



BENEFIT Partnership – 2020 Annual Report

Bilateral Ethiopian-Netherlands Effort for Food, Income and Trade Partnership

Dawit Alemu, Irene Koomen, Selome Kebede, Legesse Abate & Mirjam Schaap, Amsalu Ayana, Mohammed Hassena & Gareth Borman, Eyasu Elias & Eric Smaling, Helen Getaw & Monika Sopov, Geremew Terefe & Ted Schrader, Tewodros Tefera & Remko Vonk

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1 PCU

2 ISSD

3 CASCAPE

4 ENTAG

5 SBN

6 REALISE

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Executive Summary

1. Introduction

The bilateral project entitled "Bilateral Ethiopian Netherlands Effort for Food, Income and Trade Partnership (BENEFIT Partnership) supported by the Dutch Government through the Embassy of the Kingdom of the Netherlands (EKN) has, since 2016, been implementing four agricultural development programmes (ISSD – Integrated Seed Sector Development, CASCAPE - Capacity building for Scaling up of evidence based Practices in agricultural production in Ethiopia, ENTAG - Ethiopia-Netherlands Trade for Agricultural Growth and SBN – Sesame Business network). In 2018 a fifth programme, REALISE - Realising Sustainable Agricultural Livelihood Security in Ethiopia, joined the BENEFIT partnership. The Partnership aims at increasing food and nutrition security, brokering Dutch expertise, and stimulating trade. In 2020, as a year of no-cost extension for ISSD, CASCAPE, ENTAG and SBN and full implementation year for REALISE, there were less field activities but more targeting of communication and direct engagement with policy makers and other stakeholders to ensure embedding the diverse demonstrated evidences by the five BENEFIT programmes. REALISE has continued the full implementation of planned activities at field level to demonstrate evidences. In addition, the planned activities had to be re-adjusted because of COVID-19 pandemic.

The engagement and field level activities have been implemented together with MoA and other partners at federal level and with regional partners (Universities – Addis Ababa, Arba Minch, Arsi, Bahir Dar, Haramaya, Hawassa, Jimma, Mekelle, Oda Bultum, and Woldia, Regional Agricultural Research Institutes in Amhara, Oromia, Southern Nations Nationalities and Peoples Region and Tigray, and the Oromia Seed Enterprise). Evidence mainstreaming and engagement related activities to ensure embedment and institutionalization were performed, as it was in previous year, through mainly four channels: (i) regular engagement with Ministry of Agriculture (MoA) through the monthly meetings with the state ministers, (ii) active engagement in the different technical committees and taskforces of the Rural Economic Development & Food Security committee (RED&FS), (iii) active utilization of opportunities that emerge from invitations to events and policy dialogues, and to be a member in different committees and taskforces in recognition of BENEFIT staff expertise and demonstrated evidences at ground level, and (iv) the engagement and communication of evidences by the BENEFIT seconded experts within the MoA through their day-to-day engagement.

The 2020 annual report presents the major achievements under each of the BENEFIT outcome indicators followed by the major challenges faced, opportunities, key lessons learnt and the way forward.

2. Major achievements in 2020

The major achievements of the BENEFIT partnership are summarized based on the result chain outputs (Figure 1), which are related with (i) enhancing portfolio collaboration among BENEFIT programmes, (ii) increasing quality and quantity of agricultural production, (iii) improving markets and trade, (iv) improving the enabling environment for the agricultural sector, and (v) enhancing partnership for synergy.



Figure 1 Key partnership indicators: 2016 - 2020 achievements

2.1 Collaborative BENEFIT Portfolio

The main areas of collaboration among BENEFIT programmes focused on two major areas. The first was design and implementation of aligned response to the COVID-19 pandemic in line with the public prevention and control measures put in place as part of the national and MoA COVID-19 response strategy. The second was continuation of the joint engagement to mainstream and institutionalization of the demonstrated evidences in the areas of policy, practices and institutions for sustainable impact.

In the area of collaboration in response to COVID-19 pandemic, the collaborative activities were rapid assessments in the different strategic areas of the agriculture to timely determine/identify emerging challenges and opportunities along with measures required for timely policy and/or development actions. Accordingly, since the start of the pandemic the following alert documents were prepared and communicated to relevant stakeholders along with facilitation of implementation of response measures: (i) seed alerts, (ii) fertilizer sector alert, (iii) sesame sector alerts, (iv) poultry sector alert, (v) soya bean value chain alert, (vi) the pulse sector alert, (vii) urban agriculture alert, (viii) alert on PSNP programme operations and its beneficiaries and (ix) alert on agricultural casual labourers, and (x) alert on the overall food system. These alerts were communicated to relevant stakeholders either

by organizing either face-to-face or virtual meetings. In most of these events, follow up actions were agreed and BENEFIT programmes have been engaged in facilitation of the implementation of agreed actions/activities.

Similarly, BENEFIT programmes have collaborated to engage in mainstreaming / institutionalization of the different evidences demonstrated over the last four years. Some of these where the programmes were engaged are: (i) national agricultural and rural policy revision, (ii) design of implementation strategy based on the national seed sector transformational agenda, (iii) institutionalization of mandate zonation for members of the National Agricultural Research System, (iv) institutionalization the sector platforms/councils with due emphasis on pulse/grain council, and (iv) revision of the national agricultural extension packages and pluralistic extension system.

2.2 Quality and quantity of sustainable agricultural production

The different activities implemented in 2020 to ensure improved quality and quantity of sustainable agricultural production were related with (i) increasing the availability and use of quality seed of farmers' preferred varieties at affordable price and place, (ii) validation and testing of best fit agricultural practices and scaling along with associated woreda capacity development, (iii) interventions targeted to reduction of production cost especially in sesame producing belt of the Northwest part of Ethiopia, and (iv) awareness and capacity development for market based production as part of promoting sustainability.

Through these efforts the following achievements were recorded in 2020:

- A total of 565,865 farmers reached with increased productivity (direct and indirect) in 2020, of which 22% were women and 30% youth through various activities of the five BENEFIT programmes with the objective of increasing the quality and quantity of sustainable agricultural production;
- 373,977 farmers were reached with improved access to input market (direct & indirect);
- 102,839 farmers were trained in sustainable agricultural production & practices, of which 30% were women and 19% were youth.

2.3 Improved markets and trade

In an effort to promote market and trade development, BENEFIT programmes had implemented diverse activities in 2020 related with (i) enhancing the performance of the seed value chain, (ii) facilitating product and market development for sesame, (iii) facilitation of value chain development related national and regional policy, strategy and institutional reforms.

- In order to enhance the performance of the seed value chain, (i) about 550 business linkages among seed producers and inputs, services and markets were facilitated, (ii) two partnership projects targeting increased trade with and foreign direct investment in Ethiopia's seed sector, (iii) facilitated popularization of selected hybrid varieties of onion and tomato of the Dutch breeding company Enza Zaden; (iv) scaled up multiple interventions in seed value chains to solve common problems in relation to EGS supply, seed quality assurance, and seed marketing, and in coordination with the multi-stakeholder regional seed core groups;
- SBN has been engaged in facilitating policy discussions to address the challenges facing the sesame market: (i) lack of price incentive for sesame quality; (ii) sesame domestic price inflation at ECX in the quest for the hard currency compared to international prices; and (iii) the need to enhance direct market linkage between producers and buyers/exporters through group action -cooperatives and their unions;
- The ENTAG programme, through its platform meetings and other high-level engagements, has been serving as a catalyst for some of value chain development related national and regional policy, strategy and institutional reforms and drafting of new regulations on Ethiopian poultry, spices, aquaculture and pulses subsectors.

2.4 Improved enabling environment

As a programme that targets demonstration of evidences for wider development, the different interventions for improving the enabling environment have continued to be implemented in 2020 by

the different the BENEFIT partnership programmes and the BENEFIT portfolio. These interventions covered a range of activities including: (i) identification of relevant policy issues for further discussions based on prevailing challenges and opportunities, (ii) documentation of demonstrated evidences for the identified priority issues, (iii) engagement with relevant stakeholders to ensure the communication of demonstrated evidences through different forums mainly workshops, and (iii) contribution & facilitation of the design of new directives and regulations.

In the area of improved enabling environment for enhanced performance of seed value chain, ISSD has facilitated (i) facilitated the incorporation of the seed sector transformation agenda in the (multi-) annual plans at federal and regional state levels; (ii) facilitated (de)briefing on the institutional mapping and needs assessment of Ethiopia's seed regulatory services, which resulted in the incorporation of the seed quality issues in the strategy of MoA and Ethiopian Institute of Agricultural Research (EIAR) to improve quality control and assurance; (iii) Since 2017, ISSD Ethiopia has had the mandate to establish a sustainable system of early generation seed (EGS) supply in the country and accordingly, ISSD has submitted the EGS Multiplication System Guideline to MoA for endorsement and implementation; (iv) facilitated the National Seed Advisory Group as chair and members in its engagement in the seed sector development; and (iv) the Ethiopian Seed Association (ESA) was backed in the advocacy to address identified policy constraints to private seed sector development in the new draft seed policy.

In an effort to strengthen informed decision-making within the agricultural sector, CASCAPE facilitated the institutionalization of Innovation Recommendation Mapping (IRM) through provision of capacity building activities for senior experts of the Ethiopia Soils Research Institute (ESRI), EIAR and MoA and its application in respective organization.

Through the different stakeholders' platform meetings and high-level engagements, ENTAG programme has been serving as a catalyst in ensuring the approval/implementation of the different national policy reforms in collaboration with relevant stakeholders both governmental organization and other partners like SITA, 2SCALE, FTF, and CFRS.

One of the high level target of SBN has been addressing the key policy challenges facing the sesame sector that have been identified as stagnant production, insufficient financing of the sector, insufficient support for appropriate mechanisation, market system and policies that separate farmers from buyers and blocks value chain development, digitalisation, bottom-up planning, and establishing regional and federal sesame platform. Even though, some of these issues were addressed, all the efforts during 2020 remained only at information sharing, which demands further engagement at federal level. For instance, after a long process of engagement to establish a national sesame platform, it was decided to be considered as part of the grain council together with the initiative we pushed to establish a pulse council through ENTAG.

Through its system innovation pathway, REALISE programme has engaged in strengthening enabling environment under PSNP context. The contributions in 2020 were (i) capacitating the Soil Resource Information and Mapping Directorate of the Ministry of Agriculture of Ethiopia to undertake surveys and map soil resources at scale, (ii) demonstrated evidences on scalable youth employment opportunities, improving household resilience through women empowerment, affordable extension packages for smallholder farmers, increasing access to weather information for smallholder farmers to inform their investment decisions under PSNP context.

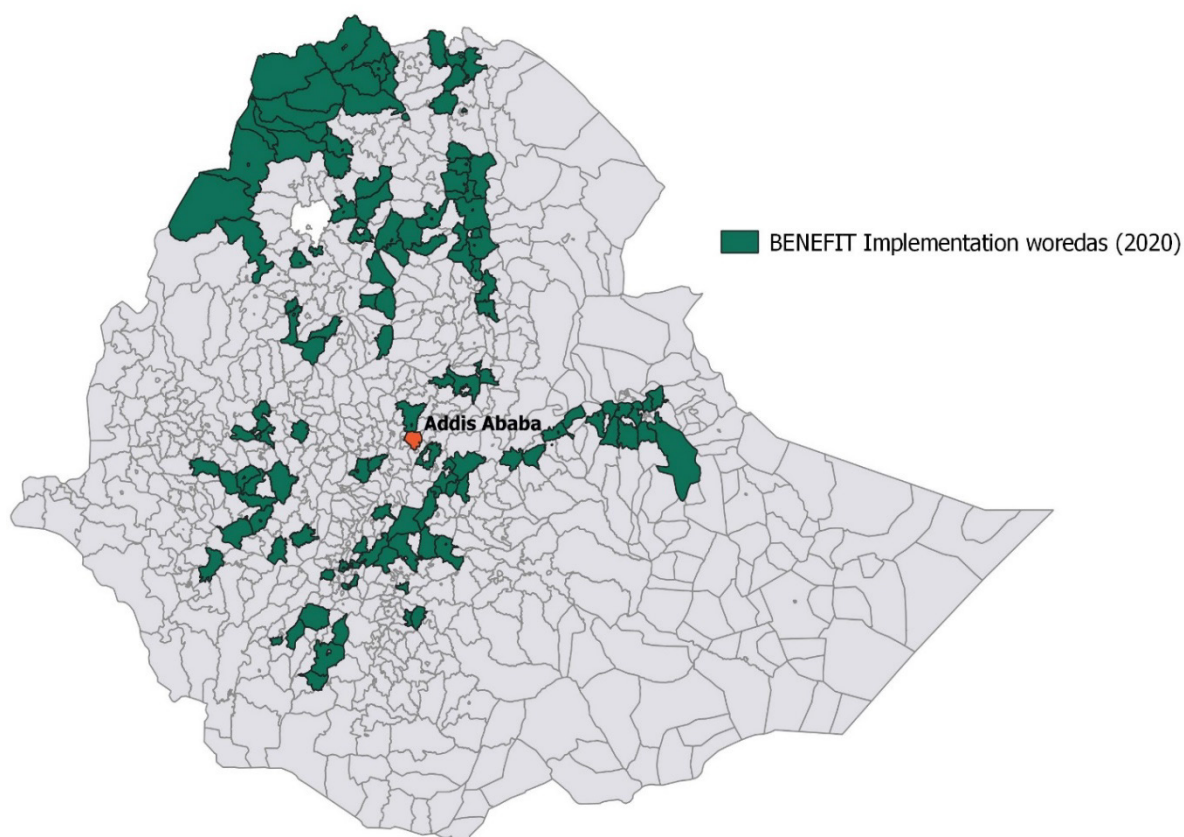


Figure 2 Overview map implementation woredas of all BENEFIT programme

2.5 Enhanced partnership for synergy

Coordination of the partnership for synergy among BENEFIT programmes and with other development programmes has been implemented by the BENEFIT Partnership Coordination Unit (PCU) mainly through facilitation of (i) alignment of programmes and their collaboration; (ii) collaboration and alignment with other projects and programmes; (iii) facilitation of BENEFIT and programme Level policy engagement; (iv) mainstreaming social inclusion and nutrition, and (v) fostering collaboration in BENEFIT portfolio.

Alignment of programmes and collaboration: The facilitation of alignment and collaboration has continued in 2020 through organization of review and planning events, regular reporting, organization of peer-to-peer meetings, and engagement with EKN.

Collaboration and alignment with other projects and programmes: The PCU continued to facilitate the formal and informal collaboration with relevant public and private initiatives at both BENEFIT and Programme level to ensure effective alignment and synergy through:

- (i) The membership and active engagement in the newly restructured four technical committees of the RED&FS as BENEFIT have been instrumental to align and synergize efforts with relevant development partners. BENEFIT Partnership currently serves as co-chair for the agricultural input and output marketing development technical committee;
- (ii) the formal collaboration with the Agricultural Transition Agency (ATA) has enabled to jointly engage with relevant stakeholders in the areas of seed sector development, soil test based fertilizer application, sesame sector development, and also general agricultural market development;
- (iii) BENEFIT partnership has continued in engaging and facilitating the functioning of taskforces and technical committees like the National Seed Advisory Group, the Agricultural Development Partners Linkage Advisory Council (ADPLACs), and National Rice R&D taskforce at national and regional level.

Facilitation of BENEFIT partnership policy engagement: BENEFIT has both facilitated policy dialogue and participated in events organized by partner organizations. Some of the important engagements were (i) participation in the consultative meeting on Agriculture Sector Policy and Regulatory Reform organized by MoA and served as member of the different taskforces established for drafting different contents of the policy document; (ii) engaged in the MoA 10 year perspective plan preparation (2021 – 2030) and facilitated the national public briefing televised online; (iii) continued serving as member of the national technical committee on promotion of mandate zonation for members of the National agricultural research system, where the content of the interventions for piloting in the 2020 production season in four regions have been agreed (Amhara, Oromia, SNNPR and Tigray); (iv) continued serving as the member of the National technical committee for rice R&D and engaged in the revision of the National Rice Sector Development Strategy (2020 – 2030); and (v) engaged in the different discussions for the design of the agricultural policy and development responses related with COVID-19 challenges organized by different organizations (MoA, IFPRI, etc.).

Mainstreaming social inclusion & nutrition: In 2020, BENEFIT PCU was mainly focusing on: (a) documentation and communication of gender and nutrition experiences and evidences of BENEFIT Programmes, (b) providing technical support and backstopping to BENEFIT programmes on nutrition and gender along with follow up and support the implementation of gender and nutrition collaborative activities, and (c) participation and sharing of experiences using the national level network meetings in the areas of gender and nutrition.

Fostering collaboration in BENEFIT portfolio: Collaboration among BENEFIT portfolio programmes has been fostered through as it was in the previous years: (i) BENEFIT portfolio management; (ii) provision of centralized administrative services (Finance, human resource management, and logistics.), and (iii) communication and use of evidence-based information through an effective M&E system linking the five BENEFIT programmes.

- **BENEFIT Portfolio management:** The management meetings held in 2020 were BENEFIT partnership meetings, managers, and coordinators' meetings.
- **Provision of centralized administrative services:** One of the key sources of synergy for collaboration within the BENEFIT Partnership was having a centralized finance and administration system. Accordingly, appropriate support functions related with (i) financial management, (i) human resource management, (iii) procurement, and (iv) pooled resource use facilitation were provided in 2020 to the five programmes.
- **Monitoring and Evaluation:** Year 2020 being the year of no-cost implementation of the portfolio, 2020 PCU M&E mainly focused on result harvesting and documentation of lesson learnt at portfolio level. The end review of the partnership was supported by making all information, data and reports available and organising interviews with major stakeholders and field visits.
- **Communication:** The communication interventions in 2020 targeted facilitating internal and external communications towards promoting the activities of BENEFIT and its programmes, build consistent branding and share knowledge and information for effective management.

3. Major challenges, opportunities, lessons learnt and way forward

Major challenges

The different BENEFIT programmes have been continued to engage in addressing the identified key challenges faced in 2020 in the implementation processes. It was possible to address some of the challenges however, some of the challenges persisted with emerging new challenges:

- **Staff turnover including higher officials all levels (federal, regional, zonal and woreda levels) in public and development partner organizations** that limited the timely implementation of planned/agreed activities esp. policy engagements and mainstreaming of partnership for synergy;
- **The challenge related with COVID-19:** this has affected the mobility of staff and organization of planned events (meetings, workshops and conferences) esp. during the time of the state of emergency;

- **The short period of implementation for demonstrating more influential evidences:** this is the main challenge for the REALISE programme, where 2020 was the second production season making challenging for demonstrating adequate evidences esp. for issues relevant for policy for food insecure areas;
- **Low sensitivity of partners towards gender and nutrition:** there remains as a challenge in 2020 to adequately ensure the mainstreaming of gender and nutrition related evidences due to the low interest and sensitivity at different levels;
- **Security challenges related with the unrest prevailed in the country.**

Opportunities

The main opportunities that prevailed in 2020 were related with (i) the opportunity to engage in the revision of important public strategic documents, (ii) increased interest of existing and emerging new initiatives to collaborate, (iii) engagement with RED&FS is creating an opportunity to communicate, (iv) the increased visibility and continued recognition to the BENEFIT Partnership programme by stakeholders including policy makers.

- **Revision/design of public strategic documents:** 2020 was a year where the National Agricultural and Rural Development Policy was revised, and the 10 year perspective plan of the MoA (2021 – 2030) was prepared. These created the opportunity to participate in the process and communicate the main evidences of BENEFIT partnership demonstrated over five years;
- **Sustained interest of existing and emerging new initiatives to collaborate:** this has continued in 2020, where there is increased interested to adapt BENEFIT demonstrated evidences in some of the initiatives like Agricultural Growth Programme (AGP); ATA; Alliance for a Green Revolution in Africa (AGRA); United States Agency for International Development (USAID); Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ); CGIAR and EIAR. This has provided an opportunity for synergy in scaling;
- **Engagement with RED&FS is creating an opportunity to communicate demonstrated evidences:** Currently, BENEFIT Partnership is serving as the co-chair of the Agricultural Input and Output Marketing Development Technical committee (TC), as member of Agricultural System Transformation TC, Policy and Governance Taskforce, Extension and Capacity Building Taskforce, and Agricultural Research and Technology Taskforce;
- **Increased visibility and recognition to BENEFIT Partnership:** This has facilitated continuous engagement with relevant stakeholders including policy makers, which is important for better influence and wider impact of the BENEFIT partnership efforts. Senior staff of BENEFIT partnership are invited to be different engagements and taskforces;
- **Strengthened outreach programmes of implementing partners:** realizing own mandate and considering evidences from their engagement through BENEFIT partnership support, implementing partners esp. HLIs are redesigning and strengthening their own outreach programmes. This provides a huge opportunity to sustain some of approaches BENEFIT partnership has been promoting.

Key lessons learnt and way forward

The general key lessons learnt during the implementation of the different activities of the BENEFIT and its programmes emanate from (i) the implementation strategy, and (ii) the implemented technical themes related with mainly enhancing scaling of innovations, institutionalization and policy influence:

- **Implementation strategy:** The selection of partners with clear alignment with diverse public initiatives including the flagship programmes played crucial role not only in the demonstration of evidences of innovations but also their mainstreaming and institutionalization. The agile approach followed by the programmes allowed to some extent to timely adjust in response to emerging (i) natural and biological hazards, and (ii) policy and regulatory changes allowed maintaining the programme interventions relevant. The monitoring, evaluation and learning approach adapted was instrumental in ensuring not only to timely capture of the progress made but also in timely informing the adjustment required for the different programmes of the partnership;
- **Enhancing scaling of innovations:** The high adoption rate of best-fit technologies in implementation areas showed there is ample space for successful scaling of good agricultural and best fit practices and approaches to other parts of the country. To do so, the extension system should work with integrated approach that support scaling of agricultural technologies and practices (hardware/software/orgware) using sector wide approach / from agriculture input to commercialization, supported by bottom up planning at *woreda* level and integration with regional

and zonal priorities, rural development strategies. The linkages of research, extension and universities at zonal level has great potential to support testing, validation and scaling of innovations. These evidences of innovation requires further investment and facilitation for full scaling;

- **Institutionalization and policy influence:** Working closely with the extension directorate and strong collaboration with government and other organizations (MoA, BoA, AGP, PSNP, ATA, etc.) and preparation of manuals and simplified extension materials were instrumental to promote and the institutionalize CASCAPE, REALISE and SBN practices and approaches. Organizing policy dialogue meetings to inform policy makers on policy relevant issues generated by the programmes was key to initiate systematic change. Some of the major successes have been the involvement of the partnership in the seed policy, the poultry strategy, the poultry strategy, the extension policy etc. This was based on the hands-on experience and based on evidences gathered in the various sectors. Engagement in policy dialogue does need time to build trust between the public sector and the BENEFIT partnership. Institutionalization of stakeholder platforms as arena for policy dialogue requires due attention so that timely policy design/reform and institutionalization of innovations becomes a mainstreamed regular activity.

1 Introduction

The 2020 BENEFIT annual report presents the fifth year of implementation of the BENEFIT Partnership, which unites five programmes namely ISSD, CASCAPE, ENTAG, SBN and REALISE, and the umbrella unit PCU.

As a year of no-cost extension for ISSD, CASCAPE, ENTAG and SBN and full implementation year for REALISE, there were less field activities but more targeting of communication and direct engagement with policy makers and other stakeholders to ensure embedding the diversity of demonstrated evidences by the four BENEFIT programmes. REALISE has continued the full implementation of planned activities at field level to demonstrate evidences. As it has been in the previous year, there were four major channels used in communicating the diverse evidences.

The first was through the regular engagement with the Ministry of Agriculture (MoA) through the continued monthly meetings with the state ministers. These engagements were more oriented on updating progress and demonstrated evidences in one side and ensuring alignment with MoA initiatives by sharing assignments. The uniqueness of the year 2020 was the engagement using the different COVID-19 pandemic related alert documents prepared by the different BENEFIT programmes.

The second channel was through active engagement in the different technical committees and taskforces of the Rural Economic Development & Food Security committee (RED&FS) that has enabled the partnership to communicate better the demonstrated evidences. The BENEFIT Partnership has continued serving as the co-chair of the Agricultural Input and Output Marketing Development technical committee, as a member of Agricultural System Transformation technical committee, Policy and Governance taskforce, Extension and Capacity Building taskforce, and Agricultural Research and Technology taskforce.

The third channel was active utilization of opportunities that emerged through invitations in recognition of BENEFIT staff expertise and demonstrated evidences at ground level by the MoA, the Ethiopian Institute for Agricultural Research (EIAR), and other development partners to participate in policy dialogues, events and to be a member in different committees and taskforces. To mention a few, engagement in the national Agricultural and Rural Development Policy revision process, design of the implementation strategy for the seed sector transformation agenda, mandate zonation for the members of the National Agricultural Research System, pulse council establishment, and investment project design as part of the implementation of the national rice sector development strategy.

The fourth channel has been through the engagement and communication of evidences by the three BENEFIT seconded experts within the MoA through their day-to-day engagement.

This annual report is structured based on the result chain and considers the achievements made, challenges faced and lessons learnt by the five BENEFIT Partnership programmes and the PCU. Accordingly, the report covers achievements in the areas of (i) Collaborative BENEFIT portfolio, (ii) increasing quality and quantity of sustainable agricultural production, (iii) enhancing market dynamics, (iv) improving enabling environment, (v) social inclusion and nutrition, (vi) enhancing partnership for synergy and (vii) key lessons learnt. Selected write-ups of notable outcomes and impact demonstrated by the different programmes are presented (Appendix 1), detail of the food & nutrition security indicators (Appendix 2) as are the detailed annual reports of the respective programmes (Appendix 3 to 7).

2 Increased quality and quantity of sustainable agricultural production



ISSD, CASCAPE, SBN, REALISE and to a lesser extend also ENTAG, have contributed to the objective of increasing the quality and quantity of sustainable agricultural production in 2020. ISSD targeted improving the availability and use of quality seed of new, improved and/or farmer preferred varieties. CASCAPE with a focus on AGP *woredas* does so through testing and validation of best fit agricultural practices and making these available for dissemination, working together with *woredas* to increase the capacity to develop and implement agricultural development plans, including strategies for scaling and a focus on diversification of agricultural production with attention to nutrition. SBN targeted enhancing sesame production and cost of production reduction. REALISE with a focus on PSNP *woredas* works on improving access to quality seed of preferred varieties, development of best-fit practices, capacity development of beneficiary farmers and partners, and addressing issues related with enabling environment. ENTAG in this regard, facilitated creation of pull factor for increased production through improved market access and stakeholders' linkage.

Summary achievements



565,865 farmers reached with increased productivity (direct and indirect)
111,647 farmers reached directly: 22% ♀ and 78% ♂; 30% youth under 35 years.
373,977 farmers reached with improved access to input markets
15,326 persons reached/trained with improved technology and skills:
45% ♀ and 55% ♂; 36% youth under 35 years.
102,839 trained farmers in sustainable agricultural production & practices:
30% ♀ and 70% ♂; 19% youth under 35 years.



72,095 of hectares of farm land used more eco-efficiently (direct and indirect)

2.1 Outcomes achieved by BENEFIT programmes

ISSD – Increased availability and use of quality seed

The availability and use of quality seed has improved for almost 4.2 million farmers with support from ISSD Ethiopia since 2016. Comparison of end- and baseline data collected by seed availability and use surveys shows that significantly more farmers report now that quality seed is easy to obtain than in 2016. Correspondingly, frequency of reports that quality seed is difficult to obtain has dropped almost 10 percentage points. Greater shares of the volume of seed obtained are coming from formal and intermediate (or integrated) seed systems, to which the model of local seed business and seed producer cooperatives belong; up four percentage points compared to 2016. With exception to potato and certain minor crops, the importance of informal seed systems has decreased. Intermediate seed systems, including local seed business, are of increased importance for legumes. Since 2016, their importance has increased 10.8 percentage points. Similarly, but to lesser extent, the importance of intermediate seed systems for major cereals production increased 4 percentage points. Informal seed systems remain important for potato, other root and tuber crops, and some minor crops including vegetables and spices. Farmers are also harvesting more produce. More than one-third of those that increased their production in 2020 gave as a reason the availability of quality seed. Almost 95% of farmers perceived seed quality to be as or above expected in the Belg and Meher seasons in 2020; up 4.7 and 2.4 percentage points respectively. These gains have been achieved across informal, intermediate and formal seed systems. Surveys show improvements in women's influence over decision making at household level regarding what seed to sow, including a 13 percentage point drop in frequency of husbands taking decisions unilaterally, and a 16 percentage point increase in husband and wife deciding together. Despite considerable investment in deploying the almost full range of diversity currently on offer to farmers, surveys detect a one to three percentage point decrease in the frequency that farmers obtain their preferred variety. It is suspected that due to their increased exposure to new and improved varieties through participatory variety selection (PVS) and crowdsourcing, farmers are more aware of what they are missing out on. This reiterates the need to link PVS and crowdsourcing activities to seed production in different seed systems to further increase seed supply, recognizing the different contributions each makes to food and nutrition security in the country.



Addis Alem SPC was supported by ISSD to produce disease free quality potato mini-tubers as a sustainable source for seed potato. The SPC planted 900 plantlets to produce 13000 G0 disease free mini-tubers of Belete variety. In the next round they produced 6000 G1 mini tuber. These produced mini-tubers planted on half hectares and produced 200qt G2 of quality disease free seed potato. These produced mini-tubers planted on half hectares and produced 200qt G2 of quality disease free seed potato.

CASCADE - Best fit agricultural practices & Scaling and woreda capacity development

No fieldwork was conducted in testing, validation, and demonstration during the no-cost extension period. In addition to documentation, publication and dissemination of results that were core activities of the period, some clusters have managed to carry out scaling support activities and through which AGP reached more than 46,000 farmers. Project data collected from the field indicates that the BFPs (comprising of agricultural technologies and practices) have been adopted and as a result farming households have seen significantly increases in yields and agricultural productivity at a farm level.



The best practices validated by BENEFIT-CASCADE have enabled farmers to double their crop yields. Cereal yields at pre-extension demonstration fields reached an average of 5.5 t/ha. In the case of papaya in Tigray, and soya bean in Jimma the innovation created jobs for the youth, and improved diets of the community through fresh juice and soya milk consumption.

ENTAG –Market linkage, trade and investment integration among local and foreign agribusiness companies

In the reporting year, the ENTAG programme worked on a range of activities on backward and forward market linkage, trade and investment integration among local and foreign agribusiness companies:

- ENTAG has been supporting the private sector in Ethiopia on farm management, production quality, launching new businesses, investment opportunities, innovation fund grants, and addressing challenges to improve their production. In this reporting year, ENTAG supported more than 20 private companies on access to improved markets, investment opportunities and trade through its front desk and hands on advisory services;
- COVID-19 Impact: ENTAG conducted a rapid assessment on the impact of COVID-19 on its priority value chains. The assessment included identifying market barriers and possible response plan. The response plan identified cost-effective production methods and exploiting local market opportunities since the export has been constrained for some time at the start of the pandemic. Accordingly, the response strategies are now shared with both public and private sector stakeholders through different virtual communications mechanisms;
- The ENTAG programme organized two virtual platform meetings that initiated discussion on pertinent challenges and opportunities in relation to impact of COVID-19 on priority value chains. These platform meetings highlighted the hard-hit areas of the value chains as identified by the quick assessment ENTAG conducted and possible mitigation and recovery plans in the Ethiopian poultry, legumes and aquaculture sector. The sectoral recovery plans developed by ENTAG were submitted to the relevant government bodies;
- Innovation fund - Seven grantees of the innovation fund have successfully completed project implementation in 2020;
- ENTAG has been updating business opportunity reports on poultry, spices & herbs sectors. The updated business opportunity reports are now published and believed to provide an up to date information on the current status of the sectors in Ethiopia and serve as a tool for private investors, government and any other interested body to make informed decisions for tailored interventions;
- Absence of organized, well-networked and all-inclusive formal body of pulse creates loose and weak coordination for improved market and trade of pulse. Due to this reason it has been envisioned to establish Ethiopian Pulse Council (EPC). The (under formation) Pulse Council envisions to create an internationally competitive pulse sector driven by technology and knowledge that significantly contribute to food and nutrition security, environmental resilience, increased income for smallholders, processors, exporters and local traders within the next decade. Additionally, in time of crisis, like the current state we are in because of COVID-19, informed decisions are pivotal especially for business and trade. Taking this fact into account COVID-19 Impact and market assessment studies are conducted and shared to policy makers and direct pulse business actors.

SBN – Yield improvement and cost price reduction

Without doubt, farmers can double yields and significantly reduce production costs per kg of sesame produced. For most intermediary outcomes good progress has been made and even more potential has been demonstrated. A full review of outcome indicators is available and summarised in this report. Because of training and exposure, farmers know and accept most of the recommended practices (20 steps) and are willing to adopt these because of economic attractiveness. Farmers are making efforts and most are partial adopters. Availability of row planters is a key constraint, which can be addressed by coherent action. The recommended practices could be accessible and affordable if farmers would have access to formal input credit and appropriate mechanisation services. A focus on yield improvement and cost price reduction remains very important for farmers to improve their profits. The financial literacy training, marginal rate of yield and return are important for treating farmers as entrepreneurs. Like coffee, sesame should receive much more attention in addressing fundamental challenges at federal and regional levels. Agri-finance (investments and innovations) and market system change will be the cornerstone for agricultural sector transformation.



"Before, farmers' awareness on improved production technology was very limited, but now a considerable number of farmers have started applying good agricultural practices. Together with the SBN, we demonstrated the 20 steps and improved technologies of rotational crops. Farmers are comparing the difference in yield gap between the 20 steps and the conventional practice. They are getting more than 700kg per hectare from the 20 steps while less than 300kg from the conventional practice. Farmers especially liked the newly introduced and demonstrated sesame and mung bean varieties." Kaleata Hiluf, a Development Agent (DA) from Central Kebele, Humera

REALISE - Practices, seeds and capacity building

- Over 110 demonstration and pre-scaling activities and strengthening linkages in seed system were conducted to generate best fit practices for PSNP agro-ecologies and socio-economic conditions;
- 54 best fit practices have been identified after validation, which will help smallholder farmers to increase their productivity;
- 194,284 smallholder farmers (34.6% females), both directly and indirectly accessed innovations;
- A total of 159,492 smallholder farmers used best fit practices of the REALISE programme, with 35% female beneficiaries, covering a total 22,464 hectares of land, out of which 3561 hectares were managed by directly involved farmers who benefited from using the practices to increase their productivity; and the programme also generated evidences for further scaling;
- Productivity of major crops increased, for the farmers involved in REALISE interventions, between 35-900% over the baseline in 2020; majority of the crops giving more than a 150% yield increase;
- 18,944 farmers (44.7% female) directly accessed nutrition dense crops of legumes, fruits, orange fleshed sweet potato, quality protein maize and vegetables;
- 160,517 smallholder farmers (directly 23% and 77% indirectly) got access to quality seeds, out of which 35.8% are female;
- Crop portfolio (diversity of varieties) increased between 120 and 600% with an average 285% showing that the REALISE programme is creating a basket of options for locally adapted varieties for food insecure farmers;
- 43 linkages were strengthened/established and supported between seed producers, seed users and service providers;
- A training of trainers was organised for 518 subject matter specialist (SMS), researchers, office heads and administrators. The progress is below the plan due to the COVID-19 pandemic;
- In-situ training was given to 29,188 farmers on the use of best fit practices;
- 10,486 participants comprising farmers, experts, researchers, policy makers, NGO staffs and private sector actors attended field days organised by the university clusters. Out of the total participants 29% were women;

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- Two institutional advisory board meetings were held during the reporting period. One of the meetings was accompanied by a high-level delegation visit to Hawassa and Arsi University clusters;
 - Capacity building training was organised for partner institutions on 'Digital Soil Mapping' and 'Innovation Recommendation Mapping' in collaboration with ISRIC.



To reduce months of food gap as well as to increase household nutritional diversity of the PSNP supported farmers in particular, REALISE introduced sweet potato varieties. "The high yield, good taste, early maturity period, and its suitability for intercropping are among the desirable characteristics of Adu variety. The local varieties took five months to mature while the new variety, Adu, matures in three months. In addition to improving the food and nutrition security of my household and reducing the food gap months, I am able to earn additional income." Safiya Ahmed Abdule, a 54 year-old mother of 10 of which 4 daughters, living in Meta *woreda*.

