

GLOBAL SUPPORTING SEED SYSTEMS FOR DEVELOPMENT ACTIVITY FY22 ANNUAL REPORT

October 1, 2021 – September 30, 2022



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Contents

1. Executive Summary	6
2. Accomplishments versus targets.....	8
3. Summary of Accomplishment by Sub IR.....	9
3.1 Formal Seed Sector activities	10
3.2 Informal Seed Sector activities.....	12
3.3 Emergency, Humanitarian Aid and Resilience programming activities ...	13
3.4 Integration and Collaboration between sectors	17
3.5 Cross-cutting Activities.....	23
4. Monitoring, Evaluation, and Learning.....	33
4.1 Independent Evaluations.....	33
4.2 Learning agenda.....	33
5. Summary by country	39
6. Problems and Solutions	42
7. Collaboration	42
8. Associate Awards	43
9. Next Steps.....	43
10. Annexes	47
Annex A. Planned outputs and achievement by activity.....	48
Annex B. ESR	55

Acronyms and Abbreviations

ADA	Agriculture Development Agents
AE	Agri Experience
AGRA	Alliance for a Green Revolution in Africa
The Alliance	Alliance of Bioversity International and CIAT
AVRDC	Asian Vegetable Research and Development Center
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
ESR	Environmental Status Report
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
IR	Intermediate Result
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 the 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 Biodiversity 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 Intermediate Results (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.

FY22 achievements

The Uganda seed sector profile was presented at the FAO Global Conference on Green Development of Seed Industries¹ in November 2021 in Rome.

In South Sudan and the DRC, under the fragile states work (activity 2.2.2.2), S34D worked with the Wageningen Center for Development Innovation (WCIDI), CIAT and AE and drafted three case studies. The findings of these studies were validated and a two-day synthesis workshop with 11 individuals from the partner organizations was organized to synthesize the findings of all the case studies and draw out the key findings and lessons relating to seed system development in fragile states.

In Ethiopia, S34D developed training manuals for forage crop production, on feeding dairy animals, and on forage Early Generation Seed (EGS) production. Six seed system regulatory maps were developed for the current seed policy and for the proposed seed policy which is under development and awaiting approval. S34D facilitated a stakeholder discussion session on seed reserves. S34D interviewed seed producer groups across Ethiopia, Zambia, Uganda, Niger, and Guatemala to assess climate changes experienced and understand the coping mechanisms adopted by the farmers. S34D looked into how QDS is implemented considering the FAO guideline, the Ethiopian directive and actual implementation

¹ <https://www.fao.org/events/detail/global-conference-on-green-development-of-seed-industries/en>

practices. Forage informatic dashboard using seed data and metrics was developed. A landscape and scoping analysis of seed systems, forage seed systems and animal feed were completed. Findings from the study were used to curate a list of forage seed producers, forage growers, dairy farms, fattening centers, and feed producers

In Zambia, in close collaboration with the Seed Inspector and Certification Institute, S34D completed an accessible cost saving digital e-learning training course for seed inspectors that will allow more people to take to course, at their own pace, at their own time. The seed inspectors E-learning platform covers all important crops 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 e-Learning platform underwent a penetration test by APEX, a USAID-funded project, and in coordination with the South African partner, Mwabu/iSchool, w the architect and platform developer, S34D implemented the APEX recommendations. S34D also ensured that the e-learning platform is accessible by making the platform Section508 compliant.

In collaboration with CRS Zambia, S34D linked Agriculture Development Agents (ADA) to farmers who bought seeds to grow pigeon pea grains. Data from the field was collected in October 2022, due to the timing of the agricultural season.

S34D worked on scoping business models to strengthen forage seed systems and production of cultivated forages is nearly completed. Economic, nutrition, and environmental assessments were completed.

2. Accomplishments versus targets

S34D Indicator	Indicator Name	FY22 Target	FY22 Achievement	% Target Achieved	Reasons for Deviation
OUT- 1	Number of seed actors trained	130	27	21%	There were 70 people expected to be trained in Ethiopia and 60 in Zambia. Only 27 seed inspectors were trained in Zambia. The training manuals in Ethiopia were completed and the training is planned for FY23.
OUT-2	Number of individuals participating (FtF EG.3.2)	2130	59	3%	The activity did not interact with the planned 2000 farmers in Zambia and did not yet train the 70 people in Ethiopia. This achievement is made up by the 27 seed inspectors trained and 32 participants in the standard seed protocol work.
OUT-4	Number of models	1	1	100%	
OUT-5	Number of studies that have fulfilled all criteria	13	1	8%	Many of the reports have been drafted, or finalized, but not yet disseminated, therefore these reports cannot be counted towards this indicator as not all criteria are met.
OUT-6	Number of tool kits developed	10	7	70%	This achievement is made up of two manuals; two training programs; two flyers on balanced feeding using cultivated forages and the other tool kit is the e-learning platform in Zambia. Two remaining tool kits are pending from the activities 'Framework and response options for resilient seed systems' and 'Develop guidance for emergency, resilience, and development seed interventions'. The third toolkit from 'Generate recommendations for integrating vegetable seeds into humanitarian responses', was cancelled.
OUT-10	Number of seed policy road-maps developed	6	6	100%	
OUT-11	Number of inclusive seed policy dialogues facilitated	2	2	100%	
OUT-12	Number of evidence-based seed policy briefings developed	3	2	67%	Of the three policy briefs the one brief for the activity 'promote access to locally grown legume seed through use of agricultural development agents in Zambia' was not completed.
OUT-13	Number of information sets digitized and shared in public	1	1	100%	
OUT-14	Number of tools and technologies generated and/or augmented on seed supply and quality	2	0	0	The two Ethiopia activities that were put on hold should have contributed to this indicator: 'Test out recommendations from FY20 technical roadmap, in select woredas (10-15) in Ethiopia' and 'Establish a seed production and marketing information network at the national and regional levels in Ethiopia'.

3. Summary of Accomplishment by Sub IR

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

The Uganda seed sector profile was completed and posted to the Development Experience Clearinghouse (DEC)². The Uganda seed sector profile was presented at the FAO Seed Conference in November 2021 in Rome. Here is the summary of the presentation by the former seed systems Lead. “This presentation draws on a study in Uganda that reviewed the main seed sectors including formal, semi-formal, informal and emergency-based seed systems (Longley *et al.*, 2021³). The findings showed that most farmers in Uganda continue to access seeds through a combination of these seed channels.

Whilst hybrid seeds for maize and vegetables varieties are accessed through formal seed systems, most smallholder farmers access non-hybrid seeds for self-pollinating and vegetatively propagated crops, through home saved seeds and local informal markets. Whilst most countries aim to develop robust formal seed systems to provide farmers with quality seed, in many cases, governments, humanitarian and development agencies buy or procure certified seed and provide this to vulnerable farmers through various free seed channels. Although seed subsidy programs may be successful in the short run, in enabling farmers to access seed, there is little evidence to show that free seed programs, such as direct distributions or seed fairs, lead to long-term business relations between seed input suppliers and farmers when the free seed program ends.

This presentation will review the effects of recurrent subsidized seed delivery on the formal commercial seed sector in Uganda, where decades of free seed disbursements have led to a situation where it is believed that 30–50 percent of the commercially available seed is of low quality, expired or counterfeit seed.⁴ To address the degradation of free seed on the formal seed markets and associated early generation seed systems, agencies such as Catholic Relief Services are developing more sustainable and resilient ways of enabling farmers to access quality seed of non-hybrid seeds at affordable prices by establishing improved business links between seed companies and farmers. These methods are supported by innovative financing systems, and last-mile delivery agents. These methods aim to support both sustainable and scalable business models.

There is increasing evidence that countries with high levels of free seed in their seed supply systems are struggling to improve their commercial seed markets. The policy environment is not always supportive of innovation in seed systems, and procurement systems used by humanitarian agencies may be contributing to poor performance in the commercial seed markets. More needs to be done to develop seed systems that enable more farmers to access quality seed, and this requires better coordination and use of best practices by humanitarian and development agencies alongside new approaches with the government and private sector.”

The Kenya seed sector profile was put on hold during FY22 while S34D was waiting for incremental funding.

² https://pdf.usaid.gov/pdf_docs/PA00Z8M6.pdf

³ https://pdf.usaid.gov/pdf_docs/PA00Z8M6.pdf

⁴ Uganda National Seed Strategy, 2018: <https://www.agriculture.go.ug/wp-content/uploads/2019/05/Ministry-of-Agriculture-Animal-Industry-and-Fisheries-National-Seed-Policy.pdf>

3.1 Formal Seed Sector activities

Sub IR 1.1.1 Operational efficiency of seed companies increased

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 these two Sub IRs in FY22.

Sub IR 1.1.3 Capacities of local seed actors strengthened

FY19 - Activity 1.1.3.1: Synthesis of existing reports, models and approaches in all bean/legume corridor countries with a focus on last mile actor needs, options for delivery and farmer demand.

This activity was completed in FY22 and the report was posted to the DEC⁵. Because this report was not disseminated to the targeted audience, e.g. IPs working on service delivery at the last mile, USAID Kenya, seed companies, it cannot contribute towards output indicator number 5: Number of studies that have fulfilled all criteria.

Activity 1.1.3.1: Digital training of seed inspectors and samplers in Zambia (FY21) (RFS).

Achievements: While the seed inspector training e-learning platform was being developed, SCCI continued to train seed inspectors, using Zoom and in-person practical courses. The table below shows the participants' November and March refresher and initial training details.

Country	Type of training	Total trained	Public sector	Private sector	Male	Female	Number examined	Number passed exams	Dates training conducted
Zambia	Refresher training	17 (3 women)	0	17 (3 women)	14	3	17 (3 women)	16 (3 women)	Nov 10-18, 2021
Zambia	Initial training	10 (4 women)	9 (4 women, 1 women under age of 30)	1	6	4	10 (4 women)	7 (3 women)	Mar 14-18, 2022
Totals		27 (7 women)	9 (4 women)	18 (3 women)	20	7	27 (7 women)	23 (6 women)	

With a regional partner based in South Africa, and in close collaboration with the Zambia Ministry of Agriculture, the Seed Inspector and Certification Institute developed an accessible cost saving digital e-learning training course for seed inspectors that will allow more people to take to course, at their own pace, at their own time. The seed inspectors E-learning platform covers all important crops 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 e-Learning platform underwent a penetration test by APEX, a USAID-funded project, and in coordination with the South African partner, Mwabu/iSchool, who was the architect and platform developer, S34D

⁵ https://pdf.usaid.gov/pdf_docs/PA00ZDF5.pdf

implemented the APEX recommendations. S34D also ensured that the e-learning platform is accessible by making the platform Section508 compliant.

Learning: The work of developing the LMS has been exciting and demanding at the same time for the SCCI. Much of the workload was not anticipated and combining the workload with SCCI's routine activities has been a challenge. Support from S34D in holding workshops has been timely and very helpful in attending to the workload for the development of the LMS.

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

FY20 - activity 1.1.4.1: Prototype two last mile delivery models to reach last mile users with quality seeds in Kenya (core).

This activity was completed in FY22 and the report was posted to the DEC⁶. Because this report was not disseminated to the targeted audience, e.g. IPs that work on service delivery at the last mile and USAID Kenya, IFDC, seed companies, it cannot contribute towards output indicator number 5: Number of studies that have fulfilled all criteria.

⁶ https://pdf.usaid.gov/pdf_docs/PA00ZDD1.pdf

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

Sub IR 1.2.1 Informal trader capacity and local seed networks assessed

FY19 - Activity 1.2.1.3: *Conduct field survey with relevant stakeholders on storage management.*

This activity was completed in FY22 and the survey report was posted to the DEC⁷. Because this report was not disseminated to the targeted audience, e.g. IPs working on post-harvest handling, USAID Tanzania, Purdue University, it cannot contribute towards output indicator number 5: Number of studies that have fulfilled all criteria.

Sub IR 1.2.2 Capacity of local seed entrepreneurs and non-traditional seed actors strengthened

Sub IR 1.2.3 Business models to leverage integrated operations validated

There were no activities implemented under these Sub IRs in FY22.

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

FY20 – Activity 1.2.4.1: *Niche Market business model: explore non-seed distribution and sale niches with seed varieties (linked to PoS ICT application with seed companies) and monitor sales/adoption in Kenya (core).*

This activity was completed in FY22 and the niche market business model report was posted to the DEC⁸.

⁷ https://pdf.usaid.gov/pdf_docs/PA00Z53Z.pdf

⁸ https://pdf.usaid.gov/pdf_docs/PA00ZG5F.pdf

3.3 Emergency, Humanitarian Aid and Resilience programming activities

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

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

Activity 1.3.1.1: Participatory Impact Assessment (PIA) of emergency seed interventions (FY21) (BHA).

Achievements: This activity is led by CRS and implemented in collaboration with World Vision International, Lutheran World Federation, CRS's DRC Country Program, and the Global Food Security Cluster (gFSC). Three assessments were completed in Northern Uganda and the DRC, generating a detailed understanding of the impacts of selected emergency seed interventions on beneficiaries and local seed systems. The fieldwork also tested and refined a methodology to assess the impacts of emergency seed interventions. CRS continues to liaise with FAO's Evaluation Unit who have recently undertaken their own assessment in South Sudan, with the gFSC and with SEADS, particularly on the methodological aspects and the broader learning.

