	10

7	Food for the Hungry	Uganda	3	Men, Women, Youth	28	2	10
8	Solidarités International Myanmar mission	Myanmar	N/A		30 (F:47%, M: 53%, Y: 30%, 13% FHH)	3 (F: 1, M:2)	19 (F: 9, M:10)

### Disaggregated Demographics

The R-SSSA pilots provided two options to apply a gender lens:

- Focus Group Discussion Tool with gender-specific questions
- Household survey data disaggregated by gender, household type (male-headed/female-headed) and age

A review of the eight written reports showed varying degree in utilizing the available data to conduct the gender and age analysis. Many of the pilots collected and reported on sex of the household survey respondent (6 out of 8) as well as held women-only focus group discussions (FGDs). Two projects reported demographics related to youth (<29 years), household type (male-headed/ female-headed/ child-headed), and households with a person living with a disability. Only 1 project pilot reported the gender of key informants. The IRC Niger assessment also interviewed gender specialists from Care Resilac.

For those pilots that reported sex disaggregated demographic data, the percent of women respondents varied from 32%-77% with half of the pilots having more than 50% of respondents being female. Of the three pilots that reported on household types, the percentage of women interviewed exceeded the percentage of female-headed households, suggesting that women within male-headed households were respondents to the survey. This is considered good practice, since women are often responsible for seed management for specific crops within the household.

### Gender and Age-Disaggregated Analysis of Household Survey

Although six pilots reported gender-disaggregation of household respondent, only two pilots presented gender-disaggregated household survey results suggesting the disaggregated data is not being fully used. Disaggregating the household survey responses by gender and/or household type can provide additional insights on sources of seed, quality of seed and constraints in access to seed that may vary according to sex and/or household type.

**Table 13: IRC Niger R-SSSA Assessment - Sources of seed by gender**

Crop	Own Seed		Local Informal Market		GoN		NGO	
	M	F	M	F	M	F	M	F
Millet	42		26		8		5	
Cowpea	37	39	63		6		5	
Peanut	40	42	38	40				
Sorghum	47		25		4		2	
Sorel		60		40				
Okra		53		32				
Sesame		33		33				

The Samaritan Purse pilot in South Sudan illustrates the importance of applying a gender lens to the data analysis. The assessment found that the most important crops in the family/male head farm plot that are normally planted in the upcoming season was sorghum, 100% (n=30), followed by maize, 60% (n=18), while on the female headed plots it was okra (67%), maize (30%) and then sorghum (17%). This is important as the seed system security assessment is designed to gather in-depth data only on the 3 most important crops. If the most important crops are different for male-headed and female-headed or male and female respondents, we may not gather in-depth data on key crops for a certain sex or household type.

The Samaritan Purse South Sudan assessment also found that when sourcing seeds, 87% of the male-headed households were planning to obtain seed for each of the crops from the same sources they used in the past whereas, while 43% of female-headed households were planning to change their seed sources to NGOs because it was difficult obtaining the amount and type of seeds they needed from local markets. This is a key finding that should feed into the design of response options given 43% of female respondents cannot obtain the type or amount of seed they want.

The IRC-Niger assessment showed that men respondents would source 37-47% of seed from own-saved seed, 25%-63% from the informal local market, 4-6% from Government of Niger (GoN) and 2%-5% from non-government organizations (NGOs) Women respondents indicated that for their main crops, they would source 39%-60% from own seed, 32%-40% from local informal markets and 11%-27% from community-to-community aid. Only 4.35% of women expect to receive any seed aid from NGOs or the GoN. Youth headed households in Mainé indicated that own-saved seeds will cover 50% while youth of Chetimari and Diffa indicated that 33% of their seed needs would be covered by own-saved seeds. No youth from Mainé expect to source seed from agro-dealers, NGOs or the GoN<sup>25</sup> This gender and age disaggregated analysis could help shape what crops to include in the seed intervention, subsidy amounts, who to target the subsidy, and the approach to be used. It also highlights a concern that the GoN and NGO seed interventions are not reaching critical vulnerable groups such as women and youth. This result would encourage a deeper dive into these differences that would help shape the seed system response.

Analyzing the household data using a gender and youth lens, would shed more nuanced understanding of constraints that male and female farmers, male-headed and female-headed households face. If the

<sup>25</sup> IRC Niger Assessment Report, 2021

disaggregated analysis is used, it could shape seed system responses to better address the needs of different audiences within the same project.

### **Learning about gender and age dynamics through FGDs**

The FGDs provided some insights into gender and age dynamics that may affect women and youth's access and use of seed. The CRS DRC assessment uncovered that seeds are provided by the parents to youth and at harvest time, decisions on the management and use of the income are made by the holder of the harvest (woman or youth) but as a sign of politeness they consult the man (father) who is the head of the family. Generally speaking, it is a cultural norm for women to have the approval of their husbands for any decision to be taken since the man is in many cases the head of the family.

The IRC South Sudan assessment found that seed producer groups are composed of about 25 members, 88% being female. On average, group leadership is composed of a similar percentage of female leaders who are selected through an election during an organized group meeting. Farmers also noted that most group leaders have been trained by NGOs on leadership skills, management skills, sensitized on collective planning and working hard to grow as a group. Decisions on seed production are commonly made by both male and female members.

The IRC Niger assessment learned through the FGD that there is varying access to land by women. In Diffa, 78% of women, who are not the head of household, can access periphery less fertile land outside their family farmlands, compared to 89% in Mainé commune and 56% in Chetimari commune. Women heads of households are more likely to have 100% access to land, normally of higher quality. Youth also declared that they are able access to land for agricultural production.

The Myanmar assessment found that head of household makes decisions about the seeds to plant including the types of crops and the varieties, how to use the harvests and also on the use of cash from the harvest in consultation with other family members, in most cases.

### **Seed System Response Options**

From the data collected and analyzed, response options to guide seed system interventions are developed. Although most projects collected sex and age demographics, only some pilots presented sex disaggregated household analysis, and/ or summarized gender and age-related findings from the FGD. Very few response options consider the gender and age findings. The IRC South Sudan assessment recommended that the improvement of farmer level storage structures through locally accepted improved granaries take into consideration the gender of users. ACTED Kenya and Samaritan Purse DRC assessments included recommendations on increasing access to vegetable seed as these are key crops or sources of food that women gather. The Samaritan Purse response targeted women who are involved in gathering vegetables away from the settlement, which exposes women to abuse and attacks. Samaritan Purse encouraged setting up kitchen gardens to help ensure the vegetables are available nearby. Their assessment showed that vegetable seeds are available from the agrodealers at the trading centers.

An IRC Niger assessment suggested that 'men, women and youth, identified within the community by the seed/inputs company, be trained as agro-dealer representatives and equipped with seeds and other essential inputs to sustainably facilitate farmers' access to quality seeds and conduct demonstrations on proper seed use and storage to improve production and limit loss of seeds during post-harvest storage. The assessment looked at reaching women and youth and connecting them with formal seed companies to create job opportunities. Lastly, the report recommended **organizing seed distribution to**



**households in critical needs**, specifically targeted crops grown by women and youth as indicated by the R-SSSA in Mainé, Chetimari and Diffa commune.

A systematic analysis of the data with a gender and age lens is essential, but we found that the capacity of the teams is insufficient to be able to apply the findings to the response option. Teams need to be supported to identify options or adaptations to options that address the different needs and constraints of men, women and youth.

## Recommendations

The review of these pilot studies brings to our attention the additional support needed by teams assessing seed systems to ensure a gender and age-sensitive analysis and application of the results to shape response options.

- **Inclusion of gender-sensitive training into the R-SSSA training:** During the R-SSSA pilot studies validation workshop (June 2021), it was recommended that training be offered on the use of the tool and its applications. The training can incorporate the importance of collecting demographic information related to sex, age, marriage type, household type and other key vulnerable groups. When training on the data analysis, the database should include gender and age disaggregated data and exercises should require participants to share gender and age disaggregated results. Using the case study results, the participants can brainstorm together to develop seed system responses that address the unique gender and age findings.
- **Electronic data collection software tool:** the data collection software should include as default questions related to sex, age, marriage type, household type.
- **Automated analysis tool:** The R-SSSA Workshop recommended providing a tool that conducts the analysis in real time. This tool should be designed to automatically analyze the data using the gender and age disaggregated data.
- **Pilot adapted household survey tool:** In response to reviewing initial pilot assessment reports, an adapted household survey tool was developed that aims at collecting data based on ownership/ control of household plot by the male-head and female-head.
- **Engage gender advisors:** Country program/ project gender advisors have an in-depth understanding of the gender dynamics in the areas in which activities are being implemented. It is recommended to engage them to help refine the FGD to dive deeper into gender and seed availability, access and use constraints given what is already known about gender dynamics in the assessment implementation zone. The gender advisor can also support the seed team in thinking through seed responses and any adaptations to those response given the gender and age findings.

## 4.2 Learnings from evaluations

S34D conducted two evaluative learnings. One was to assess efficiency of short-term trainings provided to strengthen capacities of the seed sector stakeholders (**Section 1.2.1**). The second was a research study that interviewed seed companies to understand what incentivizes the private sector to expand their crop-seed portfolio (**Section 1.2.2**). These two learnings indicate that with adequate trainings, enabling environment, and sustainable and catalytic partnerships, private entities could expand their crop-seed portfolio.