3 Improved markets and trade



ISSD, ENTAG and SBN, contributed through various activities to the objective of improved markets and trade. ISSD does this through enhancing the performance of the seed value chain. ENTAG contributed through increasing the performance of key sub-sectors and enhancing business to business (B2B) linkages. SBN supported the development of sesame products and markets.



29,326 farmers reached with improved access to output markets



52 companies with supported plan to invest, trade or provide services

3.1 Outcomes achieved by BENEFIT programmes

ISSD – Enhanced performance of the seed value chain

In 2020, ISSD Ethiopia facilitated approximately 550 seed input, service and market linkages. This was achieved primarily by building stronger bilateral relationships and improving coordination at local, regional state and federal levels in the form of committees, core groups and platforms. It is important that these be sustained. Various communication media and products were explored for sharing information on sources of quality seed. Two partnership projects that concluded this year illustrate ISSD Ethiopia's approach to increasing trade with and foreign direct investment in Ethiopia's seed sector. The local distributor GAWT and ISSD Ethiopia decided to scale their efforts in popularizing selected hybrid varieties of onion and tomato of the Dutch breeding company Enza Zaden from the Central Rift Valley to Amhara, SNNPR and Tigray as well, reaching 570 farmers in intensive field

training and 713 during field days at demonstration sites across 18 *woredas* in 2020. With ISSD Ethiopia's support, Rijk Zwaan has introduced slicer cucumber as a new crop and commodity to the fresh market, which is roughly 10 times more lucrative for farmers than tomato, requiring just over 9% of the area of land to generate the same gross margins. Multiple interventions in seed value chains were scaled in 2020 to solve common problems in relation to EGS supply, seed quality assurance, and seed marketing, in coordination with the multi-stakeholder regional seed core groups. Given low levels of market orientation, business linkages are weak and not professionalized. Further effort is needed to consolidate contractual (early generation) seed supply, seed agent/dealer networks, and investments in the seed sector. ISSD Ethiopia has sensitized the investment decisions of the core groups to gender by documenting all investment decisions to date on grant canvases that explicitly ask: who benefits; and how is gender addressed in activities? All canvases, from 2016 onwards, have been updated with important information for evaluating impact on outcomes including social inclusion and nutrition.



Since 2016, the programme facilitated the giving and getting of CoCs reaching more than 23 seed producers (18 SPCs & 5 Private Seed Producers (PSPs)). To reap the full benefit of CoCs, the programme also implemented activities promoting business to business relationships to ensure SPCs become part of contractual EGS production and supply process. Contractual based basic seed production and supply not only ensure real demand based seed supply but also enhanced crops and variety portfolios. In 2020, 37 seed producers signed a contractual based EGS supply and access.

ENTAG – Provision of technical and financial support for better performance of sectors and companies

The ENTAG program, through its platform meetings and other high-level engagements, has been serving as a catalyst for some of the national and regional policy, strategy and institutional reforms and draft of new regulations on Ethiopian poultry, spices, aquaculture and pulses subsectors. In light of this ENTAG has been working on the below areas in 2020:

- ENTAG has been closely working with partners, technically supporting the development/revision of the Agricultural and rural development policy;
- On-going technical support was provided regarding the implementation of the poultry disease control strategic plan and reopening of the national poultry training centre;
- Through ENTAG technical and financial support, the Ethiopian Poultry Producers and Processors Association (EPPPA) has been strengthened with an increased membership and an active role in the sector. Currently, the association is progressing well towards becoming self-sustained. The EPPPA is expected to take over ENTAG lobbying work, technical support to companies and supporting in the implementation of activities handed over to the MoA;
- Through ENTAG consistent effort, the establishment of Ethiopian Pulses Council has now been owned by the MoA. The Ministry is leading the last mile of Ethiopian Pulse Council Establishment. Accordingly, pro-pulse production, trade and coordination policies are underway. Overall, the environment for better performance of pulse sector is slowly becoming supportive.

The effort of ENTAG to establish Ethiopian Pulse Council that started in 2017 started showing fruit, in June 2019, at the platform's seventh annual meeting where a formal agreement was reached with the leadership of the MoA. The proposal was finalized in January 2020 to be tabled to MoA and ultimately to the Council of Ministers for official approval. The proposal writing team and also state ministers involved, strongly believe that the Ethiopian Pulse Council could potentially be a model for other sectors on how to create sound platform and sector institution with active participation of all relevant stakeholders and move away from the traditional silo and top-down state driven model towards a more inclusive and private friendly + driven sector transformation agenda.

SBN - Product and market development

Compared to set targets, results for product and market development have been disappointing. Sesame value chain and business development could not take off as planned because of the sesame price inflation at ECX in the quest for the hard currency. Farmers' that sale at spot markets took the advantage of the inflated EXC prices and invested on a risk sharing modality to promote bank loans for cooperative marketing. Due to lack of incentive for quality the potential high value markets are not reached. Ethiopia continued losing its competitive position in the international sesame market. This call for a fundamental sector reform and market system change. Realistic domestic prices and direct buyer and supplier relations would allow linking producers to promising market segments. With market system change, the time and effort that was put in preparatory studies, trainings and business plan development could materialise for the purpose of product and market development, both for sesame and rotation crops. SBN also promoted marketing of soya bean, mung bean, sunflower and cotton.



For the last two years, SBN promoted and supported the production and marketing of rotational crops. One of its efforts focused on linking a recently established oil processing company, Richland Biochemical Processing Factory, located at Bure Industrial Park, with Metema and Admas farmers' Cooperative Unions.

"The agreement has multi-faced benefits. It is an assurance for us that we will not have market problem after we produce the crop; it allows us to sell the produce in advance; cut unnecessary long marketing chains and reduce extra costs that we pay for brokers. Collecting the produce directly from our farms also reduces the transportation cost, increasing household income." Bere Shimelash, one of the commercial farmers from Quara woreda that signed an agreement with Richland Factory explained.

4 Improved enabling environment for the agricultural sector



As a programme that targets demonstration of evidences for wider development, different interventions for improving the enabling environment have implemented by the different the BENEFIT partnership programmes and the BENEFIT portfolio. These interventions covered a range of activities including: (i) identification of relevant policy issues for further discussions based on prevailing challenges and opportunities, (ii) documentation of demonstrated evidences for the identified priority issues, (iii) engagement with relevant stakeholders to ensure the communication of demonstrated evidences through different forums mainly workshops, and (iv) contribution & facilitation of the design of new directives and regulations.



Contributed to 14 substantial policy changes / reforms

4.1 Outcomes achieved by BENEFIT and its programmes

ISSD – Improved enabling environment for enhanced performance of seed value chains

The seed sector transformation agenda has been incorporated in the (multi-)annual plans of stakeholders at federal and regional state levels as a result of efforts to raise stakeholder awareness of and commitment to implement its strategies. The specific agenda to establish dedicated leadership bodies to the seed sector in each region has been advanced in particular in Amhara and Oromia. The position of the Ethiopian Seed Association (ESA) has been strengthened by the secondment of a secretariat officer and inclusion of the association in strategic dialogue facilitated by the programme. Further, ISSD Ethiopia carried out thorough (de)briefing on the institutional mapping and needs assessment of Ethiopia's seed regulatory services, and the programme's innovations in relation to

seed quality were included in the strategy of MoA and EIAR to improve quality control and assurance in the country. Since 2017, ISSD Ethiopia has had the mandate to establish a sustainable system of EGS supply in the country and recently submitted the EGS Multiplication System Guideline to MoA for endorsement and implementation. The guideline provides for participation of capable holders of Certificate of Competence (CoC) in EGS production of public varieties. Rapid assessments of the impact of COVID-19 on key seed sector functions were conducted in May and June, resulting in the publication of two Seed Alerts. Recommendations, and the stakeholders best positioned to propel their action, were proposed to and approved by senior leadership in the sector. In October, ISSD Ethiopia assessed the status of seed production across the country and alerted government to the need to coordinate collection, processing, storage and eventual distribution of what appears to be a record harvest for Ethiopia, and to ensure that stakeholders have sufficient working capital to operate.



ISSD has been working on improved smallholder farmer's access to and use of quality seed of new and preferred varieties through crowdsourcing approach to sustainably increase agricultural productivity. Following the agreement in 2019, that research centres and universities are the vital stakeholders for the embedding Crowdsourcing (CS) and Participatory Variety Selection (PVS) activities / approach, consultative meetings and field visits were organized and grant was allocated to facilitate the institutionalization process. A session was facilitated to share seed extension experience; a training workshop was organized for university and research centre focal persons to share its two years (2017-2018) experience on CS and PVS, discuss best lessons and challenges in the implementation process, train on how to design trails for CS and PVS and how to use ClimMob software and raise awareness on gender related issues.

CASCAPE - Strengthened enabling institutional environment for the agricultural sector

The planned consultative meetings, national dialogues, and workshops (both at regions and national) were not implemented because of the movement and restriction on gathering because of COVID-19 pandemic. However, it was possible to conduct two rounds of IRM training for ESRI, EIAR and MoA staff. Project outputs were communicated in the form of print materials, pamphlets, leaflet, video documentary, and mass media. The six policy briefs were actively shared with regional and federal officials including heads of extension programmes at MoA and BoA, RARIs and EIAR. In addition, five scientific papers published in open access journals are widely shared among researchers and the academia. University clusters were using their community radio to reach the stakeholders in addition to sharing the legacy books, proceedings. The 23 new best fit practice manuals that we have prepared will be shared with the extension directorate of MoA for institutionalisation.

Some of CASCAPE institutionalization achievements include

- Institutionalization of Participatory Action Research (PAR) by the research system
- Institutionalization of Best Fit Practice (BFP) manuals into the national extension package - 49 BFPs submitted, so far 7 have been
- Validation included in AGP's best practice identification and scaling guideline
- Adoption of Integrated Validation Protocol (IVP) for technology screening
- New and improved scaling strategy included in the woreda development plans
- Need assessment based Training of Trainers (ToT) to build the skills and knowledge of development workers and farmers

ENTAG

ENTAG in collaboration with the rest of the BENEFIT projects has conducted a quick assessment on the soybean value chain and submitted the report to the relevant office in MoA. Furthermore, it has been collaborating with development partners in mitigating sectoral crisis caused by the COVID-19 pandemic and solving sector challenges.

Strong partnership and collaboration are created among key actors of pulse sector. Actors, such as pulse farmers, cooperative union leaders, importers and exporters, experts and researchers from both governmental and non-governmental organizations were brought together in regular pulse or legume business platforms to discuss major issues that could enhance the growth of the sector. Moreover, relevant studies and articles have been shared to the stakeholders for common understanding and consensus of key issues regarding the sector. These actions are improving partnerships and collaborations among stakeholders across the sector.

ENTAG legume subsector has maintained close partnership with Ministry of Agriculture at higher level (minister and state ministers) where its agendas are taken for consideration. Also, close relations have been maintained with SITA, 2SCALE, FTF, CFRS and other programmes that work on legumes and poultry to streamline scope and enhance level of influence.

SBN – Strengthened enabling environment for the Ethiopian sesame sector

Has SBN suggested options for a more enabling environment? Definitely so. Is the performance of the sesame sector enhanced because of a more enabling environment? To a certain extent, but compared to what is needed, the structural change is too limited. This is disappointing as there is huge potential for bringing the Ethiopian sesame subsector to the next level. Failure to do so is costing farmers thousands of ETB, and the country millions of dollars per year. Stakeholders are quite unanimous about the necessary change. They impatiently ask for leadership to address persisting challenges: stagnant production, insufficient financing of the sector, insufficient support for appropriate mechanisation, market system and policies that separate farmers from buyers and blocks value chain development, digitalisation, bottom-up planning, regional and federal sesame network/platform, sustainable funding of communication activities (see Appendix 6 for a detailed agenda-for-action). Because of the centralised decision-making process, necessary resolutions for sesame sector transformation are not taken. Having tried for many years, sometimes successfully, but mostly in vain, it seems that only a special high level conference could lead to a breakthrough. The requirement from donors to have a coherent sector transformation plan can help bring decision-makers together.



Over the years, SBN promoted collaborative initiatives to improve the performance of the sesame sector. “The partnership with SBN has significantly improved research outputs, machinery testing, demonstration and promotion, seed multiplication and distribution by GARC and HuARC. For example, previously many farmers’ especially large-scale farmers did not use fertilizer for sesame production, resulting in a very low productivity, less than 300 kg/ha. But with the new technology package our production efficiency has increased by three folds. It is now possible to produce 1 ton per hectare under rain-feed conditions using proper fertilizer type and rate.” Dr. Tilaye Teklewold, Director General of the Amhara Regional Agricultural Research Institute.

REALISE - System innovation pathway

- In order to promote soil type based interventions, a soil resource survey at semi-detailed scale was conducted in 15 REALISE intervention *woredas* in Ethiopia and produced a soil resource dataset including a soil profiles database and a soil class map.
- The training and backstopping provided by ISRIC contributed directly to the further strengthening of the capacity of the Soil Resource Information and Mapping Directorate of the Ministry of Agriculture

of Ethiopia in its ambition to survey and map soil resources at scale and become the Ethiopian Soil Resources Institute. The implemented work activities are reported here relative to the original work plan.

- The Innovation Recommendation Mapping (IRM) method was used to assess and identify optimal areas for growing two sweet potato varieties in Oromia region (both Adu and Hawassa in Arsi and Adu in East Hararghe zones) and maize and haricot bean potential for intercropping in SNNP region, Siliti zone as an evidence of the importance of the method.
- 13 piloting activities were implemented from 2019- 2020. The purpose of these pilots was to generate evidence on scalable youth employment opportunities, improving household resilience through women empowerment, affordable extension packages for small holder farmers, increasing access to weather information for small holder farmers to inform their investment decisions.

5 Mainstreaming social inclusion and nutrition



5.1 Social inclusion

The BENEFIT partnership approached social inclusion from various angles such as inclusion of women, youth and disadvantaged group in their needs and the design of activities, the inclusive business models, labour saving technologies and a specific focus on labourers in the sesame and PSNP related intervention.

Inclusion and inclusive business models

The REALISE interventions and in-depth studies were initiated to deal with systemic bottlenecks and issues of social exclusion among the youth, women and economically weak section of the community. REALISE demonstrated that if appropriate interventions are designed and institutional support is provided to women and youths, the poor and vulnerable groups can actively participate in development activities and share from equitable distribution of benefits.

The pluralistic approach of ISSD was inclusive of the operators of and service providers to seed value chains relevant to informal, intermediate and formal seed systems, and the different market segments they serve. Prior to selecting seed value chains to work on, analysis was conducted to assess the gendered performance of tasks from plant genetic resources management, through variety development, (early generation) seed production and seed distribution, to farmers' utilization of seed and their agronomic practices. This informed our selection of seed value chains, taking their relevance to women as a criterion, and directed awareness raising, training, coaching, supervision and monitoring by staff.

Different groups in society are engaged in this way, and also in meetings, committees, core groups, and platforms facilitated by the programme. The seed core groups are one specific arena for inclusion. Representatives of BoAs, seed regulatory authorities, RCPAs, research institutes, universities, public

seed enterprises, private seed producers/companies, farmers' cooperative unions, and NGOs are united in their decision making about support to the seed sector. ISSD Ethiopia has also sensitized the investment decisions of the core groups to gender. Since 2016, all investment decisions are documented on grant canvases, which explicitly ask: who benefits; and how is gender addressed in activities? In 2019 recording of the impact of these investments was included.

ENTAG has been technically and financially supporting an inclusive business model, where a spice and essential oil processing company works with 270 smallholder women farmers. The 270 women farmers are organized into 5 cooperatives that have already entered into a contractual agreement with the company, Damascene. Collaboration with TEPI Research Institute and 2Scale was done to ensure the success of the pilot project and avoid duplication respectively.

Labour saving technologies

As part of targeted action interventions, time and labour-saving technologies were identified, introduced and promoted to the beneficiary farmers in both the REALISE and CANAG programmes. The introduction of these technologies is cognizant of existing farming practices in the selected woredas. The objective of these interventions was to minimize the amount of labour spent on farming activities especially by women and validate them for uptake and scaling by the target group.

The labour saving technologies tested and validated by REALISE were a potato harvester, teff row planter, multi-crop thresher and maize sheller. In general the technologies introduced are well accepted by the community members and being used. CANAG introduced a wide range of technologies such as fuel saving stoves, potato harvester, enset scraper, maize sheller, water lifting technologies and avocado harvester. These technologies were specifically aimed at female farmers or female members of the household. CANAG developed a technology validation protocol and was able to collect data directly from households about their experience of using the technologies, as well as potential limitations such as challenges around fixing the technologies or cost. Based on this validation protocol, manuals are being developed on the promising technologies which will be shared with Bureaus of Agriculture.

Labourers

At peak times during the agricultural season, the number of wage labourers in the sesame zone is higher than family labourers. In total, more than half a million seasonal labourers arrive in the sesame lowlands. They are generally young and poor and originating from food insecure midlands and highlands in Tigray and Amhara. Most people in the sesame zone, especially labourers, have a very monotone diet.

Labourers are essential for sesame production, and labour costs make up the largest part of production costs. They are however not an easy target group to reach: they are not residents of the sesame zone, they are weak and vulnerable and not organised. Following the situation analysis of this year's agricultural season and the rapid assessment results, utmost attention was given to the living and working conditions of labourers. As a result of the rapid assessment on labour at the onset of the COVID-19 pandemic, zone and woreda level stakeholders, such as the social and labour affairs departments and bureaus, health offices and the command posts at different levels were giving due attention to labour issues.

5.2 Nutrition

The BENEFIT partnership over its life span has implemented a range of nutrition sensitive agricultural specific interventions are outlined below. The lessons learnt and implications of these practices will be published in a paper (in draft).

Home Gardens

Home gardens, or the small scale production of fruits, vegetables, and herbs, usually for consumption by the family, has been a common practice for thousands of years, including in Ethiopia. Home gardens are one of the most common type of nutrition sensitive agriculture, targeting mainly

production of diverse agricultural crops for the household to consume, but also looking at small scale sale of surplus, increasing access to fruits and vegetables for other community members. The Ethiopian government's National Nutrition Programme and Nutrition sensitive Agricultural Strategies set targets for adoption of home gardens in Ethiopia; aiming for 40% of all rural households and 25% of urban households to have a home garden by 2020.

Home gardens have been included in CASCAPE, SBN, REALISE and CANAG resulting in diversified diets and an additional income for households. As good quality seed of vegetables is often a limiting factor, ISSD has worked with Dutch seed companies on the introduction of hybrid varieties of tomato and onion, and the introduction of cucumber as a novel crop. The CANAG project also introduced a validation protocol to understand the perceived benefits and limitations of home gardens, which collected data on a range of parameters including social (perceived benefits vs work for various family members, household consumption) economic (costs of the home gardens vs income earned from surplus) and environmental (use of pesticides and fertilizers) sustainability.

Promotion of biofortified crops

Quality protein maize (QPM) is maize which has been bred to contain high levels of several amino acids essential for humans. Studies in Ethiopia have found that it has been able to effectively prevent, and in some cases reverse growth faltering in young children. Acceptability studies have also found that both women and children were more likely to prefer QPM compared to conventional maize when evaluating factors such as taste and aroma. ISSD has worked on early generation seed of QPM, while REALISE introduced QPM to PSNP clients as one of the nutrient dense crops.

Orange Fleshed Sweet Potato Vitamin A deficiency is linked to poor immune function leading to increased susceptibility to a range of diseases, as well as, vision impairment and blindness. Orange fleshed sweet potatoes contain high levels of bio-available vitamin A are a more affordable way to deliver vitamin A to potentially deficient populations.

The orange flesh sweet potato has been incorporated in the home garden activities, especially targeting the PSNP clients through REALISE. ISSD supported the establishment of a PLC to trade in vines of Orange fleshed sweet potatoes.

Quick maturing and high yielding varieties of papaya Papaya is an excellent source of vitamin C. The introduction of the quick maturing Maradol variety of papaya by the Mekelle cluster of CASCAPE resulted in additional income for farmers, both through selling fruit as the sales of seedlings. This practiced has expanded to other regions, also to PSNP clients by the REALISE programme, to women beneficiaries of the CANAG programme in Oromia, and incorporated in the home gardens tested by SBN and documented in a best-fit practice manual, and adopted by the MoA.

Introduction of rotational crops The use of rotational results in a variety of crops being produced which can contribute to a more diverse diet for both humans as well as livestock. Among the rotational crops pulses are nutritionally a good addition to the rotation as they are rich in protein as well as a range of vitamins and micro nutrients. CASCAPE, SBN and REALISE tested and validated a range of pulses, ISSD worked on the early generation seed of soya, haricot and mung bean. ENTAG, together with the other programmes established a soya bean platform which contributed to increased uptake of growing soyabean by small holders – apart from an addition to the diet it also contributed to household income as many women are interested in soya and mung beans, especially as crops for sale.

Animal source foods can be important sources of proteins, fats and key micronutrients that are often deficient in diets based many on cereal.

Dairy Goats

Goats have been found to be the preferred livestock species by small holders in Ethiopia as they can provide the family with a range of benefits, including milk, meat, manure as well as the potential to be sold for income if necessary (Wodajo et al. 2020). Both the REALISE and CANAG project introduced dairy goats households with young children as a way to increase access to milk on a regular basis, while the REALISE project goat fattening for income and resilience building which show early signs of

improvement in livelihoods. CANAG distributed pregnant dairy goats to women beneficiaries through a scheme whereby women committed to give part of the new offspring to other women beneficiaries in their community. As a result, women and children's milk consumption increased and women gained additional income through the selling of goats.

Small Scale Poultry production

Eggs are commonly promoted in resource poor settings, given their high levels of protein, fatty acids, essential nutrients including vitamins A and B12. They are often the most affordable way of introducing animal source foods into the diet. The REALISE project studied how the introduction of pullets contribute to livelihood diversification and risk management. The CANAG project introduced Koekoek variety chickens to women beneficiaries in Amhara, in combination with training on cage construction, feed production, and nutrition education, resulting in increased egg consumption by both mothers and children.

Behaviour change communications

There is evidence from a range of nutrition sensitive programmes that they are much more effective if they incorporate behaviour change communication as well agricultural activities. CANAG specifically focus on nutrition integrated nutrition education in its programming. Examples of such interventions include school home garden clubs, cooking demonstrations, exchange visits by farmers to each other's home gardens, group dialogues, and messaging through local radio or other channels. Both men and women are invited to participate in these activities to ensure the husband's support to the nutrition related efforts by his wife.

Improvement of Dietary Diversity

In the CANAG project data was also collect on the baseline and end line Dietary Diversity of women and children. This dietary diversity survey was carried out in all 5 clusters and included 500 respondents (80 per cluster). We found a significance difference in the national (5 cluster average) DDS mean difference (baseline and end line); the result from the pre-intervention (baseline) $M=3.64$, $SD=1.37$ and end line (post-test) $M=4.05$, $SD=1.57$. The figure shows that, the mean difference has improved by 0.41 ($SD=2.1$). This improvement is statistically very significant at $t(399)= 3.91$, $P<.001$.

6 Enhanced partnership for synergy



Coordination of the partnership for synergy among BENEFIT programmes and with other development programmes has been implemented by the BENEFIT Partnership Coordination Unit (PCU) mainly through facilitation of:

- Alignment of programmes and their collaboration;
- Collaboration and alignment with other projects and programmes;
- Facilitation of policy engagement;
- Mainstreaming social inclusion and nutrition, and
- Fostering collaboration in BENEFIT portfolio in terms of (i) BENEFIT portfolio management; (ii) provision of centralized administrative services (finance, human resource management etc.) to the four BENEFIT programmes; and (iii) communication and use of evidence-based information through an effective M&E system linking the four BENEFIT programmes and other partners.

6.1 Alignment of programmes and collaboration

The facilitation of alignment and collaboration has continued in 2020 through organization of review and planning events, regular reporting, organization of peer-to-peer meetings, and engagement with EKN.

- **Assessments of impact of COVID-19:** Twelve rapid assessments highlighting alerts for the various sectors and areas, seed, fertilizer, inputs, sesame, poultry, soya bean, labour and PSNP, were published. These assessments were widely shared with relevant stakeholders. An overall analysis of the food system was compiled on the basis of this as well as a video to highlight the major alerts (https://youtu.be/x_cI8EqzXSg).



Figure 3 COVID-19 alerts

- **Collaboration in mainstreaming and institutionalization of evidences:** BENEFIT programmes have collaborated to engage in mainstreaming / institutionalization of the different evidences demonstrated over the last four years. Some of these where the programmes were engaged are: (i) national agricultural and rural policy revision, (ii) design of implementation strategy based on the national seed sector transformational agenda, (iii) institutionalization of mandate zonation for members of the National Agricultural Research System (EIAR, RARIs, and HLIs, MoA/BoA), (iv) institutionalization the sector platforms/councils with due emphasis on pulse/grain council, (iv) revision of the national agricultural extension packages and pluralistic extension system, and (v) scaling up of weather information sharing piloted by SBN jointly with ISSD and ENTAG to wider areas.
- **Engagement with the Embassy of the Kingdom of the Netherlands (EKN):** this has continued through meetings to updating progress and through invitation of relevant EKN staff in BENEFIT Partnership engagements with stakeholders although minimal due to the restrictions imposed by the COVID-19 pandemic, workshops and field days.

6.2 Collaboration and alignment with other programmes

Effective alignment and synergy with public and private initiatives has been made. Accordingly, the following activities were accomplished and progressing well:

- Engaged with the seed sector development of the MoA together with ATA to develop three documents namely:
 - A concept note on Ethiopian Comprehensive Seed Sector Development Initiative,
 - An implementation plan with interventions and priority areas, and
 - Status of Seed Quality Control and Assurance in Ethiopia: Required Measures for Improved Performance;
- Conducted briefings and facilitated the mainstreaming of the mandate zonation process of members of the National Agricultural Research System for technology testing, validation and scaling, which resulted in the decision for piloting in the 2020 production season;
- Facilitated ISSD Africa Webinar on Transforming Seed Marketing - Lessons from Ethiopia, held on November 25th, 2020 where ISSD's achievements, challenges and lessons learnt were shared to international audience;
- Facilitated the establishment of the National Pulse Council through different meetings with relevant stakeholders including the MoA;

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- (v) Engaged in further formalization of the alignment of joint engagement with ATA and SNV. As a result a MoU was signed;
 - (vi) Facilitated the planning and implementation of the priority activities of the Agricultural Inputs and Output sector development technical committee of the RED&FS as a co-chair along with ensuring alignment and sharing of experiences of the different BENEFIT programmes as member of the Agricultural Systems Transformation Technical Committee (AST TC) and Policy and Governance Technical committee. Under AST TC, BENEFIT is also a member of the two taskforces i.e. Research and Technology Taskforce and Extension and Capacity Building Taskforce. Given the COVID 19 related restrictions, the RED&FS related engagements were limited to virtual meetings;
 - (vii) Facilitated a visit to REALISE programme activities in Oromia and SNNP regions for a high level delegation of REALISE programme institutional advisors and EKN. The delegation included State Minister of Agriculture, Directors of Extension Directorate and Food Security Coordination Directorate from Ministry of Agriculture (MoA); Director of Ethiopian Institute of Agricultural Research (EIAR); Senior Director of Production & Productivity Projects vertical, Agricultural Transformation Agency (ATA); Deputy Head of Mission, EKN; Senior Policy Officer for Food Security & Sustainable Development of EKN; and BENEFIT senior staff.

6.3 Policy engagement

2020 policy level engagements were related to communicating sector alerts prepared by the BENEFIT partnership, on the impact of COVID-19 on seed, fertilizer, sesame, labour, poultry, pulses and PSNP, and support in the follow up of agreed upon measures. BENEFIT also assisted MoA in drafting policy documents (seed sector transformation initiative, agricultural export promotion and import substitution, pluralistic extension system development etc).

The following policy dialogues were held to share BENEFIT experiences and evidences:

1. Participation in the consultative meeting on Agriculture Sector Policy and Regulatory Reform organized by MoA and served as member of the different taskforces established for drafting different contents of the policy document;
2. Engaged in the MoA 10 year perspective plan preparation (2021 – 2030) and facilitated the national public briefing televised online;
3. Continued serving as member of the national technical committee on promotion of mandate zonation for members of the National agricultural research system, where the content of the interventions for piloting in the 2020 production season in four regions have been agreed (Amhara, Oromia, SNNPR and Tigray);
4. Continued serving as member of the National technical committee for rice R&D and engaged in the revision of the National Rice Sector Development Strategy (2020 – 2030);
5. Engaged in the different discussions for the design of the agricultural policy and development responses related with COVID 19 challenges organized by different organizations (MoA, IFPRI, etc.);
6. The seed sector transformation agenda¹ has been incorporated in the (multi-)annual plans of stakeholders at federal and regional state levels as a result of efforts to raise stakeholder awareness of and commitment to implement its strategies;
7. Concept and guiding principles of integrated seed sector development along with plans to consolidate and scale ISSD Ethiopia innovations have been incorporated in MoA's proposal for a 'Comprehensive Seed Sector Development Project';
8. Evidences of innovation under PSNP condition targeting systemic challenges related to resilience building, youth employment, risk management and nutrition were piloted for scaling. There are (i) seven business models that aimed at creating jobs and generate income for vulnerable groups especially youth and women; (ii) four were proof of concept aimed at generating evidence for wider scale up of practices as well as inform / influence policies and regulations; and (iii) three related with innovations aimed at contributing to improved household resilience and nutrition.

¹ MoA (2019) *Transforming the Ethiopian Seed Sector: issues and strategies*. Government of the Federal Democratic Republic of Ethiopia. Addis Ababa.

6.4 Fostering collaboration in BENEFIT portfolio

6.4.1 Monitoring and Evaluation

2020 is a year of no cost extension implying the need of the M&E activities to focus on the finalization of the documentation of key achievements made and lessons learnt both at portfolio level and at programme level. Accordingly, the in 2020 M&E focused on (i) result harvesting, documentation of lessons learnt, documentation of data and (ii) facilitation of the partnership level M&E.

The following are major activities and result achieved:

- Documentation including indicator tracking: Indicator values for all programmes were tracked and summarized at BENEFIT partnership level and programme level. Using tracked indicators, reach values through life of the programmes summarized;
- Documentation of Programmes' data from 2016 to 2020 was supported and format developed for the purpose of documenting data and data handover;
- Endline assessments by ISSD and REALISE were facilitated and supported. ISSD conducted endline on seed availability and used in the selected 15 woredas (3 in Amhara, 6 in Oromia, 3 in SNNPR and 3 in Tigray) while REALISE conducted endline for the evaluation of selected key programme indicators like food gap, DDS and asset building in the intervention woredas;
- Online data collection for the assessment of alerts on the impact of COVID-19 on soybean value chain was supported;
- A weekly virtual meetings were held between PCU/PMU and clusters for the monitoring, evaluation and learnings for activities planned through COVID-19 in 2020;
- External end review of the programmes was conducted by international consultant.

Support to external evaluation: The Embassy of the Kingdom of the Netherlands commissioned an advice from ERBS BV (Erasmus University Rotterdam), which included an evaluation of the interaction between the five BENEFIT projects. BENEFIT provided all information solicited by the evaluators for the inception report and contacted and facilitated meeting arrangements with the key stakeholder informants selected for individual interviews by the consultants team. However, as the report is not a public report lessons from the evaluation could not be incorporated into this annual report.

6.4.2 Communication

Key external activities performed were related with facilitation of the publication of different evidences in the form of articles, alerts, newsletters and news and ensuring the wider communication through different forms mainly by posting them on BENEFIT website. Major publications prepared in collaboration with BENEFIT programmes both at BENEFIT and cluster level were:

- Eight alert reports in relation to COVID 19 impact in the areas of seed, fertilizer, sesame, labour, poultry, pulses and PSNP;
- Two (Jan-Mar and Apr-June) BENEFIT newsletters and a brochure summarising the 2019 BENEFIT achievements;
- Facilitation sharing of quarterly and bi-annual collaborative reports by regional collaboration leads;
- Multiple reports and publications: see www.benefitethiopia.org;
- A video on stories of change as a result of activities of the BENEFIT partnership;
- Finance and administration.

In ensuring further synergy for collaboration within the BENEFIT Partnership, the provision of centralized finance and administration service has continue in the last six months. Specifically, appropriate support functions related with (i) financial management, (i) human resource management, (iii) procurement, and (iv) pooled resource use facilitation were provided.

7 Key lessons learnt and way forward



This section highlights key lessons captured from the BENEFIT Partnership experiences and learnings gained. It aims to provide insights for future agriculture development interventions in the areas of programme implementation strategies in ensuring the achievement of set objectives with sustainable impact.

Implementation strategy

The selection of partners with clear alignment with diverse public initiatives including the flagship programmes played crucial role not only in the demonstration of evidences of innovations but also their mainstreaming and institutionalization. The agile approach followed by the programmes allowed to some extent to timely adjust in response to emerging (i) natural and biological hazards, and (ii) policy and regulatory changes allowed maintaining the programme interventions relevant. The monitoring, evaluation and learning approach adapted was instrumental in ensuring not only to timely capture of the progress made but also in timely informing the adjustment required for the different programmes of the Partnership. Some of the specific cases in this regard are:

1. The outbreak of COVID-19 pandemic followed by a state of emergency that restricted mobility affected the supply and distribution of inputs, provision of trainings, follow up support to programme activities and ability of stakeholders to meet, share information and coordinate activities face-to-face. The pandemic created challenges to reach out to government stakeholders to actively play their role in addressing emerging challenges. Some of the activities impacted included slowed down the institutionalization of financial literacy training and advancing of marketing finance issues (SBN); delayed the finalization of scenario and in-depth studies (REALISE); impacted the whole value chain of some sectors like poultry (ENTAG); limited inclusion of best-fit practices in the national extension package (CASCAPE).
2. In most cases, the programmes changed these challenges into opportunities through increased involvement and leadership of *woreda* and *kebele* offices of agriculture in implementation of activities with minimum support from programme staff. This enabled *woreda* people to properly understand best practices, created sense of ownership and thus paved ways for institutional

embedding. For example, MoA secured financial resources for the COVID-19 response plan that not only contributed to the recovery of the hard-hit sector, but also provided an opportunity to fill gaps and untapped potential areas throughout the value chains of sub-sectors. In general, the programmes were able to reduce the impact of the disruption and succeeded in smooth implementation of planned activities by using flexible and adaptive programme management (e.g., initiating timely discussion with partners; conducting assessments to better understand the situation, dropping some planned activities when the context changed etc.) and proactively adjusting working modality that gave more responsibility to key stakeholders.

3. In response to the strategic direction of the government on import substitution and export promotion, some of the Partnership programmes were engaged to support this initiative esp. in supporting cooperatives and value chain development. Some of the cooperatives and unions engaged in sesame were able to engage direct export, which was more attractive to earn a premium on the international market. This is expected to benefit these actors in a sustainable manner and contribute to the initiative.
4. Overall collaboration among programmes and relevant stakeholders reduced the cost of activities, improved reach and increased the results and impact at the level of the end users. The success of the BENEFIT partnership as a whole is a result of strong bilateral collaboration between Ethiopia and the Netherlands, among government, industry, science and civil society in and between both countries, and across the various value chains in Ethiopia, from production to consumption. Working with stakeholders at local, regional and national level was essential to sustain the outcomes of all BENEFIT programmes.

Alignment and collaboration

Participation of research and extension stakeholders in the annual planning and review at regional and national level sensitized stakeholders about programme interventions and project outcomes, created a favourable condition for the alignment and collaboration at all levels. In designing projects, participatory approaches to define problems and interventions ensured the commitment of stakeholders. Rounds of discussion with stakeholders and expert panels narrowed down the focus of interventions and in-depth studies scope and type.

In relation to the seed sector, at the time of COVID-19 pandemic, the coordinated response of stakeholders to COVID-19, and the proactive support of government boosted production to unprecedented levels, and facilitated uptake of information and communication technologies, which made it possible to coordinate activities remotely.