In Northern Uganda, two assessments were undertaken in the Adjumani District, which currently hosts some 250,000 refugees, of which over 80% are women and children. More than half of the total population of the district are refugees, mainly from South Sudan. Refugees are usually allocated a small area of land in a designated refugee settlement area where they can establish a homestead and plant food crops. Some refugees have been able to secure additional land through informal negotiations with the host community, and humanitarian organizations have also helped groups of refugees (or mixed groups of refugees and host community members) to negotiate access to blocked farms. Participatory impact assessments were conducted on two emergency seed interventions: one implemented by WorldVision under the Australian-funded Improved Self Reliance and Livelihoods Project (2019-22), and the other implemented by LWF under two projects: (i) Promoting Sustainable livelihoods, Environmental and Psychosocial Support in Adjumani, funded by Bread for the World (BftW), and (ii) Reconnecting Lives, Vision, and Empowerment (Re-LiVE), funded by USAID's Bureau of Population, Refugees, and Migration (PRM). Each of these interventions provided seed (through direct distribution), and agronomic training to farmers and helped them to access and open up land for group farming activities. Many other seed interventions have also been provided over the years by multiple agencies.

In the DRC, the assessment focused on the fourth phase of the BHA-funded Ditekemena Emergency Project (January 2021 to February 2022) in Central Kasai province. Assessment data were collected in an area that had received no previous assistance from the earlier phases of the project. Farmers who had previously been displaced had returned to their communities and had been planting and harvesting for the previous three years. There was no shortage of seed. The project aimed to provide farmers with quality seed of improved varieties. As such, farmers were given vouchers worth \$40 which they could exchange at seed fairs for seeds of maize, cowpea, rice, and/or groundnut for either agricultural season B (January-May), or season A (September-December).

Learning: In the Adjumani District, Uganda, many seed distributions over many years have allowed for the regular introduction of new varieties into local cropping systems, giving farmers an appreciation of a range of different varieties and their particular characteristics (e.g. drought resistance, marketability, duration, etc). Many different varieties have been incorporated into local seed management practices and markets. Food security increased for both male and female refugee and host smallholder farmers, but the role of seed in contributing to this increase was relatively minor. Increased access to fertile land was the key driver for the increase in food security among refugee farmers. Anticipated increases in yield due to the use of improved varieties could not be attributed to the interventions assessed, because many of the varieties provided were already being cultivated by beneficiary farmers. Production decreased in the case of groundnuts due to poor quality seed. Livelihood impacts were relatively small and were not accompanied by reduced expenditure on food, as might have been expected.

The DRC assessment findings revealed that the seeds were provided early enough if the rains had been 'normal,' but irregular rains, particularly in Season B, hampered the timing of planting and performance in the field. The adverse effect of drought that followed the Season B planting led to minimal harvest or total crop failure in many households. Season A planting was better and allowed farmers to harvest more (the varieties provided were reported to be higher-yielding than the local varieties), save some of the harvested output as seed, and even sell some for increased household cash flow. The assessment suggested that the seed intervention resulted in a marginal increase in food security. Farmers in six out of the ten villages sampled for the assessment reported improvements in livelihoods and household income as a result of CRS's seed intervention. However, the impact was not as great as it could have been due to the drought in Season B. This underlines the inherent risk of agriculture and raises questions about the appropriateness of seed distribution as a short-term solution to food insecurity. For longer-term sustainable impact, systemic issues need to be addressed, e.g., the issues of soil health and a dysfunctional seed system. These issues can only be addressed through programs that are committed to support farmers well- beyond the short-term time horizon of emergency programs.

FY20 - activity 1.3.1.3: Interview private and research sector actors on their role in emergency and humanitarian seed programming in Kenya, Uganda and Malawi (core).

This activity was completed in FY22.

Activity 1.3.1.5: Assess differential effects of seed security cash transfers on men and women and intrahousehold dynamics (BHA).

This activity was cancelled after it was determined that there was insufficient gender-based data for the cash transfer interventions that had been identified under Activity 2.2.3.1.

Sub IR 1.3.2 Emergency and humanitarian responses that promote climate resilience, including food, income, cover and fodder crops are catalyzed.

Activity 1.3.2.2: Generate recommendations for integrating vegetable seeds into humanitarian responses (BHA)

Achievements: A literature review was undertaken, and discussions were held with the Asian Vegetable Research and Development Center (AVRDC). During the review of existing literature, the 2017 guidance brief "Emergency Vegetable Seed Interventions: Can we expect improved nutrition or

income generation among beneficiaries?” showed that it already provides comprehensive guidance, which aligned with this activities focus on generating recommendations for integrating vegetable seeds into humanitarian response. Hence the S34D activity decided to not duplicate efforts and cancelled this activity.

Activity 1.3.2.3: Participatory Action Research into cash-based seed security responses in Guatemala and East Africa (BHA).

Achievements:

S34D and the two programs jointly developed key questions to be addressed during the research activity. In addition to looking at ways the cash transfer supported sustainable seed markets, both programs chose to examine the intra-household dynamics of decision-making on the use of cash. S34D supported the projects in revising exit interviews, post distribution monitoring tools, in addition to developing focus group guides, and key informant interviews with seed vendors. DiNER fairs were held between April and June. Both countries are now finalizing data review, analysis, and preparing initial reports.

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

Activity 1.3.3.1: Framework and response options for resilient seed systems (BHA)

Much of the time allocated for this activity was instead used to support Activity 2.2.3.1 after the consultant hired for Activity 2.2.3.1 was unable to generate a report to the acceptable and expected standard. Activity 1.3.3.1 will now take place in FY23.

Activity 1.3.3.5: Strengthen Capacity for Rapid Seed System Security Assessments (BHA).

Achievements: During FY 22, tools were revised while household, agrodealer and grain vendor interviews were digitized. The tools were tested in an RSSSA pilot conducted by IRC in Somalia. The data is currently being analyzed with a report due in November. In addition, a gender sensitive household survey was piloted in the DRC that tested some gender assumptions on farm level seed management compared to those plots controlled by only by women. The key assumption is that the prioritized crops (staples, vegetables, fruits) will be different on the main family farm, often controlled by men, than on the plot allocated to women in a male-headed household. Furthermore, the source of seed and changes in that source by men and women, particularly women within male-headed households, are likely to differ given existing literature. The reasons for changes in the amount being planted on the family plot compared to the women's plot may differ as well. If there is a difference, then the SSSA may be biased towards seeds males prioritize and outlets males gain access to seed, given the focus on the household farms resulting in biased programming. Results are now being analyzed. These pilots will enable us to finalize the RSSSA toolkit and make it available to the entire development community.

⁹ <https://seedssystem.org/wp-content/uploads/2017/05/Emergency-Vegetable-Seed-Interventions-final.pdf>

Learning:

In order to maintain and revise as necessary digital versions of the surveys, dedicated staff time will need to be resourced. This will entail ongoing costs for the housing and upkeep of the RSSSA toolkit.

Sub IR 1.3.4 Last mile delivery solutions especially for chronic stress areas (small packs, boutiques, WhatsApp seller linkages) developed

FY20 - Activity 1.3.4.4: *Develop a 1-2 page white paper on possibilities for financing of different farmer segments (core).*

This activity was completed in FY22 and the white paper was posted to the DEC¹⁰.

¹⁰ https://pdf.usaid.gov/pdf_docs/PA00Z53S.pdf

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.

FY20 – Activity 2.1.1.2: *Conduct a scoping study to assess the fodder/forage crop seed value chain in Ethiopia.*

This activity, together with Activity CCIR 1.3.2, was completed and the report was posted to the DEC¹¹. This work was also published in a peer review journal¹².

Activity 2.1.1.4: *Scoping business models to strengthen forage seed systems and production of cultivated forages in Zambia (RFS)*

Achievements: This activity is nearly complete – several surveys were designed, and key stakeholder interviews were conducted along with secondary data collection from both public and private sources. Economic, nutrition, and environmental assessments are complete.

Learning: Zambia conducts minimal forage seed multiplication at present. However, recently there has been a focus on forages by the Ministry of Agriculture along University of Zambia and development program E-SLIP (Enhanced Smallholder Livestock Investment Program). Several small to medium forage seed multipliers have been identified. Most of the livestock population is in the southern and western provinces, linking to corridors in Namibia and Botswana. Cross boundary trade in animal feed to these countries has a high probability of success as such routes already trade in other commodities including live animals. Connecting the seed multipliers with early generation (forage), seeds and introducing densification of cultivated forages into blocks or pellets would be a good strategy to feed livestock in Zambia along with several possibilities of trading in animal feed with neighboring countries.

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

Activity 2.1.2.2: *Strengthen capacity of forage (certified and quality declared assurance) seed production (Mission).*

Achievements: S34D developed training manuals for forage crop production for select improved forages. Also, in collaboration with the Ethiopian Institute of Agricultural Research (EIAR), identified federal research institutes for the forage varieties.

Learning: As part of workshops held in Addis Ababa, and in conjunction with recent landscaping activity in Ethiopia by S34D, a set of forage growers who are using improved forages have been

¹¹ https://pdf.usaid.gov/pdf_docs/PA00ZDF6.pdf

¹² https://pdf.usaid.gov/pdf_docs/PA00ZBD8.pdf

identified. As next steps, these forage growers will be connected with forage seed producers so that forage cultivation could increase.

Activity 2.1.2.3: Increase capacity of actors on animal feeding using cultivated forages (Mission)

Achievements: In FY22, a manual on feeding dairy animals was developed. The manual has different combinations of producing balanced feed that includes cultivated forages as one of the components. Containing various options of initial body growth of the dairy cows, the manual provides an array of options using available animal feed that is currently used and improved forages.

Learning: This manual has a unique feature as it integrates cultivated forages as one of the components of the diets. In addition to providing basic concepts of ration balancing and good housing, it presents practical examples of balanced rations of relevance to Ethiopian farmers. Several studies have shown that the farmers lack skills and knowledge to prepare balanced rations for their animals. The aim is to provide practical training to dairy farmers and extension workers using this manual. The manual as it stands now is a working document. The list of practical rations will be extended after getting feedback from farmers during the training workshop(s). It is hoped that these efforts will enhance feed use efficiency, increase milk production and help greening the livestock sector.

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

Activity 2.1.3.2: Promote access to locally grown legume seed through use of agricultural development agents in Zambia (RFS).

Achievements: The model was piloted, and ADAs were linked to farmers who bought seeds to grow pigeon pea grains. Data from the field was collected in October, 2022 and due to the timing of the agricultural season. The report will be completed once the data is available.

Learning: The pigeon pea variety that is currently grown by the ADAs are of short duration and thus climate smart. However, this variety grows very tall and thus hard to apply pesticides. Though climate smart, the variety is susceptible to pests. Thus, several farmers have issues with the variety at hand. CRS Zambia Country Program, a partner with S34D, is working on approaches (using demonstration plots with ZARI), to figure out alternative high-yielding climate-smart pigeon pea varieties that would be more suitable and preferred by the farmers. Another issue is that price of soyabean is often higher than that of pigeon pea (even though the soyabean market is more volatile). Thus, training and knowledge dissemination about the differences between these two markets is imparted to the farmers and seed multipliers – in order to explain the cost-benefits of the opportunities.

Activity 2.1.3.3: Strengthen the supply of forage early generation seed system (FEGS) (Mission)

Achievements: S34D partner CIAT has developed training manuals on forage seed production for the EGS seed class. It has also identified agricultural research centers for each of the forage types that would need capacity building to increase FEGS multiplication.

Learning: The table below maps the forage species with the associated institute and breeder center. As next steps, trainings will be provided to build capacity on EGS multiplication as well as, connecting these centers with forage seed multipliers who produce high quality forage EGS.

Forage species	Variety	Year registered	Institute	Breeder/ center
<i>Panicum maximum</i>	Local Panicum	2014	EIAR	Pawe
<i>Lablab purpureus</i>		1984	EIAR	Holetta
	Gebisa - ILRI-14417	2016	OARI	Bako
	Beresa - ILRI-14455	2016	OARI	Bako
	Doli-I	2020	EIAR	Melkassa
	Doli-II	2020	EIAR	Melkassa
<i>Avena sativa</i>	CI-8237	1976	EIAR	Holetta
	CI-8251	2013	EIAR	Holetta
	Bonsa	2011	EIAR	Sinnana
	Bona-bas	2011	EIAR	Sinnana
	SRCPX80Ab2806	2015	EIAR	Holetta
	SRCPX80Ab2291	2015	EIAR	Holetta
<i>Brachiaria mutica</i>	DZF-483	2014	EIAR	Debre Zeit
<i>Brachiaria hybrid</i>	Mulato II	2018	EIAR	Melkassa

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

Activity 2.1.4.2: Pilot the cultivation of improved forages and densification of cultivated forages into pellets (sites: one in Afar and two in SNNPR) (Mission).

This activity was put “on hold” in FY22 due to the situation on the ground in Ethiopia.

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

Sub IR 2.2.1 Seed System Security Assessments in Feed the Future Crisis Hotspot areas (focus on formal, semi-formal and informal seed systems)

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.