## 4.2.1 Uganda Seed Companies Training Evaluation

### Background

From September 1-5, 2020, S34D through Agri Experience worked closely with the Uganda Seed Trade Association (USTA) to provide training on seed production, quality assurance, and seed processing and storage. The training topics were selected following feedback from seed companies on specific challenges and areas of focus in which they would be most interested in training. A total of 54 participants from 23 seed companies participated in the training, which was led by two different consultants and experts in their field. To better understand the impact of the training, a follow up survey was conducted to assess changes in outcomes as a result of the trainings provided. Our goal was to understand what capacity strengthening occurred due to the trainings that S34D provided, so those results could be reported.

### Methodology

Surveys were shared with training participants by USTA during March-April 2020. Eleven unique responses were recorded from 11 different seed companies, 10 males and 1 female. During the training in September, 51 participants from 23 different organizations took part but only 11 responses were recorded seven months after the training. The low response rate is likely due to the seven months between the training implementation and the survey; however, any reported changes seven months after the training are more likely to represent long-term impacts on participants. Because of the low female sample size, responses will not be disaggregated by gender. Respondents hold positions including production manager, agronomist, quality control, and plant sales manager. Survey tool is attached in Annex I.

### Results

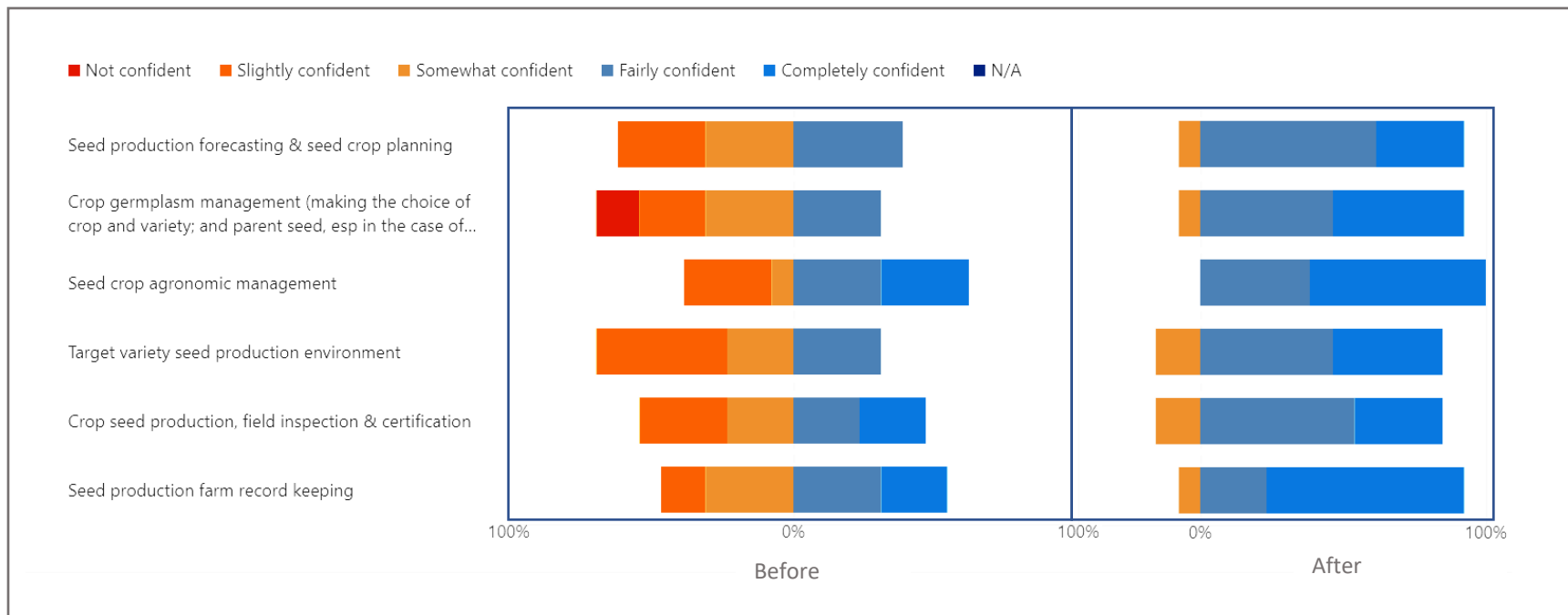
Results are grouped into three sections based on the survey tool: changing confidence in knowledge; changing practices and procedures; and willingness to pay. These results are presented in the three figures below and followed by a discussion of implications.

#### Changing Confidence in Knowledge

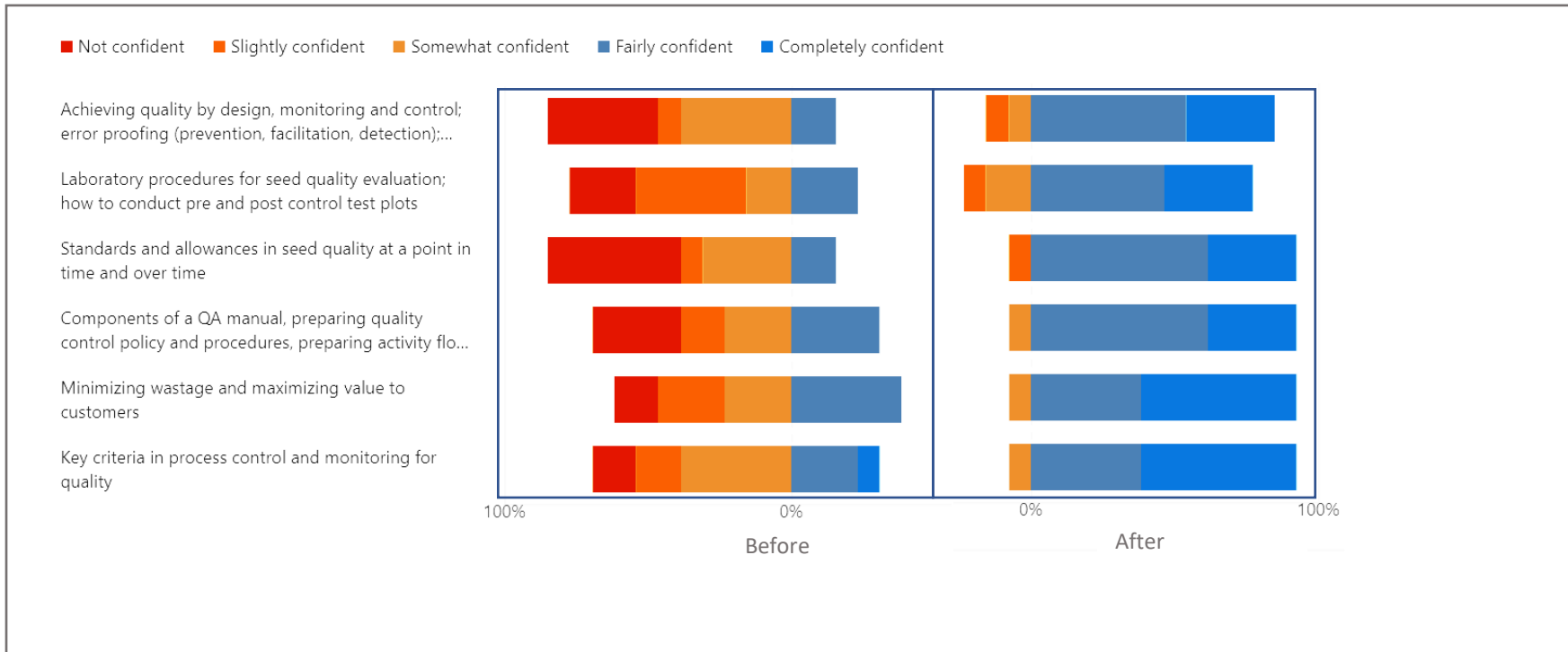
The results from the survey highlighted many changes as a result of the training. Participants shared that most were not completely confident in many aspects of seed production (**Figure 3**) but became more confident following the training. Prior to training, topics such as crop germplasm management and target variety seed production environment were mentioned as areas where participants felt the least confident. Following the training, participants felt more confident in these areas and especially confident in seed crop agronomic management and seed production farm record keeping with 62% and 69% completely confident in these areas, respectively.

For the training on seed quality assurance, participants also had a range of experience and confidence with the subject area (**Figure 4**). Almost half (46%) of participants were not confident in their knowledge of standards and allowances in seed quality prior to the training but following the training, 31% were completely confident. Other areas of improvement in confidence included achieving quality by design, monitoring, and control and laboratory procedures for seed quality evaluation.