In the case of CASCAPE, the strong collaboration between the AGP, MoA, BoA enabled institutionalization of innovations and approaches. SBN's effort that improved relationship between members and cooperatives due to the provision of trainings and input loans is a fertile ground to strengthen farmer organizations through active membership participation, internal capitalization and increased business operations.

Joint activities require agreement on feasible goal, common working procedure, achievable plan, research approach and methodology. A memorandum of understanding is essential to clarify roles and responsibilities for partnership. The need for clear role and responsibility among different people and partners and having timely and uniform communication among partners is crucial. The BENEFIT partnership has, amongst other a MoU with ATA and SNV on alignment for the portfolios, and for specific activities, with ATA (seed), EIAR (integrated recommendation mapping), PSNP (REALISE) and MoA on collaboration with the Ethiopia Soli Research Institute (ESRI).

Other key lessons in collaboration include the need to have the critical mass attention of the public sector in addition to the anchor private sector actors; e.g. ENTAG experience in the establishment of Ethiopian Pulse Council; explore complementarity of commercial and food insecure areas (SBN-REALISE collaboration); beyond physical collaboration, focus on collaboration that sharing methodologies and experiences.

Way forward

- Investment to strengthen the formalized linkage between the private sector and the government should continue to address overlooked areas in sectoral value chain development and resolve sector specific issues sustainably;
- Design a separate project to continue and enhance the support of Amhara Investment Commission support to the Kunzila Horticulture Development program;
- Connect seasonal employment issues in sesame lowlands to poverty reduction and food production in mid- and high-lands efforts;
- Support MoA extension directorate to pilot 'one timad package' in the coming belg season in two universities.

Agricultural input supply

Investment in the deployment, evaluation, participatory selection, for instance through crowd sourcing, and promotion of new and improved varieties is crucial to ensure that farmers continue to use new technologies to increase their productivity. Challenges like limited reserves of foreign currency that affected the import of high quality seed of nutritionally-dense crops like fruit and vegetables, which demands exploration of the possible domestic production of seed of these crops. Whilst contractual agreements improve the coordination and market-orientation of EGS production, a lot more consolidation needs to be done before supply is boosted. The scale up of CASCAPE EthioSIS-based area-specific fertilizer recommendations will only be successful other necessary inputs are available. The different alert reports in response to COVID 19 have played crucial role for timely action and response in ensuring timely availability of inputs to end users.

Way forward

- The next step in the seed sector's journey towards transformation includes providing improved seed regulatory and other service provision, enhancing enabling environment for private investment, and building a strong structure with agreement on and alignment between dedicated leadership bodies at federal and regional state levels to govern the sector is governed.
- Much more effort is needed to ensure that winner varieties are taken up in the product portfolios of seed producers and that seed production continue to become more demand-driven. Seed producers need to be linked effectively to the PVS and crowdsourcing activities through research and extension so as to respond to the demand created for locally adapted varieties.
- Support should also focus on enhancing the market orientation and business management of farmers, SPCs and unions in local seed business, and federal and regional state cooperative agencies need to be competent in providing this technical assistance.
- To systematize EGS production in the country, MoA and Bureau of Agriculture (BoA) in each regional state need to consolidate the effort by continuing to witness, monitor and enforce signed contractual agreements.
- In relation to investment, it is relevant to enable direct foreign and domestic private investment in the seed sector to widen the crops and variety portfolio for which quality seed products are on offer and adapt to changing climates. Building on ISSD experiences, it is possible to unlock the potential for increased private domestic and foreign direct investment, identifying leverage points through the Ethio-NL Seed Partnership.
- Explore handing over input supply functions to the private sector where the government plays facilitation, coordination and quality control functions only.

Enhancing agricultural mechanization & services

As a strategically important topic for sector transformation, SBN has been working to promote appropriate mechanization for the sesame lowlands considering lease financing, machinery rental services, and farmer production clusters as key drivers. Noting that farmers are very interested in mechanization and many investors and cooperatives are ready to invest. Even though machineries were tested and accompanying measures such as lease financing and machinery rental services were suggested, shortage of tractors and row planters is still a problem and lease financing to mechanization remain to be a challenge.

The provision of weather information jointly with National Meteorological Agency was successful and farmers demand is increasing. Started by SBN the service was also provided to farmers participating

in ISSD and ENTAG interventions. Farmers are ready to pay for the weather information service, the next step is to scale this activity through the relevant stakeholders.

Way forward

- To facilitate provision of services, promote farmer-to-farmer extension and provide need based and tailored extension services for different categories of farmers;
- Make cooperatives strong autonomous farmer-business organisations;
- Arrange lease financing to advance appropriate mechanisation;
- Design a digital information, planning, monitoring and evaluation system, to be used from *kebele* up to regional level, based on the experiences of the partnership.

Access to finance

Lack of a vision and subsequent strategies to address agricultural financing problems of farmers, cooperatives and unions, are among the major bottlenecks for enhancing agricultural production, ensuring food security and increasing foreign currency earnings from export. The facilitated linkage among financial institutions, farmer organizations and farmers as end-users ensured improved access to finance. For instance, the marketing credit intervention with commercial banks achieved strong results due to intense monitoring and should continue to receive support and follow up from financial institutions and cooperative promotion agency. However, the provided amount of market credit is still insufficient for unions and cooperatives in for instance, the sesame sector, to strengthen their business operations and purchase larger proportions of the produce from members. Input finance remains to be a challenge. In addition, even though strong awareness and interest has been created among the farming communities on cost recording, improved practices on farm financial management might be further encouraged by the provision of credit based on documentation and performance.

The innovation Fund (ENTAG) providing investment money has played great role in introduction of new technologies that enhanced productivity and quality of supported sectors. The implementation of few innovation fund projects and their expected impacts have been constrained due to several reasons; such as, foreign currency shortage to import machines and materials; grantees' incapability to raise their share, and unrest in project sites. Another challenge in innovation fund implementation is poor financial recording by the grantees. BENEFIT finance department reported that financial reports of some of the grantees who have completed project implementation are not up to the standard although these grantees have fully implemented the innovative projects.

Financial literacy training for farmers is one way of improving access to finance as cost recording and cost-benefit analysis improve farm management, develop entrepreneurship and increase eligibility to credit. Financial literacy has now been adopted and included in the national extension package.

Woreda offices of agriculture started to organise cost recording and calculating cost benefit analysis training together with the agronomic subjects. Cooperatives showing interest to train their members and farmers buying the cashbook also shows as the activity is becoming institutionalised.

Way forward

- Scale financial literacy training endorsed by the MoA;
- Design input finance master plan to overcome the long standing problem of input finance;
- Build on the experience that proved commercial banks can finance the marketing activities of cooperatives, as demonstrated by the 100% repayment rate and ongoing banking relations.

Market linkages & platforms

There is limited coordination and lack of mutual understanding in creating market linkages, the recent Ministry of Trade directive that inhibits companies purchasing directly from unions and cooperatives is a strategic challenge as it hampers direct cooperative/union-company relations, which are essential for value chain development and market linkages. The main challenge in 2020 was related to the sectoral crisis caused by the outbreak of the pandemic. COVID-19 has affected the market and the whole value chains of priority areas, bringing huge losses and product wastage as a result of reduced market and disconnecting international and local supply chain.

To address the multi-faceted challenges of its priority sub-sectors – poultry, spices and herbs, aquaculture, legumes and sesame - multi-stakeholder platforms were organized. These platforms were structured in a way that allows the private sector to raise its challenges and share its experience with other actors in their respective sectors and pose its questions to concerned governmental and non-governmental bodies. The platforms are also used to introduce new market information, technologies and regulations to better equip the sector players.

These sectoral platforms raised pertinent sectoral issues and initiated interesting discussions about potential solutions and priorities. They help identify the main challenges of each sector and relevant stakeholders that should be involved in addressing these challenges. However, not every platform is successful as for sesame the regional platforms have been regularly organised and are taken up by BoA, ARI's, regional governments and ATA. But, the efforts to establish the national stakeholders' platform was unsuccessful because of high official turnover and the difference in understanding on its importance.

Way forward

- Promote market liberalisation and ensure realistic domestic market prices to open doors for investments, value addition and new market relations;
- Legalization of the Ethiopian Pulse Council that was endorsed in November 2020, is yet to be done;
- Launch strong national sesame sector platforms and strengthen the regional platforms.

Social inclusion and nutrition

Social inclusion has been mainstreamed in the BENEFIT partnership. While this has resulted in small success with regards to inclusion of women, youth and disadvantaged group in their needs and the design of activities such as inclusive business models, labour saving technologies and a specific focus on labourers in the sesame and PSNP related interventions, scaling of these interventions has remained limited. This is partly due to the fact that most interventions were aimed at production and marketing and not focussed interventions on social inclusion. The same is true for the major stakeholders and flagship programmes the BENEFIT partnership has been collaborating with.

With regards to nutrition a large number of nutrition sensitive agricultural interventions were tested and validated ranging from home-gardens, promotion of biofortified produce, animal source food, dietary diversity including rotational crops to behavioural change. One of the lessons was that for home gardens a limitation was the availability of and access to good quality vegetable seed.

The REALISE experience showed that pilots on the livestock (goats and poultry) for women, youth and marginalized poor farmers contributed to livelihood diversification, job creation, income, nutrition improvement and risk management, but require huge investment, market linkage, multi-institutional players and proved market demand.

Way forward

- Work for the sustainable farming systems and diet diversity, especially for labourers and vulnerable groups;
- Incorporate gender sensitive technologies and commodities that have the potential to increase dietary diversity into the extension package.

Capacity building

Provision of services by the government is impacted by reorganization and capacity limitations. In addition, changing the top-down training and field day approach to participatory methods and providing demand driven training is still a challenge. Our experience showed that provision of trainings based on the competency level of the target group, following participatory learning, and increasing participants' interest on the trainings improves uptake.

The capacity building approach of the BENEFIT programmes considered facilitation of farmer-to-farmer training, adaptation to DA incentive systems, and local farmer field and farmer business schools, with due focus on outcomes rather than outputs. Cascading of trainers through the public system showed to be very successful in the case of CASCAPE. In addition, capacity building activities for service

providers to ensure sustainability was considered. For example, CASCAPE and REALISE tailored made capacity building training such as the state-of-the-art approach on Digital Soil Mapping and innovation recommendation mapping improved the institutional capacity of MoA and other partners; and CASCAPE's capacity building on use of biophysical and socio economic data sets in Recommendation Domain Mapping (IRM). ENTAG experience showed the importance of linking training/education and research with private sector to bring effective productivity especially for those sub-sectors with small actors.

ENTAG launched an internship project to link new graduates in agriculture, with agribusiness companies operating in Ethiopia. The purpose of the internship programme was to provide practical skills and training for BSc and MSc graduates at agribusiness companies and to support increase the entrepreneurial & professional capacity of young graduates. While the initial aim was to offer this to 150 graduates, the number was by far exceeded, this shows that there is a real need for graduates to gain experience in the agri-food sector.

Way forward

- Extension should incorporate lessons from the various training modalities into its methodology especially the cascading of training;
- Youngsters and fresh graduates need to be given an opportunity to gain experience in a real work setting. The various ministries should endorse this as not to lose out on high potential candidates from the work force.

Enhancing scaling of innovations

The high adoption rate of best fit technologies in implementation areas showed there is ample space for successful scaling of good agricultural and best fit practices and approaches to other parts of the country. To do so, the extension system should work with integrated approach that support scaling of agricultural technologies and practices (hardware/software/orgware) using sector wide approach / from agriculture input to commercialization, supported by bottom up planning at *woreda* level and integration with regional and zonal priorities, rural development strategies. The linkages of research, extension and universities at zonal level has great potential to support testing, validation and scaling of innovations.

While farmer field days are found to be important vehicles to familiarize farmers and stakeholders about technologies and attract media attention (television radio dissemination), they are most effective when organized jointly with relevant stakeholders (extension, RARIs, BENEFIT sister projects) than unilaterally. In addition, scaling worked well through capacity building approach. However, there were also challenges related with scaling innovations and approaches mainly in relation to ensuring adequate supply of good quality seed, finance (institutional credit), and access to markets for produce.

Way forward

- Scale the practical planning tool, bottom-up planning, piloted in numerous *kebeles* and *woredas*;
- Scale seasonal and weekly weather forecast services as farmers demand it more and ready to pay for the service;
- MoA and especially the department of extension to incorporate a best-fit approach into the extension packages.

Institutionalization and policy changes

Working closely with extension directorate and strong collaboration with government and other organizations (MoA, BoA, AGP, PSNP, ATA, CDMF etc) and preparation of manuals and simplified extension materials were instrumental to promote and the institutionalize CASCAPE, REALISE and SBN practices and approaches. Programmes' involvement in *woreda* development planning process facilitated the inclusion of BFPs within the *Woreda* agricultural plans. Organizing policy dialogue meetings to inform policy makers on policy relevant issues generated by the project was key to initiate systematic change. Some of the major successes have been the involvement of the partnership in the seed policy, the poultry strategy, the poultry strategy, the extension policy etc. This was based on the

hands-on experience and based on evidences gathered in the various sectors. Engagement in policy dialogue does need time to build trust between the public sector and the BENEFIT partnership.

Nevertheless, the institutionalization process was met with various challenges, including difficulty to get higher officials and administrators on platforms and meetings; not enough time to finalize the institutionalization process; programme staff and DA turnover and reshuffling of government officials creating instability in institutional linkages; attitude, finance, commitment of policy makers etc. Even if institutions are convinced about the added value and efficiency of interventions, such as providing financial literacy training, changing decision making hierarchies, processes and work habits are extremely difficult. Lack of a well-defined and structured enabling environment creates a risk of innovations 'on the shelf' if not institutionalized. Some of the challenges met by the programmes include the delayed coordination from the government after selecting poultry as a commodity (ENTAG); formalizing EIAR's adoption of participatory approaches (CASCAPE); realizing the establishment of sesame national platform under MoA (SBN).

Key lessons include, to facilitate handover of key activities and promote institutionalization, a memorandum of understanding should be signed not only at a ministry level but also at a commodity level with the respective directorate. Maintaining senior project staff who understands the entire development of the projects is relevant for coaching new staff and retaining institutional knowledge.

Way forward

- Ensure the documented evidences of innovations are shared with all relevant stakeholders;
- Sustain the engagement with relevant decision makers to ensure the different stakeholder platforms remain operations to further ensure the implementation of different policy and institutional innovations;
- Continue with engagements with MoA and other stakeholders to sustain the communications of evidences and expertise.

Appendix 1 Programme's notable outcomes and impact

In the past four years, the BENEFIT Partnership has made efforts to contribute to the improved performance of the Ethiopian agriculture sector, with the aim to improve sustainable food, income and trade among rural households in Ethiopia. Under five programmes (ISSD, CASCAPE, ENTAG, SBN and REALISE) the partnership gave attention to sustainable improved agriculture production and productivity, economic competitiveness, ecological and financial sustainability and social inclusiveness.

This section on notable outcome and impact presents a synthesis of the BENEFIT Partnership programmes performance and highlights results and systemic issues achieved over the last four years. The report covers the work of BENEFIT Partnership collaborative efforts and details the work of its five programmes. It is organized by BENEFIT Partnership outcome pillars – Pillar 1: Increased quantity and quality of sustainable agricultural production; Pillar 2: Market Dynamics; and Pillar 3: Improved enabling environment.

The activities have been carried out together with regional partners, the Universities of Addis Ababa, Arba Minch, Arsi, Bahir Dar, Haramaya, Hawassa, Jimma, Mekelle, OdaBultum, and Woldia, and the Regional Agricultural Research Institutes in Amhara, Oromia, Southern Nations Nationalities and Peoples Region and Tigray, and the Oromia Seed Enterprise.

Increased quantity and quality of sustainable agricultural production

ISSD, CASCAPE, SBN, REALISE and to a lesser extend also ENTAG, contributed to the objective of increasing the quality and quantity of sustainable agricultural production. ISSD targeted improving the availability and use of quality seed of new, improved and/or farmer preferred varieties. CASCAPE with a focus on AGP *woredas* tested and validated best fit agricultural practices for dissemination and worked with *woredas* to increase the capacity to develop and implement agricultural development plans and strategies for scaling. The programme activities gave special attention to diversification of agricultural production and nutrition working with CANAG (CASCAPE Nutrition and Gender) project. SBN targeted enhancing sesame production and cost of production reduction. REALISE with a focus on PSNP *woredas* worked on improving access to quality seed of preferred varieties, development of best-fit practices, capacity development of beneficiary farmers and partners, and addressing issues related to enabling environment. ENTAG in this regard, facilitated creation of pull factor for increased production through improved market access and stakeholders' linkage.

The potential of intercropping to address food and nutrition security

Mitigate the dual problems of food shortage and poor nutritional status while reaping agronomic benefit

Most PSNP households face food gaps of 3-7 months per year, and even when food is available; their diet is not well balanced as it often lacks protein and vitamin source foods.

In this respect, BENEFIT-REALISE implemented intercropping of maize and haricot bean to mitigate the dual problems of food shortage and poor nutritional status of PSNP farmers in the mid highland *woredas* of Ethiopia. In addition to increasing total productivity of land, it fills the food gap months since it reaches maturity earlier than maize; it enhances soil fertility; it reduces the cost of fertilizer, weed infestation and weeding; and improves nutritional wellbeing of households because haricot bean is rich in protein.

Yield data collected from 2019 demonstration trials (80 farmers) showed that productivity was 2-3 times higher than the farmers' practicing mono-cropping. In 2020, due to the excellent performance of the demonstration trials and farmers' interest, the project in collaboration with the respective *woredas*, implemented pre-scaling of maize-bean intercropping on 300 farms in the same *woredas*.

Jemal Dardegba is a 45 year-old farmer said,

"I was given inputs (seed of maize and haricot bean) and trained by the programme experts how to implement intercropping on my 0.125 hectare of land. To maximize yield benefits I applied 12.5kg NPS (100 kg/ha) and 25kg Urea (200kg per/ha) fertilizers, as per the recommendations. Between the periods of planting to harvesting, I took very good care of my crops sometimes assisted by the kebele extension agent. At harvest, I obtained 13.5 qt of maize and 4 qt of haricot bean from 0.125 ha.

What I have learned improved food availability and income of my family. I learned that the solutions to our problems are within our reach, we just have to open our minds to learn new agricultural technologies and work hard to get out of poverty. I am grateful for this opportunity that showed me how to harvest more from my small farm to improve the livelihoods of my family in general".

Farmers who adopt innovative practices get 50% higher yields than those who don't

Average yield of 300-400 kg/ha doubles to 600-800kg/ha

For eight years, evidence has shown that the yields of sesame growing farmers who fully adopt the BENEFIT-SBN 20 steps innovation practice get at least two times higher yield than those farmers following conventional practices. Marginal Rate of Yield (MRY) studies showed that the yield effects of fertilizer application, row planting, weeding and quality seeds are the highest. In terms of cost-effectiveness, thinning is very important (low cost but, high yield effect). This evidence justifies an ambitious national investment plan to follow the practice to double yields per hectare, and double national production as a result.



Kaleata Hiluf, a Development Agent (DA) from Central Kebele, Humera, said,

"Before, farmers awareness on improved production technology was very limited, but now a considerable number of farmers have started applying good agricultural practices. Together with the SBN, we demonstrated the 20 steps and improved technologies of rotational crops.

Farmers are comparing the difference in yield gap between the 20 steps and the conventional practice. They are getting more than 700kg per hectare from the 20 steps while less than 300kg from the conventional practice. Farmers especially liked the newly introduced and demonstrated sesame and mung bean varieties. Their only complaint is lack of row planter that puts limitation on practicing the fully recommended practices."

Farmers using BFPs to double crop yield

Crop yields for cereal yields doubled from an average of 2.6 t/ha to an average of 5.5 t/ha



The best practices validated by BENEFIT-CASCADE have enabled farmers to double their crop yields. Cereal yields at pre-extension demonstration fields reached an average of 5.5 t/ha. During the project lifetime, it was observed (although not systematically monitored) that increased agricultural productivity has resulted in household food security and livelihood improvement of farmers including changing their grass thatched house to iron roof, sending children to school/universities, and covering medication expenses for family members.

In the case of papaya in Tigray, and soya bean in Jimma the innovation created jobs for the youth, and improved diets of the community through fresh juice and soya milk consumption.

Kiflom Eyasu, a 21-year old farmer from South Tigray, involved in improved papaya production said,

"First of all, the new improved papaya variety takes only 7-9 months to flower, which means in less than a year you can start selling your papayas. One fruit plant can produce 10 or more big size papayas bringing you more money.

Now we have regular income! No more support from the government. We live in a better home we constructed using over 60 iron sheet, our house is always full. Our quality of life has improved - we eat better, sleep on comfortable bed and save regularly, about 400birr per month. The benefit is like having a cow that gives milk but with even less work /management."

Improving sesame farm management through weather forecasting

Weather forecast SMS service reaching nearly 10,000 farmers and professionals

To strengthen the resilience of sesame growers to weather variability, BENEFIT-SBN collaborated with Weather Impact, the National Meteorological Agency (NMA), and Apposit PLC to develop and share weather forecast information via SMS to registered farmers. The number of farmers increased to 10,000.

An elaborate lessons learned paper was prepared by the partnership (WI, NMA and SBN). At the end of the season the accuracy and usefulness of the information delivered to users will be assessed and feedback will be provided to technology developers (NMA, WI) and the disseminator (Apposit).

Mr. Yelale Amebachew, one of the farmers at Tach Aremachiho woreda, Kokora kebele who received weather forecast SMS, said,

"I used the weather forecast information to decide on planting date of sesame, put sesame hillas on plastic sheet and protect the teff and finger millet heap from rainfall and windstorm. In June, I wanted to sow sesame early but, the weather forecast information I received via SMS indicated probability of low rainfall distribution in the coming three days. Then, I stopped planting until I received the next SMS message indicating sufficient rainfall. Without rain the seed would have been exposed for birds and termites resulting in poor germination.

In the same year, because of the weather forecast information I managed to cover sesame hillas and teff heaps with plastic sheet to protect from rainfall damage."

Crop rotation: From mono-cropping to a balanced farming system

Diverse farming system improving household productivity and nutrition

There is a modest move towards a more diverse farming system. Mung and soya beans are increasingly produced and are now eligible for marketing through ECX. First evidence suggests that pulses are good precursor crops for sesame. The agri-food industry demand for soya bean is growing and offers perspectives for developing supplier-buyer relations. Sunflower can develop as a commodity with in-country value addition. Farmers, women in particular, have increased interest in fruit and vegetable production. Mung beans, vegetables and fruits have most potential for integrating local food habits. This encouraging trend towards diversification, important for spreading farmers' production and market risks, can be further supported.

Improved onion technology for food security and asset building: a game changing interventions

Not only food secure all year round but able to meet other necessities and build household assets



To improve food and nutrition security and household income, BENEFIT-REALISE demonstrated improved onion technology in 2019. Three improved varieties of onion (Adama Red, Bombe Red and Red King) were planted for demonstration on 25 farmers' plots with access to small scale irrigation. The demonstration trail in 2019, identified Adama Red to be the preferred variety by farmers, which led to pre-scaling of the variety involving 50 farmers (40 PSNP and 10 non-PSNP) in 2020.

Kidir Turcho who lives in Odabultum said,

"In 2019, I used the new variety onion and used best fit practices I learned to earn 32,000 Birr from onion selling. I used the money to buy food grains, paid for the children's schooling, bought inputs for next season production, one ox, one heifer and nine chickens. I also paid back the onion seed that was provided to me to the kebele cooperatives as agreed. Following the success, I planted the improved variety in 2020, on 0.0625 and harvested 15 gonfas (1 gonfa=120kg) and got about 34,000 Birr. This time I bought five goats and one additional ox and one heifer.

Before the project, I used to take credit to buy grains to feed his family. Now, not only are we food secure year-round, we are able to meet other needs like cloth and school materials for my children. Because of my improved financial capacity and the confidence I developed, I started to engage in community social activities. I am very thankful for the project that opened the door for me to improve my livelihood within such a short time."

One 'Timad' package for potato production: customized extension package for PSNP households

Downscaling technology packages to meet the specific needs of poor farmers

Costly standardized extension packages for different crops force farmers to plant their own saved crop seeds without or with less fertilizer than the recommended dose, resulting in low productivity. In response, the 'One Timad Package' (OTP) was piloted by the BENEFIT-REALISE programme in 2019. The phrase 'one timad' (OT) refers to 1/4th of a hectare and the OTP is a package consisting of the recommended amount of seed for one 'timad' plot size, with recommended amount of fertilizer divided into half the recommended chemical fertilizer and half organic fertilizer prepared at home (composts or farm yard manure).

The pilot demonstrated the need to customize extension packages that match the capacity and needs of PSNP farmers with small landholdings.

Mohammed Yusuf who lives Haramaya woreda participated in one of the pilot implemented with improved potato variety in East Hararghe zone. Mohammed said,

"I harvested 33.00 quintals of potato from the 0.125 ha of land using 2.00 quintals of seed tubers supplied by Haramaya University cluster and 25kg of NPSB and 19kg of urea fertilizers with compost. I sold 17 quintals of potato for 18700 Birr. I saved 5 quintals for next season seed, 5 quintals for family consumption, and gave 6 quintals to relatives as seed. "

On the same piece of land, I used to produce sorghum and have been harvesting only three quintals of sorghum. But now from this potato production I can get sufficient income that enables me not only fulfill my family needs, but earn enough money to finish the construction of my house, I started near the town of Adele."

Sweet Potato, a means for food and nutrition security and livelihood diversification

The right crop, the right variety and the right practice shortening months of food gap, generating income

Sweet potato is known as a strategic food security crop, in terms of its ability to withstand moisture stress, its high productivity from small land holdings, its relevance for food and nutrition security (high caloric content and beta carotene), and low cost of production (no commercial fertilizer is required as recommended by research).

To reduce months of food gap as well as increase household nutritional diversity of the PSNP supported farmers in particular, BENEFIT-REALISE introduced sweet potato varieties proven by research centres for fitting to similar agro-ecology and farming system in Dodota Woreda, Arsi Zone of Oromia Region.

Similar intervention was implemented in Meta Woreda Oromia Region in 2019, to address PSNP household challenge in accessing improved crop varieties and production technologies. Following its success in 2019, 1050 (389 women) households were engaged in pre-scaling of sweet potato variety in 2020. The programme provided a total of 179,900 vine cuttings of the sweet potato variety obtained from Haramaya University.



Dedu Tujara, a 45-year-old widow who lives in Dodota Woreda, Arsi Zone of Oromia said,

"I have never received crop technology based assistance nor have seen or heard of sweet potato production before. So initially, my family, and neighbouring farmers were reluctant to join.

During training, we were informed that the varieties are known for their nutritional value, can adapt to dry conditions, are early maturing, high yielding, and don't need any mineral fertilizers; unlike other crops we grow in our area. I can testify that sweet potato is really a food security crop. Unlike other difficult times, I now have something to feed my seven children during those food shortage months (month of food gap). I also sold the surplus in the local market and bought other food items for my family, and covered the educational expenses of my children which I always struggled with. And with the leftover money, I bought one goat and now, a year later I have two goats."



Safiya Ahmed Abdule, a 54 year-old mother of 10 (4 female), living in Meta woreda said,

"In 2019, I started growing Adu variety on a small portion of my land (0.04ha) and produced 1.2ton from the plot (equivalent to 30t/ha). Looking at higher and better quality yield, I expanded to more than 0.1ha in 2020.

Before the project, what I produced was not enough for consumption let alone for the market. I had no experience of selling sweet potato tubers. That changed after growing the Adu variety. The high yield, good taste, early maturity period, and its suitability for intercropping are among the desirable characteristics of Adu variety. The local varieties took five months to mature while the new variety, Adu, matures in three months. In addition to improving the food and nutrition security of my household and reducing the food gap months, I am able to earn additional income. I made around 1950.00 Birr from the sale of surplus tubers for the first-time in 2019. Observing and understanding of the advantages, the surrounding farmers are asking me for vine cuttings of the variety and I have provided to six farmers so far."

Parma garden production improving food and nutrition security

In 2020, farmers were able to get a minimum of 1200 birr and a maximum of 7800 birr from selling their surplus vegetables

In Oda Bultum West Hararghe zone, shortage of nutrition dense crop variety was reported as one of the major challenges for low dietary diversity score. Therefore, BENEFIT-REALISE started to demonstrate different fruits and vegetables through perma garden production, to ease the problems of food and nutrition security in the area. The perma garden demonstration was conducted for two consecutive years (2019-2020). A total of 105 women farmers were engaged in the demonstration. Working closely with agricultural research centres, private agro-dealers and Unions, the programme provided vegetables and fruits in the form of seedlings and suckers to all selected women. In addition, in-situ training was provided on improved vegetables and fruits technologies.

Hindi Ahmed, a 45 year-old mother of 5, selected to participate in the Parma garden demonstration starting from 2019 said,

"Before the project intervention I only planted some vegetables mainly for market and rarely used them for home consumption since I needed the money. In 2019, the project trained me and gave me seed for home garden production. I was not convinced with the small amount of seed they gave me at first and I was really surprised of the outcome. I planted vegetables such as onion, beetroot, chili pepper, swish chard, head cabbage, tomato and carrot as well as fruits like banana, papaya and avocado in my home garden. Producing different vegetables and fruits from a small plot of land was a surprise for me. Outside what we consumed at home I saved about 5,000 birr from selling the surplus I produced.

My family diet has changed significantly. We have been eating fresh vegetables every day for the last four months from my own garden. My children consume fresh carrots daily. They also like working in the garden. The proximity of Parma garden helped us give frequent caring and manage the vegetables well. I plan to continue year-round production of different vegetable varieties using the experience I developed."

Production of mini-tubers as a sustainable source for seed potato

SPCs producing disease free quality potato mini-tubers



To contribute to the overall performance of potato value chain development, BENEFIT-ISSD has been supporting SPCs in producing disease free quality potato mini-tubers as a sustainable source for seed potato. One of this effort focused on supporting Addis Alem SPC in collaboration with Amhara Regional Agriculture Research Institution (ARARI).

The support started by the construction of a screen house and Diffused Light Store (DLS) in the potato potential areas of South Gondar zone.

Initially the SPC planted 900 plantlets in 900 pots to produce 13000 G0 disease free mini-tubers of Belete variety. In the next round they produced 6000 G1 mini tuber. These produced mini-tubers planted on half hectares and produced 200qt G2 of quality disease free seed potato.

The experience is currently being scaled up by Mush SPC, North Shewa zone. Furthermore, Bahir Dar University, Debreabor University and Guna seed union visited Addis Alem SPC to learn from their experiences.

To ensure sustainability of the system, a regional potato platform that involves GOs and NGOs working in potato value chain was established to provide coordinated support for potato producers and develop appropriate strategy.

There are many examples how farmers are benefiting and the method is attracting many farmers. Misgan Mulaw, a farmer who owned suitable land for potato production was able to get G1 disease free tubers and produced and supplied 64qt of disease free seed potato to SPC. He earned 60,500.00Birr. Similarly Misganaw Haile and Awoke Fantaw produced and supplied 37 and 36qt and earned 29,600.00 and 28,800.00Birr respectively.

Improved markets and trade

ISSD, ENTAG, SBN and REALISE, contributed through various activities to the objective of improved markets and trade. ISSD does this through enhancing the performance of the seed value chain and REALISE has designed intervention options similarly to engage the performance of the seed value chain in PSNP target woredas. ENTAG contributed through increasing the performance of key sub sectors and enhancing B2B linkages. SBN support the development of sesame products and markets.

Linking producers with processing companies to promote production of rotational crops

The agreement assured the company's access to raw materials and guaranteed the producers with access to market



One key reason for farmers' reluctance to produce rotational crops relate to a low demand for rotational crops, such as soya bean, mung bean and sorghum in the market.

In response to this, BENEFIT-SBN promoted and supported the production and marketing of rotational crops for the last two years. One of its efforts focused on linking a recently established oil processing company, Richland Biochemical Processing Factory, located at Bure Industrial Park, with Metema and Admas farmers' Cooperative Unions.

Currently, more than 25 investor farmers who planted sesame on nearly 1,100 hectares of land have signed an agreement with Richland Biochemical Processing Factory. This is an important breakthrough, in linking producers with processing companies.

Mr. Bere Shimelash, one of the commercial farmers from Quara Woreda that signed an agreement with Richland Factory explained,

"The agreement has multi-faced benefits. It is an assurance for us that we will not have market problem after we produce the crop; it allows us to sell the produce in advance; and it will cut-off the unnecessary long marketing chains and reduce extra costs that we pay for brokers. Collecting the produce directly from our farms also reduces the transportation cost, increasing household income."

Capacitating seed producers towards becoming commercial seed producers and suppliers

From contract grower to self-reliant quality seed supplier

Prior to 2016, few SPCs met certificate of competence (CoC) requirements, and most were not even aware about its importance to succeed in SPC business. This scenario forced them to become out growers, which is less profitable for the SPC in general and low income for its members in particular. Lack of CoC also prevented them from accessing credit and other services since most service providers prefer to work with CoC holders.

In response, BENEFIT-ISSD started with capacity building for the seed producers to raise their awareness on the importance of CoC, criteria needed to get it, and the rights and obligation of having CoC. On spot discussions were regularly conducted with key seed producers (e.g SPCs' management committee) and OBANR to convince them on the importance of giving and having CoC. Technical training and regular coaching were provided on how to use the right emanated from CoC and the obligation they should respect as per the legal provision of seed proclamation No.782/2013 (article 6/1 & 8).

Since 2016, the programme facilitated the giving and getting of CoCs reaching more than 23 seed producers (18 SPCs & 5 Private Seed Producers (PSPs)). The seed producers annually renewed their CoCs to maintain their reputation and social capital they have built in the local farming community.

To reap the full benefit of CoCs, the programme also implemented activities promoting business to business relationships to ensure SPCs become part of contractual EGS production and supply process. Contractual based basic seed production and supply for SPCs not only ensure real demand based seed supply but also enhanced crops and variety portfolios.

In 2016, the programme capacitated the SPCs' committee members and provided on-spot coaching and supervision, lobbied concerned government bodies to recognize the potential of SPCs to secure locally available certified seeds.

The pilot showed encouraging result which led to further scale up. In 2020, 37 seed producers signed a contractual based EGS supply and access. 14 CoC holder SPCs formally signed agreement with Oromia Seed Enterprise to access

basic seeds of different crops and varieties. About 40% of the total basic seed demand (800 tons) in the region was requested by the 14 SPCs. The seed enterprises agreed to supply about 231 tons (74% of the total demand).

In addition to access to basic seeds from EGS suppliers and service provision for quality seed certification from seed laboratory, the SPCs now use seed marketing outlets to get better price for their seed than price obtained from out grower scheme. Recognition of the government about the potentiality of SPCs to sustainably supply quality seeds to local community has increased.

Obbo Sisay Mekasha, a chairperson of Limu Dima SPC said,

"Now the issue of basic seed problem is resolved, we can confidently step up our SPC to a successful local seed business".

The case of Tuka Ketar SPC

In 2016, BENEFIT-ISSD started supporting the Tuka Ketar SPC building their capacity to obtain CoC through technical capacity building on quality seed production and control mechanism, seed business plan development, marketing strategies, organizational and financial managements. In addition, the programme linked the SPC with different development partners to develop their infrastructure, and provided periodic grants to improve their performance capacity.

The SPC now autonomously produce, clean, pack and supply quality seed of different crops and varieties to local smallholder farmers and other potential customers. They annually produce and supply an average of 4000 quintals of quality seeds of different crops and varieties. They are adding value to their produce by providing small seed packs with their name and logo. Their annual profit has significantly improved from 2055 ETB (2016) to 138,165 ETB (2019).

In addition to enhancing the SPC members' income, local availability, accessibility and affordability of farmers' preferred varieties of quality seeds has improved considerably. The SPC's confidence in the local seed business has increased encouraging them to re-invest on infrastructural development.

Having CoC helped attract development partners relevant to improve existing infrastructure, such as adding seed threshing and cleaner machine. Tuka Ketar SPC, was supported to get seed cleaner (GIZ) and seed thresher (ICARDA). This allowed the SPC to sell value added faba bean seed (cleaned) earning 2150 ETB per quintal compared to 1750 ETB sold as raw in 2018.