FY21 – Activity 2.2.2.1: Design seed vouchers & fairs (SVFs) for resilience and/or long-term programming (core).

This activity was completed in FY22 and the report was posted to the DEC¹³. Because this report was not disseminated to the targeted audience, e.g. IPs using seed vouchers and fairs in their programming, USAID BHA, it cannot contribute towards output indicator number 5: Number of studies that have fulfilled all criteria. S34D may disseminate this report with a number of other activity outputs in FY23.

¹³ https://pdf.usaid.gov/pdf_docs/PA00ZBK7.pdf

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).*

Achievements: The case study report on Haiti was approved and posted to the DEC¹⁴, but not yet disseminated, and three other case study reports have been completed. These include two case studies on DRC by ABC and AE respectively, and a case study on South Sudan by the Wageningen Center for Development Innovation (WCID). Findings from the South Sudan case study were presented and validated at a workshop in Juba. A two-day synthesis workshop with 11 individuals from the partner organizations was organized to synthesize the findings of all the case studies and draw out the key findings and lessons relating to seed system development in fragile states. A detailed workshop report has been drafted which will provide the basis for the synthesis report. The synthesis workshop identified and explored a number of cross-cutting themes across the different case studies, e.g., quality of seed, lack of seed policy and regulation, creative solutions to fill the gap in the role of government, the role of emergency seed relief in seed delivery, etc. Some of the lessons from one of these themes are briefly described below.

Learning: The lack of seed law and seed regulation poses a challenge to seed sector development in many fragile states. Some of the ways in which this has been overcome in the case study countries include the creation of platforms and dialogues at provincial and local levels. In DRC, for example, provincial seed councils have been established in North and South Kivu which bring together key stakeholders (e.g., researchers, regulators, private sector), to work through specific issues (e.g., addressing the weak capacity of bodies to regulate the seed sector, innovative approaches for relief seed distribution, etc.), and these councils offer a model that could be replicated elsewhere. In South Sudan, there have been some good examples of local governments contributing structure within the seed sector, though this is often dependent on the individual heading the agricultural bureau. Many governors have realized the importance of the sector and are discussing what needs to be done in consultation with the MoA. Elsewhere (e.g. Nigeria), the private sector has stepped up to self-regulate and take the lead in pushing the government to allow for self-regulation. It is still possible to support the private sector in the absence of legal frameworks, as illustrated by the examples above from South Sudan, DRC and Kenya. Although governments in fragile states tend to rely on relief aid for seed provisioning, it is important to realize that relief is not a permanent solution. The government should at some point step up, but relief seed provisioning acts as a vicious circle. In South Sudan, for example, the Ministry of Agriculture and the Agricultural Research Center feel powerless because they are used as a cash source for seed development, yet they are not involved in decision-making. Donors that promote seed sector development need to acknowledge the role of the government, make it part of their donor policies, exercise that capacity, and act on it. There needs to be a structured and well-informed approach to seed sector development, but seed is often viewed as one facet of food security, and the complexity of seed systems is often overlooked. There should be a portal describing the seed sector, the actors, and where and how it fits into a larger strategy.

Activity 2.2.2.4: *Develop guidance for emergency, resilience, and development seed interventions (BHA)*

Achievements: Production of the draft outline for the Do's and Don'ts recommendations for seed strategies in emergency, resilience, and development projects. This paper aims to provide practitioners working in humanitarian, resilience and development projects with a framework and options for best

¹⁴ https://pdf.usaid.gov/pdf_docs/PA00ZG2W.pdf

practices in seed systems that provide sustainable and scalable outcomes. The purpose of this paper is to explore options that provide farmers in a range of farming contexts and conditions, with improved access to seed in ways that “do no harm” in market systems.

The purpose of this paper is also to address the observation that many agencies including research, humanitarian, and development projects, along with national and local governments, are increasingly using free seed distribution modalities to provide farmers with access to seed, rather than working on mechanisms to strengthen market-based seed channels. Although free seed strategies are expedient, they are unsustainable and the continued use of free and subsidized seed, over many years, weakens the commercial seed system and corrodes the overall agricultural market system.

Learning: There are many interventions that can be made to increase farmer access to quality seed and the interventions vary according to the type of project, whether it is focused on emergency, resilience or commercialization. Within every country there are at least four types of seed systems in operation and the public NGO sector has an important role making sure that these systems are not supported in absolute isolation, as each of the systems affect the operations of the other.

Overuse of free and subsidized seed is a key area to understand and use judiciously and appropriately making sure that it does not do harm to the overall strength of the commercial and formalizing seed markets. Markets are robust institutions, but free services and products will force out private investment to the long-term detriment of communities.¹⁵

Much more attention should be given to developing and strengthening seed systems that are being supported through local informal and formal market systems and agencies should use market systems thinking in the design and implementation of their work. This will provide local capacity, build new jobs for the younger generation of agri-prenuers, and with effective co-investment, will accelerate the use of quality seed over time.

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

FY20 – Activity 2.2.3.1: *Review DiNER/seed vouchers and fairs and their sustainable link to private sector (core).*

This activity was completed in FY22 and the report was posted to the DEC¹⁶. Because this report was not disseminated to the targeted audience, e.g. IPs working in seed vouchers and fairs, USAID BHA, CGIAR centers, it cannot contribute towards output indicator number 5: Number of studies that have fulfilled all criteria.

Activity 2.2.3.1: *Develop and test market-based emergency seed security interventions (BHA).*

Achievements: This activity is being implemented by CRS, with inputs from the CRS Humanitarian Response Department (HRD). An updated practice review of cash transfers for seed security, based on experiences since the completion of the earlier review by Keane et al (2019) has been drafted and is currently being finalized. The report offers a review of recent experiences with Cash Transfers for Seed Security (CTSS), highlighting lessons to help guide the use and design of future CTSS interventions. It draws on detailed case studies and literature from 11 CTSS interventions, plus those documented by the 2019 study. The report examines the contexts in which cash is most appropriate, and the purposes that

¹⁵ See, for example, Sunil Sinha, Johan Holmberg and Mark Thomas, 2013. ‘What works for market development: A review of the evidence’. SIDA: UTV Working Paper 2013:1. Available at <http://www.sida.se/publications>.

¹⁶ https://pdf.usaid.gov/pdf_docs/PA00ZDZH.pdf

it best serves, both within emergency, recovery and resilience-building settings. Experiences with a range of complementary programming activities that can support market development and seed sector development objectives are described. A number of barriers to CTSS are identified, and ways of overcoming these barriers are proposed.

Learning: CTSS is increasingly being used as a purposeful alternative to more traditional modalities in seed-related emergency and development interventions, indicating that implementors are increasingly aware of the advantages that cash entails. CTSS has also been seen as an appropriate modality in the COVID context. From the cases reviewed, some of the key lessons are as follows:

- CTSS can avoid potential delays and costs associated with seed procurement and delivery, though more data is needed to demonstrate the cost-effectiveness of CTSS. Investments are needed to develop the necessary capacity for CTSS, including staff training, operating procedures and partnerships with financial service providers. If this capacity is developed prior to an emergency then it is more likely that CTSS can be implemented in a timely manner.
- Price increases can occur with CTSS, but less frequently than with vouchers. Careful price monitoring is necessary to be able to address this if it arises. Outside of a fair setting, there is no limit to the number of vendors who can participate in a cash transfer intervention, and this increases the likelihood of fair pricing due to increased competition. Farmers are comfortable using cash and feel more confident about negotiating prices with cash than with vouchers.
- CTSS enables farmers to make their own decisions about what seed to purchase, and from where, maximizing choice and dignity and placing value on farmer's own experience and knowledge. Alternative, more restricted modalities such as vouchers, do not necessarily ensure continued use of improved seed as farmers can sell the seed accessed in favor of what they prefer, and may not continue to purchase improved seed in the future. As an alternative, CTSS can be coupled with behavior change approaches that support farmers to make more informed seed decisions in the medium term, such as marketing, training and information campaigns.
- The consideration of market development objectives that are possible through cash transfer modalities has led to a shift in the design of emergency seed interventions, allowing for greater focus on seed providers, seed supply, and linkages between farmers and seed providers. Achieving such objectives can potentially help to build the resilience of seed systems beyond the timeframe of the transfer itself, though evidence to show the outcomes and impacts of these interventions has yet to be generated.
- CTSS has a limited ability to meet agricultural development objectives. Cash transfers essentially allow recipients to choose what to purchase, and as such are poorly suited to promoting quality seed of improved varieties unless they are programmed with fairs that restrict choice or involve complementary actions capable of influencing farmers' choices.

Sub IR 2.2.4 Shock-responsive and resilience-based models--by crisis type, crop profile, and broad agro-ecological system are developed and tested.

3.5 Cross-cutting Activities

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

CCIR 1.1 Country specific seed policy road maps developed.

Activity CCIR 1.1.1: Develop and compare regulatory systems maps in Ethiopia (FY21) (Mission)

Achievements: Six seed system regulatory road maps were developed by S34D in collaboration with the New Markets Lab. The sets were done for the current seed policy and another set was developed for the proposed seed policy which is under development and awaiting approval. These maps were compared by side. Dissemination was done in FY22Q2. This assessment contained the results of this comparative mapping of rules and regulations along six key dimensions of the seed systems regulatory value chain: (1) public varietal research, development, and transfer; (2) seed dealer and venue registration or certificate of competence (CoC); (3) seed variety registration and release; (4) plant variety protection (PVP) or plant breeder's rights (PBR); (5) seed certification and quality assurance; and (6) anti-counterfeiting and consumer protection.

The report is finalized and published on the DEC¹⁷.

Learning: Ethiopia's seed system is in the process of ushering in significant reforms. Alongside these reforms, however, several factors should be considered to ensure that changes in the legal and regulatory system deliver the desired impact.

First, financial and operational planning and accountability will be needed to execute many of the changes proposed in the new seed rules. For example, a new institutional structure has been put forward for the seed sector (reportedly called the Agricultural Inputs Regulatory Formation Authority), that will require dedicated resources and budgetary allocation, as will institutions like the NVRC. An M&E framework will also be important.

As emphasized throughout the Report, flexibility and inclusivity in the rules will be important for addressing the needs of small farmers, the private sector, and women and youth to make Ethiopia's system a more pluralistic and inclusive seed sector.

Legal and regulatory change can be an ambitious and costly undertaking, and it will be important to prioritize short, medium, and long-term goals. Good practices from other countries, e.g. Vietnam, Thailand, India, Peru, Brazil, Benin (like those highlighted in the legal and regulatory takeaways), provide important options and would enhance Ethiopia's existing good practices.

Finally, given the different initiatives focused on Ethiopia's seed systems, sectoral coordination and co-location will be critical to raising awareness, engaging stakeholders, and building capacity as rules, institutions, and system overall evolve.

¹⁷ https://pdf.usaid.gov/pdf_docs/PA00Z13Z.pdf

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

FY21 – Activity CCIR 1.2.1: *Compare seed clubs and QDS Producers: South to South Learning; compare with Niger Federation of millet growers (core).*

This activity was completed and the report was posted to the DEC¹⁸. This work was also published in a peer review journal¹⁹.

FY20 – Activity CCIR 1.2.2: *Assess policy implications of the yellow bean field study in Tanzania, Kenya, and Uganda (core).*

This activity was changed and instead of the policy implications of the yellow bean study, S34D conducted a study outlining incentives for seed companies to expand their crop-seed portfolio. This was part of an evaluative learning. The report can be found on the DEC²⁰.

Activity CCIR 1.2.3: *Implement and pilot of Standard Seed Protocol in Kenya (RFS).*

Achievements: Following the successful piloting of standard seed in FY21, the two newly-registered seed companies that participated in the pilot (Inyamandu CBO Seed Merchant and Tegemeo Cereals Enterprise Limited), continued to produce standard seed for cowpea, green grams and sorghum. At least four additional established companies have also produced standard seed of common beans, cowpeas, green grams, OPV sorghum, okra and indigenous African vegetables. The initial volumes certified by the Kenya Plant Health Inspectorate Service (KEPHIS) under this pilot were 106 metric tons (MTs). However, KEPHIS reported a total of 394.45 MTs of certified standard seed to-date, excluding OPV sorghum certified under the pilot. This shows rapid adoption of certified standard seed by mainstream seed companies.

Table 1: Volumes of Standard Seed Certified by KEPHIS (Excluding OPV sorghum)

#	Crop	Certified Standard Seed by 2022 (MT)
1	Beans	150.99
2	Green gram	109.83
3	Okra	75.56
4	Cowpea	34.12
5	Black Night Shade	7.5
6	Amaranthus	5.49
7	Crotolaria	4.76
8	Spider Plant	3.2
9	Jute Mallow	3.0
	Total	394.45

Source: KEPHIS, 2022

¹⁸ https://pdf.usaid.gov/pdf_docs/PA00ZHJP.pdf

¹⁹ https://pdf.usaid.gov/pdf_docs/PA00ZH46.pdf

²⁰ https://pdf.usaid.gov/pdf_docs/PA00ZGXV.pdf

Dryland Seed Limited that produces seed for ASAL areas, had not started producing standard seed by July 2022. The company lost its Director and Founder to Covid-19, and have been struggling to adjust to new management. However, they are planning to produce standard seed of beans in the short rain season of 2022. Notably, Dryland Seed Limited is now a fully female-run seed company.