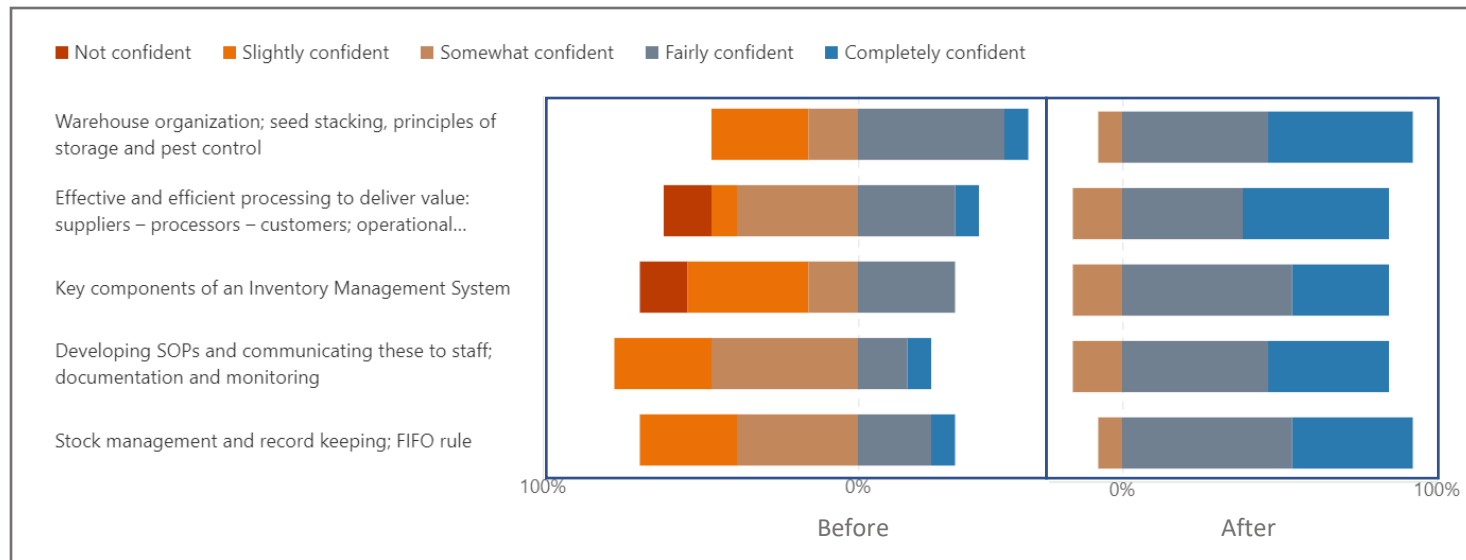
**Figure 3. Participant confidence in seed production topics before the training and after the training**



**Figure 4. Participant confidence in seed quality assurance before the training and after the training**



**Figure 5. Participant confidence in seed processing and storage topics before the training and after the training**



Seed processing and storage was an area where participants generally felt more confident. A majority (54%) of participants felt fairly or completely confident in their knowledge of warehouse organization and 92% felt fairly or completely confident following the training. Effective and efficient seed processing was an area where only 38% felt fairly or completely confident, however, by the end of the training 85% felt fairly or completely confident. Developing Standards Operating Procedures (SOP) and stock management were also areas of considerable improvement in confidence.

### **Changing Practices and Procedures**

When asked about areas where best practices or standard procedures had been changed because of training, participants gave many different responses. Two seed companies highlighted seed treatment procedures, while quality control was emphasized by two others. One commented that “every person in the company has the right to stop a process if quality is being compromised hence it is the responsibility of each individual who contributes to the production. This has greatly changed the perspective of the workers,” emphasizing the critical role of each employee in ensuring quality. Two participants also mentioned the importance of outgrowers for ensuring maximum and high-quality seed production. For two businesses, the “voice of the customer” was the main new principle or practice implemented by the seed company as a result of the training, and one respondent commented “if customer wants 2 cobs of maize, we come up with it.”

Stock management and recordkeeping was important to five different companies, while examples cited only once included using standard inspection forms, improvised labs, certification from the national seed certification council, and packaging and branding. Hybrid maize was emphasized by two seed companies, as well as pest management. One respondent comments that “quality output should be valued higher than the quantity of output” which had contributed to “successfully deliver over 150 tons of seed to different clients in a period of less than 4 months without any serious complaints from our clients.”

The impacts of the changes in practices included increasing demand, reduced losses, and improved quality and quantity of seed. Participants mentioned that growers have more confidence in their seeds now and paying more attention to the voice of their customers. Even simple changes in warehouse management and recordkeeping contributed to “quality in the warehouse increasing profit to the business.” One seed company mentioned that they now produce a new variety of rice based on customer demand, while another mentioned that they responded to customer demand by offering early-maturing maize. Others commented on the improved storage practices and improved standards.

Only one respondent mentioned negative effects from the training: “we have successfully managed to deliver quality seeds to clients. However, the challenge has been that we delivered most seeds past the agreed delivery times since it takes more time to process quality seed.” Despite these challenges, the same respondent also commented that they were now able to more efficiently allocate staff time to ensure quality seeds were packaged in a timely manner.

### **Willingness to Pay**

When asked about their willingness to pay for a similar series of workshops, the average willingness to pay was UGX<sup>26</sup> 262,500 or approximately \$73.76 total. Many requested follow-up, refresher trainings on new topics such as marketing, branding, or pest management. Multiple respondents requested practical, in-person training which was not possible given the COVID-19 restrictions when this training took place. One respondent echoed others’ enthusiasm for follow-up trainings, saying “I honestly appreciate the training as regards warehouse organization; seed stacking, principles of storage and pest control. I have gained valuable information.” Generally, the respondents requested more frequent and more practical, in-person trainings to follow the sessions held in September 2020.

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<sup>26</sup> Uganda Shilling

## Discussion

The impacts of the training were only assessed on 11 of the 23 companies that participated, but these respondents shared very positive feedback. The 11 individuals that participated named a total of 42 improved practices or procedures and 31 positive impacts of the training. This suggests that the participants continued applying the skills and knowledge they gained during the training, even seven months later. Participants also demonstrated the value they placed on the training through their willingness to pay, which extended from UGX 150,000 to 500,000 or \$42.15-\$140.50. While this would cover only a small fraction of the costs of the training, the large number of participants who requested follow-on training suggests that there is an appetite for future training on similar or new topics. Participants demonstrated increased confidence in specific topics and practical changes in their daily activities. These resulted in reported increased profits, customers, and quality for the seed companies. Future trainings should consider the feedback provided by these participants, including the suggestions for future training topics. Despite the number of previous trainings that participants had previously attended, their interest in new trainings from USTA suggests that they value the expertise and reputation of the association and may be willing to share the costs of future trainings.

### 4.2.2 What incentivizes private entities to expand crop-seed portfolio? <sup>27</sup>

S34D interviewed twenty seed companies in Kenya, Uganda and Tanzania. The study methods included: (a) in-depth interviews with selected seed companies in USA and East Africa; and (b) a cross-sectional survey involving a short semi-structured questionnaire. The questionnaire was administered face to face<sup>28</sup> and follow up questions were included using telephone, skype interviews and emails. The primary data was complemented with desk-based research using publicly available information on indices and metrics. Qualitative data was transcribed verbatim, and the transcripts analyzed to generate themes. Quantitative data was analyzed using Microsoft excel.

The study interviewed 21 seed companies in East Africa, seven in each County (**Table 14**). The goal was to have a sample with various company sizes to distill learnings for our research questions. Out of the 21 seed companies, 2 were international, 10 regional and 9 local companies<sup>29</sup>. The number of employees in the study country varied by type of company with international companies having on average 33, regional 55 and local 38 employees. International companies had more branches or offices compared to regional seed companies while all the companies had at least 2 offices within the study countries. Countries were selected based on current activities under the S34D portfolio and to build on established work by partners on formal and informal seed systems. The East Africa regional corridor

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<sup>27</sup> We appreciate Dr. Losira Sanya, Makerere University, Uganda and Mr. Kangile Joseph from Sokoine University of Agriculture, Tanzania for coordinating data collection in Uganda and Tanzania respectively. Finally, we recognize the cooperation and support from Seed companies in Kenya, Uganda, Tanzania and USA. The study was conducted in close collaboration with Justus Ochieng is a Scientist, Social Science and Impact at Bayesian Consulting Group (BCG), Nairobi, Kenya; Capable research assistance was provided by Dr. Marcia Croft (CRS).

<sup>28</sup> Due to COVID-19, virtual interviews were combined with face-to-face interviews. All the interviews in Uganda and Tanzania were face to face while 2 interviews in Kenya were virtual via zoom. During the data collection, all the COVID-19 spread reduction strategies were followed as provided by the Ministry of Health (MOH) such as social and physical distancing, wearing facemasks, and use of hand sanitizers.

<sup>29</sup> International company was defined as company that has branches or offices in more than one continent, Regional has branches or offices in more than one country while local companies are in country based.

also includes Kenya, Tanzania, and Uganda, the three countries selected for this study. Seed enterprises were selected to include a variety of both international, regional, and local companies to include diverse perspectives. Inter-regional trade also allows for the flow of formal and EGS seed between the three countries selected and was captured by including the three selected countries and their seed enterprises.

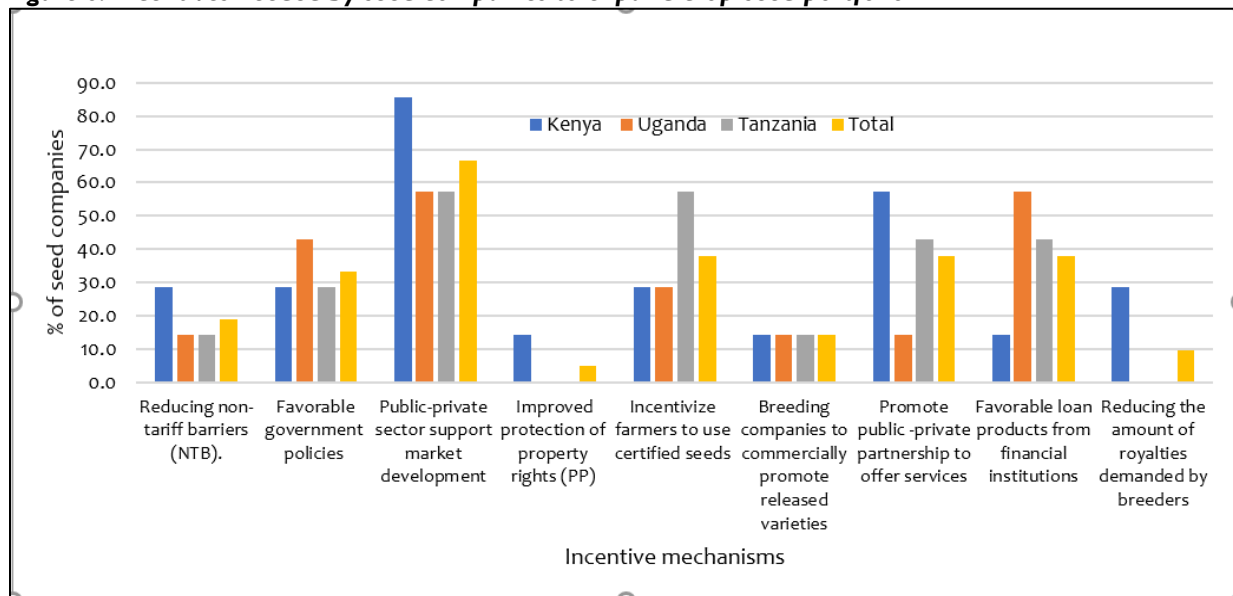
**Table 14. Distribution of seed companies by type and country**