Small seed packs to enhance smallholder farmers' access to quality seed

Farmers accessing quality seed of preferred sizes at their localities

In response to smallholder farmers' preference to purchasing certified seed in small packs BENEFIT-ISSD project worked with three unions on creating awareness about seed delivery in small packs of different sizes; promoting small seed packs; providing small grants to unions to print different size packs; and facilitating linkage with packaging materials providers.

As a result, large volume of seed was delivered in small packs to smallholder farmers, and adoption of small seed pack in crop type and volume (1kg-5kg) among unions is highly increasing. Different crop varieties such as maize, sorghum, teff, and chickpea are being sold in a size of 2kg-5kg to smallholder farmers.

The small seed pack opened an opportunity to large number of smallholder farmers because of its affordability, to minimize wastage, easy of transport, and to test the technology with minimum risk. Furthermore, now farmers are aware of availability of different crop varieties, desirable traits and sources; unions were able to understand farmers' needs and get market access; the attitude of farmers towards the use and benefits of quality seeds has improved; and unions and seed producer cooperatives are reaching new market channels to sell their seeds.

"My name is Rabo Aliyi. I am from Oda Biyo kebele of Oda Bultum woreda. I used local teff for several years. The problem of local teff is the weak stalk vigour susceptible to strong air and wind, resulting in post-harvest loss. I didn't get the opportunity to use quality seeds before due to its unaffordability lack of access in small amount in the local market. I am happy to see that the Boset variety that has a strong stalk vigour, and gives high yield and is moisture tolerant is available in small pack. I plan to use that in the coming season."

Record keeping stimulates farmer entrepreneurship

20,000 farmers trained and financial literacy

Thanks to the close collaboration with cooperative unions, primary cooperatives and the Cooperative Promotion Offices, the training of farmers in record keeping and cost-benefit analysis has reached 12% of all farm households in the 13 (three times more than initially foreseen) of BENEFIT-SBN implementing woredas.

The financial literacy training approach and materials have received much attention from regional to Federal. The Ministry of Agriculture has decided to integrate financial literacy training in the national agricultural extension system. Scaling of the financial literacy training is thus possible, in the sesame zones and beyond. To change the financial literacy training into national programme, intensive guidance and technical support to farmers and participating cooperatives is very essential. Financial literacy could also be part of school programmes, especially in rural areas where sons and daughters of farmers go to school.



Priest farmer, Gebremedhin Gebreslassie, Kafta Humera woreda said,

"My family and I received training in financial literacy. We did not record our expenses before we received the training. We used to do our farming business without recording expenditures. My wife and my son were also trained. Now we recorded all costs, including my family labour, foods served to labourers and other costs. This year, we calculated our expenditures and benefits from sesame production. Finally we have managed to earn about 50,000 birr profit. The obtained profit encouraged us to continue sesame farming. Because of the various capacity building support services provided by the SBN, our farm management capacity has improved significantly".

Marketing credit and for farmer cooperatives and unions

Structural collaboration between financial institutions, cooperative unions and primary cooperatives lifting financial constraints of sesame farmers

BENEFIT-SBN initiative on risk sharing scheme for promoting marketing credit for cooperatives was a big success. To enhance unions and primary cooperatives access to marketing credit and build trustful farmer organization-bank relations, the BENEFIT-SBN support programme together with the Dutch NGO Agriterra piloted a risk sharing scheme based on a guarantee fund from 2016 till 2020. A one-year marketing loan addressed credit needs on various levels as it is provided by private commercial banks to cooperative unions and from cooperative unions to primary cooperatives and then to their member farmers.

A risk sharing scheme was established with banks in collaboration with Agriterra. The scheme started with 50% cash guarantee deposit (Bank: SBN) for the provision of a one year marketing loan to Setit, Dansha and Metema unions and very recently to Godebe and Sanja cooperatives of Selam union. Slowly, the risk share increased from 50: 50%, to 70: 30% and 80: 20% in the case of Abay bank. The improved loan repayment, invited commercial banks to take more and more risk every year, indicating the growing interest of banks to finance agriculture, with a nominal guarantee if 100% repayment assured. The unions channelled this money to cooperatives that supported member farmers with input loans at 15-18% interest rate. Such credit arrangement reduced production cost by more than 80%. It also improved relationship between farmers and cooperatives, and between unions and cooperatives, increased supply of agricultural products to their affiliated cooperatives for marketing. It also increased cooperatives visibility at spot markets that reduced traders' collusion. The access to affordable credit can be life changing for smallholders if the experience could be further scaled at a wider scale.

The risk sharing scheme contributed to: increasing farmers household income; improving livelihoods; strengthening membership relationships between cooperative unions, primary cooperatives, and members; and

building trustful relations between banks and farmers and their organizations that can extend beyond the intervention. The achieved results are an important breakthrough and show that sustainable banking relations are possible between banks and farmers' organisations.

The marketing credit for cooperatives and unions can be scaled and institutionalised. This would be one of the key components of an investment plan for the Ethiopian sesame sector. Wisely used temporary risk sharing arrangements are an option. This requires a guarantee fund, loan management training of farmers' organisations, a better understanding of the agricultural sector of bank staff and close monitoring of loan use and results by both parties.



"The major change is that the guarantee fund scheme strengthens the relationship and trust between the union and the bank. It also strengthened the relationship between the union and its primary cooperatives and farmers with their primary cooperatives. The loan management training provided by SBN and Agriterra to unions and cooperative staffs' improved financial management and internal resources mobilization capacity. The credit, also served as input credit for farmers to invest on weeding and harvesting". (ZelekeMamo, manager, Metema Farmers' Cooperative Union)

"For the last four years, I have been accessing credit from Meka Farmers' Cooperative through the guarantee fund programme. The credit helped me to go out of the crippling financial situation. The facilitated loan saved me from selling my farm and enabled me to pay school fees for my children".

Mulu Mekuriaw, 38, married woman with four children, a member of Meka Farmer Cooperative, Amhara region.

Enhancing Competitiveness of Ethiopian Pulse Sector through an All-inclusive Institutional Platform

Independent organization with active private-public sector participation steer transformation of the Ethiopian Pulse sector

For the last three years, the idea of establishing Ethiopian Pulse Council has been a major subject of discussion on legume business platform supported by BENEFIT-ENTAG. The effort that started in 2017 started showing fruit, in June 2019, at the platform's seventh annual meeting where a formal agreement was reached to the idea of establishing the Pulse Council with leadership of the MoA.

The participants of the platform nominated twelve people from the public, private and research to develop a proposal for the establishment of the Council. This team was led by Crop Director of the Ministry. The first proposal write-up workshop was organized in November 2019 in the presence of all the eleven members of the team and facilitated by BENEFIT-ENTAG Legume Coordinator. The proposal highlighted the key problems encountered by the pulse sector, the opportunities, the rationale for establishment of the pulse council, account of experiences of similar public-private partnership in Ethiopia, East Africa and other countries, potential service assortment of the envisaged council and its vision, mission and objectives. The draft proposal was presented and endorsed by two State Ministers of Agriculture. The proposal was finalized in January 2020 to be tabled to MoA and ultimately to the Council of Ministers for official approval.

The proposal writing team and also state ministers involved strongly believe that the Ethiopian Pulse Council could potentially be a model for other sectors on how to create sound platform and sector institution with active participation of all relevant stakeholders and move away from the traditional silo and top-down state driven model towards a more inclusive and private friendly + driven sector transformation agenda.

Collaboration for Improving Sesame Sector Performance

"When spider webs unite, they can trap a lion"

Over the years, BENEFIT-SBN promoted collaborative initiatives to improve the performance of the sesame sector. Driven by the principle of grafting and co-funding, the programme worked with a range of partners such as the Bureau of Agriculture (BoA), Agricultural Research Institutes and Centres, Cooperative Promotion Agency, financial organizations, unions, and cooperatives. Working with financial institutes improved access to input and marketing credit; collaboration with MoA, Ministry of Trade (MoT), ECX and EPOSPEA facilitated policy influencing changes; stakeholders' capacity enhanced, crop productivity increased, household income improved, reach increased and subsector performance improved.

The joint efforts between Agricultural Research Centres and the programme, for example, have not only resulted in generation of improved production technologies but also helped to translate research outputs into farmer-friendly production guides.



Dr. Tilaye Teklewold, Director General of the Amhara Regional Agricultural Research Institute said,

"The partnership with SBN has significantly improved research outputs, machinery testing, demonstration and promotion, seed multiplication and distribution by GARC and HuARC. For example, previously many farmers' especially large-scale farmers did not use fertilizer for sesame production, resulting in a very low productivity, less than 300 kg/ha. But with the new technology package our production efficiency has increased by three folds. It is now possible to produce 1 ton per hectare under rain-feed conditions using proper fertilizer type and rate."

Kunzila Integrated Sustainable Development

Sustainable co-existence of investment, host community and environment

Kunzila Horti Investment is a new flower investment corridor with estimated value of USD 80 million. It involves, Dutch, German and Belgian (three Dutch, one German and one Belgian) companies along with a six company that coordinates the operations of the five. When operating at full capacity the investment is expected to create up to 10,000 jobs and generate over USD 60 Million export earning for Ethiopia.

Over the last three years BENEFIT-ENTAG has been actively involved in supporting the establishment of Kunzila Horti Park. The programme in partnership with RVO.nl played a lead role in developing a PACT and now working to generate an Integrated Sustainable Development Plan (KISDP) that will serve as a blue print for the areal development of Kunzila and its surrounding.



BENEFIT-ENTAG involvement in Kunzila sets a solid example of supporting Dutch trade and investment while at the same time bringing a profound development opportunity to Ethiopians. The effort also shows how public-private led initiatives can address both investment and development challenges for the benefit of the investors, host community and the environment at large.

Since the companies hit the ground around a year ago, over 400 people have already been hired and many more are anticipated to get job opportunity in the coming months and years. The Embassy of Kingdom of the Netherlands have so far allocated Euro 16 million to support rehabilitation and agricultural transformation of the surrounding kebeles of Kunzila Horti Park. The once muddy small town of Kunzila with few thousand people is expected to grow radically in the coming five years with influx of employees to the horti park and the bigger areal economic development space drawn in the Kunzila Integrated Sustainable Development Plan (KISDP).

Internship Programme

Boosting employability of new graduates

Employers require experienced graduates while current possibilities to gain necessary practical skills and expertise are limited. The educational curricula tends to be more theoretical with limited practical business case studies. As an initiative to address this challenge, an internship program was developed by BENEFIT-ENTAG to in-house train and capacitate young graduates. Through this initiative 189 agricultural graduates (35% female, 65% male) were assigned to 88 agribusiness companies from 1 August 2018 to 31 December 2019. In addition to four months on job training, about 90% of them also received entrepreneurship training. The programme's experiences was shared with stakeholders interested in job creation projects/initiatives to use as input in their interventions – one of them Maastricht School of Management.

"If it was not for ENTAG Internship Program, I would have still been going from office to office looking for a job. Finding a job right after graduation in Ethiopia is really hard as the market is already small even for those who have work experience. I am very grateful for the opportunity and I am thinking of perusing my Master's degree in Business Management, which will help me upgrade my position in the organization I am working in."

Mekedes Teferra, Intern for Florecens Ethiopia, Mojo, Ethiopia

Indicator	Planned	Actual	Gap (actual-plan)
Interns' placement	150	189	+39
Female interns placement (% of total)	33.3	32	(1.3)%
Interns' received orientation training (% of the total placement)	90	93	+3%
Interns' received entrepreneurship training (% of the total placement)	75	80	+5%
Dutch and other foreign companies share (% of total host companies)	33.3	27	(6.7)
Permanent job opportunity (% of interns assigned to Host Companies)	50	47	(3)%

Enabling environment



The main activities performed in the area of enabling environment are related with i) identification of relevant policy issues for engagement, ii) documentation and preparation of proper communication materials for the demonstrated evidences for the issues identified, iii) conducting different forums mainly workshops to communicate the identified policy issues with demonstrated evidences, and iv) contributing in the design of new directives and regulation.

In addition, mainstreaming of evidences and engagement to ensure embedment and institutionalization were performed mainly through four channels: (i) regular engagement with Ministry of Agriculture through the monthly meetings with the state ministers, (ii) active engagement in the different technical committees and taskforces of the RED&FS, (iii) active utilization of opportunities that emerge from invitations to events and policy dialogues, and to be a member in different committees and taskforces in recognition of BENEFIT staff expertise and demonstrated evidences at ground level, and (iv) the engagement and communication of evidences by the BENEFIT seconded experts within the Ministry of Agriculture through their day-to-day engagement.

Institutionalization of Participatory Action Research (PAR) by the research system

From supply driven to demand driven technology generation using Participatory Action Research (PAR) approach

Research has been supply driven in the past which failed to generate technologies suitable to farmers in different settings. After successful implementation of the participatory action research (PAR) approach by BENEFIT-CASCAPE, the research system has now started to adopt the bottom up and farmer centred research approach.

Originally, promotion of PAR was planned to be implemented on 400 hectares in 2018 but due to the large number of interest shown by different stakeholders, the approach was conducted on 1589 hectares of land owned by about 3000 farmers. EIAR, RARIs and MoA have now internalized the approach to a considerable extent.

Different stakeholders mentioned that participatory approach together with appropriate agricultural technologies could change effectiveness of research and extension leading to positive and significant impacts. Overall the participants acknowledged and appreciated the new practice of using piloted approach to bring systematic change.

Institutionalization of BFP manuals into the national extension package

49 BFPs submitted, so far 7 have been incorporated into the national extension package



Through bottom-up planning process, CASCAPE tested and validated a number of promising technologies and innovations for different agro-ecological zones and farming system settings. And based on the findings, the programme prepared and submitted 49 best fit technologies and identified conditions for their successful implementation at farm level. Of these, seven commodity based technologies (wheat, maize, potato, soybean, garlic, malt barley and faba bean) have been successfully incorporated into the national extension package. These practices are translated into Amharic and become the part and parcel of the extension system.

Institutionalizing crowdsourcing and Participatory Varietal Selection (PVS)

Research institutions and universities took over scaling up BENEFIT CS and PVS approaches

For years BENEFIT-ISSD has been working on improved smallholder farmer's access to and use of quality seed of new and preferred varieties through crowdsourcing approach to sustainably increase agricultural productivity.

Considering the limited life of the project, enough attention was given to design institutionalization strategies to ensure sustainability and ownership of the programme's approaches. In 2019, upon an agreement that research centres and universities are the vital stakeholders for the embedding CS and PVS activities / approach, consultative meetings and field visits were organized and grant was allocated to facilitate the institutionalization process.

With great effort and support of BoA, consensus was built to support the stakeholders through small grant and capacity building until they are capable to implement the practice independently. Universities and research centres took the responsibilities of cascading the activities with diminutive support from ISSD until the end of 2020. BoA promised to support the process through promoting crowdsourcing activities to scale into more woredas in the region.

A prerequisite session was designed to share seed extension experience with universities and research centre focal persons and experts. The programme organized a training workshop for university and research centre focal persons to share its two years (2017-2018) experience on CS and PVS, discuss best lessons and challenges in the implementation process, train on how to design trails for CS and PVS and how to use ClimMob software and raise awareness on gender related issues. That was followed by planning for next year's CS and PVS activities and a signing of a MoU between ISSD and research centres and universities.

Validation included in AGP's best practice identification and scaling guideline

Validation before scaling to ensure success in practices under different context

AGP/MoA promotes scaling up of model farmer practices coined as the "best practices" and scale these practices to the wider farming community without validation. Practices worked for a given group of farmers in a given area may not necessarily work for farmers in other areas and agro-ecological zones. This requires validating model farmer practices and identify conditions (biophysical, socio-economic, environmental, etc) for their successful implementation at farm level.

In response to this, BENEFIT-CASCAPE has been working to incorporate validation in AGP best practice guideline process. After successful implementation of the innovation pathways that involves validation before scaling, the approach is now been adopted by the AGP. The research system is mandated to do the testing and validation. Accordingly, the best practice identification, screening, validation and scaling up guideline/manual of the Federal MoA/AGP has been revised to include the critical stage of validation.

Adoption of Integrated Validation Protocol (IVP) for technology screening

Screening technology based on a broad criteria beyond yield

Previously, the research system evaluates agricultural technologies and practices mainly on the basis of yield increment, resulting in low adoption rate. Other aspects of technology such as farmer preference, gender/nutrition, profitability, and environmental sustainability received little or no attention, resulting in limited technology uptake by farmers.

To address this challenge, and increase the relevance and importance of technologies, BENEFIT-CASCAPE developed and tested an integrated validation protocol that evaluates technologies in broad range of criteria beyond just yield. These evaluation parameters are supported to generate full-fledged technologies and thereby facilitate adoption of best practices. This protocol has now been adopted by some Regional Agriculture Research Institutes (RARIs), particularly Tigray Agriculture Research Institute (TARI) and EIAR.

New and improved scaling strategy included in the woreda development plans

Using a dynamic, iterative and functional scaling approach

BENEFIT-CASCAPE support in the preparation of the woreda development plans enabled uptake of selected best-fit practices. The programme designed and implemented a dynamic, iterative and functional scaling approach that resulted in organic scaling, addressing previous challenges in weak technology transfer and dissemination.

Involvement of the woreda extension experts and SMS with research and farmers in pre-extension demonstrations resulted in the diffusion of demonstrated practices into the non-intervention areas. Farmer-to-farmer extension during field days, implementing cluster approach, involvement in preparation of woreda development plans, preparation of simplified extension training materials in local languages, were instrumental for wider scaling of best practices at farm level.



Demesa Muluneh, wheat cluster coordinator in North Shewa said

"Working together has many advantages such as being able to support and learn from each other. It is also relevant to ensure all farmers apply the recommended input and follow the right practice which ensures getting good quality seed."

Need assessment based Training of Trainers (ToT) to build the skills and knowledge of development workers and farmers

Beyond counting numbers of participants, to addressing the specific training needs

Capacity development is one of the components of BENEFIT-CASCAPE that aimed to improve job efficiency through bridging existing capacity gaps of experts who closely work with agricultural extension staff and also of SMS and DAs who closely work with farmers. As per MoU signed between CASCAPE and AGP, CASCAPR, the programme carried out the Training of Trainers (ToTs) in three major categories (top priority trainings, medium priority trainings and low priority trainings). In the last two and a half years, 20 organized ToTs were delivered to the cluster experts and sixty four (64) ToTs to the woreda level 1207 SMS in two years and half.

A national level training outcome assessment showed that 95% of the participants have indicated that they are putting the new skills and knowledge to a good use in cascading the training with DAs and farmers with financial support from AGP. In the past, no such outcome level result has been recorded in AGP as counting the number of trainings and participants was regarded as a success.

Following the request of AGP/MoA, the programme prepared and submitted a guideline / manual on capacity building approach for wider scale up and institutionalization.

Institutionalisation of Research-extension-university linkages

A research-extension-university platform improving farmers' technology adoption

Lack of effective linkage between research (universities and agricultural research institutes) and extension systems has been blamed for limited dissemination of technologies to the end users. Researchers generated technologies largely via on-station testing and handover to the extension expecting wide scale dissemination. Extension blames research for failure to adapt technologies to farm conditions. Bringing these actors together for a common goal has been absent or very limited.

In order to address this issue, CASCAPE piloted research-extension-university linkage and created a platform to work together. The programme intervention sites were used as a testing ground for joint experimentation. This has proved to be effective as witnessed through organic scaling. Local capacity for technology adaptation and innovation has improved. As a result, the MoA has now adopted the approach and installed it within the extension directorate. The platform is fully funded jointly by EIAR and extension and has now up running.

In similar effort, SBN facilitation of joint effort between research and extension increased technology adoption. In more kebeles than was foreseen (263 instead of 100), Development Agents (DA), of whom 1/3 were female, were trained and coached to monitor and guide farmers, to scale up recommended sesame and rotation crops agricultural practices. Due to trustful collaboration made with different stakeholders, based on clear collaboration agreements, BENEFIT-SBN was able to reach many more farmers than originally planned. Attractive field guides, training modules, brochures, posters, newsletters and research results were prepared in easy to understand way and shared with farmers and extension workers. A broad range of communication channels (website, social media, films, radio ...) were used to inform farmers and stakeholders on a regular basis.

The joint efforts between Agricultural Research Centres and the programme, for example, have not only resulted in the generation of improved production technologies but, also helped in

translation of research outputs into farmer-friendly production guides.



Mr. Tsidalu Jemberu, former Director of Gondar Agriculture Research Centre (GARC) said,

"In the past the research outputs we released hardly reached farmers. Now this has changed completely. The joint efforts among the programme, research centers and extension helped to bring released technologies to farmers' fields. For instance, previously farmers used local varieties with limited productivity and did not use fertilizer properly. Nowadays, that trend has changed and most farmers have begun to use the improved sesame varieties and are convinced that the application of fertilizers increases yield. The effort strengthened the weak link between research and extension."

Mandate zonation

Institutionalizing the National Agricultural Research System at zonal level

One of the key areas BENEFIT partnership promoted was the ensuring the aligned engagement of members of the National Agricultural Research System mainly research centres of EIAR and RARIs, HLIs and zonal offices of agriculture at zonal level for agricultural technology testing, validation and possible scaling up through a mandate zonation approach since 2016. The approach is promoted mainly to ensure the institutionalization of the demonstrated evidences that local level technology testing and validation is very crucial to scale up appropriate and adapted agricultural technologies. Through sequences of high-level engagement, the concept of mandate zonation has been accepted in 2020 by the extension directorate of the MoA to implemented in the four regions (Amhara, Oromia, SNNPR and Tigray). BENEFIT partnership will continue in backstopping the implementation process.

Promoting responsible investment for decent labour handling

Addressing gaps in labour management for sustainable and profitable sesame production

Practically no or very little service is provided by farmers, governmental and non-governmental organizations in improving labourers' working and living conditions. In this regard, BENEFIT-SBN implemented activities to (i) increase the understanding of investor farmers and farm managers on the role of labourers in sesame production and ensure their mutual interest has improved; and (ii) ensure labourers working and living condition is set as an agenda and incorporated in the regular plan of relevant stakeholder organizations. Based on the findings of action research, different action points were proposed, and technical and budget support were provided to labour and social affairs office to do the proposed activities.

The programme's support resulted in an establishment of a local arbitration committees in the sesame production areas that supports labourers, when dispute arises between workers and employers. After many bilateral talks, lobbying, sensitization events and discussions held at regional workshops and during the various field days, a higher weight values was

assigned for labour handling criteria when evaluating investor farmers' performance.

Now, laborers know what is expected of them and what their rights are. They know where to present their complainant if they have any dispute with employers. Stakeholders' awareness on the importance of labour handling has improved, and labour issues have become priority agendas.

Through collaboration agreements, synergy was created to reach more individuals with better quality services. All the ongoing activities are taken up by respective offices and incorporated into the stakeholder organizations plan and there is positive trends of laborers condition in the sesame subsector. However, more proactive actions are still needed to improve laborers working, living, health and feeding conditions specifically in the sesame subsector.

Mr. Mohamed Aman, a labourer in sesame zone said,

"Once I was sick and needed money for medical treatment, but my boss (the farm manager) was not willing to give me my wage. I didn't know where and how to complain. Now, I know about the Ethiopian labour law, my rights and duty."

Appendix 2 Detailed information key performance indicators

In line with the guideline for reporting results in the thematic area Food and Nutrition security, the five BENEFIT programmes report on the following key performance indicators.

Impact	Improved sustainable food, income, trade and nutrition security of rural households in Ethiopia			
outcome	Pillar 1: Increased quantity and quality of sustainable agricultural production		Pillar 2: Market Dynamics	Pillar 3: Improved enabling environment
outcome indicators	<p># of farmers reached with increased productivity (ISSD, CASCAPE, SBN, ENTAG, REALISE)</p> <p>(2020) 565,865</p> <p>(2019) 2,029,894</p> <p>(2018) 1.813.946</p> <p>(2017) 1.740.820</p> <p>(2016) 910.745</p>	<p># of hectares of farm land used more eco-efficiently (ISSD, CASCAPE, SBN, REALISE)</p> <p>(2020) 72,095</p> <p>(2019) 341,338</p> <p>(2018) 114.998</p> <p>(2017) 564.858</p> <p>(2016) 285.452</p>	<p># of companies with supported plan to invest, trade or provide services (ISSD, SBN, ENTAG)</p> <p>(2020) 52</p> <p>(2019) 60</p> <p>(2018) 1.048</p> <p>(2017) 260</p>	<p># of substantial policy changes / reforms contributed to (ISSD, CASCAPE, SBN, ENTAG)</p> <p>(2020) 14</p> <p>(2019) 25</p> <p>(2018) 19</p> <p>(2017) 7</p> <p>(2016) 5</p>
	<p># of farmers reached with improved access to input markets (ISSD, SBN, REALISE)</p> <p>(2020) 373,977</p> <p>(2019) 972,482</p> <p>(2018) 1.388.861</p> <p>(2017) 1.340.439</p> <p>(2016) 62.613</p>	<p># of farmers reached with improved access to output markets (SBN, ENTAG)</p> <p>(2020) 29,326</p> <p>(2019) 35,094</p> <p>(2018) 32,363</p> <p>(2017) 11,914</p> <p>(2016) 5,046</p>		
output	Improved stakeholders capacity in agricultural practices (knowledge and skills)			
output indicators	<p># of persons reached / trained with improved technology and skills (ISSD, CASCAPE, SBN, ENTAG, REALISE)</p> <p>(2020) 15,326</p> <p>(2019) 61,692</p> <p>(2018) 56.982</p> <p>(2017) 86.085</p> <p>(2016) 5.282</p>		<p># of trained farmers in sustainable agricultural production and practices (ISSD, CASCAPE, SBN, REALISE)</p> <p>(2020) 102,839</p> <p>(2019) 180,261</p> <p>(2018) 261.334</p> <p>(2017) 241.228</p> <p>(2016) 18.093</p>	

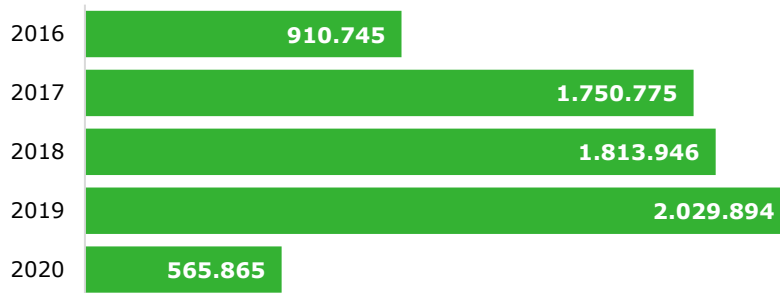
Disaggregated data partnership key performance indicators 2020

Indicator	ISSD	CASCADE	ENTAG	SBN	REALISE	Total 2020
Indicator P1 EKN 1.1: Number of farmers reached with increased productivity (total)	209,438	26,560	0	135,583	194,284	565,865
Indicator P1 EKN 1.1: Number of farmers reached with increased productivity (direct)	4,290	780	0	63,516	43,061	111,647
women	1,013	240	-	5,882	17,535	24,670
men	3,277	540	-	57,634	25,526	86,977
under 35	878	156	-	20,164	12,027	33,225
over 35	3,412	624	-	43,352	31,034	78,422
% women	24%	31%	-	9%	41%	22%
% men	76%	69%	-	91%	59%	78%
% under 35	20%	20%	-	32%	28%	30%
% over 35	80%	80%	-	68%	72%	70%
Indicator P1 EKN 1.1: Number of farmers reached with increased productivity (indirect)	205,148	25780	0	72,067	151,223	454,218
Indicator P1 EKN 1.2: Number of hectares of farmland used more eco-efficiently (total)	5,324	1000	0	62,210	3,561	72,095
Indicator P1 EKN 1.3: Number of farmers reached with improved access to input market (direct & indirect)	209,435	0	0	40,25	160,517	373,977
Indicator P1 EKN 1.3: Number of farmers reached with improved access to input market (direct)	4,287	-	-	4025	36,919	45,231
women	1,013	-	-	1,095	13,217	15,325
men	3,274	-	-	2,930	23,702	29,906
under 35	878	-	-	1,309	11,206	13,393
over 35	3,409	-	-	2,716	25,713	31,838
% women	24%	-	-	27%	36%	34%
% men	76%	-	-	73%	64%	66%
% under 35	20%	-	-	33%	30%	30%
% over 35	80%	-	-	67%	70%	70%
Indicator P2 EKN 2.1: Number of companies with support plan to invest, trade or provide service	25	0	25	2	0	52
Indicator P2 EKN 2.2: Reached # of farmers with improved access to output markets	0	0	617	28,709	0	29,326
Indicator P3 EKN 3.1: Number of substantial policy changes/reforms contributed to	2	6	2	2	2	14

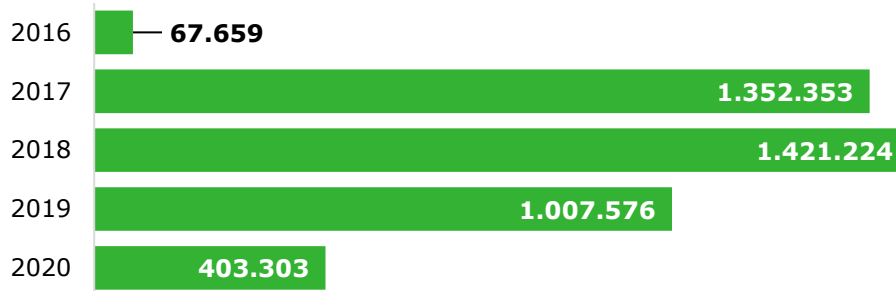
Indicator	ISSD	CASCAPE	ENTAG	SBN	REALISE	Total 2020
Indicator EKN O 1.1: Number of persons reached/trained with improved technology and skills (direct + indirect)	3,490	24	0	1,207	10,605	15,326
Indicator EKN O 1.1: Number of persons reached/trained with improved technology and skills (direct)	3,490	24	0	1,207	10,605	15,326
women	988	7	-	460	5387	6,842
men	2,502	17	-	747	5218	8,484
under 35	551	4	-	739	4262	5,556
over 35	2,939	20	-	468	6343	9,770
% women	28%	29%	-	38%	51%	45%
% men	72%	71%	-	62%	49%	55%
% under 35	16%	17%	-	61%	40%	36%
% over 35	84%	83%	-	39%	60%	64%
Indicator EKN O 1.2: Number of trained farmers in sustainable agricultural production & practices (direct + indirect)	3,827	0	0	69,824	29,188	102,839
Indicator EKN O 1.2: Number of trained farmers in sustainable agricultural production & practices (direct)	3,827	0	0	69,824	29,188	102,839
women	195	-	-	17,498	13,135	30,828
men	3,632	-	-	52,326	16,053	72,011
under 35	1,115	-	-	10,006	8,173	19,294
over 35	2,712	-	-	59,818	21,015	83,545
% women	5%	-	-	25%	45%	30%
% men	95%	-	-	75%	55%	70%
% under 35	29%	-	-	14%	28%	19%
% over 35	71%	-	-	86%	72%	81%

Partnership key performance indicators 2016 - 2020

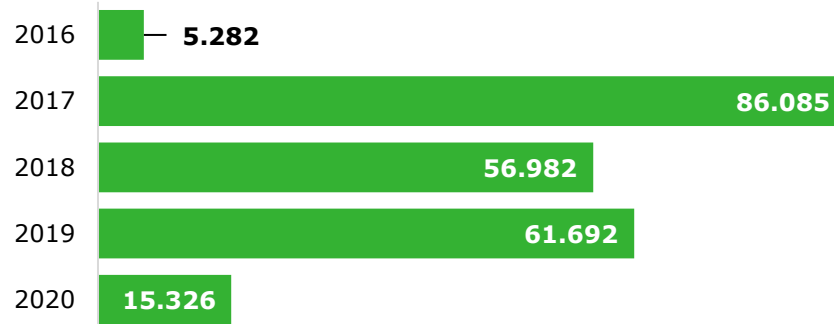
Number of farmers reached with increased productivity (TOTAL)



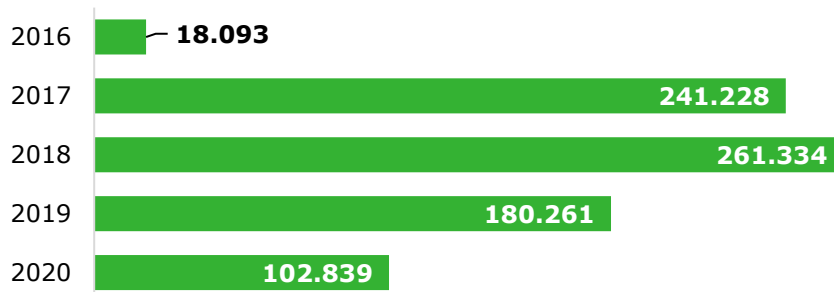
Number of farmers reached with improved access to input & output markets (TOTAL)

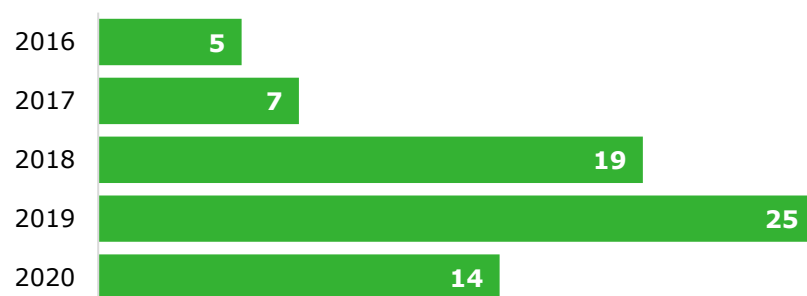


Number of persons reached/trained with improved technology and skills

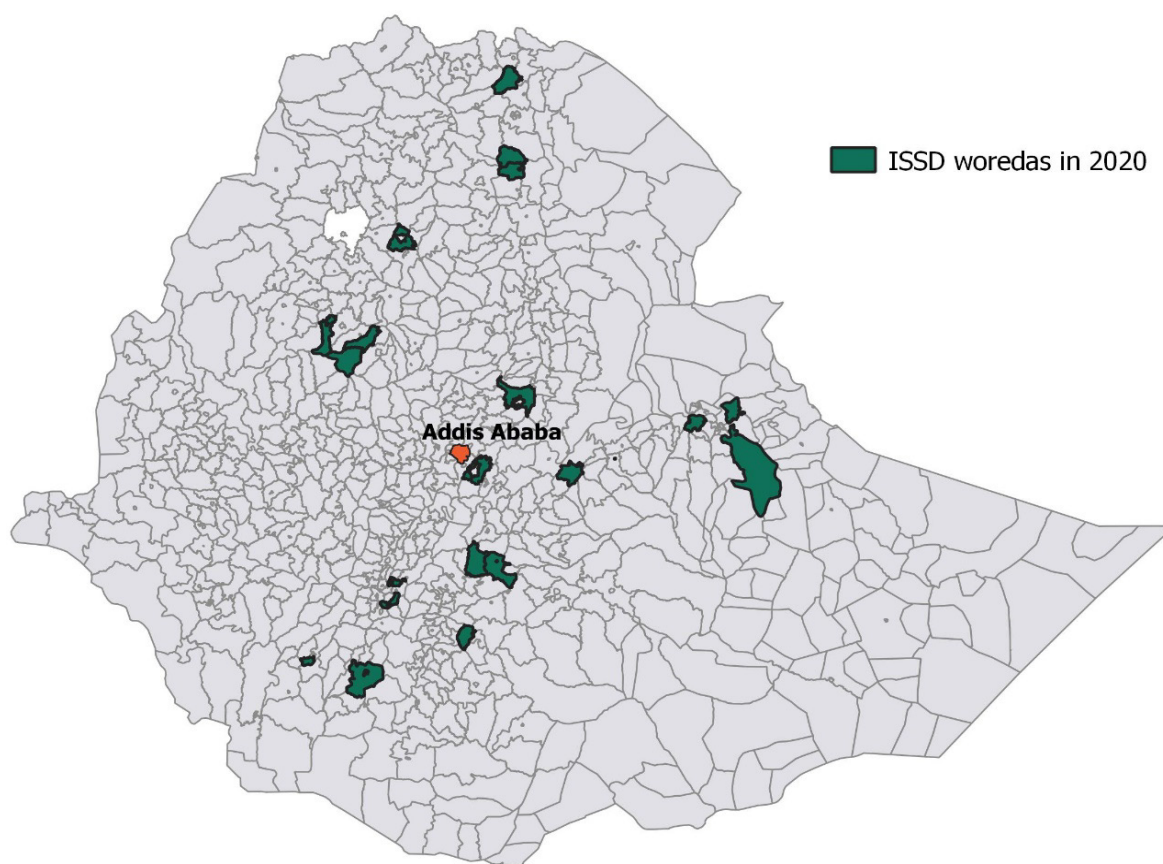


Number of trained farmers in sustainable agricultural production & practices



Number of companies with support plan to invest, trade or provide service**Number of substantial policy changes/reforms contributed to**





Executive summary

Introduction

The Integrated Seed Sector Development programme in Ethiopia (ISSD Ethiopia) works to ensure the sustainable increase of agricultural productivity due to improved access to and use of quality seed of new, improved, and/or farmer preferred varieties by men and women smallholder farmers. Increased availability and use of quality seed; enhanced performance of seed value chains; and an improved enabling environment for the seed sector are outcomes that contribute to this impact. The availability and use of quality seed of new, improved and/or farmers preferred varieties is increased by providing support to informal seed producing groups largely through the deployment of a large number of improved and local varieties; by strengthening seed producer cooperatives (SPCs), private seed producers (PSPs), and public seed enterprises to become more market-oriented in their seed production, marketing and distribution; and by facilitating conditions for Dutch/international seed companies to invest in Ethiopia. By piloting interventions in partnership with stakeholders, ISSD Ethiopia alleviates bottlenecks hampering the performance of seed value chains. Embedding evidence based innovations in regulatory frameworks and putting them into practice, ISSD Ethiopia improves the enabling environment of the seed sector. ISSD Ethiopia operates in four agriculturally important regional states of Ethiopia. Implementing partners of ISSD Ethiopia are Bahir Dar University in Amhara, Haramaya University and Oromia Seed Enterprise in Oromia, Hawassa University in SNNPR and Mekelle University in Tigray. Technical and administrative assistance is delivered by the Wageningen Centre for Development Innovation (WC DI).