With support from S34D, Agri Experience engaged more companies to focus more on standard seed, and support was given to help promote seed of legumes (common beans, cowpea, green grams) and sorghum. The three new additions are Leldet (female-owned with many female outgrowers), Dryland Seed Limited (female-owned and managed) and Faida Seeds. S34D also continued to support the two pilot companies: Tegemeo Cereals Enterprise Limited and Inyamandu CBO Seed Merchant, making the total number of participating companies five.

Radio Campaign on Radio Citizen. The strategy of this intervention was to create awareness among farmers on the importance of replenishing their recycled seed with fresh certified seed, even if only for a portion of their crop field. The radio campaign was aimed at increasing demand of seed of the focus standard seed crops. S34D supported a 3-week radio campaign in Swahili language on Radio Citizen, which was aired from August 29, 2022 to September 16, 2022. While the ideal scenario would have been to have campaigns on local language radio stations, we would have required a much longer time to prepare and be ready to broadcast in at least five local languages, and this would have been a drop in the ocean as Kenya has over 40 local languages. We therefore decided to use Swahili which is a national language and widely understood by most farmers and Radio Citizen is the most listened to Swahili radio station in the country.

The message focused on encouraging behavior-change by farmers so that they would start to introduce fresh certified seed for the non-maize and non-hybrid crops which is being certified as standard seed. Farmers were encouraged to ask their agrodealers about the availability of this seed, since farmers typically purchase maize seed and other inputs at the agrodealers, hence the message encouraging farmers to enquire about seed of legumes and other crops. The message gave reasons for replenishing seed stock including the quality assurance by KEPHIS of the performance of the seed (i.e. germination vigor and purity). Each week had a themed message as shown below:

Week one: Change behavior by not recycling seed for beans, green grams, sorghum or cowpea forever, and start replacing some seed each season with fresh certified seed from the local agrodealer. An investment in some healthy new seed each season will increase harvest.

Week two: Seed that is recycled for too long gets tired and weaker. Stop using seed that has been recycled for too long! Invest in some certified seed of bean, cowpea, sorghum or green gram from a local agrodealer each season. Certified seed has good vigour and is disease free, and has a special coating to protect your seed against pests and diseases in the soil, and increase your harvest.

Week three: Start *retiring* some of the seed you have been recycling forever! Go early to your local agrodealer and buy some certified seed for bean, cowpea, green gram or sorghum each season. After a few seasons you can upgrade all of your seed! A modest investment can improve your harvest – and increase the money you have available for your family.

In addition to the main campaign messages, announcers made periodic mentions throughout the day to reinforce the campaign message.

Promotional Materials. During the radio campaign period, other promotional materials such as posters, fliers, banners and dustcoats were distributed to agrodealers with more detail about certified seed, and

even going further to provide agronomic advice such as seed quantity needed for specific acreage, recommended spacing, stage for weeding etc.

All five companies mentioned above participated in producing promotional material that contained information on specific certified standard seed varieties. In addition, Agri Experience made generic posters on certified standard seed varieties for agrodealers. The messages on radio were complemented by the visual posters in agrodealer shops so that farmers were motivated to ask about seed of the standard seed focus crops, and hopefully purchase modest amounts to try out.

Small Seed Packs. Four of the five seed companies agreed that a smaller-size pack containing one kilogram of seed was ideal for the focus crops. All vendors typically sell two-kilogram packs as the smallest size. S34D supported the companies to produce 1 kg packs for nine varieties of cowpea, common beans and green grams as shown on Table 2 below. Leldet preferred much smaller packs of 250g and 400g.

There was modest cost-sharing by the three mainstream companies (around 10% of direct packet costs, labor, distribution of posters to agrodealers and cost of KEPHIS labels for the packets - a label costs KES2.50, which is equivalent to USD 0.02, and must be affixed to every seed packet). Agri Experience also supported an additional \$2,000 of Dryland Seed Limited’s small packs, because the company did not possess standard seed, yet it was critical to include them in S34D activities due to their location and production of ASAL-focused crops, that align perfectly within the standard seed focus crops.

Table 2: Small Packs of Crops and Varieties for Standard Seed

Name of the seed company	Crops/varieties
1. INYAMANDU	Cowpea - K80
	Green gram - Karembo
2. FAIDA	Beans - Chelalang
3. TEGEMEO	Sorghum - Gadam
	Green gram - N26
4. DRYLAND	Beans - KATB I
	Cowpea - K80
	Greengrams - N26
5. LELEDET	Beans - KK8

Retesting of Carryover Standard Seed from Tegemeo Cereals Enterprise Limited. ninety-four metric tons of green gram seed carried over from the previous season was retested by KEPHIS, which is a requirement for legume seed that has stayed one year after production. All three lots passed KEPHIS tests and the seed was repackaged for sale in the short rains season of 2022.

Table 3: Crops and Varieties for Standard Seed retested by KEPHIS

	Crop	Lot no.	Weight sampled in kgs
1	Sorghum (Mtama I)	46121	30,000
2	Sorghum (Mtama I)	46122	12,000
3	Green gram (N26)	46123	30,000
4	Green gram (N26)	46124	22,000
	Total		94,000

Stakeholder Meeting. A standard seed stakeholder meeting was held on September 26, 2022 in Nairobi. The meeting brought together KEPHIS inspectors, seed companies, the Seed Trade Association of Kenya (STAK), development partners, and for the first time, agrodealers. The inclusion of agrodealers was important as to make them aware of availability of more seed of the standard seed focus crop and the radio campaign, in readiness of farmer queries about the seed.

The agrodealers raised issues that pertain to actual farmer realities, because of their close interaction with farmers. Some offered to have some demos to demonstrate to the performance of the seed to farmers, and include these in other ongoing activities to raise farmer awareness. This will be a separate activity managed by the seed companies and agrodealers.

The meeting participants discussed issues arising and how to resolve the issues and have more production and adoption of standard seed. Some of the issues raised included challenges availability of parent seed, especially for groundnut and soybean, yield gaps among outgrowers of the focus crops and how to close the gaps, effective certification including devolving the certification to private inspectors as producers of the focus crops typically have smaller land holdings and are very scattered, which makes inspection very costly. Some participants also wanted to know how additional crops such as soybean and pigeon pea could be included as standard seed.

Learning: The question of standard seed cost continues to be an issue for debate. Seed companies gain from standard seed by KEPHIS decreasing the field inspections from three to at least one. However, seed companies still conduct other activities for seed processing, packaging, distribution to agrodealers and marketing. In addition, due to the single inspection, they lose the opportunity for carrying correctional steps (such as rouging off-types) as was the norm with the multiple field inspections. This means that the one inspection can easily condemn an entire field if the protocols are not strictly adhered to.

This reality is not understood by many non-seed company actors who think that standard seed should be cheaper from the onset. While the price for farmers may become lower in future when volumes increase significantly, more companies need to start producing and marketing standard seed in order to make the market more competitive. The price will be determined by market forces of supply and demand.

Activity CCIR 1.2.7: *Establish a variety registration system dedicated to farmers / pastoralists, separate from the regular variety ownership registration system in Ethiopia (Mission).*

In consultation with USAID Ethiopia, this activity was put “on hold” in FY22 due to the situation on the ground in Ethiopia. Significant coordination and collaboration with MoA is required to move forward with this activity and during the internal conflict in Ethiopia, that was not feasible.

FY21 – Activity CCIR 1.3.2: *Conduct a learning study on national feed reserve systems with examples from other countries with implications for Ethiopia.*

This activity, together with Activity 2.1.1.2. was completed and the report was posted to the DEC²¹. This work was also published in a peer review journal²².

Activity CCIR 1.3.3: *Facilitate and initiate implementation of seed policies and directives in Ethiopia (FY21) (mission).*

Achievements: The activity examined the extent of operationalization of the Ethiopian seed regulatory provisions and associated gaps using three subsequent steps of assessment. This is an inventory of the policies and respective regulatory provisions; identification of three priority seed regulatory provisions (domains); including (i) Quality Declared Seed - QDS, (ii) Seed packaging and labeling, and (iii) dispute settlements; and analysis of the identified seed regulatory provisions.

Findings from the activity were (virtually) disseminated with the stakeholders including government officials on March 24, 2022.

Learning: Based on data generated through KIs and FGDs with 66 respondents from relevant stakeholders covering seed actors, the assessment indicates that there are gaps both with the regulatory provisions as well as in their operationalization. On the one hand, regulations like packaging and labeling focused on theoretical precision and control without taking into account existing capacity and available technologies leading to challenges of implementation. On the other hand, directive for QDS missed the basic concept for which regulation was introduced, yet implementation didn’t follow the directive. These imply the need (i) to consider practicality in the design of the different regulations and directives, (ii) ensuring adequate awareness to all relevant stakeholders, (iii) developing feedback and learning mechanisms specially to facilitate learning among stakeholders for timely adjustment/revision, (iv) ensuring technical and human capacities to design and implement policies, and gradual liberalization and investment in the seed sector.

Activity CCIR 1.3.5: *Facilitate and conduct a stakeholder discussion session on seed reserves (Mission).*

Achievements: The objectives of the study are to: (1) derive the pros and cons of developing and maintaining seed reserves, (2) inform the Ethiopian government and stakeholders about these pros and cons, and (3) propose the way forward, to enhance proactive action. Initially, a desktop literature review was made to gain insight about seed reserve, including why, how, where and under what conditions seed reserve is used. This is followed by empirical study using questionnaire survey. After developing checklists (i.e., closed and open-ended), data were collected using face-to-face focus group discussion (FGD) and key informant interview (KII) as well as using remote means of communication (i.e., using emails and telephone call). The process of data collection involved pertinent government organizations,

²¹ https://pdf.usaid.gov/pdf_docs/PA00ZDF6.pdf

²² https://pdf.usaid.gov/pdf_docs/PA00ZBD8.pdf

such as Federal Ministry of Agriculture and its affiliated institutions, the Ethiopian Biodiversity Institute, four regional bureaus of agriculture (i.e., Amhara, Oromia, Sidama and South Nations, Nationalities and Peoples Region NNPR) and their affiliated institutions, federal and regional research institutions, public and private seed companies, two community seed banks in Oromia and one seed producer cooperative, UN-Organizations like FAO/Ethiopia, non-governmental organizations that often involve in emergency seed aid in Ethiopia as well as veterans that had led seed provision in the country, including emergency seed aid. Also, useful information has been collected through questionnaire responded to via email from international professionals in the area of seed reserve/bank, seed security and seed systems, including emergency seed, so to reflect on the pros and cons of developing and maintaining seed reserves. 30 stakeholders from within Ethiopia and eight international professionals, totaling 38 individuals were contacted and the proportion of respondents was more than 80%. The data was analyzed using descriptive statistics.

Learning: Drawing on the present study (primary data from national and international stakeholders as well as literature review), the following conclusions are in order:

- Distinction between seed reserve and seed bank is not clear, esp. when both are qualified as community seed reserve and community seed bank.
- The most critical problem associated with establishment, organization and operation of seed reserve is its high cost. As a way out, our results and most literature sources are in favor of community seed banks to seed reserve proper (i.e., maintaining quality assured seed in store, anticipating occurrence of disaster).
- To be financially sustainable, however, community seed reserves/banks need to integrate market-oriented seed production, along with conservation, seed selection, seed multiplication, seed use and seed exchange during and after disaster as well as during normal seasons. This implies that community seed reserves/banks would be sustainable ecologically, culturally, socially, and financially, when and where market-oriented seed production of improved and farmers varieties is done; traditional foods and drinks are promoted; and these two are combined with conservation, seed selection, seed multiplication, and seed distribution.
- Thus, supporting and strengthening seed systems in ways that they are resilient can be feasible, instead of reserving seed for bad years and provide direct seed distribution. Our literature review revealed community seed banks/reserves to be more resilient under COVID-19 pandemic, which otherwise disrupts national and international supply chain, including seed trade. Strengthening local seed systems means decentralize support to formal, informal and integrated seed systems; promote *in situ* and *ex situ* conservation strategies; empower farmers and communities to make their preferred choices of crops and varieties; strengthen local seed storage structures at individual and community level through awareness creation, training and material support; support community-based seed production in a market-oriented way; and develop complete value chain for local crop varieties through participatory plant breeding, participatory variety selection and promotion of traditional foods and drinks for market
- Our findings provide support to a growing body of evidence from seed system security assessment (SSSA) that seed is available in areas exposed to disasters and hence creating means to access seed from the local seed systems is preferred to direct seed distribution as emergency

seed aid. This can be done through seed vouchers, cash for seed and supported by organizing seed fairs/exhibitions at the time of planting.

- Ethiopia should continue strengthening local seed systems (informal, formal and integrated), supported by government, private, and development partners.

Activity CCIR 1.3.6: Seed systems and climate adaptation at the last mile, learnings and best practices: A global case study approach (Mission).

Achievements: S34D in collaboration with Oxfam Novib's SD=HS program conducted an extensive desktop literature review and field interviews with 25 seed producer groups across five countries – Ethiopia, Zambia, Uganda, Niger, and Guatemala. The goal of this activity was to assess climate changes experienced by these seed producers and understand the coping mechanisms (including agronomic practices and other adaptive strategies) adopted by the farmers.