Country	Type of company			Total
	International	Regional	Local	
Kenya	1	3	3	7
Uganda	0	4	3	7
Tanzania	1	3	3	7
Total	2	10	9	21
Mean number of employees	33	55	38	42
Mean number of branches outside the country	16	3	0	3
Mean number of branches in the country	2	3	2	2

The seed companies were asked about the incentives they needed to expand crop seed-portfolio (**Figure 6**). Of the companies interviewed, 19% mentioned that the governments should reduce non-tariff barriers (NTB) that restrict trade such as licenses, embargoes, roadblocks, sanctions (long clearing procedures at the port and levies etc.). This was mostly mentioned by large companies (international and regional companies) that exports seeds. There is need for favorable government policies in reducing the long bureaucratic importation process of seeds into the region. Similar concerns were reported by Gamba, 2016. Moreover, 90% of seed companies interviewed asserted that they needed support on market development to help them to efficiently market their seeds and reach small-scale farmers in the region, incentivizing farmers to use certified seeds through training and extension services and ensuring availability of EGS. Partnership with NGOs and government ministries to support seed companies with scaling, extension, training services and breeding was mentioned by 57% of the companies. Other incentives included favorable loan products from financial institutions, and reducing the amount of royalties demanded by breeders and improving protection of property rights especially for companies with own varieties.



**Figure 6. Incentives needed by seed companies to expand crop-seed portfolio**



Smallholder farmers in Sub-Sahara Africa (SSA) need sustainable access to high-quality seeds to not only improve their incomes, food and nutrition security, but also to help absorb shocks, adapt to shocks, and build transformative capacity. The formal seed system is often unable to meet the demand for quality seeds since seed companies face bottlenecks to introducing new seed varieties particularly in SSA. Seed companies often consider a wide range of factors before introducing a new crop-variety into their product portfolio for commercialization. This study investigated the incentives that could encourage seed companies to broaden their crop portfolio.

Interviews indicated seed companies consider seed demand, competition in the seed industry and crops with higher nutritional content, resilience to emerging diseases, and promoted varieties by other organizations among other factors, before introducing a new variety into their portfolio. Enabling factors such as government policies and availability of suitable areas for producing and availability of Early Generation Seeds (EGS) for the identified variety are other key factors that affect the production portfolio of the private seed companies. The most important challenges preventing seed companies, particularly small seed companies, from expanding crop-seed portfolio include high cost of seed certification, persistent incidence of fake seeds, lack of enforcement of regulations and policies, poor business environment and limited internal capacity of the seed companies.

Partnership can support seed companies to expand crop-variety portfolios for the benefit of farmers, but also to be able to cope with the impact of pandemics and shocks. Commercializing new varieties could benefit from partnerships between local and international research centers and private companies.

The COVID-19 pandemic has disrupted the seed sector because of the control measures undertaken by the government as indicated by 76% of the seed companies in our study sample. These measures have led to disruption in flow of inputs and output to markets which include reduced production and traded seed volumes due to lack of customers, low cash flow and inability to promote seed products due to restricted movement of human and goods.

Based on the findings, several types of incentives could encourage seed enterprises to diversify their crop-variety portfolios. Partnerships with relevant research centers, NGOs and CSOs, and government

bodies could help connect seed enterprises to a wide range of adapted seed varieties. In addition, these partnerships could connect enterprises to important business development services including market development strategy planning and other capacity strengthening options. These efforts may help seed enterprises expand sales points at the last mile, including connecting to youth and women entrepreneurs.

Diversifying crop-variety portfolios may help seed enterprises expand their customer base and better respond to smallholder farmer demand, but one major constraint to diversification is the high cost of certification. More streamlined government policies on seed certification, including an increased number of licensed inspectors, would help create an enabling environment of accountability and transparent enforcement to promote private sector growth. Improving cross-border trade of certified seed and EGS would also enhance the diversity of seed available to enterprises and farmers, but would require changes to government policies that currently slow the exchange of seed across Kenya, Tanzania, and Uganda.

Finally, the COVID-19 pandemic has had a strong impact on 76% of the seed companies interviewed. This suggests that seed enterprises may not currently be ready to take on additional risk by offering a wider selection of crop-varieties and political interventions may be necessary to reduce risk. Governments, donors, and other stakeholders can help mitigate or share risk with seed enterprises by carrying out market studies, subsidizing the cost of research and development for new varieties, creating greater awareness of the benefits of certified seed, or facilitating greater access to finance, as necessary.

## **Recommendations**

- Seed companies should collaborate with other actors to co-develop marketing strategies, provide training and extension services to stimulate demand for certified seeds among small scale farmers. These partnerships can be done with CGIAR (e.g., CIMMYT, ICRISAT, CIAT, IITA), AGRA, and CSOs and NGOs working on market development among others.
- Seed companies can diversify their crop-seed portfolio to increase access to quality seeds at the last mile with appropriate incentives. The seed companies would be motivated to expand their portfolio if varieties are able to respond to the needs of the clients e.g., availability of early maturing, drought resistant/tolerant, highly nutritious varieties and resistance to emerging pests such as MNLD.
- Seed companies and stakeholders in the seed industry should strive to remove barriers to expanding crop-seed portfolio and increase access to quality seeds at last mile. Major barriers include high cost of seed certification, lack of enforcement of regulations and policies, poor business environment and limited internal capacity of the seed companies, as well as seed companies' internal capacity and costs to conduct market research.
- Seed companies should expand delivery options to reach new customers at the last mile e.g., supporting establishing seed kiosks in remote rural areas targeting youth and women entrepreneurs.
- The seed import and export system should be enhanced by reviewing policies that limit seed exchange across borders. Cross-border trade is curtailed by long wait times and high costs of processing export documents. Currently, the seed importation process takes on average 7 days to import seed into Kenya, 15 days in Uganda, and 12 days in Tanzania. These factors mean that few traders directly venture beyond the borders and would rather stop at the border points.
- COVID-19 negatively affected seed business in East Africa and the government should support seed companies to bounce back through giving tax incentives while seed companies should prioritize in-country seed production, integrate technology into seed businesses, diversify into other business or range of products to spread risks, achieve better utilization of their assets or smooth out seasonal cash flows which makes them better prepared for future pandemics and shocks.

## 5. Summary by country

### Kenya

**Standard Seed** Protocols were developed for cowpea, green grams, soybean, groundnut, common beans (in dryland locations), OPV sorghum, finger millet, cassava, sweet potato, and indigenous vegetables (Amaranthus, African Black Nightshade, Crotalaria, Spider Plant, Jute Mallow) with Kenya Plant Health Inspectorate Service (KEPHIS), private seed companies, breeders from public research institutions and other interested partners. S34D piloted standard seed production with three seed producers for cowpea, green grams, groundnuts and sorghum. A total of 67 outgrowers were trained in standard seed certification by KEPHIS, and good seed crop agronomic practices by Agri Experience. Due to severe drought in the coastal region of Kenya 17 outgrowers lost their seed crop. The remaining 50 outgrowers had their seed crop inspected and 16 of the 18 outgrowers passed both field and lab inspections. Two farmer fields failed the field inspections due to weeds. In terms of volume, 106 MT of OPV sorghum, green gram and cowpea were sampled and tested in the pilot under standard seed. Sticker labels have been issued for 2.3 MT of standard seed which is now ready for sale.

The **Financing Potential** of the Seed Sector in Sub-Saharan Africa report<sup>30</sup> was completed and posted to the DEC This report provides country-level assessments of the supply-side financing gaps and opportunities within the agricultural financial services sector, specifically for the purpose of expanding access to financing for the seed sector. Based on these reports, S34D wrote a gender learning brief in the semi-annual report<sup>31</sup>.

The **micro-franchise model** prototype was rolled out during the short rainy season in the semi-arid lowlands of Tharaka Nithi in Eastern Kenya. The micro-franchise model offered opportunities to FreshCo Seed company to engage with more agro-dealers and farmers, whom they would not have targeted had they only dealt with their town-based network of wholesalers. Previously, customer feedback was limited to what the wholesalers told FreshCo. Now they received firsthand feedback from last-mile farmers and MFEs, who tried FreshCo's certified seed varieties suitable for that agro-ecological zone. This is helping FreshCo to adjust their messaging to accommodate farmer feedback, e.g., training needs.