Major achievements

- The availability and use of quality seed has improved for almost 4.2 million farmers;
- More farmers report now that quality seed is easy to obtain than in 2016;
- Greater shares of the volume of seed obtained are now coming from the intermediate and formal seed systems than in 2016;
- 95% of farmers perceived seed quality to be as or above expected in 2020, which is 2.4 - 4.7 percentage point increase since 2016 for the Meher and Belg seasons;
- Women's influence over decision making on what seed to sow has increased in frequency by 16 percentage points since 2016;
- Remote coaching, monitoring and supervision, and to some extent facilitated dialogue as well, was carried out successfully despite the impact that COVID-19 has had on mobility;
- Three years-worth of data on approximately 35,000 farmers' preferences among 343 varieties of 20 different crops was analysed and documented;
- Summary reports indicating 'winner varieties' across a tremendous range of agro-ecologies and markets were presented to a diverse range in stakeholders, including those upscaling their uptake in Amhara, Oromia and Tigray with GIZ funding;
- Quality (early generation) seed of nutritionally-dense crops including quality protein maize, haricot bean, mung bean, sesame and orange-fleshed sweet potato were produced in 2020;
- In 2020, ISSD Ethiopia facilitated approximately 550 seed input, service and market linkages;
- In Oromia (east), the unit at Haramaya University helped establish a PLC to trade in seed potatoes and OFSP vines produced by Haji Faji and one other SPC through outgrower agreements;
- Further upgrades were made to the Seed Information Exchange, a digital platform for seed marketing information, which ISSD Ethiopia will handover to Ministry of Agriculture (MoA) shortly;
- In 2019, GAWT and ISSD Ethiopia decided to scale their efforts in popularizing selected hybrid varieties of onion and tomato of the Dutch breeding company Enza Zaden from the Central Rift Valley to Amhara, SNNPR and Tigray as well, reaching 570 farmers in intensive field training and 713 during field days at demonstration sites across 18 *woredas* in 2020;
- With ISSD Ethiopia's support, Rijk Zwaan has introduced slicer cucumber as a new crop and commodity to the fresh market, which is roughly 10 times more lucrative for farmers than tomato, requiring just over 9% of the area of land to generate the same gross margins;
- Multiple interventions in seed value chains were scaled in 2020 to solve common problems in relation to EGS supply, seed quality assurance, and seed marketing, among other topics;
- The programme has also sensitized the investment decisions of the core groups to gender by documenting all investment decisions on grant canvases that explicitly ask: who benefits; and how is gender addressed in activities?;
- The seed sector transformation agenda has been incorporated in the (multi-)annual plans of stakeholders at federal and regional state levels as a result of efforts to raise stakeholder awareness of and commitment to implement its strategies;
- The position of the Ethiopian Seed Association (ESA) has been strengthened by the secondment of a secretariat officer and inclusion of the association in strategic dialogue facilitated by the programme;
- Since 2017, ISSD Ethiopia has had the mandate to establish a sustainable system of EGS supply in the country and recently submitted the EGS Multiplication System Guideline to MoA for endorsement and implementation;
- Recommendations of the rapid assessments of the impact of COVID-19 on key seed sector functions and resulting Seed Alerts for May and June, and the stakeholders best positioned to propel their action, were proposed to and approved by senior leadership in the sector;
- ISSD Ethiopia quickly got up to speed with digital/virtual ways of doing business and managed to carryout activities with moderate changes to the work plan;
- (Two-)weekly virtual meetings of managers at regional units, PMU and WCDI facilitated the kind of agile management needed for ISSD Ethiopia to appropriately respond to the needs of the sector during the difficult and uncertain times of the pandemic;
- From September to October, ISSD Ethiopia held a series of webinars on the key messages of selected publications by the programme, achievements of the past four-five years, and lessons learned for the institutional embedding of innovations in Ethiopia;
- At least six books, 15 reports and articles, 30 manuals and guides, one film and countless news items can be read on our website: www.ISSDethiopia.org;

- In 2020, collaboration with a wide range of N/GOs, industry players, research and knowledge institutes, and programmes, projects and initiatives continued for the increased uptake, scaling and embedding of ISSD Ethiopia innovations.

Major challenges, opportunities, lessons learned and way forward

Challenges

- The unprecedented outbreaks of COVID-19 and desert locusts and their threats to livelihoods;
- Mobility restrictions in response to COVID-19, civil unrest, conflict and insecurity;
- Excess rain during planting and thereafter, flooding and resulting increased pest and disease pressure and poor crop performance in some localities;
- COVID-19-related mobility restrictions, at least at the onset of the pandemic, and inability of stakeholders to meet, share information and coordinate activities face-to-face;
- Mobility restrictions on and limited communication capabilities of ISSD Ethiopia staff working remotely, and follow up with core group members and stakeholders scaling innovations in seed value chains;
- Limited reserves of foreign currency to import high quality seed of nutritionally-dense crops like fruit and vegetables;
- Reorganization and capacity limitations in government and its provision of services to the sector;
- Limited absorption capacity of MoA for ISSD Ethiopia innovations and the continuation thereof;
- Lack appreciation for the need and clarity on how best to govern the seed sector;
- These were politically turbulent times for Ethiopia;
- Limited time and funds remaining for collaboration among BENEFIT partners.

Opportunities

- Endorsement of the seed sector transformation agenda and Ethiopia's first seed policy, which give direction to the country's future;
- Rapid assessments of the impact of COVID-19 on the seed sector and Seed Alerts published in May and June made a response plan readily available to government and other stakeholders;
- Government and other stakeholders' commitment to actions recommended by the Seed Alerts;
- Considerable interest of government and its development partners to transform the seed sector;
- Concentration of efforts made in the seed sector by the Agricultural Growth Program (AGP); ATA; Alliance for a Green Revolution in Africa (AGRA); United States Agency for International Development (USAID); Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ); CGIAR and EIAR;
- High recognition of ISSD Ethiopia at federal and regional state levels and willingness to partner with the programme;
- As BENEFIT comes to an end, ISSD Ethiopia looks forward to the development of the Ethio-NL Seed Partnership between the two countries, and a new and exciting intervention in the food systems of Ethiopia.

Lessons learned

- The coordinated response of stakeholders to COVID-19, and proactive support of government to seed producers to evade (seed and) food insecurity boosted production to unprecedented levels;
- Investments in the deployment, evaluation, participatory selection and promotion of new and improved varieties has made farmers more aware of what they are missing out on;
- The pandemic actually facilitated uptake of information and communication technologies, which made it possible to coordinate activities remotely;
- Frequent contact and sharing of information and advice with input directorates of MoA and BoAs has helped raise seed sector leadership and coordination on the agenda of government officials;
- Whilst contractual agreements improve the coordination and market-orientation of EGS production, a lot more consolidation needs to be done before supply is boosted;
- Embrace systemic change, take the vision of the future as a port of departure and not today's problems, and focus the narrative on root causes of the problem and not its symptoms;
- Manage adaptively, timing is everything, grab opportunities when they present themselves;
- Invest in social capital, set inclusion as a goal on its own and not a side thought, and ultimately be prepared to make a long-term investment;

- The success of the portfolio as a whole is a result of strong collaboration bilaterally between Ethiopia and the Netherlands, among government, industry, science and civil society in and between both countries, and across the various value chains in Ethiopia, from production to consumption.

The way forward

- The same kind of coordinated action that was seen in response to the pandemic and to boost seed production is desperately needed to ensure that this increased production doesn't go to waste;
- Much more effort is needed to ensure that winner varieties are taken up in the product portfolios of seed producers and that seed production continues to become more demand-driven;
- Seed producers have to be linked effectively to the PVS and crowdsourcing activities through research and extension so as to respond to the demand created for locally adapted varieties;
- Institutional support to intermediary seed systems like local seed business is critical to ensure that seed of locally important and neglected and underutilized crops is supplied;
- Such support should be focussed on enhancing the market orientation and business management of farmers, SPCs and unions in local seed business, and federal and regional state cooperative agencies need to be competent in providing this technical assistance;
- MoA and Bureau of Agriculture (BoA) in each regional state need to consolidate the effort to systematize EGS production in the country, by continuing to witness, monitor and enforce signed contractual agreements of supply;
- Enable direct foreign and domestic private investment in the seed sector to widen the crops and variety portfolio for which quality seed products are on offer and adapt to changing climates;
- The next step in sector's journey towards transformation includes improved seed regulatory and other service provision and an enhanced enabling environment for private investment;
- Structure needs to be given to how the sector is governed, with agreement on and alignment between dedicated leadership bodies at federal and regional state levels;
- Building on ISSD experiences, unlocking the potential for increased private domestic and foreign direct investment in the seed sector for contributing to food and nutrition security and climate resilience in Ethiopia through the Ethio-NL Seed Partnership, and identifying leverage points for catalysing sustainability and inclusion in the major food systems of the country.

Quality and quantity of sustainable agricultural production

The availability and use of quality seed has improved for almost 4.2 million farmers with support from ISSD Ethiopia since 2016. Comparison of end- and baseline data collected by seed availability and use surveys shows that significantly more farmers report now that quality seed is easy to obtain than in 2016 ($n=388$, $p \leq 0.05$). Correspondingly, frequency of reports that quality seed is difficult to obtain has dropped almost 10 percentage points ($n=389$, $p \leq 0.01$). Greater shares of the volume of seed obtained are coming from formal and intermediate (or integrated) seed systems, to which the model of local seed business and seed producer cooperatives belong; up four percentage points compared to 2016 ($p \leq 0.05$). With exception to potato and certain minor crops, the importance of informal seed systems has decreased. Intermediate seed systems, including local seed business, are of increased importance for legumes. Since 2016, their importance has increased 10.8 percentage points. Similarly, but to lesser extent, the importance of intermediate seed systems for major cereals production increased 4 percentage points. Informal seed systems remain important for potato, other root and tuber crops, and some minor crops including vegetables and spices. Farmers are also harvesting more produce. More than one-third of those that increased their production in 2020 gave as a reason the availability of quality seed ($p \leq 0.01$). Almost 95% of farmers perceived seed quality to be as or above expected in the Belg and Meher seasons in 2020; up 4.7 and 2.4 percentage points respectively ($p \leq 0.01$). These gains have been achieved across informal, intermediate and formal seed systems. Surveys show improvements in women's influence over decision making at household level regarding what seed to sow, including a 13 percentage point drop in frequency of husbands taking decisions unilaterally, and a 16 percentage point increase in husband and wife deciding together ($p \leq 0.01$). Despite considerable investment in deploying the almost full range of diversity currently on offer to farmers, surveys detect a one to three percentage point decrease in the frequency that farmers obtain their preferred variety. It is suspected that due to their increased exposure to new and improved varieties through participatory variety selection (PVS) and crowdsourcing, farmers are more aware of what they are missing out on. This reiterates the need to link PVS and crowdsourcing activities to seed

production in different seed systems to further increase seed supply, recognizing the different contributions each makes to food and nutrition security in the country.

Improved markets and trade

In 2020, ISSD Ethiopia facilitated approximately 550 seed input, service and market linkages. This was achieved primarily by building stronger bilateral relationships and improving coordination at local, regional state and federal levels in the form of committees, core groups and platforms. It is important that these be sustained. Various communication media and products were explored for sharing information on sources of quality seed. Two partnership projects that concluded this year illustrate ISSD Ethiopia's approach to increasing trade with and foreign direct investment in Ethiopia's seed sector. The local distributor GAWT and ISSD Ethiopia decided to scale their efforts in popularizing selected hybrid varieties of onion and tomato of the Dutch breeding company Enza Zaden from the Central Rift Valley to Amhara, SNNPR and Tigray as well, reaching 570 farmers in intensive field training and 713 during field days at demonstration sites across 18 *woredas* in 2020. With ISSD Ethiopia's support, Rijk Zwaan has introduced slicer cucumber as a new crop and commodity to the fresh market, which is roughly 10 times more lucrative for farmers than tomato, requiring just over 9% of the area of land to generate the same gross margins. Multiple interventions in seed value chains were scaled in 2020 to solve common problems in relation to EGS supply, seed quality assurance, and seed marketing, in coordination with the multi-stakeholder regional seed core groups. Given low levels of market orientation, business linkages are weak and not professionalized. Further effort is needed to consolidate contractual (early generation) seed supply, seed agent/dealer networks, and investments in the seed sector. ISSD Ethiopia has sensitized the investment decisions of the core groups to gender by documenting all investment decisions to date on grant canvases that explicitly ask: who benefits; and how is gender addressed in activities? All canvases, from 2016 onwards, have been updated with important information for evaluating impact on outcomes including social inclusion and nutrition.

Improved enabling environment

The seed sector transformation agenda² has been incorporated in the (multi-)annual plans of stakeholders at federal and regional state levels as a result of efforts to raise stakeholder awareness of and commitment to implement its strategies. The specific agenda to establish dedicated leadership bodies to the seed sector in each region has been advanced in particular in Amhara and Oromia. The position of the Ethiopian Seed Association (ESA) has been strengthened by the secondment of a secretariat officer and inclusion of the association in strategic dialogue facilitated by the programme. Further, ISSD Ethiopia carried out thorough (de)briefing on the institutional mapping and needs assessment (IM&NA³) of Ethiopia's seed regulatory services, and the programme's innovations in relation to seed quality were included in the strategy of MoA and EIAR to improve quality control and assurance in the country. Since 2017, ISSD Ethiopia has had the mandate to establish a sustainable system of EGS supply in the country and recently submitted the EGS Multiplication System Guideline to MoA for endorsement and implementation. The guideline provides for participation of capable CoC-holders in EGS production of public varieties. Rapid assessments of the impact of COVID-19 on key seed sector functions were conducted in May⁴ and June⁵, resulting in the publication of two Seed Alerts. Recommendations, and the stakeholders best positioned to propel their action, were proposed to and approved by senior leadership in the sector. In October, ISSD Ethiopia assessed the status of seed production across the country and alerted government to the need to coordinate collection, processing, storage and eventual distribution of what appears to be a record harvest for Ethiopia, and to ensure that stakeholders have sufficient working capital to operate.

² MoA (2019) *Transforming the Ethiopian Seed Sector: issues and strategies*. Government of the Federal Democratic Republic of Ethiopia. Addis Ababa.

³ Hassena, M., van den Broek, J. and Borman, G., 2020. *Final report to RVO: institutional mapping & needs assessment of Ethiopia's public seed sector services* (No. WCDI-20-101). Wageningen Centre for Development Innovation. <https://library.wur.nl/WebQuery/wurpubs/562068>

⁴ WCDI, 2020a. Seed Alert Ethiopia, number 1. Wageningen Centre for Development Innovation and ISSD Ethiopia Programme. https://www.wur.nl/upload_mm/1/0/7/215cfd9-b4a7-4533-a09a-266acf6798ba_Seed%20sector%20assessment%20-Ethiopia%20-%20May%202020.pdf

⁵ WCDI, 2020b. Seed Alert Ethiopia, number 2. Wageningen Centre for Development Innovation, and ISSD Ethiopia Programme. https://www.wur.nl/upload_mm/a/f/5/d97db26a-7dc3-4301-aa5d-d0fd0e4ecfc4_Seed%20Sector%20Alert%20-%20June%20-%20Ethiopia.pdf

Collaboration

The COVID-19 pandemic had considerable impact on internal systems of planning, monitoring and evaluation, and on communication and learning with the outside world. ISSD Ethiopia quickly got up to speed with digital/virtual ways of doing business and managed to carryout activities with moderate changes to the work plan. (Two-)weekly virtual meetings of managers at regional units, PMU and WCDI facilitated the kind of agile management needed for ISSD Ethiopia to appropriately respond to the needs of the sector during the difficult and uncertain times of the pandemic. The leading role played in guiding the rapid assessments and synthesising the Seed Alerts resulting from them positioned ISSD Ethiopia's units as the sources of knowledge and advice to turn to in rolling out the response to the pandemic. From September to October, ISSD Ethiopia held a series of webinars on the key messages of selected publications by the programme, achievements of the past four-five years, and lessons learned for the institutional embedding of innovations in Ethiopia. With particular interest in the latter of these topics, REALISE seed experts and agronomists joined. At least six books, 15 reports and articles, 30 manuals and guides, one film and countless news items can be read on our website: www.ISSDethiopia.org. In 2020, collaboration with a wide range of N/GOs, industry players, research and knowledge institutes, and programmes, projects and initiatives continued. ISSD Ethiopia extended its support to BASF-Nunhems; Enza Zaden and Rijk Zwaan in the Dutch/international private sector. ISSD Ethiopia piloted the rapid assessment methodology that was later taken up by CASCAPE in assessing the impact of COVID-19 on the fertiliser sector, and SBN on food systems in the sesame growing areas of the north-west.

Quality and quantity of sustainable agricultural production

Increased availability and use of quality seed of new, improved and preferred varieties

The availability and use of quality seed has improved for almost 4.2 million farmers with support from ISSD Ethiopia since 2016. Comparison of end- and baseline data collected by seed availability and use surveys shows that significantly more farmers report now that quality seed is easy to obtain than in 2016 ($n=388$, $p\leq 0.05$). Correspondingly, frequency of reports that quality seed is difficult to obtain has dropped almost 10 percentage points ($n=389$, $p\leq 0.01$). Greater shares of the volume of seed obtained are coming from formal and intermediate (or integrated) seed systems, to which the model of local seed business and seed producer cooperatives belong; up four percentage points compared to 2016 ($p\leq 0.05$). Table 1 displays important gains in the relative importance of intermediate and formal seed systems to cereal and oilseed production. Intermediate and formal seed systems have increased by 2.2 and 1.9 percentage points in importance in general. With exception to potato and certain minor crops, the importance of informal seed systems has decreased. Intermediate seed systems, including local seed business, are of increased importance for legumes. Since 2016, their importance has increased 10.8 percentage points. Similarly, but to lesser extent, the importance of intermediate seed systems for major cereals production increased 4 percentage points. Informal seed systems remain important for potato, other root and tuber crops, and some minor crops including vegetables and spices.

Table 1 Change in percentage points[#] in the relative importance of different seed systems to the availability of seed of different crop types from 2016 to 2020

Crop types	Informal	Intermediate	Formal
Major Cereals	-6.3%	4.0%	2.3%
Minor Cereals	-1.7%	-0.3%	1.9%
Legumes	-6.6%	10.8%	-4.2%
Oilseeds	-13.7%	0.4%	13.3%
Potato	2.0%	-2.1%	0.2%
Other ^{##}	3.8%	-3.7%	-0.1%
Total	-4.1%	2.2%	1.9%

[#] Measured by the relative importance (%) in 2020 minus relative importance (%) in 2016

^{##} Including other root and tubers, vegetables and spices

Source: baseline survey (2016) and end line survey (2020)

Farmers are also harvesting more produce. More than one-third of those that increased their production in 2020 gave as a reason the availability of quality seed ($p\leq 0.01$). Almost 95% of farmers perceived seed quality to be as or above expected in the Belg and Meher seasons in 2020; up 4.7 and 2.4 percentage points respectively ($p\leq 0.01$). These gains have been achieved across informal, intermediate and formal seed systems. Surveys show improvements in women's influence over decision making at household level regarding what seed to sow, including a 13 percentage point drop in frequency of husbands taking decisions unilaterally, and a 16 percentage point increase in husband and wife deciding together ($p\leq 0.01$). Despite considerable investment in deploying the almost full range of diversity currently on offer to farmers, surveys detect a one to three percentage point decrease in the frequency that farmers obtain their preferred variety. It is suspected that due to their increased exposure to new and improved varieties through PVS and crowdsourcing, farmers are more aware of what they are missing out on. This reiterates the need to link PVS and crowdsourcing activities to seed production in different seed systems to further increase seed supply, recognizing the different contributions each makes to food and nutrition security.

Increased production and marketing of quality seed

In 2020, support was given directly to 22 seed producer cooperatives (SPCs), having a total of about 4,200 individual members, and three private seed producers (PSPs) to increase production and marketing of quality seed in Ethiopia. Selected seed producers produced a total of 4,851 tonnes (t) of quality seed of grains, legumes and oilseeds (Figure 1a); 140 t of seed potatoes (Figure 1b); and

277,775 sweet potato cuttings. The decline observed in Figure 1 from 2018 to 2019 and again from 2019 to 2020 is a result of our reduced support from 169 to 89, and from 89 to just 25 seed producers respectively. ISSD Ethiopia has gradually scaled down its direct support to seed producers, having decided on the policy of *Quality not quantity* in its 2019 annual plan. Seed producers with higher potential to improve their performance as a result of further assistance were selected, whilst those lacking commitment were excluded.

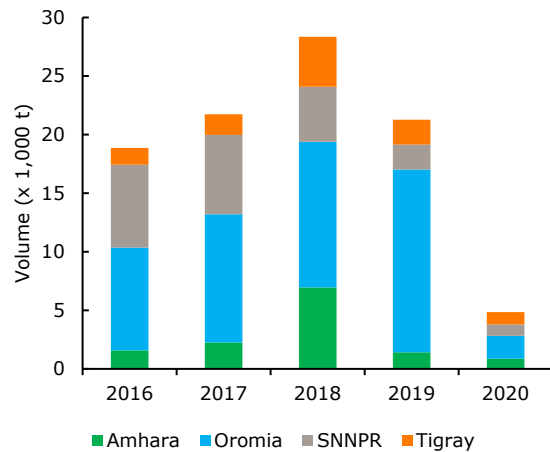


Figure 1a Quality seed of grains, legumes and oilseeds produced from 2016-20

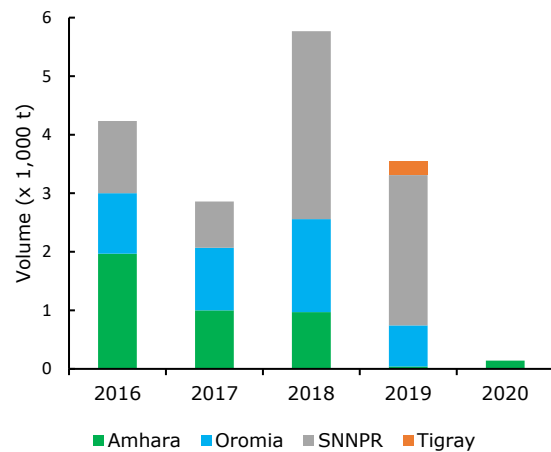


Figure 1b Quality seed potatoes produced from 2016-20

The type of support given included tailor-made training; coaching, monitoring and supervision; and facilitated dialogue. Much coaching, monitoring and supervision, and to some extent facilitated dialogue as well, was carried out remotely due to government and programme health and safety protocols in response to the COVID-19 pandemic. Other specific outputs in 2020 included:

- A total of 744 SPC committee members, woreda and *kebele* experts, and members of cooperative unions, of which 117 (~16%) are women, were trained on quality seed production (with a focus on legumes) and a range of other important topics (see *Enhanced business orientation and financial viability of seed producers*);
- In Oromia (south & west), chairpersons of the four selected SPCs and manager of the selected PSP in the region were coached weekly over telephone during the COVID-19 lockdown on their progress in accessing basic seed, producing quality seed and seed quality control;
- Eight committee members of Hunde Gudina SPC were coached on the importance of having a robust portfolio of crops and varieties for soil fertility management, food and nutrition security, marketing risk reduction and income generation, which resulted in their uptake of one of the most preferred varieties of faba bean in region named Gora;
- Strengths and weaknesses of and opportunities and threats to SPCs in quality seed production were shared with 15 members of a technical team drawn from five SPCs' supporting partners in Oromia (south & west), and 16 farmers from the selected SPCs and PSP participated in an experience sharing visit on best practices, particularly in seed value addition, to Tuka Katara SPC;
- In Tigray, workshops were organized with the aim to improve rates of seed collection by SPCs and unions, after which Hadinet Raya Seed Union collected 563 t and sold 503 t of quality seed of wheat and Mebale Seed Union collected and sold 96.2 t of quality seed of wheat and collected 66.6 t and sold 59.6 t of quality seed of teff that was produced by supported SPC members.

Increased demand for and availability of new, improved and preferred varieties

Despite considerable investment by ISSD Ethiopia and its partners in deploying the almost full range of diversity currently on offer to farmers, surveys detect a slight decrease in 2020 in the frequency that farmers obtain their preferred variety, compared to 2016. It is suspected that due to their increased exposure to new and improved varieties through participatory variety selection (PVS) and crowdsourcing, farmers are more aware of what they are missing out on. For that reason, ISSD

Ethiopia has actively encouraged seed producers to incorporate 'winner varieties' in their seed product portfolios. Three years-worth of data on approximately 35,000 farmers' preferences among 343 varieties of 20 different crops that was gathered from PVS and crowdsourcing trials was entered into and analysed by the ClimMob software and documented. Summary reports indicating winner varieties across a tremendous range of agro-ecologies and markets in Ethiopia were presented in each regional state to the Bureau of Agriculture (BoA) and Cooperative Promotion Agency (RPCA), research institute(s), universities, development partners, and seed producers for inclusion in their activity plans. Other specific outputs in 2020 included:

- In Oromia (east), 100 copies of manuals and success stories on PVS and crowdsourcing were shared with partners to aid them in embedding the practice institutionally;
- In SNNPR and Sidama, field days, trainings and workshops increased demand for and availability of new, improved and preferred varieties;
- Seed producers and offices of agriculture participating in these events in SNNPR and Sidama obtained access to winner varieties and information on related good agronomic practices;
- GIZ-funded upscaling activities at selected local seed businesses and community seed banks for the uptake of improved technologies for durum wheat, finger millet, chickpea and faba bean in Amhara, Oromia and Tigray were informed about the winner varieties of these crops.

Enhanced business orientation and financial viability of seed producers

At the time of writing this report, six SPCs and two PSPs across Oromia, SNNPR and Sidama had been audited in 2020. Four of the SPCs and one PSP in the South recorded profits (63%), and the others losses. Despite these less than desired results, ISSD Ethiopia-supported SPCs and PSPs have improved their performance against key performance indicators (KPIs) for local seed business, with the exception of one PSP in Amhara and another in Oromia. Figure 2 displays the general trend of over the past five years.

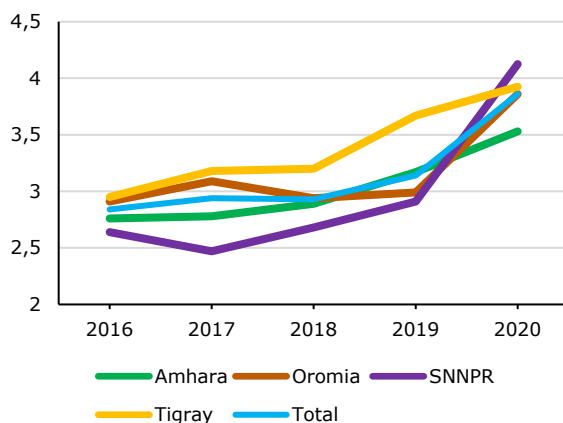


Figure 2a SPCs' average scores for KPIs of local seed business from 2016-20

Note: 1=poor; 3=satisfactory; and 5=excellent performance

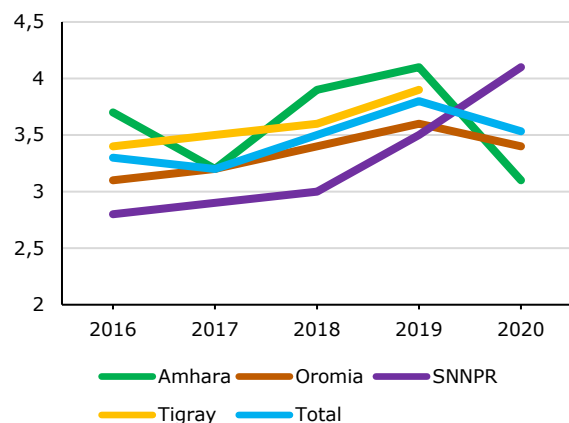


Figure 2b PSPs' average scores for KPIs of local seed business from 2016-20

All 25 selected seed producers have received training and coaching on business planning, financial management, and seed marketing with attention to accessing affordable financial credit and promotion of small seed packs. Other specific outputs in 2020 included:

- Other important topics upon which training was provided to the aforementioned 744 SPC committee members, *woreda* and *kebele* experts, and members of cooperative unions (see *Increased production and dissemination/marketing of quality seed*), included seed processing and promotion in small seed packs, seed mini-marketing, organizational management and gender;
- Telephone was used to coach and follow up on earlier training provided to five selected SPCs in Oromia (east) to improve their organizational governance and leadership including women's representation in executive committees, which prompted general assembly, election of new management committee members, including several women, and auditing at Haji Faji, Abdi Gudina

and Daro Gora SPCs, and seven SPCs under Chercher Oda Bultum Farmers' Cooperative Union hired professional managers;

- Nine SPCs and 3 PSPs in Amhara, Oromia (south & west), SNNPR and Sidama, were supported in renewing their certificates of competence (CoCs) in 2020;
- In Amhara, Loma Azmir and Jema PSPs were supported to package quality seed of, respectively hybrid maize in 6.25 kg bags and onion in 250 g and 50 g packets to sell directly to smallholders;
- Modest financial co-investment was made in Oromia (east) in procuring small packs for the three farmers' cooperative unions, each ranging from 2-5 kg, to deliver quality seed of maize, sorghum, haricot bean, mung bean and sesame to smallholder farmers;
- Modest financial co-investment was made in Oromia (south & west) in procuring 1,000 small seed packs each for Hunde Gudina, Kolbe, Limu Dima and Tuka Katara SPCs, with their details printed on them, and in constructing an office for Tuka Katara SPC with one room each for the chairman, cashier, accountant, seed quality and marketing sub-committee, and management committee;
- Modest financial co-investment was made in Amhara in purchasing a generator for Serten Endeg SPC to power the seed cleaning machine donated by the Ethiopian Agricultural Transformation Agency (ATA) some years ago, which is now fully operational, and in constructing diffused light storage for Addis Alem SPC;
- In total, ETB 379,000 (~€ 8,300) was co-invested in four SPCs in Amhara for the aforementioned purposes and for purchasing a maize sheller and office supplies;
- In Tigray, proposals were written to *woreda* administration on the behalf of selected SPCs for land tenure for the purpose of constructing storage, office and sales facilities;
- Land was secured for Mush SPC in Amhara for the construction of a screenhouse for potato plantlets raising and mini-tuber propagation;
- Access to crop insurance was facilitated for three SPCs in Oromia (east) to mitigate financial risks.

Women have improved access and use of quality seed of their preference at household and community level in informal seed systems

With the purpose of improving women's access to and use of quality seed of their preference, ISSD Ethiopia targeted a minimum of 50% participation in on-farm variety testing and selection trials through the approach called crowdsourcing. This explains the increase seen between 2017 and 2019 in Figure 3, followed by the subsequent decrease in 2020 after crowdsourcing was discontinued.

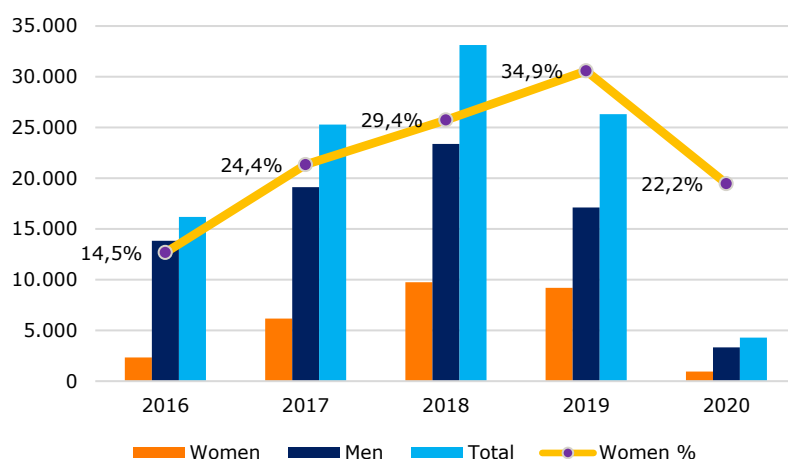


Figure 3 Women's participation in general (bars) and as a proportion of all participants (line)

Specific outputs in 2020 included:

- 117 women members of SPC committees, and experts of *woreda* and *kebele* offices of agriculture and farmers' cooperative unions were trained on a range of topics including quality seed production (with a focus on legumes), seed processing and promotion in small seed packs, seed mini-marketing, organizational management and women in leadership;

- In Amhara, after strong encouragement by the programme, four women assumed leadership positions of supported SPCs whilst the total number of women members increased to 206;
- In Oromia (east), data from 3,600 on-farm trials managed by women was analysed to reveal the varieties and traits most prefer, which was documented in summary reports to stakeholders and in 50 copies of a book on best-bet varieties for women;
- Moreover, the unit at Haramaya University confirmed improved participation of women in the decision making of supported SPCs' management committees;
- In Oromia (south & west), about 36,000 women farmers are expected to obtain quality seed of improved varieties from the five directly-supported seed producers in the region, 7,200 of whom are expected to obtain that of nutritionally-dense legumes and oilseeds.

Improved food and nutrition security of farmers through increasing crop and variety diversity

Selected seed producers multiplied quality seed of 30 varieties of 12 different crops in 2020, bringing the total diversity in the seed product portfolio of all SPCs and PSPs supported to date to 202 varieties of 38 crops (Figure 4). The highest numbers of varieties were produced in Oromia (south & west). In 2020, bread wheat accounted for most of the varieties for which quality seed was on offer, but a relatively fair number of legumes were produced as well (Figure 5).