Learning:

- Seed producers and farmers have shifted to home gardens/vegetables and cash crops
- Heavy reliance on livestock that serves as “liquid asset”
- Shift from local to modern varieties that are stress tolerant
- Increased market interactions
- No clear difference between men and women when it comes to perception of climate threats and coping strategies.
- Having farm-saved seed is important to these farmers --- this shows the importance of building resilience through local informal seed systems
- Farmer Field schools was cited as a top external support throughout
- Creating and increasing sustainable off-farm opportunities would not only create employment but could also foot increasing food and medicine bills.

Activity CCIR 1.3.7: Operationalization of the Quality Declared Seed (QDS) regulations and directives in Ethiopia (Mission).

Achievements: Ensuring adequate supply of quality seed in many of the developing countries has been a challenge. One of the frequently portrayed reasons is the capacity of the regulatory system to inspect and certify seed produced. In 1993, FAO developed a guideline entitled “Quality declared seed: Technical guidelines on standards and procedures”, which was further refined in 2006, with the objective of ensuring seed quality with relatively minimum resources. Ethiopia officially adopted this concept in the regulatory framework in 2013 for the first time, which was further elaborated in ministerial directive in 2015. This study looked closely into why Ethiopia adopted QDS and how it is implemented considering the political economy perspective of divergence and similarities of the different provisions indicated in the FAO guideline, the Ethiopian directive and actual implementation practices.

Learning: Results indicate that as opposed to the initial intention of FAO, the main driver of adopting QDS was to legitimize the existing production and supply of seed by small farmers in addition to the seed supply by licensed seed companies with the goal to fulfil the ambitious seed production targets of the government development plan. This has implied to (i) limit the producers of QDS to be farmers' group, (ii) perceived quality of seed to be lower compared to certified seed, (iv) restricting QDS marketing to be only within the locality the seed was produced, and (v) consideration of QDS as a transitional system to formal seed system. Although neither the producers nor the marketing area was restricted in practice as indicated in the provisions, the fact that it was considered as a transition affected the proper support to strengthen the system limiting the contribution of QDS to the seed

supply. Moreover, with variability across regions, the observed contribution of QDS system is highly associated to the support from projects implemented by development partners. This clearly indicate the need for further exploiting the potential role of QDS in Ethiopian seed system given the challenges prevailing with the formal seed system.

The following table summarizes differences between FAO guidelines and Ethiopian Directive for QDS.

Regulatory aspect	FAO QDS Guideline	Ethiopia QDS Directive	Implementation in Practice
Who can produce QDS?	Any seed company, cooperative, individual or institution fulfilling the requirements in the guideline and registered	Farmers group and cooperatives fulfilling the requirements in the guideline and registered	Farmers' group, cooperatives, unions and private seed entities
Which crop varieties?	major crop production groups and varieties that are developed through (i)conventional breeding, (ii) PVS, and (iii) local varieties.	Except hybrid – what to be produced is decided by bureau of agriculture depending on shortage of seed from formal seed system	Any crop except hybrid, but the practices is only for few crops (potato, forage, onion, spices, fruit seedlings)
Territory of marketing	No limit within a country and allows QDS seed movement between countries if the principles of the scheme are accepted by countries or regional groups	Limited to the community where it is produced – BoA decides if it is beyond that particular community	No practical territory. Producers are selling to any buyers from any part of the country, although if it goes through formal channel, BoA decides where it has to be sold
Actors that can market	Any company, cooperative, individual or institution	Farmers group and cooperatives	Farmers group, cooperatives and private companies
Inspection requirements and frequency	Field inspection required and frequency vary by crop type from one to three times	Field inspection required as per the set standards, only 10% of the field inspected	For forage crops, there is less inspection as the producers often do not request. In case of potato, inspection frequency sometimes higher than indicated

CCIR-2 Established enhanced quality information flows for seed systems

Activity CCIR 2.2.1: Develop forage informatic dashboard using seed data and metrics and a policy brief on forage seed systems in Ethiopia (FY21) (Mission).

Achievements: This activity was completed and a draft paper was shared with USAID. The paper was accepted for publication in CABI reviews and will be forthcoming in FY23 Q1.

Learning: A framework for forage seed system was developed; there are only six protocols available to multiply forage seeds using QDS assurance system. Very little forage seed is produced and exchanged through the formal seed system; NGOs distort the system by free distribution mechanisms.

FY20 – Activity CCIR 2.2.2: Work with national and regional stakeholders to develop a technical road map (framework) for demand estimation / forecasting in Ethiopia.

This activity was completed and the report was posted to the DEC²³.

Activity CCIR 2.2.2 Test out recommendations from FY20 technical roadmap, in select woredas (10-15) in Ethiopia (FY21) (Mission).

In consultation with USAID Ethiopia, this activity was put “on hold” in FY22 due to the situation on the ground in Ethiopia.

Activity CCIR 2.2.5: Establish a seed production and marketing information network at the national and regional levels (mission).

In consultation with USAID Ethiopia, this activity was put “on hold” in FY22 due to the situation on the ground in Ethiopia.

NEW Activity CCIR 2.2.7: Landscape and scoping analysis of seed system, forage seed system and animal feed in Ethiopia (Mission)

Achievements: The study was completed and disseminated to USAID Washington and Ethiopia on September 21, 2022. Findings from the study were used as input for several objectives. One, to curate a list of forage seed producers, forage growers, dairy farms, fattening centers, and feed producers. And two, to use the knowledge of currently used feed options to formulate a total mixed ration combining cultivated forages as options for dairy animals in the training manual; use the stakeholder list to invite and conduct workshops in Addis Ababa (October 2022).

Learning:

- Cost of fertilizer increased by 32% and feed ingredients by 50% for hay and 100 to 400% for concentrate ingredients.
- Prices of the ingredients used to make concentrate feeds and of the compounded feeds have been increasing recently. Evidence from similar studies in Ethiopia indicates price increases over the recent five years were 52 and 82 %, respectively for the ingredients and compound feeds.
- The increased price of feed severely impacted the intensive fattening farms in Oromia that have been exporting animals. Several farms have ceased operation, while the impact of extensive fattening system (in Amhara) that caters to the local market was not impacted to that an extent as the intensive system.
- The labor and transport costs have increased by 30 to 100%. Forage seed price increased by 95%.
- Six out of 14 dairy farms surveyed decreased the number of animals (by 4 to 52%, with an average of 29%) due to increase in the cost of feed.
- There has been an increase in the selling price of milk (from 25 birr to 35 birr per liter in Amhara and from 30 birr to 40 to 60 birr per liter in areas around Addis Ababa). In most cases the increase in milk price has been small (and in some places there has been no increase), which was not commensurate with the high cost of inputs. This affected adversely on the income of the farmers. Several farmers considered closing the dairy business and move to another one, if the conditions would not improve.
- The extensive system was also adversely affected by COVID. The consumption of meat decreased due to COVID.

²³ https://pdf.usaid.gov/pdf_docs/PA00Z52V.pdf

4. Monitoring, Evaluation, and Learning

4.1 Independent Evaluations

In FY22, S34D was not able to conduct the independent evaluations as planned. One of the evaluations was to assess whether the trainings conducted led to any capacity building at the end of the activity. What capacity changed for the actors trained due to the trainings? This evaluation was supposed to be conducted for Activities – 1.1.1.12 and 1.2.2.4 in the DRC, and for Activity 1.1.3.1 in Zambia. The first two activities did not take place because the incremental funding was obligated in late June and we were not able to receive Mission’s approval for the work. The activity in Zambia focused on finalizing the e-learning platform and actual seed inspectors were not trained through the e-learning platform. In FY23 S34D is planning to assess whether the trainings conducted led to any capacity building under activities 1.1.3.1 and 2.1.3.2. in Zambia.

The second evaluations was supposed to look at the success of the pilot of the Standard Seed Certification in Kenya (activity CCIR 1.2.3) using the economic framework of cost-benefit analyses. This activity only started in July after the incremental funding was received. There was not sufficient time to conduct the evaluation. This evaluation is scheduled for FY23.

The third evaluation was about the use-case values and adoption patterns of the tools by the humanitarian community that were developed under the EHAR portfolio for the global humanitarian communities of practices and partners (example – gFSC). Although many of the EHAR activities were in their final stages of completion, it was not possible to evaluate the use case because the tools had not all been disseminated yet. The FY23 work plan has a number of independent evaluations for the final year of S34D, such as the training evaluation, the cost benefit analysis of the standard seed and the EHAR portfolio use-case and adoption patterns.

4.2 Learning agenda

The following section provides contributions to the following three Learning Areas:

- Learning Area #4: What is the profile of seed security actions that leads to resilience?
- Learning Area #7: To drive inclusive policies and practices, what type of evidence and processes are needed to accelerate improvements in seed security?
- Learning area #8: Which mechanisms or interfaces enabled a greater number of women smallholder farmers to sell, access, and purchase quality seeds, and more frequently?

Learning Area #4: What is the profile of seed security actions that leads to resilience?

This learning component contributes to the sub-question, ‘How can seed markets be more resilient?’ The findings are drawn from Activity 1.3.1.1, which explored the impacts of emergency seed interventions on the livelihoods of male and female farmers and on local seed markets. Focusing on the findings relating to seed markets in Adjumani District, Northern Uganda, the study results showed that emergency interventions (along with agricultural development interventions), had created considerable demand for certified seed and quality declared seed (QDS) among the NGOs and projects implementing these projects. This led to an increase in the number of agro-input dealers and possibly also Local Seed Businesses (LSBs) in Adjumani District. Whilst the capacity and seed sales of many agro-input dealers had increased, there were also concerns about market distortions due to over-dependence on NGO/project demand, displaced seed sales, and weak seed marketing efforts.

Formal seed systems benefitted from the increase in the number of agro-input dealers in Adjumani Town and farmers' increased awareness about new, improved varieties generated through successive emergency seed interventions. However, there appeared to be a disconnect between many of these agro-input dealers and smallholder farmers, raising concerns about the sustainability of agro-dealers in the case that support from NGOs and development projects were to end. The expansion of agro-dealers in the district has been heavily dependent on emergency seed interventions and agricultural development projects. As these interventions / projects are eventually phased out, agro-dealers will need to adjust their strategies and there will be an inevitable consolidation in the market. There is little evidence that smallholder farmers will patronize agro-dealers on a regular basis once free seed ends. Given this conclusion, it seems inevitable that some agro-dealers will go out of business.

Similarly, there is questionable sustainability of the LSB model currently being promoted by NGOs and other LSB supporters. The LSB model was seen to have failed in the case of groundnuts, in which specific varieties (e.g. Serenut 2 and 4), were being multiplied long after they had been discontinued by researchers. This example suggests that there is a need for stronger links between researchers, foundation seed producers and LSBs, and more effective verification of QDS seed sources at the district level.

In general, there was a limited understanding of the nature of smallholder seed demand, combined with unrealistic expectations of the extent to which commercial supply of QDS and/or certified seed can meet farmer needs. Informal seed markets, in contrast, were seen to be more opportunistic and do not rely to the same extent on commercial seed production. Rather than aiming to formalize seed markets, NGOs should aim to support the creation of resilient and sustainable seed markets, both in the formal and intermediate seed systems, as well as strengthening the capacity of the actors for sustainable growth. Following the example of the District Farmers Association, one way in which this can be encouraged is by linking LSBs to more informal Farmer Seed Producers (including traders who produce their own seed), to ensure that farmers and traders have access to QDS of appropriate new varieties for their own informal multiplication (not necessarily on a commercial basis).

The study put forward three recommendations for enhancing the sustainability and resilience of seed markets:

*1. Enhance the **quality of informal sector seed available in local markets** by working with traders who produce and sell own-grown seed.*

Many poorer farmers rely on local markets to acquire seed, yet the seed available in local markets is of variable quality. Some traders produce seed on their own farms and sell it at a premium price at planting time. These traders can be supported to provide reasonably-priced, good quality (non-QDS, uncertified) seed of improved varieties. Such support should be tested through a pilot project, but might include linkages with LSBs for access to QDS of improved varieties as source seed, knowledge about seed storage technologies, and loans to enable access to appropriate and locally-available storage technologies (e.g. insecticide, storage drums). Potential linkages and pricing structures might also be explored to consider whether traders might sell seed produced by Farmer Seed Producers or LSBs. As a pilot, the project should be co-designed with traders who are willing to participate and who have prior experience in seed management and seed sales. It will also be necessary to work closely with district agricultural officers and ensure that they understand and accept the rationale for the approach.

2. Enhance the availability of appropriate *vegetable seed and seedlings* in local markets and communities. There are various ways in which this might be achieved, and it is recommended to start with a pilot project to test different approaches.

Information collected by the assessment revealed that farmers are able to save their own seeds of okra, sukumawiki, and local tomato varieties but that they rely on NGOs for access to seed of improved tomato, onions, cabbage and green pepper. Some of these seeds are particularly small and therefore difficult to extract (e.g. onions, cabbage), whereas other might be hybrids (e.g. improved tomato, green pepper²⁴), or even both. Given that farmers tend to seek and acquire seed from other farmers and local markets before resorting to agro-input dealers, it is recommended that a pilot project might involve the identification of suitable market traders (i.e. those already dealing with vegetables who also have knowledge and experience in handling seed), who could be trained (and registered by the District Agricultural Office), to act as sales agents for agro-input dealers. Another approach might be to work with some of the more successful vegetable producer groups to test the level of local demand and profitability of selling vegetable seedlings. Given the delicate nature of vegetable seedlings, it is unlikely that they could be transported far, and suitable packaging (seed trays) using locally available materials would need to be found.