After the first season of the **niche market business model pilot**<sup>32</sup> in FY20, S34D completed the second season of this pilot in FY21 and the second season report is forthcoming. Farmers reported that the newly released and bio-fortified *Nyota* performed very well and matured within the short duration that was expected of the variety. With the grains produced, most farmers consumed them as food and/or saved the grains as potential planting material for next agricultural season. This means that seed companies when producing certified *Nyota* or any OPV seeds need to take into account the frequency with which farmers replenish seed stock from agrodealers. Many farmers do not buy OPV seed every year. Another key implication for last-mile delivery mechanisms is that farmers were not aware of how to increase efficiency and business of the boda boda riders in delivering / distributing *Nyota* seeds at the last mile. Majority of farmers showed interest in using the boda boda services to deliver seeds. This

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<sup>30</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00X894.pdf](https://pdf.usaid.gov/pdf_docs/PA00X894.pdf)

<sup>31</sup> S34D FY21 SAR: [https://pdf.usaid.gov/pdf\\_docs/PA00XVC3.pdf](https://pdf.usaid.gov/pdf_docs/PA00XVC3.pdf)

<sup>32</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00XV64.pdf](https://pdf.usaid.gov/pdf_docs/PA00XV64.pdf)

shows there is market and demand for ‘Uber’-ization of improved agricultural inputs, including improved seeds at the last mile in Kenya.

## Uganda

S34D developed and presented the **Uganda seed profile** to the national stakeholders, USAID Uganda and USAID Washington. Feedback was incorporated in the final report. This report, the profile, focused on four aspects of the seed sector in Uganda and the interactions between them – the (i) formal seed system, (ii) semi-formal<sup>33</sup> or Quality Declared Seed system, (iii) informal seed system, and (iv) emergency seed provisioning. It examined current strategies for seed sector development and made recommendations for ways in which more integrated, mutually supportive seed systems could be promoted at the broad, sectoral level, to increase smallholder farmers’ access to quality seed of improved varieties. The report is currently under review by USAID Washington.

Uganda was part of a **global empirical study** to better understand how seed producer groups operate in five countries (Vietnam, Niger, Zambia, Uganda, and Guatemala) across three continents (Asia, Africa, and Meso-America). The report is forthcoming.

S34D and CRS Uganda tested nine actions based on the recommendations from the ‘*Diversity for Nutrition and Enhanced Resilience (DiNER) Fairs and Voucher Programming: Evaluation and Learning in the Southern Africa Region*’ report (forthcoming). S34D supported CRS Uganda to **develop and implement an actionable plan** as part of a flood response. This response was part of FY20 activity 1.3.1.4. Develop actionable plan based on lessons emerging from the cash transfer and market studies completed to date, and the (on-going) FY19/20. (DiNER) evaluations in Southern African region. The report of this work in Uganda was completed<sup>34</sup>.

The **Financing Potential** of the Seed Sector in Sub-Saharan Africa report<sup>35</sup> was completed and posted to the DEC. This report provides country-level assessments of the supply-side financing gaps and opportunities within the agricultural financial services sector, specifically for the purpose of expanding access to financing for the seed sector.

## Tanzania

The **Financing Potential** of the Seed Sector in Sub-Saharan Africa report<sup>36</sup> was completed and posted to the DEC. This report provides country-level assessments of the supply-side financing gaps and opportunities within the agricultural financial services sector, specifically for the purpose of expanding access to financing for the seed sector.

The ‘**Stop Bad Seed campaign**’ received 489 SMS messages from farmers, with 131 messages received in the first week when the campaign was ongoing, and the rest (358) received after the campaign stopped airing. Farmers kept sending messages up to 9 months after campaign stoppage, which means that they save the short code and shows a need for a platform for farmers to record their complaints on low quality or fake seed. Complaints received covered the following topics: poor germination (39%), pests in the seed packet (26%), diseases (25%) and different variety other than the

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<sup>33</sup> Semi-formal in the sense that QDS is a recognized and legal seed class but is often produced within a less formal inspection and production system, often with a more informal, farmer-based business model.

<sup>34</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00XS93.pdf](https://pdf.usaid.gov/pdf_docs/PA00XS93.pdf)

<sup>35</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00X894.pdf](https://pdf.usaid.gov/pdf_docs/PA00X894.pdf)

<sup>36</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00X894.pdf](https://pdf.usaid.gov/pdf_docs/PA00X894.pdf)

one indicated on the seed packet (10%). A report of this work was completed and shared with TOSCI and USAID Tanzania. Farmers made numerous calls to the radio stations asking for general advice on recommended varieties for their regions, agronomic practices and how to identify authentic seed, indicating a need for farmer education. For some farmers, identifying the variety name on the seed packet proved to be a challenge. A report of this work was completed and shared with TOSCI and USAID Tanzania.

Previous years work in Tanzania on the **analysis of the yellow bean corridor** was completed and the report had been made public<sup>37</sup>. This work will be disseminated on AgriLinks during December 2021 Seed Systems Theme month.

## Malawi

The **Financing Potential** of the Seed Sector in Sub-Saharan Africa report<sup>38</sup> was completed and posted to the DEC. This report provides country-level assessments of the supply-side financing gaps and opportunities within the agricultural financial services sector, specifically for the purpose of expanding access to financing for the seed sector.

## Ethiopia

Six seed **sector regulatory system maps** (RSM) were completed for the current seed laws in Ethiopia. Another six maps were completed based on proposed changes in the seed laws. The six dimensions are (1) public varietal research, development, and transfer; (2) seed dealer and venue registration; (3) seed variety registration and release; (4) plant variety protection; (5) seed certification and quality assurance; and (6) anti-counterfeiting and consumer protection. The goal is to foster transparency on how the seed regulatory arena functions so that private entities have knowledge on how to navigate around these regulations to establish businesses in the country. Additionally, having two side-by-side analyses of the same dimensions help to compare what might be expected to change as a result of the differences in current versus new seed laws. During the consultations, seed companies noted that they had believed they were required to own land prior to being granted a CoC, yet the Council of Ministers Seed Regulation No.375/2016 (2016 Seed Regulation) only requires access to land, which can be leased, borrowed, or accessed through outgrower farmers. Further, the variety registration and release processes are unclear, and, in many instances, the stakeholder experiences differ from what is set out under the law. S34D found there is a need to popularize the Plant Variety Protection (PVP) laws, as many of the stakeholders were not aware that the PVP laws had been operationalized.

S34D facilitated and initiated the implementation of **seed policies and directives** using the seed regulatory value chain concept from existing literature. The study framed the various seed policies, laws, regulations, and directives on seed sector in Ethiopia into a few key domains: variety release; variety registration; EGS production and management; seed quality assurance; standards and procedures; seed certification process; seed labeling; seed marketing. For the purposes of this study, S34D narrowed it down to the domains of seed certification and labelling. This activity will continue in FY22.

S34D conducted a literature review, and analyses of different seed indices available to conclude that very little is known about and hardly any structured information available on **forage seed system**. Using learnings from the forage seed sector, a set of indicators were identified as “must- haves” to assess

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<sup>37</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00XS8V.pdf](https://pdf.usaid.gov/pdf_docs/PA00XS8V.pdf)

<sup>38</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00X894.pdf](https://pdf.usaid.gov/pdf_docs/PA00X894.pdf)

movement and progress on forage seed system. The team designed a survey instrument to gather the data against the key indicators identified.

The **seed demand forecasting** assessment was completed. S34D led a virtual/in-person workshop to validate the findings. The draft report was submitted to USAID for review.

## Zambia

Zambia was part of a **global empirical study** to better understand how seed producer groups operate in five countries (Vietnam, Niger, Zambia, Uganda, and Guatemala) across three continents (Asia, Africa, and Meso-America). The report is forthcoming.

With previous funding from Feed the Future Initiative and USAID in FY20, the Southern Africa Seed Trade Project and S34D supported SCCI in setting up their **seed inspectors' training** via the Zoom platform. The seed industry appreciated the innovative approach of conducting seed inspectors' training using a virtual platform and SCCI conducted three virtual trainings during FY21 for Zambian, Mozambican and Malawian seed inspectors. SCCI trained 147 people (35 women) and 113 passed (26 women) the test. For Zambia, the training also consisted of a week of physical practical training in the field. S34D is supporting the SCCI with developing the **online e-learning platform** which will facilitate training of seed inspectors online as opposed to using Zoom. The E-learning platform covers maize, sunflower, beans, soybean, wheat, rice, sorghum, groundnuts, sweet potato, pasture legumes, such as dolichos lablab and sun hemp, pasture grasses, cotton and cassava. Out of the 22 training modules, 8 have been finalized. The other modules will be completed in October.

## DRC

Data collection has been completed in the DRC for a **three-country study on fragile states**. An S34D Fragile States team workshop was held in September to present the preliminary findings from the literature review and from the DRC and Haiti case studies, and insights from South Sudan. A range of emergency seed interventions are being implemented through various modalities in all three case study countries. Community-based seed production (CBSP) was found to be common across all three countries, but there were issues with the quality of foundation seed, appropriate quality standards, and quality control. In DRC, some of the CBSP groups have become fledgling private seed companies. A seed market development opportunity exists to link traders with CBSP groups / emerging seed companies so that traders buy CBSP seed and then sell direct to other farmers. Rather than buying and re-distributing seed and planting material, NGOs can provide training, capacity support and business linkages to CBSP groups / fledgling seed companies; capacity support and business linkages for traders; and cash / voucher support to enhance purchasing power of farmers.

S34D assessed **the role of market pull to enhance resilience of seed supply** and respond to emergency needs under informal seed systems in South and North Kivu. The Alliance-PABRA in collaboration with INERA, the team was able to collect and collate data from over 800 bean and cassava traders spread across North and South Kivu. A validation workshop with the core team in the two provinces allowed feedback to complement the collected data. The study identified informal traders (of bean and cassava planting material) as critical to the process of information sharing amongst farmers. The study also found lower participation of women and youth in the overall potential seed and planting material trade. Additionally, where they were active, their ability to make sales like their male (and

older) counterparts was diminished due to multiple reasons. The lack of regular training on seed business and multiple taxes were some of the key concerns raised as impediments to unlocking benefits for the marginalized. The study recommends two seed supply models that can be tested to unlock existing opportunities: A formal (INERA) to informal seed supply system with informal traders and local seed and planting material producers. The second one is a formal seed supply model involving INERA, formal seed companies, decentralized seed shops (agro-dealers), culminating into farmers and or informal traders.