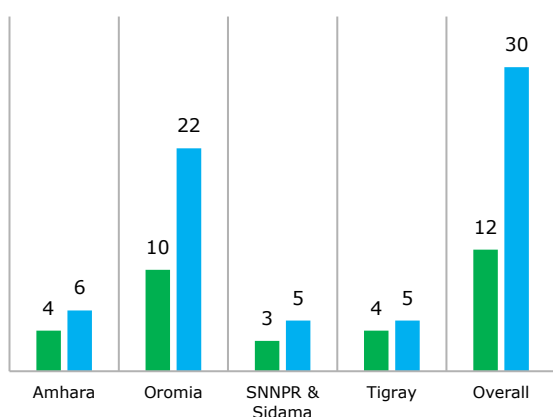


Figure 4a Number of crops (green) and varieties (blue) for which quality seed was produced by SPCs and PSPs in 2020

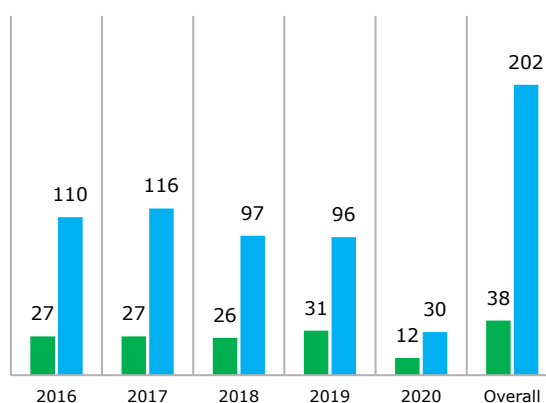


Figure 4b Number of crops (green) and varieties (blue) for which quality seed was produced by SPCs and PSPs from 2016-2020

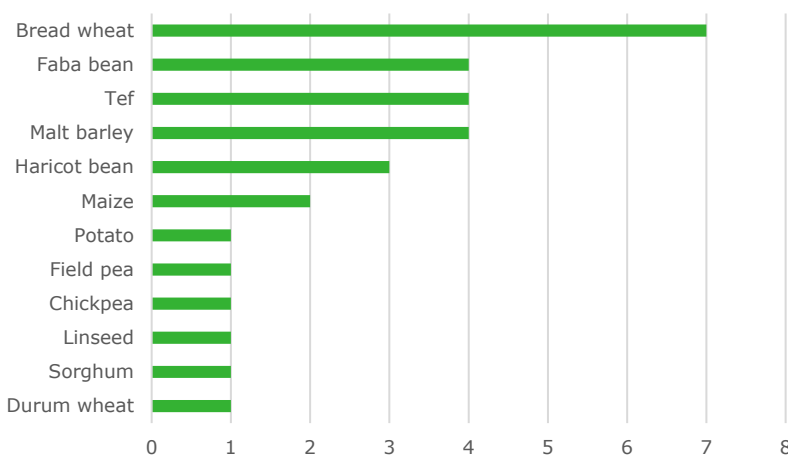


Figure 5 Total number of varieties and crops incorporated in ISSD Ethiopia interventions in 2020

ISSD Ethiopia has continuously encouraged and supported farmers and seed producers to diversify their and their communities' farming systems in terms of crops and varieties. This is assumed to contribute to improved food and nutrition security and climate resilience at household and community level. Other specific outputs in 2020 included:

- Awareness created among directly-supported SPCs and PSPs on nutrition and nutritionally-dense crops through training and coaching;
- Chickpea, faba bean, field pea and haricot bean included in the seed product portfolio of selected seed producers in 2020;
- In Amhara, RCPA and *woreda* offices of agriculture were supported remotely in their facilitation of access to early generation seed (EGS) for SPCs for a more diverse crop and variety portfolio;
- In Oromia (east), crop and variety diversity was taken into consideration during EGS supply joint planning, and as a result, quality seed of nutritionally-dense crops including quality protein maize, haricot bean, mung bean, sesame and orange-fleshed sweet potato (OFSP) were produced;
- In Oromia (south & west), Hunde Gudina, Limu Dima and Tuka Katara SPCs were strongly encouraged to take up winner varieties of faba bean in their product portfolios;
- Hunde Gudina and Tuka Katara SPCs were able to access pre-basic and basic seed of these winner varieties of faba bean, and Limu Dima SPC also included field pea in its crop portfolio;
- In the south, Fate Muruta Dicha and Chano Dorga SPCs were encouraged to increase their seed product portfolios from one to two crop types and from one to two varieties per crop type, and as a result have introduced faba bean and haricot bean into their wheat and maize seed production systems, which is also beneficial for soil fertility management.

Mainstreaming social inclusion and nutrition

ISSD Ethiopia's promotion of pluralism has helped the seed sector increase the availability and use of quality seed of new, improved and preferred varieties of both food and cash crops among multiple groups in society including women; men; the youth; and small-, medium-, and large-scale farmers in informal, intermediate and formal seed systems and traditional, intermediate and modern food systems. ISSD Ethiopia also manages for women's improved access to quality seed and improved food and nutrition security as intermediary outcomes, against which progress is reported in the previous two sections.

Conclusions and recommendations

Achievements

- The availability and use of quality seed has improved for almost 4.2 million farmers;
- More farmers report now that quality seed is easy to obtain than in 2016;
- Less farmers report now that quality seed is difficult to obtain than in 2016;
- Greater shares of the volume of seed obtained are now coming from the intermediate and formal seed systems than in 2016;
- Farmers are also harvesting more produce;
- More than one-third of those that increased their production in 2020 gave the availability of quality seed as the reason;
- 95% of farmers perceived seed quality to be as or above expected in 2020, which is 2.4-4.7 percentage point increase since 2016 for the Meher and Belg seasons;
- Women's influence over decision making on what seed to sow has increased in frequency by 16 percentage points since 2016;
- Remote coaching, monitoring and supervision, and to some extent facilitated dialogue as well, was carried out successfully despite the impact that COVID-19 has had on mobility;
- Three years-worth of data on approximately 35,000 farmers' preferences among 343 varieties of 20 different crops was analysed and documented;
- Summary reports indicating 'winner varieties' across a tremendous range of agro-ecologies and markets were presented to a diverse range in stakeholders, including those upscaling their uptake in Amhara, Oromia and Tigray with GIZ funding;
- SPCs and PSPs have improved their performance against KPIs for local seed business, with the exception of one PSP in Amhara and another in Oromia;
- 50 copies of a book on best-bet varieties for women were distributed by Haramaya University;

- 202 varieties of 38 crops have been incorporated in the seed product portfolios of ISSD Ethiopia-supported seed producers between 2016-20;
- Quality (early generation) seed of nutritionally-dense crops including quality protein maize, haricot bean, mung bean, sesame and orange-fleshed sweet potato were produced in 2020.

Challenges, opportunities and lessons learned

2020 posed some serious challenges to agriculture and the seed sector, including:

- The unprecedented outbreaks of COVID-19 and desert locusts and their threats to livelihoods;
- Mobility restrictions in response to COVID-19, civil unrest, conflict and insecurity;
- Excess rain during planting and thereafter, flooding and resulting increased pest and disease pressure and poor crop performance in some localities.

However, opportunities did present themselves, including:

- Endorsement of the seed sector transformation agenda⁶ and Ethiopia's first seed policy, which give direction to the country's future;
- Rapid assessments of the impact of COVID-19 on the seed sector and Seed Alerts published in May⁷ and June⁸ made a response plan readily available to government and other stakeholders;
- Government and other stakeholders' commitment to actions recommended by the Seed Alerts.

In addition, a number of lessons were learned:

- The coordinated response of stakeholders to COVID-19, and proactive support of government to seed producers to evade (seed and) food insecurity boosted production to unprecedented levels;
- Investments in the deployment, evaluation, participatory selection and promotion of new and improved varieties has made farmers more aware of what they are missing out on.

Way forward

- The same kind of coordinated action that was seen in response to the pandemic and to boost seed production is desperately needed to ensure that this increased production doesn't go to waste;
- Much more effort is needed to ensure that winner varieties are taken up in the product portfolios of seed producers and that seed production continue to become more demand-driven;
- Seed producers have to be linked effectively to the PVS and crowdsourcing activities through research and extension so as to respond to the demand created for locally adapted varieties;
- Institutional support to intermediary seed systems like local seed business is critical to ensure that seed of locally important and neglected and underutilized crops is supplied;
- Such support should be focussed on enhancing the market orientation and business management of farmers, SPCs and unions in local seed business, and federal and regional state cooperative agencies need to be competent in providing this technical assistance;
- Growth of formal seed systems requires MoA unlocking the potential for private domestic and foreign direct investment in the seed sector, in part through a more enabling environment.

⁶ MoA (2019) *Transforming the Ethiopian Seed Sector: issues and strategies*. Government of the Federal Democratic Republic of Ethiopia. Addis Ababa.

⁷ WCDI, 2020a. Seed Alert Ethiopia, number 1. Wageningen Centre for Development Innovation and ISSD Ethiopia Programme. https://www.wur.nl/upload_mm/1/0/7/215cfd9-b4a7-4533-a09a-266acf6798ba_Seed%20sector%20assessment%20-Ethiopia%20-%20May%202020.pdf

⁸ WCDI, 2020b. Seed Alert Ethiopia, number 2. Wageningen Centre for Development Innovation, and ISSD Ethiopia Programme. https://www.wur.nl/upload_mm/a/f/5/d97db26a-7dc3-4301-aa5d-d0fd0e4ecfc4_Seed%20Sector%20Alert%20-%20June%20-%20Ethiopia.pdf

Improved markets and trade

Enhanced performance of seed value chains

In 2020, ISSD Ethiopia facilitated approximately 550 seed input, service and market linkages. This was achieved primarily by building stronger bilateral relationships and improving coordination at local, regional state and federal levels in the form of committees, core groups and platforms. It is important that these be sustained. Various communication media and products were explored for sharing information on sources of quality seed. Two partnership projects that concluded this year illustrate ISSD Ethiopia's approach to increasing trade with and foreign direct investment in Ethiopia's seed sector. The local distributor GAWT and ISSD Ethiopia decided to scale their efforts in popularizing selected hybrid varieties of onion and tomato of the Dutch breeding company Enza Zaden from the Central Rift Valley to Amhara, SNNPR and Tigray as well, reaching 570 farmers in intensive field training and 713 during field days at demonstration sites across 18 *woredas* in 2020. With ISSD Ethiopia's support, Rijk Zwaan has introduced slicer cucumber as a new crop and commodity to the fresh market, which is roughly 10 times more lucrative for farmers than tomato, requiring just over 9% of the area of land to generate the same gross margins. Multiple interventions in seed value chains were scaled in 2020 to solve common problems in relation to EGS supply, seed quality assurance, and seed marketing, in coordination with the multi-stakeholder regional seed core groups. Given low levels of market orientation, business linkages are weak and not professionalized. Further effort is needed to consolidate contractual (early generation) seed supply, seed agent/dealer networks, and investments in the seed sector. ISSD Ethiopia has sensitized the investment decisions of the core groups to gender by documenting all investment decisions to date on grant canvases that explicitly ask: who benefits; and how is gender addressed in activities? All canvases, from 2016 onwards, have been updated with important information for evaluating impact on outcomes including social inclusion and nutrition.

Strengthened strategic linkages between seed producers and input and service providers

In 2020, ISSD Ethiopia linked at least: eight SPCs and one PSP to sources of quality EGS/starting material in Amhara and Oromia (south & west); five unions, one PSP and two public seed enterprises across Amhara and Tigray and one newly-established PLC in Oromia (east) to ISSD Ethiopia-supported SPCs as contract growers; nine SPCs, three PSPs and 500 seed agents in Amhara, Oromia (south & west), SNNPR and Sidama to authorities in obtaining CoCs to produce and retail certified seed; three unions in Oromia (east), three SPCs in Oromia (south & west) and two PSPs in Amhara to suppliers of small seed packs; five SPCs across Amhara and Oromia (south & west) to co-financing grants; and three SPCs in Oromia (east) to auditing and crop insurance services. Linkages were facilitated by building stronger bilateral relationships between seed producers and important inputs and service providers and buyers of quality seed. This was also achieved through improved coordination at local, regional state and federal levels in the form of committees, core groups and platforms. Various communication media and products were explored for sharing information on sources of quality seed.

Among others, the linkages facilitated in 2020 included:

- Four SPCs in Amhara obtained 25.6 t of basic seed from Edget, Guna and Tegulet unions, and from Amhara Seed Enterprise (ASE), Ethiopian Agricultural Businesses Corporation (EABC), and Biniam PSP to return an estimated 902.8 t of quality seed under contractual agreement;
- Elsewhere in Amhara, Loma Azmir PSP was linked to ASE, Avalo Agricultural Enterprise, and Ethio Agri-CEFT, which produce parental lines of maize hybrids, and through linkage facilitated with Adet Agricultural Research Centre and CIP, Addis Alem SPC obtained 5,150, 1,020 and 1,200 plantlets of Belete, Dagim and Gudene varieties of potato to produce disease-free mini-tubers;
- In Oromia (east), small seed packs, of sizes ranging from two to five kilograms, were embedded in the value adding activities of Afren Kalo, Chercher Oda Bultum and Burka Galeti unions, through modest co-investment and facilitation of linkages to packaging material suppliers;
- Four SPCs in Oromia (south & west) were linked with different providers of EGS and as a result Hunde Gudina purchased basic seed of faba bean from Tuka Katara SPC, Kolbe purchased basic seed of bread wheat from Oromia Seed Enterprise (OSE), Limu Dima accessed pre-basic seed of field pea from KARC, and Tuka Katara accessed two tonnes of basic seed of Kakaba variety of wheat from OSE;

- In Oromia (east), the unit at Haramaya University helped establish a PLC to trade in seed potatoes and OFSP vines produced by Haji Faji and one other SPC through outgrower agreements;
- Daro Gora, Milkesa Lafto Goba and Misoma Gudina SPCs in Oromia (east) were linked to crop insurance service providers;
- Exchange visits were organized for eight committee members drawn from the selected four SPCs in Oromia (south & west) to share experiences with OSE on market assessment, seed value addition, product promotion, and seed agents;
- Oromia region BoA was prompted to license seed agents and has authorized zone offices of agriculture to issue CoCs to 500 seed agents in accordance with the criteria set by the seed marketing directive;
- An MoU for the multiplication of EGS of durum wheat and food barley was signed with Mekelle University College of Dryland Agriculture and Natural Resources to which ETB 180,200 in co-financing has been contributed by ISSD Ethiopia;
- Further upgrades were made to the Seed Information Exchange, a digital platform for seed marketing information, which ISSD Ethiopia will handover to MoA shortly.

Increased business opportunities for seed and seed related services provided in Ethiopia by Dutch/International seed companies

A two-pronged strategy is applied to achieve this intermediary outcome: facilitating business-to-business (B2B) relations between international breeding companies and local organizations; and enabling foreign direct investment in the seed sector. Two partnership projects that concluded this year illustrate the approach. Since 2017, in partnership with ISSD Ethiopia, a local distributor named GAWT has popularized selected hybrid varieties of onion and tomato of the Dutch breeding company Enza Zaden. By 2018, one of the three onion varieties introduced in 2017 had become the leader in the Central Rift Valley. In 2019, GAWT and ISSD Ethiopia decided to scale the initiative to Amhara, SNNPR and Tigray as well, reaching 570 farmers in intensive field training and 713 during field days at demonstration sites across 18 *woredas* in 2020. This despite disruptions caused by COVID-19. ISSD Ethiopia's partnership with Rijk Zwaan started more recently. In a little over two years, the breeding company has invested more than € 30,000 to release seven new varieties, bringing their total number of products in Ethiopia to 21. Their investment is long term, yet to return a profit. Major challenges include the costly and poorly managed national performance trials of their varieties, the lack of forex for distributors to import their seed, and limited knowledge and skills of farmers to achieve the most out of hybrids. With ISSD Ethiopia's support, Rijk Zwaan has introduced slicer cucumber as a new crop and commodity to the fresh market. Slicer cucumber is roughly 10 times more lucrative for farmers than tomato, requiring just over 9% of the area of land to generate the same gross margins. These results were achieved under semi-intensive management on open fields, which is very encouraging news for emerging horticultural producers in the country. Other specific outputs in 2020 included:

- MoU between MoA and the Ethiopian Biotechnology Institute (EBTi) was facilitated for the provision of PCR testing for the presence of tomato brown rugose fruit virus (ToBRFV), a plant pathogen, upon request from BASF-Nunhems for the service and phytosanitary certificates to accompany its exports of solanum seeds to the European Union (EU);
- Due to strict phytosanitary and quarantine measures as part of the EU's emergency response to ToBRFV, information about the aforementioned MoU and service provision was shared with other potentially interested exporters, including Syngenta;
- The new state minister of agricultural development, Dr Mandefro Nigussie, has been informed of and has warmed to the custom of convening the Ethio-NL Seed Committee, an audience of Dutch / international companies with the MoA that is facilitated by ISSD Ethiopia, and a meeting will be held soon.

Piloted demand driven interventions to address seed value chain bottlenecks

Multiple interventions in seed value chains were scaled in 2020. These aimed to solve common problems in relation to EGS supply, seed quality assurance, and seed marketing, among other topics. The seed core groups have been supported in establishing their legitimacy as arenas for the collaborative governance of the seed sector. Most embedded is the Amhara regional core group, which often leads in initiating, coordinating, monitoring and evaluating efforts to transform the seed sector in the region. ISSD Ethiopia facilitated meetings of the regional seed core groups to get their strategic guidance in scaling and institutionally embedding promising innovations in seed value chains in the

country. Together in partnership with others, important stakeholders took the lead in scaling innovations. Investment decisions were taken, their progress appraised, and innovations documented and the lessons learned shared in events, meetings and workshops and through communication channels and products. Where required, ISSD Ethiopia assisted the core groups both technically and financially in guiding the process. Other specific outputs in 2020 included:

- Performance of 2019/20 contractual EGS production was evaluated by all concerned stakeholders and 2020/21 contractual agreements of EGS supply were facilitated in all regions;
- MoA and regional state BoAs were empowered to witness, monitor and enforce contractual agreements of EGS supply;
- In Oromia (south & west), ISSD Ethiopia granted ETB 130,000 to Oromia Agricultural Input Regulatory Authority (OAIRA) to co-invest in training newly recruited inspectors and procure personal protective equipment (PPE) to safely carryout inspections during the COVID 19 pandemic;
- In Amhara, coaching support has helped scale DSM of maize hybrid to 56 *woredas* and pilot DSM of wheat in two *woredas* in 2020;
- In Oromia (east), performance of the 2019 pilot on improving demand assessment and accountability in conventional seed distribution and direct seed marketing (DSM) in Hararghe zones was evaluated, progress reported, challenges identified, lessons learned and the way forward planned, including improved task division between BoA and RCPA, which in turn has improved performance and further reduced costly rates of carryover;
- Performance of a similar pilot in 2019 in Oromia (south & west) was evaluated in a workshop with 43 participants from offices of agriculture at zone and *woreda* level, RCPA, multi-purpose cooperatives (MPCs) and development agents (DAs), during which plans to scale the activity in 2020 were made;
- Two MPCs in Ada'a *woreda*, Oromia (south & west) were coached on how to better perform seed demand assessment;
- 24 selected seed agents working with OSE were trained on the benefits associated with DSM and the seed marketing directive, during which their challenges were identified and reported to OSE;
- A round table discussion between OSE and 23 seed agents in possession of valid CoCs drawn from three zones and fifteen *woredas* was arranged to improve upon their relationships, which inspired OSE's Arsi branch to do the same with 93 of its seed agents;
- In the South, performance of DSM was evaluated and increased from 45 to 63 *woredas* in 2020, of which concerned stakeholder in only three *woredas* are not yet functioning independently and continue to receive training from ATA.

Mainstreaming social inclusion and nutrition

The pluralistic approach of ISSD Ethiopia is inclusive of the operators of and service providers to seed value chains relevant to informal, intermediate and formal seed systems, and the different market segments they serve. In 2016, prior to selecting seed value chains to work on, analysis was conducted to assess the gendered performance of tasks from plant genetic resources management, through variety development, (early generation) seed production and seed distribution, to farmers' utilization of seed and their agronomic practices. This informed our selection of seed value chains, taking their relevance to women as a criterion, and directed awareness raising, training, coaching, supervision and monitoring by staff.

Different groups in society are engaged in this way, and also in meetings, committees, core groups, and platforms facilitated by the programme. The seed core groups are one specific arena for inclusion. Representatives of BoAs, seed regulatory authorities, RCPAs, research institutes, universities, public seed enterprises, private seed producers/companies, farmers' cooperative unions, and NGOs are united in their decision making about support to the seed sector. ISSD Ethiopia has also sensitized the investment decisions of the core groups to gender. Since 2016, all investment decisions are documented on grant canvases, which explicitly ask: who benefits; and how is gender addressed in activities? In 2019, we started recording the impact of these investments. All canvases, from 2016 onwards, have been updated with this information for evaluating our impact on numerous areas of outcome, including social inclusion and nutrition.

By facilitating Dutch/international breeding companies trade with and investment in Ethiopia, we have created opportunities to broaden the crop and variety portfolio for which quality seed is on offer. This

is particularly important for nutrition, but building climate resilience as well. These companies offer quality seed(lings) of fruit and vegetables, potato and forage, all of which are limited in availability in Ethiopia. Fresh fruit and vegetables and potato are important for human nutrition, but so is the dairy and protein derived from improved animal nutrition and quality forage. All of these products are increasing in their cost to consumers in Ethiopia⁹, and are significantly lacking in the average rural Ethiopian diet¹⁰.

Conclusions and recommendations

Achievements

- In 2020, ISSD Ethiopia linked at least eight SPCs and one PSP to sources of quality EGS/starting material in Amhara and Oromia (south & west);
- Five unions, one PSP and two public seed enterprises across Amhara and Tigray and one newly-established PLC in Oromia (east) were linked to ISSD Ethiopia-supported SPCs as contract growers;
- In Oromia (east), the unit at Haramaya University helped establish a PLC to trade in seed potatoes and OFSP vines produced by Haji Faji and one other SPC through outgrower agreements;
- Nine SPCs, three PSPs and 500 seed agents in Amhara, Oromia (south & west), SNNPR and Sidama obtained CoCs from authorities to produce and retail certified seed;
- Three unions in Oromia (east), three SPCs in Oromia (south & west) and two PSPs in Amhara were linked to suppliers of small seed packs;
- Five SPCs across Amhara and Oromia (south & west) obtained co-financing;
- Three SPCs in Oromia (east) received auditing and crop insurance services;
- Further upgrades were made to the Seed Information Exchange, a digital platform for seed marketing information, which ISSD Ethiopia will handover to MoA shortly;
- In 2019, GAWT and ISSD Ethiopia decided to scale their efforts in popularizing selected hybrid varieties of onion and tomato of the Dutch breeding company Enza Zaden from the Central Rift Valley to Amhara, SNNPR and Tigray as well, reaching 570 farmers in intensive field training and 713 during field days at demonstration sites across 18 *woredas* in 2020;
- With ISSD Ethiopia's support, Rijk Zwaan has introduced slicer cucumber as a new crop and commodity to the fresh market, which is roughly 10 times more lucrative for farmers than tomato, requiring just over 9% of the area of land to generate the same gross margins;
- MoU between MoA and the Ethiopian Biotechnology Institute (EBTi) was facilitated for the provision of PCR testing for the presence of tomato brown rugose fruit virus (ToBRFV), a plant pathogen, upon request from BASF-Nunhems for the service and phytosanitary certificates to accompany its exports of solanum seeds to the European Union (EU);
- Multiple interventions in seed value chains were scaled in 2020 to solve common problems in relation to EGS supply, seed quality assurance, and seed marketing, among other topics;
- Performance of 2019/20 contractual EGS production was evaluated by all concerned stakeholders and 2020/21 contractual agreements of EGS supply were facilitated in all regions;
- In Oromia (south & west), ISSD Ethiopia granted ETB 130,000 to OAIRA to co-invest in the training of newly recruited inspectors and procurement of personal protective equipment (PPE) to safely carryout inspections during the COVID 19 pandemic;
- In Oromia, performance of the 2019 pilots on improving demand assessment and accountability in conventional seed distribution was evaluated, progress reported, challenges identified, lessons learned and the way forward planned;
- In the South, performance of DSM was evaluated and increased from 45 to 63 *woredas* in 2020, of which concerned stakeholder in only three *woredas* are not yet functioning independently and continue to receive training from ATA;
- The programme has also sensitized the investment decisions of the core groups to gender by documenting all investment decisions on grant canvases that explicitly ask: who benefits; and how is gender addressed in activities?;

⁹ Bachewe, F., Hirvonen, K., Minten, B. and Yimer, F., 2017. The rising costs of nutritious foods in Ethiopia. *Addis Ababa: IFPRI ESSP Research Note*, 67.

¹⁰ Headey, D., Hirvonen, K., Hoddinott, J. and Stifel, D., 2019. Rural food markets and child nutrition. *American Journal of Agricultural Economics*, 101(5), pp.1311-1327.

- All canvases, from 2016 onwards, have been updated using a slightly revised format with this important information for evaluating our impact on numerous areas of outcome, including social inclusion and nutrition.

Challenges, opportunities and lessons learned

2020 posed some serious challenges to agriculture and the seed sector, including:

- COVID-19-related mobility restrictions, at least at the onset of the pandemic, and inability of stakeholders to meet, share information and coordinate activities face-to-face;
- Mobility restrictions on and limited communication capabilities of ISSD Ethiopia staff working remotely, and follow up with core group members and stakeholders scaling innovations in seed value chains;
- Limited reserves of foreign currency to import high quality seed of nutritionally-dense crops like fruit and vegetables;
- Reorganization and capacity limitations in government and its provision of services to the sector.

However, opportunities did present themselves, including:

- Endorsement of the seed sector transformation agenda¹¹ and Ethiopia's first seed policy, which give direction to the country's future;
- Rapid assessments of the impact of COVID-19 on the seed sector and Seed Alerts published in May¹² and June¹³ made a response plan readily available to government and other stakeholders;
- Government and other stakeholders' commitment to actions recommended by the Seed Alerts.

In addition, a number of lessons were learned:

- The pandemic actually facilitated uptake of information and communication technologies, which made it possible to coordinate activities remotely;
- Frequent contact and sharing of information and advice with input directorates of MoA and BoAs has helped raise seed sector leadership and coordination on the agenda of government officials;
- Whilst contractual agreements improve the coordination and market-orientation of EGS production, a lot more consolidation needs to be done before supply is boosted.

Way forward

- Business orientation in the seed sector needs further enhancement, and the linkages between seed producers and input and service providers, and markets need professionalizing;
- MoA and regional state BoAs need to consolidate the effort to systematize EGS production in the country, by continuing to witness, monitor and enforce signed contractual agreements of supply;
- Contractual (early generation) seed supply has to continue not only to enhance the business orientation of the seed sector, but to ensure more sustainable supply of quality seed;
- Seed agent/dealer networks need strengthening, and further investment in seed marketing infrastructure by Government and development partners would go a long way to this end;
- Seed agents/dealers need to achieve economy of scale and generate income throughout the year by trading in other agro-inputs and advisory services, and require business management skills;
- Domestic and foreign direct investment in the seed sector must be enabled to widen the crop and variety portfolio for which quality seed products are on offer and adapt to changing climates;
- Potential for seed export and forex earnings to improve the country's balance of trade in the regard should be seriously explored by MoA;
- Committees, core groups and platforms established by ISSD Ethiopia that improve coordination at local, regional state and federal levels should be sustained by MoA and BoAs.

¹¹ MoA (2019) *Transforming the Ethiopian Seed Sector: issues and strategies*. Government of the Federal Democratic Republic of Ethiopia. Addis Ababa.

¹² WCDI, 2020a. Seed Alert Ethiopia, number 1. Wageningen Centre for Development Innovation and ISSD Ethiopia Programme. https://www.wur.nl/upload_mm/1/0/7/215cfd9-b4a7-4533-a09a-266acf6798ba_Seed%20sector%20assessment%20-Ethiopia%20-%20May%202020.pdf

¹³ WCDI, 2020b. Seed Alert Ethiopia, number 2. Wageningen Centre for Development Innovation, and ISSD Ethiopia Programme. https://www.wur.nl/upload_mm/a/f/5/d97db26a-7dc3-4301-aa5d-d0fd0e4ecfc4_Seed%20Sector%20Alert%20-%20June%20-%20Ethiopia.pdf

Improved enabling environment

Improved enabling environment for enhanced performance of seed value chains

The seed sector transformation agenda¹⁴ has been incorporated in the (multi-)annual plans of stakeholders at federal and regional state levels as a result of efforts to raise stakeholder awareness of and commitment to implement its strategies. The specific agenda to establish dedicated leadership bodies to the seed sector in each region has been advanced in particular in Amhara and Oromia. The position of ESA has been strengthened by the secondment of a secretariat officer and inclusion of the association in strategic dialogue facilitated by the programme. Further, ISSD Ethiopia carried out thorough (de)briefing on the institutional mapping and needs assessment (IM&NA¹⁵) of Ethiopia's seed regulatory services, and the programme's innovations in relation to seed quality were included in the strategy of MoA and EIAR to improve quality control and assurance in the country. Since 2017, ISSD Ethiopia has had the mandate to establish a sustainable system of EGS supply in the country and recently submitted the EGS Multiplication System Guideline to MoA for endorsement and implementation. The guideline provides for participation of capable CoC-holders in EGS production of public varieties. Rapid assessments of the impact of COVID-19 on key seed sector functions were conducted in May¹⁶ and June¹⁷, resulting in the publication of two Seed Alerts. Recommendations, and the stakeholders best positioned to propel their action, were proposed to and approved by senior leadership in the sector. In October, ISSD Ethiopia assessed the status of seed production across the country and alerted government to the need to coordinate collection, processing, storage and eventual distribution of what appears to be a record harvest for Ethiopia, and to ensure that stakeholders have sufficient working capital to operate.

Evidence-based innovations advocated and implemented

Since 2017, ISSD Ethiopia has been organizing, systematizing and institutionalizing the production of EGS for more reliable, sustainable and demand-driven supply throughout the country. Mandates, roles, responsibilities and task division in the production of breeder, pre-basic and basic seed have been clarified. Consensus has been reached that it is the responsibility of: the breeder at the agricultural research centre to which a given variety is registered to maintain breeder seed; the technology multiplication directorates within the Ethiopian Institute for Agricultural Research (EIAR) and regional agricultural research institutes (RARIs) of Amhara (ARARI), Oromia (OARI), the South (SARI) and Tigray (TARI) to produce pre-basic seed; EABC, ASE, OSE and South Seed Enterprise (SSE) to produce basic seed; and all holders of a valid CoC to produce certified seed. Production of any class of EGS ought to be upon demand, agreed to contractually and signed by both parties. This year, ISSD Ethiopia submitted the EGS Multiplication System Guideline to MoA for endorsement and implementation. The guideline provides for participation of capable CoC-holders in EGS production of public varieties.

Rapid assessments of the impact of COVID-19 on key seed sector functions were conducted in May¹⁸ and June¹⁹, resulting in the publication of two Seed Alerts. Via mobile application and web survey, and focus group discussions on virtual conferencing platforms, a panel of more than 40 local experts

¹⁴ MoA (2019) *Transforming the Ethiopian Seed Sector: issues and strategies*. Government of the Federal Democratic Republic of Ethiopia. Addis Ababa.

¹⁵ Hassena, M., van den Broek, J. and Borman, G., 2020. *Final report to RVO: institutional mapping & needs assessment of Ethiopia's public seed sector services* (No. WCDI-20-101). Wageningen Centre for Development Innovation. <https://library.wur.nl/WebQuery/wurpubs/562068>

¹⁶ WCDI, 2020a. Seed Alert Ethiopia, number 1. Wageningen Centre for Development Innovation and ISSD Ethiopia Programme. https://www.wur.nl/upload_mm/1/0/7/215cfd9-b4a7-4533-a09a-266acf6798ba_Seed%20sector%20assessment%20-Ethiopia%20-%20May%202020.pdf

¹⁷ WCDI, 2020b. Seed Alert Ethiopia, number 2. Wageningen Centre for Development Innovation, and ISSD Ethiopia Programme. https://www.wur.nl/upload_mm/a/f/5/d97db26a-7dc3-4301-aa5d-d0fd0e4ecfc4_Seed%20Sector%20Alert%20-%20June%20-%20Ethiopia.pdf

¹⁸ WCDI, 2020a. Seed Alert Ethiopia, number 1. Wageningen Centre for Development Innovation and ISSD Ethiopia Programme. https://www.wur.nl/upload_mm/1/0/7/215cfd9-b4a7-4533-a09a-266acf6798ba_Seed%20sector%20assessment%20-Ethiopia%20-%20May%202020.pdf

¹⁹ WCDI, 2020b. Seed Alert Ethiopia, number 2. Wageningen Centre for Development Innovation, and ISSD Ethiopia Programme. https://www.wur.nl/upload_mm/a/f/5/d97db26a-7dc3-4301-aa5d-d0fd0e4ecfc4_Seed%20Sector%20Alert%20-%20June%20-%20Ethiopia.pdf

identified potential disruptions to activities in the seed sector and recommended immediate practical action to ensure continuity in performance. Recommendations, and the stakeholders best positioned to propel their action, were proposed to and approved by senior leadership in the sector. Pre-empting a food security crisis, government was quick to encourage and support seed producers to produce seed on large areas of land. It worked. ISSD Ethiopia assessed the status of production three months later, which seems set to reach a record high. Whilst encouraging, this also poses a serious challenge to collect, process and store the large volume of seed that is expected to be harvested, assure its quality, and ensure its timely distribution in 2021. This also requires allocating sufficient working capital to do so. After consulting stakeholders in Amhara, Oromia, the South and at federal level in October, ISSD Ethiopia published recommendations in a third Seed Alert.

To institutionally embed innovations that improve the quality and quantity of sustainable agricultural production, and also markets and trade, ISSD Ethiopia facilitates: framing of seed policy issues by regional seed core groups; meetings of the National Seed Advisory Group (NSAG); implementation of seed policy studies and provision of evidence for new policy options; workshops and seminars for policy dialogue; capacity strengthening of mandated institutions in the implementation of seed policy; and the development of guidelines that support seed policy implementation. In addition to the outputs already mentioned, other specific outputs in 2020 included:

- The seed sector transformation agenda²⁰ has been incorporated in the (multi-)annual plans of stakeholders at federal and regional state levels as a result of efforts to raise stakeholder awareness of and commitment to implement its strategies;
- In Oromia, at least 75 representatives of BoA, OAIRA and RCPA have received hard/soft copies of the seed sector transformation agenda, and a selected number of whom have been directed assisted technically in the implementation of strategies outlined in the transformation agenda;
- Policy and institutional gaps with regards to whose mandate it is to coordinate the seed sector in Oromia were revealed to the input directorate of BoA to motivate them to advise their leadership to incorporate a dedicated leadership body;
- In Amhara, the performance of the seed sector has been assessed, challenges identified, strategies developed and consensus on the findings reached between core group members and policy makers, and as a result a vacancy for a full-time seed sector coordination position within BoA has been announced;
- In Tigray, stakeholders were interviewed on their perceptions of challenges related to seed sector governance and the findings presented to the regional core group and technical team, which in turn will announce measures to improve coordination particularly at *woreda* level;
- Thorough (de)briefing on the institutional mapping and needs assessment (IM&NA²¹) of Ethiopia's public seed sector services was conducted, which resulted in agreement that ISSD Ethiopia would periodically convene a platform to coordinate support to Ethiopia's seed regulatory services;
- ISSD Ethiopia innovations in relation to seed quality were included in the strategy of MoA and EIAR to improve quality control and assurance performance in Ethiopia;
- Seed and variety promotion practices advised by ISSD Ethiopia have been included in MoA's strategy for developing agricultural inputs extension, which is believed will alleviate challenges related to demand creation and seed marketing and align seed supply and demand better;
- Concept and guiding principles of integrated seed sector development along with plans to consolidate and scale ISSD Ethiopia innovations have been incorporated in MoA's proposal for a 'Comprehensive Seed Sector Development Project'.

Strengthened position of the Ethiopian Seed Association

ESA is the umbrella organization for inter/national seed traders in Ethiopia. The mission of ESA is to establish dynamic seed production, distribution and trading systems that contribute to sustainable agricultural development in the country. ESA aims to achieve this by representing its members and promoting partnerships at inter/national level; upgrading knowledge, skills and professionalism in seed production, distribution and trade in Ethiopia; promoting the use of high quality seed and planting

²⁰ MoA (2019) *Transforming the Ethiopian Seed Sector: issues and strategies*. Government of the Federal Democratic Republic of Ethiopia. Addis Ababa.