3. NGO interactions with formal seed sector actors (e.g. *LSBs, agro-input dealers*) must avoid creating market distortions. They should instead be re-oriented to promote market linkages, resilience and sustainability, especially though linkages with informal seed systems.

The assessment has highlighted various unintended negative consequences of large-scale seed purchases from formal sector seed actors, and unrealistic expectations regarding the growth and commercial viability of Farmer Seed Producers and LSBs. Future seed and seed system interventions must be based on a realistic understanding of the nature of seed demand among poor smallholder farmers and should aim to strengthen the resilience and sustainability of both informal, intermediate and formal seed systems. For LSBs, it is essential that they have strong links with foundation seed suppliers who themselves are closely linked with researchers. LSBs can potentially tap into informal seed markets by providing QDS to market traders who produce their own seed (see Recommendation 1 above) and by providing QDS to Farmer Seed Producers. Where there is sufficient demand, agro-input dealers need to market appropriate seed types to farmers, e.g. through vegetable seed sales agents in local markets (see Recommendation 2 above).

[Learning Area #7: To drive inclusive policies and practices, what type of evidence and processes are needed to accelerate improvements in seed security?](#)

S34D works at the interface of formal and informal seed systems. However, conditions are ever changing in the agricultural sector. With climate change farmers face different stresses and it is important to understand their adaptive strategies, especially when it comes to seed multiplication. Thus, S34D conducted a five-country empirical study with 25 seed producer groups and cooperatives to assess the most cited climate change and how that has altered their coping mechanisms. Data shows that there is no difference in climate change perception and main practices adopted between male and women seed producers. Most cited climate stress is erratic rainfall, and all seed multipliers have moved to stress-tolerant varieties and home gardening. This means that policies that enable farmers to access

²⁴ If the green pepper variety is not a hybrid, then it should be possible for farmers to save their own seed.

the stress tolerant varieties are of utmost importance, as is, use of well-adapted local varieties that are naturally resistant to local conditions.

In the QDS study in Ethiopia, and drawing on a recent dissemination by S34D in Addis Ababa, it appears that not only Ethiopia, but also Uganda and Zambia have adopted different interpretations of QDS protocols than those that were put forth by the FAO. For example, in FAO guidelines, QDS seeds could be sold by anyone, but the three countries mentioned does not allow seed companies to sell QDS. Second, FAO guidelines state that QDS could be sold anywhere in the country and even between countries, but the countries cited here only allow for QDS to be sold in local communities. Even though the national rules differ from FAO guidelines, seed companies are selling QDS, and there are reports that some are being sold to different parts of the country. Thus, in a way, stakeholders are implementing what FAO had put forth even though national policymakers had intended otherwise. What this evidence tells us is that there is a demand for quality seeds, and the market is accepting QDS. Perhaps, policymakers could examine reality and practice with policies in place to re-evaluate market conditions and demand.

National policymakers in Ethiopia desired to create a national seed reserve and S34D examined the pros and cons of doing so. Learnings from the study dictates that centralized seed reserves do not work. Operationally they are cumbersome as well as expensive. It also leads to rent-seeking activities. However, evidence from other countries has shown that decentralized reserves are more sustainable. Reserves can take different forms and shapes (and thus names such as Community seed bank; Community seed reserve; Strategic seed reserve or seed reserve; Seed library; Seed house (again, another manifestation against the word 'bank'); Farmer seed house; Seed hut; Seed wealth center; Seed savers group, association or network)

Discussions with national and international stakeholders plus evidence and literature review suggest the following:

- Strengthen the local seed system, instead of direct seed distribution from the seed reserve store per se.
- Promote community seed banks that involve conservation, seed selection, seed multiplication and distribution, with reasonable storage structures and facilities.
- The decentralized nature of community seed reserve/bank demands less cost to seed reserve proper, attracting support from community and NGOs, CSO and development partners
- Overcome the donor dependent success-failure cycle of community seed banks by integrating market-oriented seed production and marketing; and promoting traditional foods and drinks by linking to the market and developing complete value chain.
- NGOs, the UN, and CSOs need to move away from direct seed distribution to support building local seed systems, like community seed banks, storage structures, promoting Participatory Plant Breeding (PPB) and Participatory Varietal Selection (PVS).

To implement the above, strong interface between formal sector and informal agents is necessary.

Finally, the activity on forage informatics provides ample evidence on the forage sub-sector in Ethiopia, with indicators and data demonstrating the infancy of forages in the country and the need to develop a greater number of seed certification and QDS protocols for forages in the country, without which high-quality forage seeds cannot increase in quantity in the country.

Learning area #8: Which mechanisms or interfaces enabled a greater number of women smallholder farmers to sell, access, and purchase quality seeds, and more frequently?

A number of studies were completed in 2022 that shed some additional understanding on gender-sensitive seed systems. In the “Micro-Franchise Model for Last-Mile Seed Delivery in Kenya,” women farmer (74%) training participation was much higher than men farmers (26%), while more men agro-dealers (60%) and men CBO members (72%) attended the training on the micro-franchise model and Freshco seed varieties. This indicates a need to better understand gender dynamics, interest and/or barriers that either limit women in being in these positions to be invited or what limits women agro-dealers and CBO members in attending such trainings. The literature review in the report “Review of Existing Last Mile Seed Delivery Models and Approaches” highlights that in the Feed the Future Mozambique Innovations (FTF INOVA) project agro-dealer businesses and business networks are male dominated. However, the agrodealers are in the process of hiring more women assistants as “the industry recognized women as being trustworthy, hard-working, and good at dealing with clients.” (FTF INOVA, 2018). This literature review also noted that private seed companies that focus on commercial crops are changing their marketing strategies to better reach women using women-led demonstration plots, demonstration plots in women-accessible locations, videos featuring women clients, and offering smaller packages (Mudege et al., 2018). The report “Strengths and weaknesses of organized crop seed production by smallholder farmers: A five-country case study” found that “All groups valued the role of women (e.g., for their specific knowledge on seed selection and food quality) and youth (needed for long-term sustainability of the group; better educated, better connected outside the community, and interested in marketing aspects), and it was noted that women often have no access to, nor own land, and may therefore have limited access to credit, which in turn may influence their position in the groups and hamper their full participation in seed production.” In the Haiti fragile states report it is noted that the significant donor investment in agricultural development that strengthen food security and seed systems was limited in its gender-responsive approach or youth-inclusivity suggesting that future aid should apply at a minimum a gender-responsive approach. Ignoring the gendered dynamics, barriers, interests and the role of women in the seed sector of fragile and non-fragile states jeopardize inclusive development of these systems.

In the “Seed Demand Forecasting in Ethiopia - Assessment and Recommendations for a Technical Roadmap” it noted that “disaggregated data for gender and youth is neither systematically collected nor controlled for while estimating demand at a variety level.” Similarly, findings on the lack of gender-disaggregated data were identified in FY21, when we reviewed the five OI financial scan reports. S34D advises that when data is collected at the individual level it is disaggregated by at least sex and age, but encourages other disaggregation and that the analysis applies at least a gender and age lens. Diving deeper into reasons why this data is not disaggregated and what is needed to support disaggregation is suggested.

B3. Global Community of Practice

S34D and Oxfam Novib’s SD=HS program jointly presented to the USAID and the Bill and Melinda Gates Foundation on the role of farmers in developing new varieties with formal researchers and breeders; variety selection with CGIAR and others; seed multiplication along with formal sector seed companies and the importance of policies to allow flexibilities for doing so. Given the one-CGIAR initiative, the two I-NGOs see an immense opportunity to coordinate and collaborate better on the ground by allowing for CSOs and NGOs to work with farmers and local stakeholders, and then forming a stronger interface with formal actors such as researchers, formal sector breeders including those in

NARs and CG centers. The need to increase the capacity of the local government is essential because federal government agents are too far from the scene of action.

5. Summary by country

South Sudan

Under the fragile states work (activity 2.2.2.2), S34D worked with Wageningen Center for Development Innovation (WCIDI) on a case study in South Sudan on the emergence of enhanced and resilient seed sectors in fragile states. Findings from this study were presented and validated at a workshop in Juba. A two-day synthesis workshop with 11 individuals from the partner organizations was organized to synthesize the findings of all the case studies and draw out the key findings and lessons relating to seed system development in fragile states. A detailed workshop report has been drafted which will provide the basis for the synthesis report. The synthesis workshop identified and explored a number of cross-cutting themes across the different case studies, e.g., quality of seed, lack of seed policy and regulation, creative solutions to fill the gap in the role of government, the role of emergency seed relief in seed delivery, etc. The lack of seed law and seed regulation poses a challenge to seed sector development in many fragile states. Some of the ways in which this has been overcome in the case study countries include the creation of platforms and dialogues at provincial and local levels. In South Sudan, there have been some good examples of local governments coming in to provide structure within the seed sector, though this is often dependent on the person heading the agricultural bureau. Many governors have realized the importance of the sector and are discussing what needs to be done in consultation with the MoA. Although governments in fragile states tend to rely on relief aid for seed provisioning, it's important to realize that relief is not a permanent solution. The government should at some point step up, but relief seed provisioning acts as a vicious circle. In South Sudan, for example, the Ministry of Agriculture and the Agricultural Research Center feel powerless because they are used as a cash cow for seed development, yet they are not involved in decision-making.

Haiti

In the Haiti fragile states report it is noted that the significant donor investment in agricultural development strengthening food security and seed systems was limited in its gender-responsive approach and that youth-inclusivity was low, suggesting that future aid should apply at a minimum a gender-responsive approach. Ignoring the gendered dynamics, barriers, interests and the role of women in the seed sector of fragile and non-fragile states jeopardize inclusive development of these systems.

DRC

Under the fragile states work, two case studies were drafted on DRC, one by ABC on seed and market systems of the Eastern DRC and one by AE on formal seed sector. The lack of seed law and seed regulation poses a challenge to seed sector development in many fragile states. Some of the ways in which this has been overcome in the case study countries include the creation of platforms and dialogues at provincial and local levels. In the DRC, for example, provincial seed councils have been established in North and South Kivu which bring together key stakeholders (e.g., researchers, regulators, private sector) to work through specific issues (e.g., addressing the weak capacity of bodies to regulate the seed sector, innovative approaches for relief seed distribution, etc.) - these councils offer a model that could be replicated elsewhere.

Ethiopia

S34D developed training manuals for forage crop production, focusing on feeding dairy animals, and forage EGS production. Six seed system regulatory maps were developed for the current seed policy and for the proposed seed policy which is under development and awaiting approval. S34D facilitated a stakeholder discussion session on seed reserves. S34D interviewed seed producer groups across Ethiopia, Zambia, Uganda, Niger, and Guatemala to assess climate changes experienced and understand the coping mechanisms adopted by the farmers. S34D examined how QDS is implemented considering the FAO guideline, the Ethiopian directive and actual implementation practices. Forage informatic dashboard using seed data and metrics was developed. A landscape and scoping analysis of seed system, forage seed system and animal feed were completed. Findings from the study were used to curate a list of forage seed producers, forage growers, dairy farms, fattening centers, and feed producers.

Zambia

In close collaboration with the Zambia Ministry of Agriculture, the Seed Inspector and Certification Institute, completed an accessible cost saving digital e-learning training course for seed inspectors that will allow more people to take to course, at their own pace, at their own time. The seed inspectors E-learning platform covers all important crops 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 e-Learning platform underwent a penetration test by APEX, a USAID-funded project, and in coordination with the South African partner, Mwabu/iSchool, who was the architect and platform developer, S34D implemented APEX recommendations. S34D also ensured that the e-learning platform is accessible by making the platform Section508 compliant.

In collaboration with CRS Zambia, S34D linked Agriculture Development Agents (ADA) to farmers who bought seeds to grow pigeon pea grains. Data from the field was collected in October, 2022 (due to the timing of the agricultural season). The pigeon pea variety that is currently grown by the ADAs are of short duration and thus climate smart. However, this variety grows very tall and thus hard to spray pesticides on them. Though climate smart, the variety is susceptible to pests. Thus, several farmers had issues with the variety at hand. CRS Zambia Country Program, a partner with S34D, is working on approaches (using demonstration plots with ZARI), to identify alternative high-yielding climate-smart pigeon pea varieties that would be more suitable and preferred by the farmers. Another issue is that price of soyabean is often higher than that of pigeon pea (even though soyabean market is more volatile). Thus, training and knowledge dissemination about the differences between these two markets is imparted to the farmers and seed multipliers, in order to explain the cost-benefits of the opportunities.