## Benin

For the development of the **policy brief on seed registry**, S34D worked with a local consultant who conducted the field work and interviews. Two survey instruments were developed – one for the policy makers Institut National des Recherches Agricoles du Benin (INRAB), and the other for the farmers. Interviews were held and data were collected.

## 6. Problems and Solutions

### Activity 0.1 Develop country profiles and framework for engagement in Uganda.

One of the key findings from the seed profile report in Uganda, was that high levels of persistently subsidized or free seed that is distributed into the seed system is having a corrosive effect on the credibility of the formal seed sector and the quality of seed. Another challenge was the lack of gender and age specific data in the information S34D was able to gather.

### Activity 1.2.4.1 (CCIR 2.3.1): Finalize Point-of-Sale pilot for the niche business model in Kenya, and disseminate the final second season report to complete the pilot in Kenya (core).

The last mile seed delivery related activities have created a huge seed demand of Nyota variety and attracted several seed companies. For instance, since 2020 more than five companies have engaged in the supply of Nyota seed and have created a lot of seed demand of the Nyota variety. This has put considerable pressure on existing supplies of Early Generation Seed (EGS) by KALRO to satisfy the demand of the seed companies. To ease that pressure, KALRO has licensed two companies to produce EGS and continue with subsequent seed grades.

### Activity 1.3.1.1. Participatory Impact Assessment (PIA) of emergency seed interventions (OFDA core).

The on-going pandemic has prevented fieldwork under EHAR's Participatory Impact Assessment (PIA) activity, and the international PIA consultant contracted to be part of the field team sadly died of COVID in August 2021. The PIA consultant has been replaced with the second candidate identified by the recruitment process. Due to the delay in the fieldwork, the relief seed interventions to be assessed had to be re-selected. This is because one whole season (from planting to harvest) needs to have taken place before each of the interventions is assessed (so that we can determine the impacts of the harvest from the seed provided), but not more than one year should have elapsed since the intervention because the participants will find it difficult to recall the details and the impacts.

### Activity 1.3.3.1 Develop tools for rapid, remote seed system security assessments (BHA).

At first, glance, the Rapid SSSA is only marginally faster than the standard SSSA (14 days vs 20 days). This throws into question the labeling of the methodology as rapid. Incorporating digitized data collection and automated data analysis will significantly speed the process. Participants felt that the skeletal training guidance provided in the methodology was inadequate. Development of a more complete training package will help resolve this issue

The degree of gender analysis varied among the pilots. In order to ensure a more systematic incorporation of gender into the R-SSSAs, gender sensitive training should be included in the training package, the revised gender sensitive household survey tool should be made available, and country program gender advisors should be engaged in the process. In addition, the sample size should be increased to allow for gender disaggregation in the analysis and gender breakdowns will be provided in the automatic data analysis.

While the R-SSSA was designed for simplicity reducing the need for seed security experts, results for the pilots demonstrate that for particular phases of the assessment, particularly the response analysis, advice of seed system experts enriches the interpretation of recommendations.

### Activity 2.2.2.2 Support the emergence of enhanced and resilient seed sectors in fragile states, e.g. in DRC, South Sudan, Haiti (core).

Under this activity, Haiti had been selected as an example of a fragile state for a deep-dive case study. Haiti exemplifies many of the aspects of a fragile state, including unstable governance, which was



unfortunately exacerbated during the past year. During the remote data collection period for this case study, the Haitian president was assassinated, making it impossible to interview government stakeholders who were rapidly adjusting to a new government. In addition, an earthquake and hurricane took place in the southern districts of Haiti. Many of the stakeholders with valuable information on seed systems in Haiti were also involved in the response to these two emergencies. This meant that fewer stakeholders' perspectives were captured as the timing of this case study overlapped with several major crises in country. In the DRC, there was overall ability to interview key respondents in South Kivu. Part of the data collection exercise in North Kivu was, however, disrupted with the May eruption of the Mt. Nyiragongo volcano. A follow up survey was undertaken under Activity 2.2.3.2 to fill in any missing data points.

#### CCIR 1.2.3 Implement and pilot Standard Seed Protocol in Kenya (core).

1. Difficulty in registering vegetatively propagated crops (VPCs) in the KEPHIS e-certification MIS, due to the fact that seed producers of VPCs need not be seed entities, but the MIS cannot bypass the first step where details of the seed entity are required, before moving on to the second step of registering the field. KEPHIS is aware of this challenge and will in the interim apply a manual approach to registering VPC crops, as a long-term solution is sought.

2. A single field inspection is both positive (cheaper due to reduce mileage charges) and very risky, as the seed grower loses the opportunity to receive correctional advice from the regulator which comes with multiple visits. The seed growers need to be well versed with the requirements and protocols applied for certification. In order to avoid a lot of rejections of field crops, we organized the training of outgrowers and coached them throughout the production period. Moving forward, this training will be formalized with KEPHIS, and could be a training they consider having periodically.

3. The serious drought that hit the Kenyan coastal region and resulted in total seed crop failure for one of the pilot Standard seed growers, is a lesson to consider investing in irrigation, especially for seed production.

4. A general low productivity was observed among the seed producers, compared to volumes prescribed by variety developers, which may be attributed to poor agronomic management practices. This is however a serious issue as the crops under Standard seed production do not have high yield advantages compared with hybrid crops and losing the little yield gain may discourage adoption of quality seed. In FY22, we have proposed to establish if the growers' practices are misaligned with optimal practices and having recommendations which will help mitigate the problem.

#### 2.2.3.2. Assess the role of market pull to enhance resilience of seed supply and respond to emergency needs under informal seed systems in South and North Kivu in DRC (core).

Due to COVID-19 travel restrictions, the Alliance –PABRA team could not travel and there were some initial challenges to carry out the study. However, building on the existing PABRA partnership framework, the Alliance –PABRA worked very closely and enabled INERA – Mulungu team through remote training on use of tablets, data collection and analysis, technical backstopping. As a result, the study could go ahead, and now the report is being finalized. This also enhanced the study process and report ownership by INERA and its partners. This will give generate ownership of subsequent activities emanating from the recommendations.

## 7. Best Practices in General, and for Dissemination

Over the past years and specifically last year, S34D and USAID Washington engaged with several new Missions. Engaging with Missions with USAID Washington's support and guidance has been very fruitful. Because of the fast-changing working environments, due to man-made or mother nature's actions, S34D was forced to step up its adaptive management strategy: quickly responding to Missions needs and requests and being flexible with changing technical approaches and activity designs from one seed sub-sector to another.

Activity 0.1. The verification session for the draft Uganda Seed Profile report offered an opportunity to verify the data, findings and conclusions presented in the draft report. Such verification is essential for reports that might be regarded as particularly sensitive. After the national stakeholder meeting, S34D presented the profile to USAID and the report is now being reviewed by USAID Washington.

Activity 2.2.3.1 (FY19) and activity 2.2.3.2 (FY20): The FY20 EHAR activity on "free seed" identified two alternative, innovative approaches to building resilience in both formal and informal seed systems. (i) In contrast to the distortionary market effects of earlier free seed programmes in Mozambique, the Innovation for Agribusiness project (InnovAgro, 2011-21) was designed to develop inclusive, commercial, market-driven systems for agricultural input supply for smallholder farmers. InnovAgro's successful, long-term approach involved stimulating farmer demand for certified seed, facilitating commercial links between seed suppliers and smallholder farmers, capacity development among seed suppliers, and the creation of a conducive enabling environment for seed industry development. (ii) The Kenya Cereal Enhancement Program – Climate Resilience Agricultural Livelihoods (KCEP-CRAL, 2015-22) project is a long-term resilience programme that was essentially designed to replace the earlier repeated emergency seed interventions in disaster-prone areas. It focuses on crop diversification and climate resilient varieties and has a value chain approach to encourage the adoption of new, appropriate varieties. By taking a long-term approach, the seed demand by the project is more predictable, helping to reduce the market volatility in formal sector seed production. Seed is provided through e-vouchers and private sector agro dealers, potentially increasing last-mile distribution. A sliding subsidy value theoretically avoids the problem of crowding out smallholder farmers' own purchases of seed from the formal sector. S34D presented the findings from this work to USAID in May.

CCIR 1.2.3 Implement and pilot Standard Seed Protocol in Kenya (core): The systemic change approach which included wide consultations with permanent actors during the development of Standard seed protocols, has helped in the crowding in of seed companies who produced Standard seed outside the pilot entities. This trend is most likely to continue with increased number of seed companies crowding in to produce more crops and varieties. The systemic approach is important in ensuring sustainability, and the continued production of Standard seed even after the project ends.

Activity 1.3.3.1 Develop tools for rapid, remote seed system security assessments (BHA): Undertaking the revision of the R-SSSA toolkit and piloting the methodology through the Agriculture Working Group of the global Food Security Cluster (gFSC) provided S34D a platform to review and test the methodology. The gFSC has enabled the R-SSSA to reach a scope and scale that would have been unlikely without its collaboration.