²¹ Hassena, M., van den Broek, J. and Borman, G., 2020. *Final report to RVO: institutional mapping & needs assessment of Ethiopia's public seed sector services* (No. WCDI-20-101). Wageningen Centre for Development Innovation. <https://library.wur.nl/WebQuery/wurpubs/562068>

materials; ensuring compliance with the highest standards of business ethics and quality and mediating disputes among members and with the public; and contributing to the establishment of a transparent and equitable regulatory environment for the seed industry in Ethiopia through sustained dialogues with government and harmonization regionally. ISSD Ethiopia has strengthened ESA by seconding one a secretariat officer to the association from 2018 to 2020 and by including its representatives in strategic dialogue. Other specific outputs in 2020 included:

- 18 seed producers (including six non-members) obtained maize seed treatment chemicals from suppliers to which they were linked by ESA, which compiled an inventory and negotiated support from MoA to facilitate the release of foreign currency and issuance of import permits;
- Foreign currency required to import these chemicals for the treatment of this year's harvest of maize seed was estimated and submitted to MoA to facilitate procurement ahead of 2021;
- At least 10 seed producers were linked to buyers.

Mainstreaming social inclusion and nutrition

ISSD Ethiopia facilitates dialogue between stakeholders from federal and regional state levels, thereby creating the opportunity for different groups to share experiences, exchange ideas, debate the problems and converge on solutions. Supporting ESA, ISSD Ethiopia tried to give a stronger voice to the private sector and an audience with decision makers in government. The rapid assessments of the impact of COVID-19 on the seed sector were inclusive of farmers, seed traders, SPCs, PSPs, seed companies, public seed enterprises, breeders and researchers, DAs, seed inspectors, non-/governmental offices, and policy makers. However, not a single women took part in the panel, which illustrates their poor representation, in particular, in positions of leadership, which the surveys aimed to engage. With regards to nutrition, systematizing EGS production not only relieves EIAR and RARIs of the burden of producing pre-/basic seed of widely adapted varieties that public seed enterprise and selected producers are capable of doing themselves, but creates opportunity for the production of EGS of more narrowly adapted, neglected or underutilized crop varieties.

Conclusions and recommendations

Achievements

- The seed sector transformation agenda²² has been incorporated in the (multi-)annual plans of stakeholders at federal and regional state levels as a result of efforts to raise stakeholder awareness of and commitment to implement its strategies;
- The specific agenda to establish dedicated leadership bodies to the seed sector in each region has been advanced in particular in Amhara and Oromia;
- The position of ESA has been strengthened by the secondment of a secretariat officer and inclusion of the association in strategic dialogue facilitated by the programme;
- Further, ISSD Ethiopia carried out thorough (de)briefing on the institutional mapping and needs assessment (IM&NA²³) of Ethiopia's seed regulatory services, and the programme's innovations in relation to seed quality were included in the strategy of MoA and EIAR to improve quality control and assurance in the country;
- Since 2017, ISSD Ethiopia has had the mandate to establish a sustainable system of EGS supply in the country and recently submitted the EGS Multiplication System Guideline to MoA for endorsement and implementation;
- Recommendations of the rapid assessments of the impact of COVID-19 on key seed sector functions and resulting Seed Alerts for May and June, and the stakeholders best positioned to propel their action, were proposed to and approved by senior leadership in the sector;
- In October, ISSD Ethiopia assessed the status of seed production across the country and alerted government to the need to coordinate collection, processing, storage and eventual distribution of what appears to be a record harvest for Ethiopia, and to ensure that stakeholders have sufficient working capital to operate;

²² MoA (2019) *Transforming the Ethiopian Seed Sector: issues and strategies*. Government of the Federal Democratic Republic of Ethiopia. Addis Ababa.

²³ Hassena, M., van den Broek, J. and Borman, G., 2020. *Final report to RVO: institutional mapping & needs assessment of Ethiopia's public seed sector services* (No. WCDI-20-101). Wageningen Centre for Development Innovation. <https://library.wur.nl/WebQuery/wurpubs/562068>

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- 18 seed producers (including six non-members) obtained maize seed treatment chemicals from suppliers to which they were linked by ESA, which compiled an inventory and negotiated support from MoA to facilitate the release of foreign currency and issuance of import permits.

Challenges, opportunities and lessons learned

2020 posed some serious challenges to agriculture and the seed sector, including:

- COVID-19-related mobility restrictions, at least at the onset of the pandemic, and inability of stakeholders to meet, share information and coordinate activities face-to-face;
- Limited absorption capacity of MoA for ISSD Ethiopia innovations and the continuation thereof;
- Lack appreciation for the need and clarity on how best to govern the seed sector;
- These were politically turbulent times for Ethiopia.

However, opportunities did present themselves, including:

- Considerable interest of government and its development partners to transform the seed sector;
- Concentration of efforts made in the seed sector by the Agricultural Growth Program (AGP); ATA; Alliance for a Green Revolution in Africa (AGRA); United States Agency for International Development (USAID); Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ); CGIAR and EIAR;
- High recognition of ISSD Ethiopia at federal and regional state levels and willingness to partner with the programme.

In addition, a number of lessons were learned:

- Embrace systemic change, take the vision of the future as a port of departure and not today's problems, and focus the narrative on root causes of the problem and not its symptoms;
- Manage adaptively, timing is everything, grab opportunities when they present themselves;
- Invest in social capital, set inclusion as a goal on its own and not a side thought, and ultimately be prepared to make a long-term investment.

Way forward

- The next step in sector's journey towards transformation includes improved seed regulatory and other service provision and an enhanced enabling environment for private investment;
- Existing policies and strategies are enabling, what is required is ensuring their full implementation;
- Structure needs putting in place at both federal and regional state levels with clear roles, task division and alignment between governing bodies;
- It will take a skilled policy entrepreneur or entrepreneurs to fill the shoes of ISSD Ethiopia's staff, but such a successor is required to use and expand existing networks, frame problems in the seed sector, build advocacy coalitions, lead by example and scale up change processes;
- ESA will need a lot of support to strengthen its position and potential for playing this role;
- ESA would be empowered in its role if private seed producers and companies were enabled to grow and improve in their performance.

Collaboration

The COVID-19 pandemic had considerable impact on internal systems of planning, monitoring and evaluation, and on communication and learning with the outside world. ISSD Ethiopia quickly got up to speed with digital/virtual ways of doing business and managed to carry out activities with moderate changes to the work plan. (Two-)weekly virtual meetings of managers at regional units, PMU and WCDI facilitated the kind of agile management needed for ISSD Ethiopia to appropriately respond to the needs of the sector during the difficult and uncertain times of the pandemic. The leading role played in guiding the rapid assessments and synthesising the Seed Alerts resulting from them positioned ISSD Ethiopia's units as the sources of knowledge and advice to turn to in rolling out the response to the pandemic. From September to October, ISSD Ethiopia held a series of webinars on the key messages of selected publications by the programme, achievements of the past four-five years, and lessons learned for the institutional embedding of innovations in Ethiopia. With particular interest in the latter of these topics, REALISE seed experts and agronomists joined. At least six books, 15 reports and articles, 30 manuals and guides, one film and countless news items can be read on our website: www.ISSDethiopia.org. In 2020, collaboration with a wide range of N/GOs, industry players, research and knowledge institutes, and programmes, projects and initiatives continued. ISSD Ethiopia extended its support to BASF-Nunhems; Enza Zaden and Rijk Zwaan in the Dutch/international private sector. ISSD Ethiopia piloted the rapid assessment methodology that was later taken up by CASCAPE in assessing the impact of COVID-19 on the fertiliser sector, and SBN on food systems in the sesame growing areas of the north-west.

M&E and communication

The COVID-19 pandemic had considerable impact on internal systems of planning, monitoring and evaluation, and on communication and learning with the outside world. Both government and the programme restricted staff mobility to protect their health and safety and those who they would normally come in contact with. It was not possible to meet face-to-face, which meant deviating from ritualized events in planning, monitoring, evaluation and learning. Acknowledging this, ISSD Ethiopia quickly got up to speed with digital/virtual ways of doing business and managed to carry out activities with moderate changes to the work plan. Not only did ISSD Ethiopia staff members need to learn how to shift to an online medium of interaction, they had to invest in increasing their communication capabilities whilst working from home. Despite allocating funds for this purpose, unreliable infrastructure and networks throttled communication to some extent. Government's clamp down on localised events of social unrest, and more recently the conflict in the north of the country, severed lines of communication with staff and partners.

The rapidly unfolding crisis caused by the pandemic was also reason for more frequent coordination than in previous years. Whilst in the past it was sufficient for the programme management unit (PMU) to conduct quarterly visits to regional units to monitor outputs and expenditure and to participate in activity planning for the coming three months, managers of the regional units, PMU and WCDI met weekly online from 17 April to 15 May, and thereafter twice-monthly for the remainder of the programme's activities. This facilitated the kind of agile management needed for ISSD Ethiopia to appropriately respond to the needs of the sector during these difficult and uncertain times, which is also exemplified by the rapid assessments conducted in May and June. The leading role played in guiding the rapid assessments and synthesising the Seed Alerts resulting from them positioned ISSD Ethiopia's units as the sources of knowledge and advice to turn to in rolling out the response to the pandemic.

More routine to ISSD Ethiopia was the periodic collection of basic, production and marketing data, and measurement of KPIs, of selected seed producers, which are entered into respective datasheets and aggregated in the BENEFIT indicator tracking table (ITT) for 2020. ISSD Ethiopia conducted the endline seed availability and use survey for 2019 and 2020's Belg and Meher seasons in August/September and is working on the endline report. Preliminary findings on the impact of ISSD Ethiopia on seed availability and use are summarized in this annual report. ISSD Ethiopia is pleased to report that against all but one of the programme's corresponding intermediate outcome indicators there is statistically significant corroborating evidence from the survey that communities are better off than in 2016.

From September to October, ISSD Ethiopia held a series of webinars on the key messages of selected publications by the programme, achievements of the past four-five years, and lessons learned for the institutional embedding of innovations in Ethiopia. With particular interest in the latter of these topics, REALISE seed experts and agronomists joined. At least six books, 15 reports and articles, 30 manuals and guides, one film and countless news items can be read on our website: www.ISSDethiopia.org.

Collaboration

Collaboration with BENEFIT programmes

Collaboration took place between ISSD Ethiopia and its partners in BENEFIT in product and place combinations and on thematic areas including: gender; nutrition; climate resilience; scaling; capacity strengthening; access to finance; monitoring and evaluation; and communication. Together, support was given in the development of the value chains of malt barley; potato; sesame; and soybean. However, in 2020, due to budget limitations and the phasing out of activities, no collaborative plans were drawn.

Collaboration with other projects and partners

In 2020, collaboration with a wide range of N/GOs, industry players, research and knowledge institutes, and programmes, projects and initiatives continued. ISSD Ethiopia maintained relationships with all key stakeholders in the seed sector, including: MoA, AGP, ATA, Federal Cooperative Agency (FCA), NSAG, EABC, EIAR, The Alliance of Bioversity International and CIAT (henceforth The Alliance), ICARDA, AGRA, Bill & Melinda Gates Foundation, and GIZ at federal level; BoAs, RCPAs, public seed enterprises, seed companies, seed- and farmers' cooperative unions, RARIs, universities, and NGOs at regional level; and *woreda* offices of agriculture and cooperative promotion, DAs, SPCs and PSPs, and agricultural research centres at local level.

Collaboration with Dutch private sector

ISSD Ethiopia extended its support to BASF-Nunhems; Enza Zaden and Rijk Zwaan in 2020, more on which is elaborated in Improved markets and trade.

Thematic collaboration

COVID-19 and rapid assessment were the topics of experience sharing with CASCAPE and SBN in 2020. ISSD Ethiopia piloted the methodology that was later taken up by CASCAPE in assessing the impact on the fertiliser sector, and SBN is assessing the food system in sesame growing areas of the north western part of the country.

Mainstreaming social inclusion & nutrition

ISSD's intervention in informal seed systems, which included specific focus on these areas though PVS and crowdsourcing in collaboration with The Alliance, ended in 2019.

Conclusions and recommendations

Achievements

- ISSD Ethiopia quickly got up to speed with digital/virtual ways of doing business and managed to carryout activities with moderate changes to the work plan;
- (Two-)weekly virtual meetings of managers at regional units, PMU and WCDI facilitated the kind of agile management needed for ISSD Ethiopia to appropriately respond to the needs of the sector during the difficult and uncertain times of the pandemic;
- The leading role played in guiding the rapid assessments and synthesising the Seed Alerts resulting from them positioned ISSD Ethiopia's units as the sources of knowledge and advice to turn to in rolling out the response to the pandemic;
- ISSD Ethiopia conducted the endline seed availability and use survey for 2019 and 2020's Belg and Meher seasons in August/September despite the restrictions in place due to the pandemic;
- ISSD Ethiopia is pleased to report that against all but one of the programme's corresponding intermediate outcome indicators there is statistically significant corroborating evidence from the survey that communities are better off than in 2016;

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- From September to October, ISSD Ethiopia held a series of webinars on the key messages of selected publications by the programme, achievements of the past four-five years, and lessons learned for the institutional embedding of innovations in Ethiopia;
 - At least six books, 15 reports and articles, 30 manuals and guides, one film and countless news items can be read on our website: www.ISSDethiopia.org;
 - In 2020, collaboration with a wide range of N/GOs, industry players, research and knowledge institutes, and programmes, projects and initiatives continued;
 - ISSD Ethiopia extended its support to BASF-Nunhems; Enza Zaden and Rijk Zwaan in 2020;
 - ISSD Ethiopia piloted the rapid assessment methodology that was later taken up by CASCAPE in assessing the impact of COVID-19 on the fertiliser sector, and SBN on the food system in sesame growing areas of the north western part of the country.

Challenges, opportunities and lessons learned

Challenges:

- COVID-19-related mobility restrictions, at least at the onset of the pandemic, and inability of stakeholders to meet, share information and coordinate activities face-to-face;
- Limited time and funds remaining for collaboration among BENEFIT partners.

Opportunities: As BENEFIT comes to an end, ISSD Ethiopia looks forward to concluding conferences in 2021 and the development of the Ethio-NL Seed Partnership between the two countries, and a new and exciting intervention in the food systems of Ethiopia.

Lessons learned: The success of the portfolio as a whole is a result of strong collaboration bilaterally between Ethiopia and the Netherlands, among government, industry, science and civil society in and between both countries, and across the various value chains in Ethiopia, from production to consumption.

Way forward

Unlocking the potential for increased private domestic and foreign direct investment in the seed sector for contributing to food and nutrition security and climate resilience in Ethiopia through the Ethio-NL Seed Partnership, and identifying leverage points for catalysing sustainability and inclusion in the major food systems of the country.

Institutionalisation and way forward

Handing over / sharing lessons learnt

The implementation modality of most of ISSD innovations are by the beneficiaries and responsible government offices themselves making activity handing over a relatively straightforward process. ISSD used core group at regional level and advisory group at national level to ensure that all activities supported by ISSD go through discussion with stakeholders. As a result, stakeholders are part of the process of not only implementation but also designing activities. Hence, the bigger objective is about co-developing the Ethiopian seed system with actors and hence implementing partners or the beneficiaries themselves will continue to use the system they developed. As a result, there is not as such formal handing over of ISSD activities, but there were different annual workshops and periodic platforms in which these innovations and outcomes are discussed with wider stakeholders. These workshops and platforms were conducted in the regions and at national level, making handing over of innovation a continues process. ISSD had a plan to have national workshop at the end of the project period to present the long journey of ISSD over the last one decade, which was not possible because of the COVID-19 pandemic in 2020.

Institutionalisation and sustainability of results

Seed production in Ethiopia is very much skewed to two crops (wheat and maize) and ISSD used the concept of crowdsourcing and participatory variety selection to introduce varieties of different crops on shelf. This has been done together with universities and research centres, who also have the varieties on their shelf. The purpose was to encourage seed producers to pick those varieties demanded by farmers. Accordingly, some of the research centres and universities are continuing the PVS and crowdsourcing activities and other projects have taken up supporting seed producer cooperatives to multiply varieties preferred by farmers in different regions.

ISSD invested in the development of seed producer's cooperatives as strategic to produce seeds of crops not often produced by parastatals and private. As a result, a number of informal groups were formalized and capacitated to fill the gap. We have also learned that it will take time for these cooperatives to be strong seed business mainly related to their background (farmers) and the many linkages that the seed business demand (access to EGS, regulatory service, and market). There was discussion as to how to sustain these cooperatives and the conclusion was to organize them under a union. Different organizations have taken up this model and continued to support seed producer's cooperatives in different parts of the country. ATA has taken up the idea and organized these cooperatives into unions also solving some of the challenges the cooperatives have in terms of access to basic seed and market in some case.

ISSD has been working on making seed policies. These are often done with key stakeholders as it demands negotiations and consensus building. In this regards ISSD has been working intensively with ATA and the ministry at national level and bureau of agriculture at regional level. The purpose was also to make the ministry and the bureau part of the process so that they continue the process. Together different strategies and legal documents have been developed and as well as implementations have started for some of systemic challenges. While strategies and legal documents are something that can be done less often, implementation of these documents is rather critical. Thus, ISSD focused on engaging the bureau and the ministry on implementation while facilitating the process. For instance, ISSD has been facilitating a systematization of EGS production and supply. The activity was embedded in the MoA and regional bureaus of agriculture to facilitate the process of contract signing and supply. The system has been developed and what remains is continuously practicing it. While the seed producers themselves are taking up on their own, as this is their business, the ministry and bureau will continue the facilitation for some times to ensure the system will become a normal process and procedure. ISSD has initiated seed marketing earlier to this phase. But given the problem of resistance has continued to systematically support the implementation together with other actors to ensure institutionalization of the marketing system in the seed sector.

Way forward

There is still a long way to go to develop the Ethiopian seed sector and future intervention should be based on the lessons we have learned in the past. One major lesson learned in the process of

supporting the increase in seed production is limited professionalization of seed business Ethiopia. This is for all types of producers (cooperatives, unions, private and public), which is very much related to its orientation (service provision) and high level of government involvement. These have created dependency of producers on government and vice versa. Major lessons learned in the process is that developing a business oriented seed sector is not a simplistic issue of knowledge and finance capacity, rather it is a complex problem of symbiotic relation between seed producers and government as well as the ideological base that has created the relationship although the issue of capacity exists. Given the dominance of the public seed production, professionalizing will continue to be a challenge for some times in Ethiopia. With regards to the government it is also the issue of seed sector security, which sometimes goes to the level of sovereignty. Hence future intervention should recognize the complexity of the seed sector problem.

Over years we have also learned that there is considerable interest of government and its development partners to transform the seed sector. Yet, it is important to take into account the current limited absorption capacity of MoA as well as the regional bureau of agriculture to effectively develop the seed sector. In the past in addition to ISSD, there are already concentration of efforts made in the seed sector by the AGP, ATA, AGRA, USAID, GIZ and some CGIAR institutes to support the Ethiopian seed sector. This is the potential that exist to support the transformation the Ethiopian seed sector to respond adequately to the unmet demand. Much more than the physical availability, it is also about developing a strong and resilient seed system. Many initiatives have started in the past and some of them are already taking root. Yet there are still some unfinished business to ensure the existence of strong and resilient seed system in Ethiopia.

The following are ways forward to transform the Ethiopian seed sector.

- Unlocking the potential for increased private domestic and foreign direct investment in the seed sector for contributing to food and nutrition security and climate resilience in Ethiopia;
- Leading the Ethiopian seed sector towards business orientation is indispensable not only to make a commodity, but also to separate those crops which can be managed by the market and those which need other supports. These also call for consolidating efforts of developing seed marketing system and systematizing business to business linkage including EGS, and other inputs supplies;
- Domestic and foreign direct investment in the seed sector must be enabled to widen the crop and variety portfolio for which quality seed products are on offer and adapt to changing climates. This also calls for strong seed sector governance that clearly guide the seed sector regulatory system that serve the seed sector efficiently;
- The seed sector also need skilled policy entrepreneur that use and expand the existing network to frame problems in the seed sector, build advocacy coalitions, lead by example and scale up change processes. It may be advisable to strengthen and embed such capacity in ESA;
- Institutional support to intermediary seed systems like local seed business is critical to ensure that seed of locally important and neglected and underutilized crops is supplied. The current effort of organizing them into union need to continue to ensure its sustainability.





Executive Summary

Introduction

The overall project impact statement and expected outcome of the CASCAPE programme has been “enhanced capacity of the research and extension system to generate demand-driven best fit technologies for uptake by smallholder farmers.” Activities implemented to achieve the outcomes were categorized under four major headings, namely, (1) testing and validating best-fit technologies and agricultural innovations; (2) pilot scaling, scaling support and pre-extension demonstrations of validated practices; (3) *woreda* development support to maximize agricultural productivity through effective planning by means of integration of best-fit practices; and (4) capacity development for research and extension stakeholders and farmers to enhance their technical skill and knowledge to generate and disseminate demand-driven technologies.

During the no-cost extension period, the programme planned to achieve documentation and dissemination of results, institutionalization of CASCAPE approaches and best fit practices into the extension system, preparation of new best fit manuals and policy briefs based on 2019 results, and publication of scientific papers to research wider research community. No field trials were planned but, due to the COVID-19 pandemic, planned stakeholder meetings, trainings and workshops that were broad activity areas of the no cost extension period could not take place. The project activities at cluster level officially ended in August 2020. In the following pages, we highlight some achievements made in the context of the pandemic during the half year of 2020.

Major achievements

- The scaling support activities in respective clusters have reached 46,010 farmers irrespective of the unforeseen COVID-19 pandemic;
- Twenty three best-fit practice manuals were compiled. Of these, three manuals (potato, wheat and animal feed) were translated into extension training materials in local languages including Tigrigna and in Amharic;
- CASCAPE training outcome level assessment report was finalized and the innovative capacity building approach was developed into need-based training manual for use by the research and extension system;
- Six policy briefs are already produced in different clusters based on in-depth studies including potato and Rhodes grass rotation, controlling free grazing and maize production intensification in Bahir Dar, Malt barley in Hawassa, soya bean in Jimma and papaya in Mekelle;
- The scaling process outcome monitoring of selected commodities in different clusters (wheat in Addis Ababa, malt barley in Hawassa, soya bean in Jimma, potato and Rhodes grass in Bahir Dar and papaya in Mekelle) has been finalized and a national synthesis report has been produced to share with policy makers;
- As part of the efforts to institutionalize the innovation recommendation mapping, two rounds of trainings were organized for EIAR, Ethiopian Soil Research Institute (ESRI) and MoA staff;
- During the no-cost extension period five papers were published, 12 others were submitted while 13 others are drafted and ready for submission to a suitable journal. In addition, Jimma, Mekelle and Hawassa university clusters have prepared a legacy book and proceedings for distribution with stakeholders as a means of institutionalization of approaches. At national level, we have documented CASCAPE journey highlighting its approaches, success factors, challenges and lessons learned so that other agricultural development projects can benefit from CASCAPE experience;
- Following the COVID-19 pandemic, CASCAPE, together with IFDC, carried out a rapid assessment of the fertilizer sector in order to assess the impact of the COVID-19 pandemic on the functioning of the fertilizer sector. The results were shared with the officials of the input marketing directorate of MoA, the extension system at federal and regional levels, EIAR and RARIs;
- CASCAPE was engaged to give technical support to the extension directorate of MoA, mainly in the preparation of the ten years strategic plan of the ministry;
- A quick assessment was conducted to explore stakeholders' response about CASCAPE's achievement and contribution to the national research and extension system. This is in a way an end-line kind of assessment on the programme and explored CASCAPE's core competence and role in best practice screening, validation and dissemination along with capacity development. The areas of improvement for future implementation have also been identified through this exercise.

Major challenges, opportunities, lessons learnt and way forward (exec summary)

Challenges

- The outbreak of COVID-19 pandemic, followed by state of emergency and travel ban all over the country inhibited many of the planned activities. In the context of the pandemic, MoA decided to drop formulation of extension package for 2020 preferring to implement the 2019 package. As a result, our ambitious plan incorporating 29 BFP manuals into the national extension package did not materialise;
- Limited face-to-face contact with target *woredas* and stakeholders at regional and national level to provide technical supports, results sharing workshops and training to institutionalize approaches tested and validated in CASCAPE;
- Blackout of internet connection, limited access (limited network and infrastructures) of target *woredas* to communicate through e-based communication system such as email and telephone.

Opportunities

- The no-cost extension of CASCAPE staff beyond 2019 has helped to finalize ongoing activities in clusters including harvesting of trials, data compilation and documentation activities;
- Presence of CASCAPE staffs who has been working since the inception.

Lessons learnt

- The strong collaboration between the AGP, MoA, BoA and CASCAPE enable the AGP and BoA to continue institutionalization of CASCAPE innovations and approaches;
- It is very much important to maintain senior project staff for coaching and understanding the entire lifetime development of the project;
- The importance of organizing any data for further use.

Institutionalisation and way forward

- Ensuring the institutionalization of validated BFP manuals into the national extension package was the most ambitious plan for the no-cost extension period. However, this was not materialized due to the COVID-19 pandemic. Some project approaches such as the integrated validation protocol (IVP), innovative capacity building approach based on needs assessment and innovation recommendation mapping (IRM) were among the planned activities for institutionalisation within the extension and research system. However, it was not possible to implement all these activities in the context of the pandemic. It is encouraging however to learn that the research-extension-university linkage piloted has now been taken up and hosted by the MoA extension directorate and implementation plan is coordinated by the EIAR in the various mandate zonation areas for joint validation, and technology multiplication;
- Previous to the outbreak of the COVID-19 pandemic, seven best practice manuals, on potato, malt barley, Rhodes grass, soya bean, faba bean, wheat and root rot disease control on garlic were used to prepare extension package for the model farmers in the Ethiopian highlands;
- Future work should have the aim to incorporate into the national extension package the 22 previously submitted and 23 new BFP manuals. In some areas, particularly Tigray, the regional research system (TARI) has adopted the Integrated Validation Protocol (IVP) approach for validating technologies instead of using yield as the main criteria to release to technologies to the farmers. With this protocol, technologies are assessed for their effectiveness on yield as well as many other aspects such as profitability, gender and nutrition, environmental aspects and farmer preference. The IRM approach has been handed over to the ESRI but capacity building and follow up support is being provided by the REALISE programme;
- The project team also published numerous scientific papers from the different activities that can serve as information dissemination and contributes to institutionalization;
- The published policy briefs also serve as means of communication and institutionalization for the policy makers.

Institutionalisation of 2016-2020 approaches, results and outcomes;

- From the start, CASCAPE has piloted the bottom up planning and joint experimentation as a point of departure from the conventional transfer of technology that has been little effective. Another unique aspect has been the institutional innovation that brought together the research and extension institutions, universities and farmers together in the field. The farming system approach balanced with the commodity value chain development was another important point of departure. In terms of tools, e.g. the IVP, the IRM, soil-landscape mapping, have been adopted as innovative tools. The rapid assessment of CASCAPE's approaches with stakeholders revealed that CASCAPE approaches has enhanced local capacities to adapt and generate demand-driven technologies as well as supporting the uptake of technologies and practices by farmers through effective scaling strategies. Although several of these approaches and technologies have organically been scaled out and taken up at *woreda* level, large-scale adoption and incorporation into the national system needs much more work in the future. A number of newly developed and modified BFP manuals that the project has prepared are currently under consideration at MoA and awaiting to be incorporated in the national extension system.
- Based on the data that was collected in each cluster there is evidence of large scale adoption of agricultural technologies and practices which has resulted in high yields and levels of productivity. CASCAPE designed and applied a three-phased scaling approach: a 'hands on' phase in the intensive *woredas* leading to the best fit manuals, a 'hands off' phase in the scaling *woredas*, and an 'enabling environment' phase in non-project areas through linking up AGP and creating partnerships with BoAs and RARIs.
- Through bottom up planning at *woreda* level the scaling strategy for specific agricultural innovations was planned and structured together with stakeholders. This included forecasting demand of

agricultural inputs (seeds, fertilizers, herbicides, etc.). Improved forecasting and planning has improved the timely availability of quality inputs and the availability of financial resources to purchase the inputs (through arrangements with cooperatives or obtained credit facilities).

- The lessons, and the scaling guidelines that were developed by the programme are shared with policy makers at federal and regional levels.

Quality and quantity of sustainable agricultural production

No fieldwork was conducted in testing, validation, and demonstration during the no-cost extension period. In addition to documentation, publication and dissemination of results that were core activities of the period, some clusters have managed to carry out scaling support activities and through which AGP reached more than 46,000 farmers. Project data collected from the field indicates that the BFPs (comprising of agricultural technologies and practices) have been adopted and as a result farming households have seen significantly increases in yields and agricultural productivity at a farm level.

Improved enabling environment

The planned consultative meetings, national dialogues, and workshops (both at regions and national) were not implemented because of the movement and restriction on gathering because of COVID-19 pandemic. However, it was possible to conduct two rounds of IRM training for ESRI, EIAR and MoA staff. Project outputs were communicated in the form of print materials, pamphlets, leaflet, video documentary, and mass media. The six policy briefs were actively shared with regional and federal officials including heads of extension programmes at MoA and BoA, RARIs and EIAR. In addition, five scientific papers published in open access journals are widely shared among researchers and the academia. University clusters were using their community radio to reach the stakeholders in addition to sharing the legacy books, proceedings. The 23 new best fit practice manuals that we have prepared will be shared with the extension directorate of MoA for institutionalisation.

Partnership and collaboration

In addition to collaboration within the BENEFIT partnership, there was a collaboration with the International Fertilizer Development Centre (IFDC) on assessing and alerting the impacts of COVID-19 on the fertilizer sector in Ethiopia. The cluster teams particularly in Mekelle, Bahir Dar and Jimma have actively participated in the quick assessment of the impact of COVID-19 pandemic on soya bean and sesame value chains value chain together with ENTAG, SBN and ISSD.

Quality and quantity of sustainable agricultural production

Best fit agricultural practices developed and made available for dissemination

Testing, validation, pilot scaling and PED of best-fit technologies

In 2020, no field activity was planned except harvesting some 2019 trials in the highland areas such as Bako in Oromiya, Farta in Amhara and Malga in the southern regions. However, Mekelle University with the assistance of AGP, carried out scaling support activities with wheat best-fit practices (BFPs), 705 with faba bean BFP, 629 with garlic BFP and 780 with potato BFP in three intervention *woredas* (Ofa, Endamehoni and Alaje). The total farmers reach was 29,114 of which about 29% were female households. Papaya scaling also reached 5200 farmers with the distribution of 244,000 seedlings in 10 *woredas* of the Tigray region. This is the result of the institutionalization effort of the project. The Addis Ababa University cluster covered 5683 ha land through its scaling support in 85 *kebele* and reached 11,696 farmers, of which 11.6% were female households.

The NPMU finalized the documentation of the scaling process related to outcome monitoring on various selected commodities. The national synthesis report will be shared with policy makers.

Enhancing capacity of EIAR and RARIs in best-fit technology testing

There was plan to carry out trainings on integrated validation protocol, innovation recommendation mapping (IRM) and soil landscape analysis to EIAR and RARI staff as part of the institutionalisation process. In spite of the covid-19 restrictions, 5 training sessions on IRM approach were conducted with the support of NPMU, WUR and Mekelle University involving subject matter specialists from ESRI, EIAR and MoA.

Testing and delivering demand-driven technology to the extension department at national, regional and *woreda* level

During the no-cost extension period, 23 BFP manuals have been prepared by regional teams on various regionally prioritized commodities (Table 1). In addition to preparing new BFP manuals based on the 2019 results, previous manuals were revised in the light of new crop varieties released and new fertilizer types introduced. Some clusters converted the BFP manuals into extension materials. For example, AAU produced an extension manual for bread wheat that is translated into Amharic and Afan Oromo. MU, in collaboration with CDSF and Tigray Bureau of Agriculture and Rural Development selected potato, wheat and animal feed to be developed into an extension training material. A technical working group for each of the BFMs was established and training was given on how to develop competency framework for farmers, DAs and SMS. The Tigray BoA and Mekelle University have committed themselves to disseminating this approach and the extension products that have been produced.

Table 1 New and revised BFPM prepared in 2020

University/Cluster	No of BFPMs Prepared			Description
	New	Revised	Total	
Addis Ababa University	6	-	6	Bread wheat, food barley, potato, lentil, chickpea and teff.
Bahir Dar University	6	5	11	New: Alfalfa, bread wheat, malt barley, maize, oat and vetch mixture, Rhodes grass and legume mixture; Revised: food barley, potato, sweet lupin and Rhodes grass
Hawassa University	1	-	1	Desho grass production
Jimma University	3	-	3	Belete potato, Tumsa faba bean and Guduru teff
Mekelle University	6	-	6	Sesame, malt barley, wheat, chickpea, and sorghum production
	1		1	Integrated Soil Fertility Management
Total	23	5	28	

Research priorities and results are discussed between RARIs, Universities and Extension Department at federal and regional level

Meetings and workshops aimed at sharing results and research priorities were not carried out due to the COVID-19 pandemic. In addition, there was no new research priorities planned for the 2020 no-cost extension period. Instead with a direction from BENEFIT PCU, CASCAPE carried out a rapid assessment of the fertilizer sector in order to assess the impact of the COVID-19 pandemic on the functioning of the fertilizer sector through rapid remote survey and focus group discussions (FGDs). The fertilizer alert identified current challenges and outlined urgent actions needed in the fertilizer sector based on the survey and focus group discussions. This was aimed at informing decision-makers where the impact of the pandemic was felt the most, and what actions are required to mitigate the identified challenges. The survey and FGDs covered a full range of fertilizer sector functions and supply chain operation. The survey included 50 respondents covering six stakeholder groups (Extension, Research, Policy Maker, Import and Transport, Farmer Organization and Credit and Financial Organization). Twenty-one participants from 13 different organizations were involved in the focus group discussions. CASCAPE published the findings of the Fertilizer Alert on BENEFIT website and fertilizer dashboard with IFDC (International Fertilizer Development Centre). In addition, the results of the Fertilizer Alert were shared with federal level officials of MoA (State Minister representative, Input director, Extension director, Soil fertility director) and ATA (Senior director) for their immediate action.

Engagement and technical support to the extension directorate of MoA

During 2020 CASCAPE continued to second a senior extension expert to support the extension directorate of MoA. The technical support was meant to facilitate the institutionalisation of best fit practices and piloted approaches into the national extension programme. In 2020 the support focussed on:

- Technical assistance in the preparation of the Ten Years Strategy Plan of the Agricultural Sector as a member of technical committee;
- Participated in the formulation of the 2021-2030 strategy of the agriculture sector;
- Participated in the formulation of the extension communication guideline amid COVID-19. This also included COVID-19 response strategy and preparation of alternative extension communication guideline;
- Participated in the preparation of the ICT for extension service guideline. Digitalizing agriculture is a recurring theme in the transforming the agricultural sector;
- Participated in the mandate zonation initiative which is part of the operationalization of the research-extension-university linkage platform in different administrative zones. This activity was originally piloted together with EIAR in 2019 and was handed over to the extension directorate of MoA. The main objective of the mandate zonation is to ensure wider adoption of available agricultural technologies through technology introduction, testing, validation and scaling by creating strong linkage between research and extension. Implementation modalities and process has been developed by the steering committee and approved by the stakeholders.

Increase capacity of *woreda* to develop and implement agricultural plans, including strategies for scaling

Training of Trainers and cascading of training - A few trainings, to be conducted by clusters and NMPU, to facilitate the institutionalization process were planned. However, none of them materialized because of COVID-19 pandemic.

Support development and implementation of agricultural *woreda* plans - Through bottom up planning at *woreda* level the scaling strategy for specific agricultural innovations was planned and structured together with stakeholders. This included forecasting demand of agricultural inputs (seeds, fertilizers, herbicides, etc.). Improved forecasting and planning has improved the timely availability of quality inputs and the availability of financial resources to purchase the inputs (through arrangements with cooperatives or obtained credit facilities).