The scoping of business models to strengthen forage seed systems and production of cultivated forages in Zambia is nearly complete. Several surveys were designed, and key stakeholder interviews were conducted along with secondary data collection from both public and private sources. Economic, nutrition, and environmental assessments are done. Zambia has very little forage seed multiplication at present. However, recently there has been a focus on forages by the Ministry of Agriculture along University of Zambia and development program E-SLIP (Enhanced Smallholder Livestock Investment Program). Several small to medium forage seed multipliers have been identified. Most of the livestock population is in the southern and western provinces, linking to trade corridors to Namibia and Botswana. Cross boundary trade in animal feed to these countries has a high probability of success as such routes already trade in other commodities including live animals. Connecting the seed multipliers with early generation (forage) seeds and introducing densification of cultivated forages into blocks or

pellets would be a good strategy to feed livestock in Zambia along with several possibilities of trading in animal feed with neighboring countries.

6. Problems and Solutions

EHAR - CRS staff changes and deployments affected some of the activities in the EHAR portfolio. One of our colleagues from the Private Sector Investment team was replaced with someone who did not have detailed experience with seed systems, so one activity was dropped, and other tasks were re-allocated among S34D team members. Similarly, work on Activity 2.2.3.1 (Cash Transfers), had to be re-allocated after two colleagues from the Humanitarian Response Department were redeployed to work on the Ukraine response. These changes contributed to the decision to carry forward Activity 1.3.3.1 into FY23.

CCIR 1.2.3 - The effect of climate change continues to be felt in Kenya, and especially in the ASAL regions. The meteorological department predicts very little and scattered rainfall in the short rainy season of 2022. This will impact very negatively on purchase of seed, as well as production of seed of the next season.

7. Collaboration

The PIA activity (1.3.1.1) is being implemented in collaboration with the Global Food Security Cluster (gFSC). gFSC members, World Vision International and Lutheran World Federation collaborated with the activity in Northern Uganda by allowing us to undertake assessments of their seed interventions. In the DRC, we collaborated with the CRS-DRC Country Program to undertake an assessment of the seed interventions implemented under the Ditekemena Project. CRS has also liaised closely with the SEADS initiative since the start of the activity, especially at the planning and design stages. Findings from the assessments will be presented as part of the official launch of the SEADS guidelines at the gFSC Partners Meeting in Rome in November, 2023, to emphasize the importance of evidence-based interventions. The activity is also collaborating with the FAO Evaluation Unit, who have conducted their own participatory impact assessment of FAO emergency seed interventions in South Sudan, using a similar methodology.

Under Activity 2.2.2.2 (Fragile States), the South Sudan case study was undertaken by WCDI, as part of a collaborative effort by S34D and the FAO Food and Nutrition Security Resilience Program (FNS-REPRO, or REPRO). REPRO is funded by the Inclusive Green Growth Department of the Dutch Ministry of Development Co-operation. It is implemented by FAO in three countries. In South Sudan, REPRO aims to contribute to the development of context-sensitive seed systems resilience, aiming to reduce the number of people in IPC-3 (food crisis), through integrated seed sector development and to reduce the number of people in IPC-4 (food emergency), through an effective seed insecurity response. The Dutch-funded FAO-implemented REPRO program works with the Wageningen Centre for Development Innovation (WCDI) of Wageningen University and Research (WUR), to provide guidance to Government, humanitarian, development actors, and the private seed sector, to build more resilient seed systems that improve food systems performance aimed at improved food and nutrition outcomes for South Sudan's peoples. In implementing its learning and capacity building agenda, WCDI works in close partnership with the Integrated Seed Sector Development Africa program (ISSD-Africa), in particular on research themes 'seed sector development in fragile states' and 'effective seed insecurity response'.

8. Associate Awards

There were no associate awards in FY22.

9. Next Steps

0.1 Develop country profiles and framework for engagement in Kenya, Uganda (FY20) (RFS). For the Kenya seed sector profile, the team will review the data that was collected in FY20 and 21 and see if these data sets can be used or if new data needs to be collected.

1.1.1.12 Increase the Availability of Seed Sector Finance in the DRC (RFS). This activity is pending consent from USAID DRC.

1.1.3.1 Digital training of seed inspectors and samplers in Zambia (FY21) (RFS). It is expected that the e-learning platform will be officially launched in Q1. Once the launch is completed, SCCI will allow trainees to sign up and pay for the training course. S34D will consult with SCCI to address any issues that may come up during the first cohort of trainees. S34D will also track, with SCCI who are signing up for the training and who are completing the training. Furthermore, we would like to conduct a short survey to find out whether the e-learning platform is inclusive.

1.2.4.3 Conduct a cost-benefit analysis of the last-mile seed delivery by motorbike riders (bodaboda) to smallholder farmers in Kenya (RFS). Based on FY19 and FY20 work, which were completed in FY21 and FY22, S34D will conduct a CBA which starts in Q1 and is expected to be completed in Q2.

1.3.1.1 Participatory Impact Assessment (PIA) of Emergency Seed Interventions (FY21) (BHA). Final analysis will be conducted on the data generated during the Guatemala and Ethiopia cash fairs and reports generated. It is hoped that learning from both interventions will be applicable beyond CRS and at the global level and build on the growing body of evidence on cash for seed.

1.3.2.3 Participatory action research into cash-based seed security responses, Guatemala & Ethiopia (FY22) (BHA). Reports will be written based on analysis being undertaken. With very limited levels of expertise in cash-based programming modalities for seed security, it is necessary to ensure that existing lessons from the 2019 S34D review of cash transfers for seed security are applied to future interventions. S34D has worked closely with both countries providing seed-related expertise needed for technical advice, monitoring, and learning in relation to seed systems and seed security, and support to expanding seed suppliers reach to the last-mile and sustainably transition toward a market-based approach. It is expected that the learning from both interventions will be applicable beyond CRS and at the global level.

1.3.3.1 Framework and response options for resilient seed systems (FY20) (BHA). It is expected that this activity will start in Q2, after the carry-over work from last FY is completed and disseminated in Q1.

1.3.3.5 Strengthen Capacity for Rapid Seed System Security Assessments (FY22) (BHA). Based on the additional information provided from the Somalia RSSSA pilot, RSSSA pilot results will be shared with formal seed actors in RSSSA countries, a training curriculum will be developed, a global rollout of the RSSSA toolkit will be undertaken, including a webinar and a more formal structure for housing the RSSSA toolkit and providing future backstopping will be created.

2.1.1.3 Scoping business models to strengthen forage seed systems and production of cultivated forages in Sudan (RFS). In Q1, S34D plans to an introductory meeting, create a framework for the overall work, create an annotated outline of the main report, finalize key survey instruments and determine KIIIs for the study, and develop a sustainability framework. In Q2, S34D plans to analyze data, draft and finalize one report, and disseminate and present on findings to USAID and other relevant audiences.

2.1.1.4 Scoping business models to strengthen forage seed systems and production of cultivated forages in Zambia (FY22) (RFS). S34D will disseminate results and model propositions in Q1 followed by a report equivalent to peer-reviewed publication quality.

2.1.1.5 Evaluate business models to strengthen forage cultivation and use as animal feed to boost livestock productivity in Cambodia (RFS). In Q1, S34D plans to conduct an introductory meeting, creating a framework for the overall work, creating an annotated outline of the main report, and finalizing key survey instruments and determine KIIIs for the study. In Q2, S34D plans to develop a sustainability framework, analyze data, draft and finalize one report, and disseminate and present on findings to USAID and other relevant audiences.

2.1.1.6 Scoping business models to strengthen forage seed systems and production of cultivated forages in Timor-Leste (RFS). In Q1, S34D plans to an introductory meeting, create a framework for the overall work, and create an annotated outline of the main report. In Q2, S34D plans to finalize key survey instruments and determine KIIIs for the study, develop a sustainability framework, analyze data, draft one report, and disseminate and present on findings to USAID and other relevant audiences. In Q3, S34D plans to finalize the report and disseminate recommendations through a webinar.

2.1.2.2 Strengthen capacity of forage (certified and quality declared assurance) seed production (FY22) (Mission). S34D will connect forage growers with forage seed producers in order to increase forage cultivation.

2.1.2.3 Increase capacity of actors on animal feeding using cultivated forages (FY22) (Mission). S34D will conduct training of the trainers using the manual and then update the manual based on any feedback received. During the workshops planned for October 2022 in Addis Ababa, a list of stakeholders to be trained will be identified.

2.1.3.2 Promote access to locally grown legume seed through use of agricultural development agents in Zambia (FY22) (RFS). In Q1, the analysis of the FY22 round of qualitative and quantitative data will be analyzed, including an economic analysis and analysis of gender data. Preparations to administer the gender-specific survey will begin. In Q2, the gender-specific survey tool will be administered to the Agriculture Development Agents.

2.1.3.3 Strengthen the supply of forage early generation seed system (FEGS) (FY22) (Mission). In early FY23, trainings will be provided to build capacity on EGS multiplication as well as, connecting these centers with forage seed multipliers who produce high quality forage EGS.

2.1.4.2 Pilot the cultivation of improved forages and densification of cultivated forages into pellets (sites: one in Afar and two in SNNPR) (Mission). In consultation with local partners the activity will select potential sites. These sites will be verified in Q1 and during the next visit to Ethiopia the site selection will be finalized.

2.2.2.2 Support the emergence of enhanced and resilient seed sectors in fragile states, e.g., in the DRC, South Sudan, Haiti (FY21) (BHA). A synthesis report will be drafted in early FY23 based off of the

workshop report created in late FY22. The outputs of this activity and the outputs of a few other EHAR activities will be disseminated together.

2.2.2.4 Develop guidance for emergency, resilience, and development seed interventions (FY22) (BHA).

The emergency, resilience, and development seed interventions, Do's and Don't's, guidance is currently being finalized and will be completed in Q1. This activity output, together with other EHAR outputs, will be disseminated to a broader audience in Q2.

2.2.3.1 Develop and test market-based emergency seed security interventions (FY21) (BHA).

2.2.3.2 Facilitated consultation process with stakeholders in developing best practices for seed distribution interventions in emergency response (FY20) (Core). For this activity a draft '2-pager' was presented to USAID RFS and BHA. Feedback from the presentation was included in the final draft, the brief. This brief will be disseminated in FY23.

CCIR 1.2.3 Implement and pilot of Standard Seed Protocol in Kenya (FY20) (RFS). Intensive capacity building efforts are planned for outgrowers of legume crop standard seed in FY23, that will address the yield gap challenges raised above. In order to address the cost of inspections, S34D will support seconding a private seed inspector within STAK to support inspection activities for the standard seed companies, as a pilot. If successful, this will become an additional offering for STAK to its members. This approach will also reduce the pressure from KEPHIS and allow them to use their limited staff capacity for other crops such as maize, while creating greater efficiency in the certification process for standard seed.

CCIR 1.2.7 Establish a variety registration system dedicated to farmers/ pastoralists, separate from the regular variety ownership registration system in Ethiopia (Mission). This activity will start in FY23 with developing partnership with the appropriate entities in Ethiopia. Q1 will be to finalize the SOW for the activity.

CCIR 1.3.4 Strengthen the enabling environment for bean and potato value chains in Guatemala (FY22) (RFS). This activity will start in FY23. The SOW for the local partner will be developed and discussions about technical approach will be planned. Data is expected to be collected in Q1 and the data analysis will be conducted in Q2.

CCIR 1.3.5 Facilitate and conduct a stakeholder discussion session on seed reserves (FY22) (Mission). The study will be disseminated to the stakeholders in October at the ILRI Campus in Addis Ababa.

CCIR 1.3.6 Seed systems and climate adaptation at the last mile, learnings and best practices: A global case study approach (FY22) (Mission). The study will be disseminated through a virtual webinar in Q1.

CCIR 1.3.7 Operationalization of the Quality Declared Seed (QDS) regulations and directives in Ethiopia (FY22) (Mission). The study will be disseminated to stakeholders in FY23 Q1 (October) at the ILRI Campus in Addis Ababa.

CCIR 2.2.2 Test out recommendations from the FY20 technical roadmap, in select woredas (10-15) in Ethiopia (FY21) (Mission). The woreda will be selected in Q1 and then a verification of these woredas will be concluded in Q2.

CCIR 2.2.4 Seed Systems Landscape Analysis in Sudan (RFS) (BHA). All contractual work will be completed in Q1 and in Q2 the field data collection will be conducted.

CCIR 2.2.5 Establish a seed production and marketing information network at the national and regional levels in Ethiopia (Mission).

CCIR 2.2.6 Seed Systems Landscape Analysis in Timor-Leste (RFS) (BHA). All contractual work will be completed in Q1 and in Q2 the field data collection will be conducted.