S34D was invited to present a panel session on 'Market-based Seed Responses in Recovery & Resilience Programming' as part of the CRS Markets Community of Practice. This provided a good opportunity to liaise with partners and collaborators to take part in the presentation, and generated useful feedback

from the CoP members. This allowed S34D to reach a new audience and disseminate best practices in supporting and developing markets for long-term seed responses.

## 8. Collaboration

In Kenya, S34D has continued to work closely with KEPHIS in developing the standard seed protocols. Also in Kenya, S34D continued to collaborate with KEPHIS and KARLO on the niche market business model pilot.

In Zambia, S34D is working closely with the SCCI on developing the e-Learning online platform for seed inspectors.

In Uganda, S34D collaborated with CRS Uganda on designing and implementing seed fairs to support ongoing seed market linkages in response to floods in Eastern Uganda.

In the Eastern DRC, the S34D EHAR team explored insights drawn from emergency practitioners working with informal traders, private sector and research (INERA). Also in the DRC, the Alliance and PABRA collaborated closely with INERA to assess the role of market pull.

The PIA activity is being implemented in collaboration with the Global Food Security Cluster, specifically World Vision International. S34D will undertake assessments of selected WVI and CRS interventions in Uganda and Mozambique. Preparatory meetings have taken place with relevant WVI and CRS country staff.

The R-SSSA was developed in collaboration with the Agricultural Working Group of the Global Food Security Cluster and tested by 9 international NGOs in seven countries.

S34D collaborated with CRS Nicaragua and Guatemala on two assessments about seed vouchers and seed fairs.

In Kenya, S34D through the Alliance –PABRA, collaborated with KARLO, five companies and three grain traders, three county governments, KEPHIS and several other development partners.

In the DRC in North and South Kivu, S34D through the Alliance –PABRA collaborated with INERA, informal seed and grain traders, several NGOs and UN-FAO, provincial governments, SENASEM and IITA.

## **9. Associate Awards**

There were no Associate Award activities in FY21.

## 10. Next steps

There are a number of reports from previous years that are now completed and approved. S34D will disseminate these reports through the appropriate channels in the first and second quarter. In December S34D and Agrilinks will host a seed systems theme month, and this theme month will be used to disseminate these reports as well.

In the first quarter of FY22, S34D will focus on wrapping up the following FY21 activities, which is mostly finalizing reports:

*Activity 1.2.4.1 Finalize Point-of-Sale pilot for the niche business model in Kenya and disseminate the final second season report to complete the pilot in Kenya.* The report for this work will be finalized.

*Activity 1.3.3.1 Develop tools for rapid, remote seed security assessments.* Determine how the R-SSSA will be packaged. Discussions will be held with USAID and gFSC partners to determine the value added of the R-SSSA to existing standard SSSA and if “rapid” is an appropriate description. Subsequently, determine where the toolkit will be housed. Revision of the tools -The pilot enabled participants to identify gaps and weaknesses tool structure, content, and phrasing of questions. These changes will be incorporated into the tools before finalization of the toolkit. Develop automatic data analysis for the tools - Data analysis was one of the more time-consuming elements of the pilots. An automatic system will save time and ensure consistency of analysis among assessments.

*Activity 2.2.2.1 Design seed vouchers & fairs (SVFs) for resilience and/or long-term programming (core).* S34D is anticipating feedback from USAID on the report and will then finalize the report and disseminate it.

*Activity 2.2.3.2. Assess the role of market pull to enhance resilience of seed supply and respond to emergency needs under informal seed systems in South and North Kivu in DRC (core).* The report of this activity is being reviewed and S34D is anticipating being able to submit the report to USAID in the first quarter.

*CCIR 1.1.1. Develop and compare regulatory system maps in Ethiopia (Mission).* S34D will conduct an in-country dissemination/sensitization through a remote online discussion session, followed by a global webinar to disseminate and share the final output. S34D is also conducting discussions to embed the RSMs with a suitable and relevant in-country partner for further deployment and uptake.

*CCIR 1.2.1. Compare seed clubs and QDS Producers: South to South Learning; compare with Niger Federation of millet growers (core).* The report is almost final and ready to be submitted to USAID for review.

*CCIR 1.3.1. Develop policy brief on seed registry in Benin (core).* The field work and analysis has been done and the report is being drafted.

*CCIR 1.3.3. Facilitate and initiate implementation of seed policies and directives in Ethiopia (buyin).* S34D will choose a sample of woredas and zones to assess the bottlenecks why labelling cannot be done per the directives issued in the country. Structured surveys will be designed to interview administrative and expert stakeholders in the field. This may also entail field work in kebeles and woredas. The analyses will first be vetted through a remote stakeholder workshop and then results will be disseminated via a webinar on MS Teams.

In the first quarter of FY22, the FY22 work plan activities tasks are:

*Activity 0.1. Develop country profiles and framework for engagement in Kenya, Uganda (FY20) (RFS).*

*Activity 1.1.3.1. Digital training of seed inspectors and samplers in Zambia (FY21) (RFS).* S34D will continue to work with the SCCI and the platform architect on developing the seed inspectors e-learning platform.

*Activity 1.2.2.4: Strengthening capacity of seed supply and grain market actors in Eastern DRC (RFS).* Initiation of the engagement with informal seed traders in partnership with INERA and other actors e.g., NGOs and starting gathering information on relevant training materials and initiate the training manual development.

*Activity 1.2.4.3: Conduct a cost-benefit analysis of the last-mile seed delivery by motorbike riders (boda boda) to smallholder farmers in Kenya (RFS).* Engage targeted private seed suppliers (agro-dealers) and bodaboda riders to develop seed distribution plans, distribution of the Nyota seed, data collection on seed supply and access.

*Activity 1.3.1.1. Participatory Impact Assessment (PIA) of Emergency Seed Interventions (FY21) (BHA).* National Consultants and Local Assistants will be hired as Field Team members in Uganda and Mozambique (pending concurrence). Detailed assessment design plans for each of the four assessments will be developed with CRS and WVI in-country staff.

*Activity 1.3.3.1. Framework and response options for resilient seed systems (FY20) (BHA).* This is a high priority activity for the EHAR team and will start immediately in FY22.

*Activity 1.3.3.5. Strengthen Capacity for Rapid Seed System Security Assessments (BHA).* Develop training modules. There was extensive variability between pilot partner trainings in terms of time required and content. A standard training module would ensure that the most important topics are addressed and there is consistency among practitioners. Develop a pool of specialists who can assist the R-SSSAs either remotely or in-person – Implementing organizations have varied capacities – particularly in terms of seed system expertise and ability to analyze the results and develop appropriate responses. In the near term, S34D has staff to be able to support the process. For the medium to long-term a cadre of seed specialists will need to be assembled to provide support to R-SSSAs.

*Activity 2.1.1.3. Scoping business models to strengthen forage seed systems and production of cultivated forages in Sudan (RFS).* S34D will start with the preparation of this scoping study.

*Activity 2.1.1.4. Scoping business models to strengthen forage seed systems and production of cultivated forages in Zambia (RFS).* S34D will start with the preparation of this scoping study.

*Activity 2.1.1.4. Evaluate business models to strengthen forage cultivation and use as animal feed to boost livestock productivity in Cambodia.* S34D will start with the preparation of this scoping study.

*Activity 2.1.3.2. Promote access to locally grown legume seed through use of agricultural development agents in Zambia (RFS).* S34D will start discussions with CRS Zambia and other national partners to prep for the work.

*Activity 2.2.2.2. Support the emergence of enhanced and resilient seed sectors in fragile states, e.g. in DRC, South Sudan, Haiti (FY21) (BHA).* The DRC case study report will be completed. Pending concurrence from USAID South Sudan, S34D and WCDI will start implementing this activity.

*Activity 2.2.3.1. Develop and test market-based emergency seed security interventions (FY21) (BHA).* The report on cash transfers for seed security will be drafted by the end of November 2022. Supply-side interventions will also be explored, based on the report generated in November.

*Activity 2.2.3.3 Pilot and test business options to support informal and emergency bean and cassava seed sector opportunities in the DRC (RFS and BHA).* Collecting baseline business information on seed and grain traders disaggregated by gender and age

*CCIR 1.2.3 Implement and pilot Standard Seed Protocol in Kenya.* S34D will start with developing training materials.

Some FY21 Ethiopia Mission-funded activities will continue and all FY22 activities will start in the first quarter of FY22.



## II. Annexes

## Annex A. Planned outputs and achievement by activity

Activity Number	S34D Activity Description	Geography	Output(s)	Accomplished
<b>Goal: Improved functioning of the high-impact integrated seed systems</b>				
0.1	0.1 Develop country profiles and framework for engagement in Kenya, Uganda (FY20) (RFS)	Ke and Ug	Kenya and Uganda seed profile	Presented Uganda seed profile to national stakeholders and USAID Uganda. Currently under final review by USAID/W
<b>IR 1.1 Constraints in formal seed systems identified and mitigated</b>				
<b>Sub IR 1.1.3 Capacities of local seed actors strengthened</b>				
1.1.3.1 (FY20 1.1.1.6)	Digital training of seed inspectors and samplers in Zambia (core).	Zambia	Digital training learning management system and platform	Trained 147 Seed Inspectors with 84% passing subsequent exams, and 8 of the 22 training units completed and being uploaded onto the e-learning platform
<b>Sub IR 1.1.4 Sustainable models with private sector players to supply quality EGS and QDS to a range of suppliers piloted</b>				
1.1.4.1	Last mile prototype: micro-franchise model roll out in Kenya (core).	Kenya	10 MFES (micro retailers) and 30 boda boda riders trained, one field day organized with five firms and 100 farmers participating	Developed micro-franchise prototype. Improved delivery services of improved seeds and non-maize cereal crops. Trained 24 Agrodealers, 7 CBO leaders, 15 motorbike riders (boda boda) and 221 farmers
<b>IR 1.3 Strengthened capacity of emergency and humanitarian aid programs to respond effectively to acute and chronic</b>				
<b>Sub IR 1.3.3 Tools and information systems to frame Shock Responsive Models developed</b>				
1.3.3.1	Develop tools for rapid, remote seed security assessments (core).	Global	Reports from field tests; final toolset	Field tests conducted by 9 organizations in 7 countries. Remote workshop conducted to share findings.
<b>IR 2.1 Strengthened interface and collaboration between formal and informal seed systems</b>				
<b>Sub IR 2.1.3 Formal sector suppliers and NARs/breeders leveraged and linked</b>				
<del>2.1.3.1</del>	<del>Establish farm-based bean seed enterprises in Burundi</del>	Burundi		activity was cancelled
<b>Sub IR 2.1.4 Effects of market-based interventions on seed market operations and last mile delivery systems are assessed</b>				
2.1.4.1	Finalize Point-of-Sale pilot for the niche business model in Kenya, and disseminate the final second season report to complete the pilot in Kenya (core).	DRC	Revise FY20 Niche market business model report	Draft report completed
<b>IR 2.2 Strengthened interface and collaboration between development and relief to resilient and market-based seed</b>				
<b>Sub IR 2.2.2 Emergency and humanitarian responses that link relief to development, especially links to private sector and</b>				
2.2.2.1	Design seed vouchers & fairs (SVFs) for resilience and/or long-term programming (core).	Global	Scoping report; SVF vendor workshop reports; multi-year actionable plans; annual implementation learning reports	Draft findings were disseminated and validated through the CRS Markets Community of Practice Conference. A comprehensive report was submitted to USAID for review.
2.2.2.2	Support the emergence of enhanced and resilient seed sectors in fragile states, e.g. in DRC, South Sudan, Haiti (core).	Global	1 Concept paper and case studies outline; 13 individual partner-based case study findings; 3 collated case study reports; synthesis paper containing proposed models; Detailed model suitable for selected country	Data collection completed in DRC and Haiti, and the Haiti case study report drafted.
<b>Sub IR 2.2.3 Emergency and development seed programs to capture market opportunities are leveraged</b>				
2.2.3.1	Develop and test market-based emergency seed security interventions (core).	Global	Concept note, expanded framework / response options; 2 or 3 actionable plans; guidelines; detailed plan for testing and monitoring of selected intervention; report	A review of recent emergency cash transfer interventions for seed security begun. A call for information publicized in four languages. This feedback has been compiled into a database of over 20 interventions
2.2.3.2	Assess the role of market pull to enhance resilience of seed supply and respond to emergency needs under informal seed systems in South and North Kivu in DRC (core).	Kenya	Study report and dissemination	Draft report complete

Activity Number	S34D Activity Description	Geography	Output(s)	Accomplished
<b>Goal: Improved functioning of the high-impact integrated seed systems</b>				
<b>CCIR-1 Improved effective policy implementation and regulatory formulation for pluralistic seed systems</b>				
<b>CCIR 1.1 Country specific seed policy road maps developed</b>				
CCIR 1.1.1	Develop and compare regulatory system maps in Ethiopia (Mission).	Ethiopia	Seed regulatory system maps for Ethiopia	6 regulatory system maps completed.
<b>CCIR 1.2 Practices to expand and liberalize seed quality possibilities are implemented and developed; market outlets and</b>				
CCIR 1.2.1	Compare seed clubs and QDS Producers: South to South Learning; compare with Niger Federation of millet growers (core).	Global	Evidence-based global seed policy brief developed, disseminated through S34D seed policy and regulatory community-of-practice	Data gathered and analyzed. Report writing is continuing. Dissemination of results is anticipated in November 2021.
CCIR 1.2.3	Implement and pilot of Standard Seed Protocol in Kenya (core).	Kenya	standard seed protocol	Standard Seed Protocols for 10 crops were developed
<b>CCIR 1.3 Linkages and coordination of seed development efforts through consolidation of data and evidence are</b>				
CCIR 1.3.1	Develop policy brief on seed registry in Benin (core).	Benin	policy study report, disseminate through the S34D seed policy and regulatory practices Community of Practice	Two survey instruments were developed, data collected and draft report completed
CCIR 1.3.2	Assess and evaluate the policy and regulatory barriers with specific-stress (saline-drought) tolerant varieties in Myanmar (core).-	Myanmar	2-seed policy and regulatory dialogues-facilitated, roadmap for 1 saline-tolerant Rice and 1 drought-tolerant nutrient-dense legume crop	activity was cancelled
CCIR 1.3.3	Facilitate and initiate implementation of seed policies and directives in Ethiopia (buyin).	Ethiopia	Three action taken to address and operationalize three policy priorities.	Identified key domains: variety release; variety registration; EGS production and management; seed quality assurance; standards and procedures; seed certification process; seed labeling; seed marketing. Steps taken to narrow down to few key domains: seed certification and labelling.
<b>CCIR-2 Established enhanced quality information flows for seed systems</b>				
<b>CCIR 2.2 Tools and technologies to capture quality information about seed supply in a geo-referenced manner are</b>				
CCIR 2.2.1	Develop forage informatic dashboard using seed data and metrics and a policy brief on forage seed systems in Ethiopia (Mission).	Ethiopia	forage-seed informatic tool digitized and shared in public domain and one policy brief	The team conducted a literature review, and analyses of different seed indices available
CCIR 2.2.2	Test out recommendations from FY20 technical roadmap, in select zones (10-15) in Ethiopia (Mission).	Ethiopia	Augmented methodology / framework at the systemic level to conduct seed demand / market forecasting in Ethiopia	The seed demand assessment was completed. S34D led a virtual/in-person workshop to validate the findings. The draft report was submitted to USAID for review.
CCIR 2.2.3	Covid-19 sub-regional seed assessment alerts in Ethiopia (Mission).-	Ethiopia	three seed alerts	activity was cancelled
<b>CCIR 2.3 Last mile markets for new and quality-assured seed varieties are enabled by developing, piloting, adapting, and</b>				
CCIR 2.3.1 (1.2.4.1)	Finalize Point-of-Sale pilot for the niche business model in Kenya, and disseminate the final second season report to complete the pilot in Kenya (core).	Kenya	digital application	CRS conducted the farmer feedback survey. 170 farmers responded to the surveys conducted over phone by CRS Kenya staff.
CCIR 2.3.2	Pilot SMS-based farmer feedback loop on seed quality, known as Stop Bad Seed (Ripoti Mbegu Isiyu Bora - RIMI) in Tanzania (core).	Tanzania	campaigns carried out, farmers' data analyzed, TOSCI staff coached on data analysis	A total of 489 SMS messages were received from farmers, with 131 messages received in the first week when the campaign was ongoing, messages were sent up to 9 months after the campaign ended- showing wide demand.

## Annex B. Environmental Status Report

### S34D Environmental Status Report Factsheet

**Activity Title:** Feed the Future Global Supporting Seed Systems for Development

**Cooperative agreement Number:** 7200AA18LE00004

**Activity country of operation:** Kenya, Uganda, Tanzania, Malawi, Zambia, Ethiopia, Niger, the DRC, and Benin

**Awardee:** Catholic Relief Services

**IEE prepared by:** Mark Huisenga, USAID/W RFS Office

**Date prepared:** 03/20/2017

**Life of Activity:** 08/23/18 to 08/22/23

**Fiscal Year of Submission:** FY21

*Note: the following information is for the fiscal year of submission.*

<b>Funding Begin:</b> 10/01/2020	<b>LOA Estimated Amount:</b> \$ 20,773,976 FY21 estimated amount: \$ 2,799,902
<b>Funding End:</b> 09/30/2021	<b>Sub-Activity Amount:</b>

<b>ESR Prepared by:</b> Nikaj van Wees, S34D COP	<b>Date:</b> 10/30/2021
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<b>Date of Previous ESR:</b> Oct 30, 2020	<b>Date of Most Recent IEE:</b> 03/20/2017
<b>Contact:</b> Nikaj van Wees, COP S34D - Nikaj.vanwees@crs.org [REDACTED]	

## Environmental Status Report

### A. Status of the Initial Environmental Estimate

- No revisions or modifications** of the Initial Environmental Estimate (IEE) are needed.
- An amended IEE is submitted.

### B. Status of Fulfilling Conditions in the Initial Environmental Estimate, including Mitigation and Monitoring

- All mitigation measures were successful at** preventing environmental impact as specified in the original IEE. An Environmental Status Report (ESR) describing compliance measures taken is attached.
- Improved mitigation measures** were adopted to better reduce environmental impacts. An ESR describing these improved compliance measures taken is attached.

### C. Status of the Initial Environmental Examination

- i. Modified or New Activities  
Have new activities been added or activities substantially modified? *No*.
- ii. Resolution of Deferrals  
Did the current IEE have deferrals? *No*.
- iii. Updates to the Initial Environmental Examination  
Based on the above, is an updated IEE needed?

- Yes** (if yes, attach here)       **No**.

If the previous documentation was a categorical exclusion submission, is an updated categorical exclusion needed to deal with new categorical exclusions for new activities?

- Yes** (if yes, attach here)       **No**       **Not applicable**

**D. Approval of the Environmental Status Report**

USAID RFS Officer \_\_\_\_\_ Date: \_\_\_\_\_

USAID Environmental Officer \_\_\_\_\_ Date: \_\_\_\_\_

**----- End of FY21 Annual Report -----**