10. Annexes

Annex A. Planned outputs and achievement by activity

Activity Number	S34D Activity Description	Geography	Planned Output(s)	Accomplishments
Goal: Improved functioning of the high-impact integrated seed systems				
0.1	Develop country profiles and framework for engagement in Kenya, Uganda (FY20) (RFS).	Uganda, Kenya	Developed manuals and a strategy on dissemination approach.	Uganda seed sector profile was posted to the DEC and widely disseminated among stakeholders, USAID missions, and presented at the FAO global seed conference.
IR 1.1 Constraints in formal seed systems identified and mitigated				
Sub IR 1.1.1 Operational efficiency of seed companies increased				
Sub IR 1.1.2 Seed availability of climate-smart crops increased, through enhancing EGS capacities of firms and producers				
Sub IR 1.1.3 Capacities of local seed actors strengthened				
1.1.3.1	Digital training of seed inspectors and samplers in Zambia (FY21) (RFS).	Zambia	SCCI will train 60 inspectors (16 female) in Zambia.	Finalized training content. Trained 27 people (7 women) using Zoom and in-person platforms. Created e-learning training course for seed inspectors that is section508 compliant and met security, penetration test recommendations.
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				
IR 1.2 Strengthened capacity of informal seed systems to offer a broader range of affordable, improved quality seed				
Sub IR 1.2.1 Informal trader capacity and local seed networks assessed				
Sub IR 1.2.2 Capacity of local seed entrepreneurs and non-traditional seed actors strengthened				

Sub IR 1.2.3 Business models to leverage integrated operations validated				
Sub IR 1.2.4 Last mile delivery solutions through non-traditional partners and ICT strengthened				
IR 1.3 Strengthened capacity of emergency and humanitarian aid programs to respond effectively to acute and chronic stresses				
Sub IR 1.3.1 Select emergency and humanitarian past actions assessed: focus on farmer evaluation, new varieties, and markets (local and formal)				
1.3.1.1	Participatory Impact Assessment (PIA) of Emergency Seed Interventions (FY21) (BHA).	Uganda and DRC	3-detailed PIA reports (one for each intervention assessed); one synthesis report	Re-selected interventions to be assessed. Identified National Consultants for Uganda and the DRC. Conducted fieldwork in Uganda and DRC. Drafted three assessment reports: 2 for Uganda and 1 for the DRC.
1.3.1.5	Assess differential effects of seed security cash transfers on men and women and intrahousehold dynamics (BHA).	TBD	One report with suggestions for best practices. Monitoring tool for assessing intrahousehold dynamics in seed security responses.	This activity was cancelled
Sub IR 1.3.2 Emergency and humanitarian responses that promote climate resilience, including food, income, cover and fodder crops are catalyzed				
1.3.2.2	Generate recommendations for integrating vegetable seeds into humanitarian responses (BHA).	TBD	Brief with best practice recommendations for integrating vegetable seed in humanitarian responses.	This activity was cancelled
1.3.2.3	Participatory action research into cash-based seed security responses, Guatemala & E. Africa (BHA).	Guatemala and East Africa	Synthesis report on cash-based seed security responses.	Identified cash-based interventions in Guatemala and Ethiopia and developed partnership with relevant in-country staff. Worked with in-country staff to agree on learning questions to be addressed. Provided inputs to data collection tools. Data collected by in-country staff alongside cash-based interventions.
Sub IR 1.3.3 Tools and information systems to frame Shock Responsive Models developed				
1.3.3.1	Framework and response options for resilient seed systems (FY20) (BHA).	Global	A conceptual framework for resilient seed systems and a series of response options for resilience-building interventions in different contexts.	Activity put on hold to focus on a number of other EHAR activities.

1.3.3.5	Strengthen Capacity for Rapid Seed System Security Assessments (BHA).	Global	A training curriculum, and automated data analysis.	Completed report from pilot phase. Revised tools and digitized interviews. Tested tools through IRC in Somalia. Piloted gender-sensitive household survey through CRS in DRC.
Sub IR 1.3.4 Last mile delivery solutions especially for chronic stress areas (small packs, boutiques, WhatsApp seller linkages) developed				
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				
2.1.1.4	Scoping business models to strengthen forage seed systems and production of cultivated forage in Zambia (RFS).	Zambia	A report with two or three economics driven inclusive business model propositions and policy implications validated with stakeholders and disseminated through a webinar.	Finalized scopes of work for and recruited consultants. Gathered literature. Designed survey instruments. Aligned and agreed upon roles and responsibilities between CRS and the Alliance. Conducted stakeholder interviews and economic, nutrition, and environmental assessments.
Sub IR 2.1.2. Crop and seed platforms that link formal and informal seed systems are catalyzed and supported				
2.1.2.2	Strengthen capacity of forage (certified and quality declared assurance) seed production in Ethiopia (Mission).	Ethiopia	One technical manual developed for seven forage species. At least 30 stakeholders trained through two 1.5-day long workshops. At least 7seven stakeholders trained will be women, and at least 10 stakeholders trained will be less than 30 years of age. At least 3 partnerships formed with stakeholders leading to MoUs.	Held discussions with the Alliance to lay out criteria for the choice of forage species and sorted contract agreement between CRS and CIAT. Finalized scopes of work and approach to engage national stakeholders in Ethiopia. Developed training manuals. Identified federal research institutes for forage varieties.
2.1.2.3	Increase capacity of actors on animal feeding using cultivated forages in Ethiopia (Mission).	Ethiopia	Developed and disseminated two manuals, two training programs, and two flyers (one each for dairy farmers and the other for feedlot farmers and quarantine station managers) on balanced feeding using cultivated forages.	Recruited an international consultant. Discussed scopes of work. Developed manual. Identified stakeholders to be trained.

Sub IR 2.1.3 Formal sector suppliers and NARs/breeders leveraged and linked				
2.1.3.2	Promote access to locally grown legume seed through use of agricultural development agents in Zambia (RFS).	Zambia	Farmer/ community-based seed production and grain marketing system developed (Volume of seed; Volume of grain; 40 ADAs trained; 2,000 farmers reached and linked); Output marketing for soya bean and pigeon pea grain strengthened (at least 4 linkages established); One policy brief; One report.	S34D Gender lead augmented training manual on how to engage with women beneficiaries. Developed survey instrument to collect information. Piloted model. Linked ADAs to farmers. Began data collection.
2.1.3.3	Strengthen the supply of forage early generation seed system (FEGS) in Ethiopia (Mission).	Ethiopia	Partners identified, scoped, and three partnerships formed with a detailed understanding of roles, responsibilities, and handoffs.	Developed training manuals. Identified agricultural research centers to increase FEGS multiplication.
Sub IR 2.1.4 Effects of market-based interventions on seed market operations and last mile delivery systems are assessed				
2.1.4.2	Pilot the cultivation of improved forages and densification of cultivated forages into pellets (sites: one in Afar and two in SNNPR) (Mission).	Ethiopia	One report on the choice of improved forages and the sites for cultivation of improved forages (3 sites and corresponding forages for these sites identified for the pilot); one report on the warehouse sites to serve as feed reserves (at least 6 sites identified); one report on machine and components needed for densification and their cost estimates.	In consultation with USAID Washington and Ethiopia, this activity put on hold due to the situation on the ground in Ethiopia.
IR 2.2 Strengthened interface and collaboration between development and relief to resilient and market-based seed systems				
Sub IR 2.2.1 Seed System Security Assessments in Feed the Future Crisis Hotspot areas (focus on formal, semi-formal and informal seed systems) are adapted and scaled				
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				

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).	Global	The output will be the South Sudan case study report and a synthesis paper containing proposed models based on the three global case studies and key stakeholder consultations. This will be disseminated via appropriate blogs and a webinar.	Undertook additional data collection for DRC. Completed one case study report; Haiti and drafted three case study reports; 2 DRC, 1 South Sudan. Conducted synthesis workshop in September 2022.
2.2.2.4	Develop guidance for emergency, resilience, and development seed interventions (BHA).	Global	A report on the types of seed exchange systems being used by humanitarian and development partners; Guidelines on Do's and Don'ts when investing in formal and informal seed systems targeted to small-scale farmers.	Conducted initial workshop and drafted framework. Drafted outline for guidelines.
Sub IR 2.2.3 Emergency and development seed programs to capture market opportunities are leveraged				
2.2.3.1	Develop and test market-based emergency seed security interventions (FY21) (BHA).	Global	1 guideline on cash transfers.	Contracted consultant for review of cash transfers for seed security. Collected data. Drafted and revised case studies. Drafted report.
Sub IR 2.2.4 Shock-responsive and resilience-based models--by crisis type, crop profile, and broad agro-ecological system are developed and tested				
CCIR-1 Improved effective policy implementation and regulatory formulation for pluralistic seed systems				
CCIR 1.1 Country specific seed policy road maps developed				
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				
CCIR 1.2.3	Implement and pilot of Standard Seed Protocol in Kenya (FY20) (RFS).	Kenya	1) One evidence-based seed policy brief that explains the progress of the standard seed certification continuation of the pilot (whether target seed companies and producing groups are producing volumes of seeds following standard seed certification protocol), 2) one guideline document that lists recommendations on how to address the breakdown in handover of	This activity started in July 2022 after incremental funding was obligated. Three-week radio campaign. Promotional materials and small seed packs, retesting of carryover seed and Stakeholder meeting.

			agronomic practices between research and seed producers, including simple manuals on key production steps and 3) One manual that illustrated a standardized training approach and material for standard seed production	
CCIR 1.2.7	Establish a variety registration system dedicated to farmers/ pastoralists, separate from the regular variety ownership registration system in Ethiopia (Mission).	Ethiopia	A roadmap established to create the system, human and technical capacity, use-cases, and financial resources; approach to create the system identified.	In consultation with USAID Washington and Ethiopia, this activity put on hold due to the situation on the ground in Ethiopia.
CCIR 1.2.8	Development of Model Licensing Agreement and Annotated Guidelines for Ethiopian Seed System (Mission).	Ethiopia	Model license agreement and annotated guidelines	In consultation with USAID Washington and Ethiopia, this activity was cancelled, and the funds were reallocated to CCIR 2.2.7
CCIR 1.3 Linkages and coordination of seed development efforts through consolidation of data and evidence are strengthened				
CCIR 1.3.3	Facilitate and initiate implementation of seed policies and directives in Ethiopia (FY21) (Mission).	Ethiopia	At least three actions taken to address three policy issues and operationalize three policy priorities with facilitation and guidance.	Study finalized and disseminated. Three policy issues discussed. Webinar conducted.
CCIR 1.3.5	Facilitate and conduct a stakeholder discussion session on seed reserves in Ethiopia (Mission).	Ethiopia	Proceeding report of the workshop and one policy dialogue facilitated.	Conducted literature review. Collected and analyzed data from key stakeholders. Disseminated study to stakeholders.
CCIR 1.3.6	Seed systems and climate adaptation at the last mile, learnings and best practices: A global case study approach (Mission).	Ethiopia/Global	One report or peer reviewed publication with recommendations and best practices for climate adaptation outlined.	Selected countries for the global component (Guatemala, Niger, Uganda, and Zambia). Selected partners and established contracts for each of the countries. Conducted literature review. Finalized survey instrument and conducted field work. Gathered and analyzed data.
CCIR 1.3.7	Operationalization of the Quality Declared Seed (QDS) regulations and directives in Ethiopia (Mission).	Ethiopia	One evidence-based policy brief; one policy dialogue facilitated with MoA	Finalized contract and conducted study. Facilitated dialogues. Shared guidelines on streamlining QDS. Disseminated study.
CCIR-2 Established enhanced quality information flows for seed systems				
CCIR 2.1 Institutional and public policy information is better digitized				

CCIR 2.1.6	Digitize seed systems regulatory roadmaps in Ethiopia (Mission).	Ethiopia	Six seed system road maps digitized, made interactive, and shared in the public domain. Uptake and utilization of these maps will be documented for further evaluation and sustainability.	In consultation with USAID Washington and Ethiopia, this activity was cancelled.
CCIR 2.2 Tools and technologies to capture quality information about seed supply in a geo-referenced manner are developed				
CCIR 2.2.1	Develop forage informatic dashboard using seed data and metrics and a policy brief on forage seed systems in Ethiopia (FY21) (Mission).	Ethiopia	Forage indicator dashboard digitized; MoA hosts and shares in the public domain.	Report finalized and submitted for peer review. Webinar held to disseminate findings.
CCIR 2.2.2	Test out recommendations from FY20 technical roadmap, in select woredas (10-15) in Ethiopia (FY21) (Mission).	Ethiopia	Augmented methodology / framework at the systemic level to conduct seed demand / market forecasting in Ethiopia.	In consultation with USAID Washington and Ethiopia, this activity put on hold due to the situation on the ground in Ethiopia.
CCIR 2.2.5	Establish a seed production and marketing information network at the national and regional levels in Ethiopia (Mission).	Ethiopia	Process and approach to establish the network are identified and piloted.	In consultation with USAID Washington and Ethiopia, this activity put on hold due to the situation on the ground in Ethiopia.
CCIR 2.2.7	Landscape and scoping analysis of seed system, forage seed system and animal feed in Ethiopia (Mission) NEW.	Ethiopia	Analysis report with recommendations to refine FY22 and FY23 activities.	Completed study. Curated a list of relevant stakeholders. Formulated total mixed ration combining cultivated forages. Used stakeholder list to invite and conduct workshops in Ethiopia.

Annex B. ESR

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:	FY22

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

Funding Begin: 10/01/2021	LOA Estimated Amount: \$ 20,773,976 FY22 estimated amount: \$ 2,638,243
Funding End: 09/30/2022	Sub-Activity Amount:

ESR Prepared by: Nikaj van Wees, S34D COP	Date: 10/31/2022
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Date of Previous ESR: Oct 30, 2021	Date of Most Recent IEE: 03/20/2017
Contact: Nikaj van Wees, COP S34D - Nikaj.vanwees@crs.org, +1 443 254 1424	

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 FY22 Annual Report -----