Monitoring and Evaluation of Scaling and Scaling Guidelines - Field based monitoring and evaluation of scaling process and scaling outcomes has provided substantial evidence of high rates of adoption of CASCAPE promoted technologies and practices. Based on the data that was collected in each cluster there is evidence of large scale adoption of agricultural technologies and practices which has resulted in high yields and levels of productivity. CASCAPE designed and applied a dynamic,

iterative and functional scaling approach that allowed designing tailored context-specific scaling strategies taking into consideration site-specific agro-ecological context and socio-economic conditions. In a nutshell, a three-phased scaling approach has been followed by CASCAPE: a 'hands on' phase in the intensive *woredas* leading to the best fit manuals, a 'hands off' phase in the scaling *woredas*, and an 'enabling environment' phase in non-project areas through linking up AGP and creating partnerships with BoAs and RARIs. These different phases show that the CASCAPE approach is starting as a project intervention, but moving into non-project areas and several growing seasons are needed to move from the early phases to the next phases. The scaling approach as implemented by CASCAPE has effectively supported key experts within the Ethiopian agricultural research and extension system to scale agricultural technologies, facilitate adoption of the promoted technologies and significantly improve agricultural productivity. A national synthesis report of scaling process monitoring has been published.

The tables below given an indication of adoption of improved technologies and area and yield for malt barley, soya bean, wheat papaya and potato.

Table 1 Adoption levels of malt barley technologies in southern Ethiopia (N=120)

Technology	PED	Non-PED	Scaling <i>woreda</i>	Non-scaling <i>woreda</i>
Use of improved seed %	100	100	100	100
Area improved ha	0.48	0.60	0.27	0.47
Weeding frequency	2.44	1.92	2.72	2.48
Row planting %	94	83	100	96
Herbicide %	16	12	51	53
Pesticide %	11	11	46	50
Seed rate kg ha ⁻¹	97.11	96.94	96.52	92.83
NPS kg ha ⁻¹	91.22	90.82	92.83	88.53
Urea kg ha ⁻¹	45.15	51.50	53.01	49.71
Productivity t ha ⁻¹	2.34	2.88	3.1	2.1
Sold proportion %	31.3	53.0	69.9	21.0

Table 2 Number of farmers and area covered by malt barley technologies

Scaling year	Total beneficiaries	Area covered (ha)	Average yield (t ha ⁻¹)	
			Scaling <i>woreda</i>	National
2016	325	82	3.32	1.40
2017	19,155	6,706	3.78	1.40
2018	9,724	2,166	3.14	1.80
2019	20,184	6,233	3.20	2.10
Total/average	49,388	49,388	3.36	1.67

Table 3 Adoption levels of soya bean technologies in central Ethiopia (N=120)

Technology	PED	Non-PED	Scaling <i>woreda</i>	Non-scaling <i>woreda</i>
Use of improved seed %	100	100	100	100
Area improved ha	0.12	0.09	0.12	0.08
Weeding frequency	2.54	2.63	2.81	2.58
Row planting %	98.4	96.8	98.2	94.1
Herbicide %	1.6	4.8	9.4	0
Pesticide %	4.8	12.7	11.3	4.9
Seed rate kg ha ⁻¹	66.8	63.5	68.8	62.2
NPS kg ha ⁻¹	72.2	68.0	84.8	65.0
Urea kg ha ⁻¹	15.3	13.8	18.0	12.6
Productivity t ha ⁻¹	3.38	4.71	4.42	4.61

Table 4 Number of farmers and area covered by soya bean technology scaling

Scaling year	Total beneficiaries	Area covered (ha)	Average yield (t ha ⁻¹)	
			Scaling woreda	National average
2016	600	75.0	2.45	2.0
2017	1484	61.3	2.52	2.1
2018	3,372	141.9	2.49	2.2
2019	15,574	973.4	2.51	2.3
Total/average	21,030	1251.5	24.9	2.3

Table 5 Adoption levels of wheat technologies in central Ethiopia in relation to best fit recommendation (N=120)

Technology	PED	Non-PED	Scaling woreda	Non-scaling woreda
Use of improved seed %	100	95	57	50
Area improved ha	1.16	0.82	0.56	0.37
Weeding frequency	1.11	1.47	1.94	1.81
Row planting %	0	0	9	10.5
Herbicide %	98	91	93	84
Pesticide %	73	93	64	70
Seed rate kg ha ⁻¹	153	122	148	92
NPS kg ha ⁻¹	243	221	272	168
Urea kg ha ⁻¹	282	218	268	144
Productivity t ha ⁻¹	5.42	3.65	3.44	2.51
Use of improved seed %	70.2	39.84	28.65	39.26

Table 6 Number of farmers and area covered by Hidase wheat technology scaling

Year	Number of farmers	Area (ha)	Average yield (t ha ⁻¹)	
			PED	NON-PED
2017	9,045		-	-
2018	21,577		-	-
2019	30,566		5.4	4.0
Total/average	61,188	39,148	37.1	13.8

Table 7 Adoption levels of Maradol papaya technologies (N=60)

Technology	PED	Scaling woreda
Use of improved seed %	100	100
Area improved ha	0.095	0.065
Weeding frequency	8.85	8.75
Row planting %	100	100
Herbicide %	0	1.5
Pesticide %	44	65
Productivity t ha ⁻¹	75.8	69.8
Use of improved seed %	78.6	77.9

Table 8 Number of farmers and area covered in Maradol papaya scaling

Year	N	Number of woredas	Area (ha)	Number of seedlings	Average yield (t ha ⁻¹)	
					Scaling woreda	National average
2015	308	2	1,400	7,750	-	16.9
2016	2,015	11	9,568	52,625	28.0	14.4
2017	6,622	11	30,100	16,550	28.9	14.4
2018	9,250	11	42,045	231,250	27.7	15.6
2019	5,655	11	44,659	245,627	25.3	14.7
Total/average	23850	11	126372	553,802	27.5	14.8

Table 9 Adoption levels of Belete potato technologies (N=60 for PED trials; N=120 for scaling trials)

Technology	PED	Non-PED	Scaling woredas	Non-scaling woredas
Use of improved seed %	93	91	41	21
Area improved ha	0.10	0.08	0.20	0.08
Weeding frequency	2.7	2.8	2.4	2.8
Row planting %	100	100	100	100
Herbicide %	0	0	0	0
Pesticide %	24	5	7	0
Seed rate kg ha ⁻¹	2,079	2,335	1,980	2,400
NPS kg ha ⁻¹	108	117	89	113
Urea kg ha ⁻¹	82	102	75	112
Productivity t ha ⁻¹	23.3	15.9	30.6	26.1
Use of improved seed %	31.3	53	30.9	21.0

Table 10 Number of farmers and area covered in potato scaling in FARTA and South Achefer

Year	Number of farmers	Area (ha)	Average yield (t ha ⁻¹)	
			Scaling woreda	National average
2017	5,843	962.5	33.7	13.5
2018	16,242	3,150.1	40.4	13.8
2019	24,872	3,195.8	-	14.2
Total/average	46,957	7,308.1	37.1	13.8

Diversified agricultural products are made available

Demonstration and promotion of home gardening and fruits - In collaboration with CANAG (CASCAPE Nutrition and Gender) a number of home garden activities were being conducted in different clusters. Some labour saving technologies were demonstrated. In all clusters, CASCAPE is still giving the maximum support to CANAG so that activities related to nutrition and gender are addressed in CASCAPE intervention areas.

Conclusions and recommendations

Achievements

- Mekelle and Addis Ababa University clusters have conducted scaling support activities reaching 46,010 farmers;
- Some 23 new BFP manuals have been prepared and 5 old manuals have been revised on major commodities (wheat, malt barley, potato, soya bean, etc). Jimma, Mekelle and Hawassa Universities have prepared CASCAPE legacy books documenting project approach;
- All project data were compiled in readily accessible format for future use by third parties;

- Five scientific papers have been published in international journals. Many more are drafted and ready to be submitted;
- The outcome level assessment of scaling process was completed at a cluster level. The project learnings were synthesised and included in a national synthesis report which provides an overview of the scaling pathways and scaling guidelines;
- Following the COVID-19 pandemic, fertilizer alert that covered full range of the fertilizer sector was produced, discussed and distributed to stakeholders;
- CASCAPE was engaged to give technical support to the extension directorate of MoA, mainly in the preparation of the ten years strategic plan of the ministry.

Challenges, opportunities and lessons learnt

Challenges

- The outbreak of COVID-19 pandemic, followed by state of emergency and travel ban all over the country throughout the no cost extension period;
- This affected face to face contact with target *woredas* and stakeholders at regional and national level to provide technical support, results sharing workshop and training to institutionalize CASCAPE approaches. This was originally the main objective during this no-cost extension period;
- Blackout of internet connection, limited access (limited network and infrastructure) of target *woredas* to communicate through e-based communication system such as email and telephone.

Opportunities

- The no-cost extension beyond 2019 has helped to finalize ongoing documentation activities;
- The interest of policy makers to include, learn and integrate CASCAPE approaches and learnings into Ethiopian policy (Scaling guidelines, Extension – Research collaboration, etc.)

Lessons learnt

- Project outcome is higher than expected-ITT (on yield basis and adoption basis);
- Scaling worked well (through capacity building approach with AGP; and via adoption of the approach by other donor agencies DSF, Selector);
- The strong collaboration between the AGP, MoA, BoA and CASCAPE enable the AGP and BoA to continue institutionalization of CASCAPE innovations and approaches;
- It is important to maintain senior project staff for coaching and understanding the entire lifetime development of the project;
- Seconding project staff as support staff within partner organizations facilitates coordination, institutionalization and embedding of approaches and project based evidence;
- Technology alone is not a sufficient condition for successful uptake of best practices – input supply (e.g., seed and agrochemicals market linkage and input supply) are also important for technology uptake by farmers; Customized training approaches, scaling strategies and analysis of socio economic condition and market demand support successful uptake of promoted practices. Learning from peer farmers during farmer field days and Farmer to Farmer encounters created enabling conditions for effective uptake of promoted technologies and practices;
- The involvement of CASCAPE experts in the *woreda* development planning process facilitates the inclusion of validated best practice within the *woreda* agricultural plans; and supports integrated planning supporting timely availability and access to input, capacity building, etc.;
- Participation of research and extension stakeholders in the project annual review and planning workshops first at regional level and then at national level sensitizes and creates mutual ownership among stakeholders with regard to CASCAPE interventions and project outcomes, and creates a favourable condition for the alignment and collaboration at all levels;
- Farmer field days (early 2020) have become important vehicles to familiarize farmers and stakeholders about technologies and best practices and attracts media attention (television radio dissemination). But it is most effective when organized jointly with relevant stakeholders (extension, RARIs, BENEFIT sister projects such as ISSD and SBN) than unilaterally by CASCAPE;
- Provision of trainings based on the competency level of the target group improves uptake. However, training that followed participatory learning (andragogy), increases participants' interest on the trainings.

Challenges, opportunities and lessons learnt over 5 years (2016-2020)

- Security issues concerns in some regions such as SNNPR, Amhara and Tigray because of the political unrest restricted mobility;
- Supply of good quality seed, finance (institutional credit), and markets for produce (with high yielding varieties such as potato) are important scaling challenges;
- Staff and DA turnover and reshuffling of government officials created instability in institutional linkages. Many project staff have also left in search of better options and job security;
- The onset and cessation of rainfall was also problematic as the late start delayed planting in some regions and the prolonged rain affected crop harvest;
- Pest and disease prevalence; improved crop varieties in production become susceptible to new strains of leaf and stem rust (mainly wheat), chocolate spot (faba bean) and potato late blight;
- Platforms (Malt Barley, etc)??
- The fertilizer recommendation framework, developed under the EthioSIS program, has been further refined based on a series of fertilizer trials on the major staple crops throughout the Ethiopian Highlands; Outcome has resulted in reconsideration import/home production policies for wheat at government level. Preliminary results (still to be published) show that blend fertilizers so far do not have a significant advantage over the traditional fertilizers in wheat, maize and teff. Other findings are that differences in soil properties are important indicators of yields, but also in response of crops to fertilizers. Hence, knowledge on soil differences is key to fertilizer recommendations that are efficient from both agronomic as economic perspective;
- Seven CASCAPE BFM have been incorporated in the national extension package. These are mainly on new and nutrient-dense and/or commercial crops, such as potato, malt barley, and papaya. Apparently, for the major staples, it is more difficult to leave the pathways spelled out before CASCAPE. At the same time though, research on responses to fertilizers on wheat by CASCAPE has led to reconsideration of wheat import policies at government level;
- Experts that have been involved with the CASCAPE project are actively involved in a variety of platforms and working groups within the Ethiopian Agricultural Research and Extension system where they continue embedding the project learnings and best practices in policy formulation and the institutional embedding of evidence and based approaches;
- Capacity building approach (Training of Trainers) was new to the Agricultural Growth Program and has been widely copied and adopted at woreda level;
- Research-extension-education linkages for PAR and technology testing has been adopted as a novel and effective way to disseminate technology by EIAR, regional research centres and Ministry of Agriculture – Directorate of Extension;
- A multi-year farm survey during both phases of CASCAPE revealed that Net Farm Income in the highlands can be explained well by just a few characteristics, including fertilizer use, crop diversity, number of animals, size of household and farm size;
- All involved (farmers, extension workers, policy makers, researchers, university staff) have gained tremendously from CASCAPE, and the expected outputs have been achieved and more than that. Even the many extension workers that left the woredas where CASCAPE / AGP worked will have the approach to development that was leading in their 'luggage' for the rest of their lives. This is quite important, as they will tell others to work along the same lines. Nonetheless, it is good to always consider which choice of approaches, activities, goals and outcomes will last beyond project duration. For future projects and programs, it is necessary to be honest and realistic on expectations, and perhaps also perform an a priori return-to-investment assessment based on what will last and what stands the risk of evaporating when the dominant presence of a project fades away;
- Several CASCAPE outputs and outcomes are being published in scientific journals – by end of 2021 they will be brought together in a legacy document and shared with relevant stakeholders.

Improved enabling environment

Regional and national policy makers make informed decisions about agricultural research and extension opportunities and challenges

Prepare policy briefs, scientific papers and research book that support decisions - Based on the results of the 2019 trials, in-depth studies and surveys (e.g., drivers for adoption study), the project planned to prepare and disseminate a range policy briefs on different topics. Six policy briefs have so far been prepared, revised and now at final stage of release. This is still planned to be done prior to a BENEFIT national conference. Topics covered include cluster farming as a gateway for agricultural intensification and large scale agriculture using the experiences from North Shewa; the importance of controlling free grazing in abating land degradation in Amhara region; integration of improved fodder species (e.g., Rhodes grass) for intensification of crop-livestock systems in the Ethiopian highlands; raising maize productivity through intensification; enhancing soya bean value chain towards enhancing nutrition.

Share project results, in-depth studies, and policy briefs with stakeholders for uptake of agricultural practices and technologies

Stakeholder meetings, platforms and media coverage - During the no-cost extension time, both NPMU and clusters planned to hold stakeholder meetings to further strengthen the uptake and institutionalization of the project activities when the project officially winds up. The consultative meeting, national dialogues, and workshops (both at regions and national) were not implemented because of the movement and restriction on gathering because of COVID-19 pandemic. However, project outputs were communicated in the form of printed materials, pamphlets, leaflet, video documentary, and mass media. University clusters were using their community radio to reach the stakeholders and AAU prepared a video documentary based on achievements. MU alone distributed more than 600 print material in the form of BFP, policy briefs, legacy books and ISFM guideline and distributed in Tigray region.

Conclusions and recommendations

Achievements

- Six policy briefs and 36 BFP manuals have been produced, of which three have been taken up into National Extension Package formulation;
- Involvement in several consultations, technical working groups, advisory panels towards EIAR and MoA;
- Project outputs were communicated in the form of print materials, pamphlets, leaflet, video documentary, and mass media;
- University clusters were using their community radio to reach the stakeholders;
- AAU prepared video documentary based on achievements; and
- Policy makers have now recognized the importance of research and scaling for development more than ever.

Challenges, opportunities and lessons learnt

- The outbreak of COVID-19, followed by state of emergency and travel ban all over the country throughout the no cost extension period;
- Blackout of internet connection, limited access (limited network and infrastructures) of target *woredas* to communicate through e-based communication system such as email and telephone;
- Difficulty to get higher officials and administrators to attend platforms and meetings.

Way forward (post 2020)

The various departments of the MoA have incorporated approaches tested and validated in the CASCAPE project in their implementation and to a lesser extent into the newly developed policy documents such as the extension strategy.

Experts that have collaborated with and been part of the CASCAPE project are still active in different positions within the Ethiopian Agricultural Research and Extension System. Within their respective roles and functions they continue to embed some of the results and experiences of the CASCAPE project with different partners and institutions.

Collaboration

M&E and communication

The major focus in this reporting year was on finalizing an already started activity, documenting project outcome, and producing report/publication that increase communication of project activities to the wider stakeholder. All the project data are stored centrally so that it can be available at later time. Success stories have been prepared that can still convey significant message to the community, regional and local decision makers. The story of papaya from MU continued in another form. At the beginning of the papaya intervention, farmers faced market problem for their produce. To address the problem, Mekelle CASCAPE along with Raya Azebo *woreda* office of small and medium enterprise have organized unemployed youth having 10 members to engage in papaya marketing. The market linkage was created with Mekelle University where they collected papaya fruit from farmers at fair price and sell it to University community in three campuses. The youth group have worked nearly for three and half years and graduated in 2019. The market linkage was successful as many of the group members have accumulated finance and diversified other businesses. In order to share this story to other actors working on horticulture, it was important to document the success story. To this effect, Mekelle CASCAPE has conducted a quick survey on the status of members of the youth group. Following this, success story was prepared based on the feedback provided by the team. The success story was shared to relevant stakeholders in the region.

Collaboration

Collaboration with BENEFIT programmes – The Jimma University cluster actively participated in quick assessment of the impact of COVID-19 pandemic on soya bean value chain together with ENTAG, SBN and ISSD.

Collaboration with other projects and partners – Mekelle University created a partnership with Global Alliance for Improved Nutrition (GAIN) project. showing interest to engage in papaya processing to produce dry biscuits and other products. Delegates of the company and the project came to Mekelle and have visited papaya farms both in the CASCAPE beneficiary farmers and investors in Raya Azebo *woreda*. They further discussed on possible collaborations during the implementation of the project led by GAIN.

Institutionalisation and way forward

Handing over / sharing lessons learnt

- 26 Best Fit Practice manuals, in hard and soft copy, were handed over to MoA, BoAs and other stakeholders; A formal session with high-level policy makers and local leaders in October 2019, combined with a field day, was held to celebrate this achievement;
- The strong collaboration between the MoA, BoA, AGP and CASCAPE enabled the AGP and BoA to continue institutionalization of CASCAPE innovations and approaches;
- Participation of experts involved in CASCAPE in variety of platforms and working groups are sharing CASCAPES lessons learned and continuing in further institutionalization and handing over of lessons learned and developed approaches;
- Capacity building on use of biophysical and socio economic data sets in recommendation domain mapping (IRM);
- Extension system should work with integrated approach that support scaling of agricultural technologies and practices (hardware/software/orgware) and sector wide approach, from ag input to commercialization, supported by bottom up planning at *woreda* level and integration with regional and zonal priorities, rural development strategies (see below including distribution, storage, processing, consumption).

Institutionalisation and sustainability of results

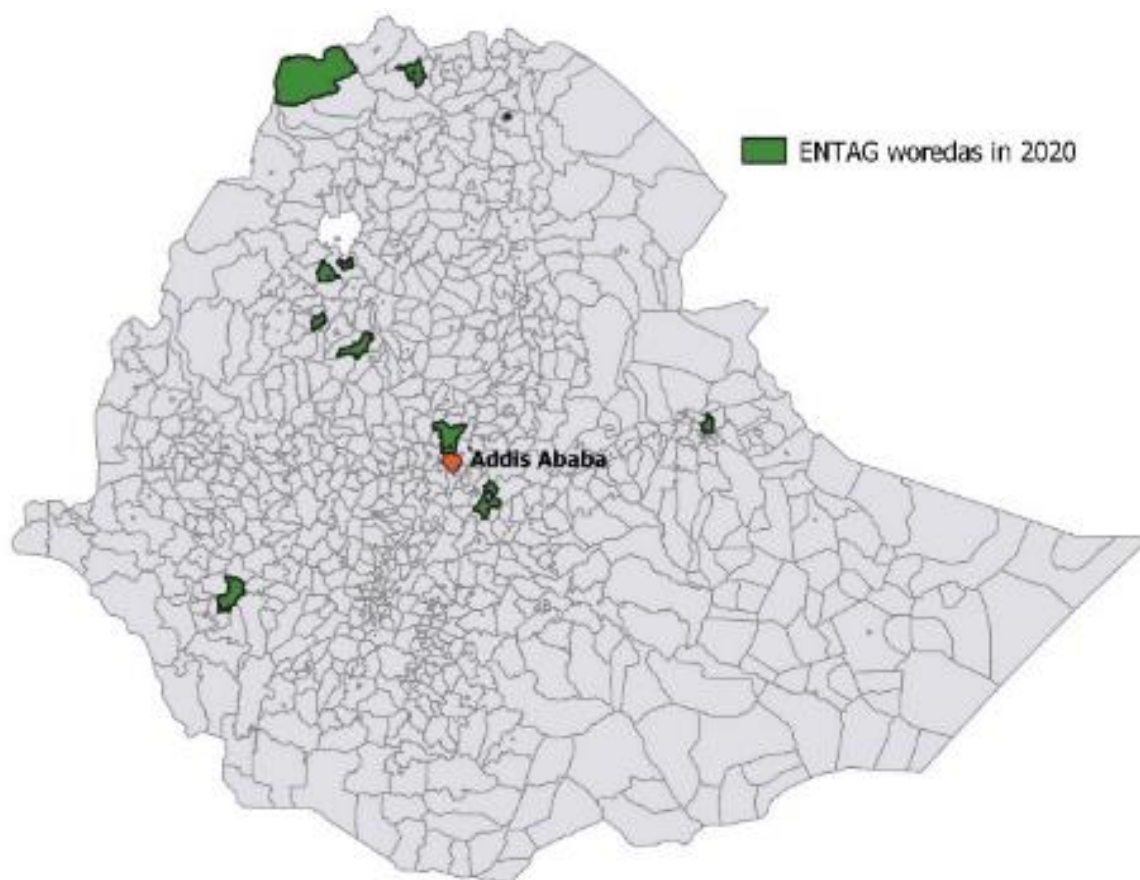
- Seven commodities best-fit practices (potato from Bahir Dar, garlic from Mekelle, soya bean from Jimma, malt barley, maize and faba bean from Hawassa and wheat from Addis Ababa clusters) have been selected and incorporated into the national extension package. These practices are translated into Amharic and become the part and parcel of the extension system;
- Institutionalization of best fit practice manuals and project approaches (bottom up planning, joint experimentation, needs based training, etc) into the national research and extension systems;
- The CASCAPE instruments such as Participatory Rural Appraisal, Integrated Validation Protocol and Innovation Recommendation Mapping, Participatory Action Research, and the Integrated Validation Protocol could become part of agricultural development strategy policies. Simplified extension materials, as developed in collaboration with CDMF, is key here, as part of the extension approach.

Way forward

- For fertilizers to be most effective, it is also necessary to scale up availability of quality seed. CASCAPE helped improve the EthioSIS-based area-specific fertilizer recommendations, but without access to seeds, the impact and profitability is limited;
- As the adoption rates of best fit technologies is high, there is ample scope for successful scaling of combined soil and crop technologies;
- For Food Security to become Food and Nutrition Security, ministries should have more cross-linkages as the focus should not solely be on production alone;
- It would be good when EIAR adopts the PAR and IVP approach (research-extension-education) in its approach and strategy;
- CASCAPE should evolve into a food systems program where the focus on production issues is broadened to include distribution, processing, consumption so as to satisfy several different outcomes (inclusiveness, affordability, sustainability, health and nutrition). This is also a suitable way to go perhaps for AGP, in combination with other flagship programs.



Appendix 5 ENTAG Annual report 2020



Executive summary

Introduction

The Ethiopia- Netherlands Trade for Agricultural Growth (ENTAG) Program has been supporting agribusinesses & entrepreneurs operating in Ethiopia. At impact level, ENTAG aims for improved sustainable food, income, and trade among rural households in Ethiopia. ENTAG Ethiopia's goal is: To increase agribusiness productivity, trade and foreign direct investment by strengthening the private sector in working more effectively with smallholders in applying new technologies and accessing finance for investment purposes. The ToC of the Program is based on the following three primary outcomes:

5. Increased demand for and use of ENTAG's market information services, and provision of hands on support to both domestic and foreign entrepreneurs/investors in selected sub-sectors;
6. Enhanced performance of selected sub-sectors; raise the volume and value of trade in domestic and high-value international markets;
7. Attracted and engaged companies to pursue more inclusive and sustainable value chain development.

ENTAG has chosen few priority sectors for its intervention. These sectors are Aquaculture, Legumes, Poultry, Spices, Sesame, Dairy and Potato. The main components of the Program activities namely are: Front Office & hands on technical support; Inclusive Business Models; Subsector platforms; Agribusiness Innovation Fund; Support of Private Sector Associations (PSA) and B2B linkage & Match making.

Major achievements

- Sectoral information and technical support were given to 20 foreign and local companies, investors and government agencies that work on poultry value chain;
- A rapid assessment on the impact of COVID-19 on Poultry, Aquaculture and Legumes subsectors was conducted and response mechanisms recommended by the assessments were disseminated to stakeholders, such as the Ministry of Agriculture;
- A virtual platform meeting was conducted with the objective of sharing the findings of COVID-19 impact assessments and discussing on recommendations proposed for a response plan;
- Business opportunity reports on Ethiopian Spices, Herbs, Legumes and Poultry value chains have been published and disseminated to stakeholders, such as the local and international private sector actors, MoA and the EKN;
- Technical and financial supports have been made to sectoral associations – Aquaculture, Poultry and ENLBA. The technical support was provided on grant proposal development, website development and board governance;
- Institutional collaboration was made with different development partners in creating an enabling environment and in mitigating the crisis caused by the pandemic on the poultry sector. Through collaboration with Dutch companies, market linkage support was given to poultry sector stakeholders. In addition, sector knowledge was shared through collaboration with foreign input suppliers in the country;
- As part of ENTAG innovation fund component, innovative and improved dairy feed from local farm residues was introduced by one of the grantees supported. As well as, green feed from alfalfa and other crops with local processing technology introduced by one of the innovative projects;
- Efforts have been made for years in order to establish the Ethiopian Pulse Council (EPC). Multiple workshops were conducted with key stakeholders and EPC establishment proposal is developed. The process is on its last stage and buy-in workshop was held on Nov 21, 2020 with the participation of H.E. Wro Aynalem, State Minister of Marketing at MoA;
- Kunzila Horticulture Development (KHD) program is ongoing. High level and community level communications and coordination are conducted. Baseline of the water and soil testing was done by Dutch expertise along with Bahir Dar University experts and communicated to relevant stakeholders;
- Assessment on COVID-19 Effect on Soybean Value chain was conducted in collaboration with the rest of the BENEFIT projects. Findings of the assessment was shared with MoA and other relevant stakeholders;
- Project outcomes and lessons learned are handed over to respective offices within MoA, as they are expected to further implement on these lessons. As part of ENTAG exit strategy, all other activities have been handed over to the private sector associations as they are expected to take most of the ENTAG service components to offer them as service packages to their (potential) members.

Major challenges, opportunities, lessons learned and way forward

Challenges

- The COVID-19 pandemic has hugely affected the implementation of project activities. It has not only hindered mobility and communication of project personnel, but also it almost paused the entire project activities from going forward. Due to that, most project activities were pushed towards the end of the implementation year and that constrained the outcome;
- Volatile security issue persisting throughout the country hindered implementation of planned activities as per schedule, and eroded the confidence of foreign investors to communicate, collaborate and work with Ethiopian counterparts;
- Continuous change in the staffing of government offices makes lobby work tedious and outputs low;
- The implementation of few innovation fund projects and their expected impacts have been constrained due to several reasons; such as, foreign currency shortage to import machines and materials; grantees' incapability to raise their share, and unrest in project sites;
- Another challenge in ENTAG innovation fund implementation is poor financial recording by the grantees. BENEFIT finance department reported that financial reports of some of the grantees who have completed project implementation are not up to the standard although these grantees have fully implemented the innovative projects;
- Due to the slow progress in aquaculture sub-sector and the lack of formal administration in the Spices Association, ENTAG's work in the two sectors has been limited to conducting COVID-19

assessment and strengthening the association in the case of the aquaculture sub-sector and conducting business opportunity reports in the case of spices, herbs and aromatics sub-sector.

Lessons learned and Opportunities

- Public-Private Partnership: Over the last three years considerable effort has been made by ENTAG to support the establishment of Ethiopian Pulse Council. Multiple workshops were conducted with key stakeholders and EPC establishment proposal was developed. The process is on its last stage and wrapping up validation workshop was held on Nov 21, 2020. The key lesson here is, in the future we need to have the critical mass attention of the public sector in addition to the anchor private sector actors;
- The MoA is securing financial resources for the COVID-19 response plan that not only contributes to the recovery of the hard-hit sector, but also provides an opportunity to fill gaps and untapped potential areas throughout the value chains of sub-sectors;
- The initiative of developing/revising the agricultural and rural development policy paves the way towards achieving an enabling environment for sub-sectors such as poultry, pulses etc, once strategies are put in place following the implementation of the policy;
- The MoA identified Poultry as a priority commodity for Ethiopia, which is a very good opportunity that will further strengthen the development of the sector;
- The need for clear role and responsibility among different people and partners and having timely and uniform communication among partners is crucial;
- From the pulse council establishment process it is learned that mainly for programs that could influence policies and high-level sectoral operation, the role or involvement of government bodies should go up from participation to leadership level;
- Innovation Fund intervention of the program has played great role in introduction of new technologies that enhance productivity and quality of supported sectors of the project;
- Linking training/education and research with private sector is very important to bring about effective productivity in the poultry spices and aquaculture sub-sectors given the small actors in the sector and lack of many available studies;
- PSAs and government have to be able to take up the major tasks that were initiated by ENTAG to support the private sector in Ethiopia and ensure economic development;
- If higher outcomes are expected to be achieved through the IF projects, increasing the amount of co-funding and extending the implementation period to more than a year would be good. Of course, the increased co-funding will require for a more thorough due diligence;
- Involving Ethiopian technical experts in the evaluation committee of IF projects is recommended because they are more aware of the local context.

The way forward

- The formalized linkage between the private sector and the government should still be strengthened for solving sector issues sustainably. As a way forward, investments should be promoted on the overlooked areas of sectoral value chains;
- The buy-in workshop on the pulse council was held in November 2020, now finalization of legalization of Ethiopian Pulse Council is yet to be done. ENTAG expects BENEFIT PCU will take over the facilitation after Dec 2020. The MoA will be the main supporting government authority for the soon to be established Ethiopian Pulse Council;
- Amhara Investment Commission support to the Kunzila Horticulture Development program will be enhanced by many folds in a separate project starting Jan 2021;
- Support EPPPA on the final validation of the poultry policy;
- Publishing impact report of accomplishments of the last four years;
- Produce publications such as lessons learnt and recommendations for way forward;
- Mainstreaming of lessons and experiences in the possible future intervention.

Quality and quantity of sustainable agricultural production

In the reporting year, the ENTAG program worked on a range of activities on backward and forward market linkage, trade and investment integration among local and foreign agribusiness companies:

- ENTAG has been supporting the private sector in Ethiopia on farm management, production quality, launching new businesses, investment opportunities, innovation fund grants, and addressing challenges to improve their production. In this reporting year, ENTAG supported more than

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- 20 private companies on access to improved markets, investment opportunities and trade through its front desk and hands on advisory services;
- COVID-19 Impact: ENTAG conducted a rapid assessment on the impact of COVID-19 on its priority value chains. The assessment included identifying market barriers and possible response plan. The response plan identified cost-effective production methods and exploiting local market opportunities since the export has been constrained for some time at the start of the pandemic. Accordingly, the response strategies are now shared with both public and private sector stakeholders through different virtual communications mechanisms;
 - The ENTAG program organized two virtual platform meetings that initiated discussion on pertinent challenges and opportunities in relation to impact of COVID-19 on priority value chains. These platform meetings highlighted the hard-hit areas of the value chains as identified by the quick assessment ENTAG conducted and possible mitigation and recovery plans in the Ethiopian poultry, legumes and aquaculture sector. The sectoral recovery plans developed by ENTAG were submitted to the relevant government bodies;
 - Innovation fund - Seven grantees of the innovation fund have successfully completed project implementation in 2020;
 - ENTAG has been updating business opportunity reports on poultry, spices & herbs sectors. The updated business opportunity reports are now published and believed to provide an up to date information on the current status of the sectors in Ethiopia and serve as a tool for private investors, government and any other interested body to make informed decisions for tailored interventions;
 - Absence of organized, well-networked and all-inclusive formal body of pulse creates loose and weak coordination for improved market and trade of pulse. Due to this reason it has been envisioned to establish Ethiopian Pulse Council (EPC). The (under formation) Pulse Council envisions to create an internationally competitive pulse sector driven by technology and knowledge that significantly contribute to food and nutrition security, environmental resilience, increased income for smallholders, processors, exporters and local traders within the next decade. Additionally, in time of crisis, like the current state we are in because of COVID-19, informed decisions are pivotal especially for business and trade. Taking this fact into account COVID-19 Impact and market assessment studies are conducted and shared to policy makers and direct pulse business actors.

Improved markets and trade

The ENTAG program, through its platform meetings and other high-level engagements, has been serving as a catalyst for some of the national and regional policy, strategy and institutional reforms and draft of new regulations on Ethiopian poultry, spices, aquaculture and pulses subsectors. In light of this ENTAG has been working on the below areas in 2020:

- ENTAG has been closely working with partners, technically supporting the development/revision of the Agricultural and rural development policy;
- On-going technical support was provided regarding the implementation of the poultry disease control strategic plan and reopening of the national poultry training centre;
- Through ENTAG technical and financial support, the Ethiopian Poultry Producers and Processors Association (EPPPA) has been strengthened with an increased membership and an active role in the sector. Currently, the association is progressing well towards becoming self-sustained. The EPPPA is expected to take over ENTAG lobbying work, technical support to companies and supporting in the implementation of activities handed over to the MoA;
- Through ENTAG consistent effort, the establishment of Ethiopian Pulses Council has now been owned by the MoA. The Ministry is leading the last mile of Ethiopian Pulse Council Establishment. Accordingly, pro-pulse production, trade and coordination policies are underway. Overall, the environment for better performance of pulse sector is slowly becoming supportive.

Improved enabling environment

- ENTAG in collaboration with the rest of the BENEFIT projects has conducted a quick assessment on the soybean value chain and submitted the report to the relevant office in MoA. Furthermore, it has been Collaborating with development partners in mitigating sectoral crisis caused by the COVID-19 pandemic and solving sector challenges;
- Strong partnership and collaboration are created among key actors of pulse sector. Actors, such as pulse farmers, cooperative union leaders, importers and exporters, experts and researchers from both governmental and non-governmental organizations were brought together in regular pulse or

legume business platforms to discuss major issues that could enhance the growth of the sector. Moreover, relevant studies and articles have been shared to the stakeholders for common understanding and consensus of key issues regarding the sector. These actions are improving partnerships and collaborations among stakeholders across the sector;

- ENTAG legume subsector has maintained close partnership with Ministry of Agriculture at higher level (minister and state ministers) where its agendas are taken for consideration. Also, close relations have been maintained with SITA, 2SCALE, FTF, CFRS and other programs that work on legumes and poultry to streamline scope and enhance level of influence.

Quality and quantity of sustainable agricultural production

Production performance of commercial farms improved

ENTAG provided technical support to a number of poultry farms involved in layer, broiler or DOC production. These farms were advised on farm performance improvement by improving their feed composition, veterinary services they should get to ensure poultry health and biosecurity around their farms that should be put in place. Most of these farms were also handicapped due to the COVID-19 pandemic and hence ENTAG advised them on how reduction of production scale and linking to projects working on school feeding. ENTAG also supported the operations of 2 Dutch poultry farms on setting up a new farm in Amhara region and resolving challenges associated with taxation within an out-growers system.

Out-growers scheme in the spices sector showed good results for scale up

A spice & herbs processing company working with 270 out-grower women farmers demonstrated that if the women were given access to finance or in this case access to advanced seed and seedling where the company supplier improved varieties sourced from research centres in exchange for receiving the outputs and giving farm management trainings and some follow up, the farmers are able to supply good volume of spices and herbs. Accordingly the model was found very useful that in 2019 and 2020 2scale has taken up the initiative to strengthen the 5 cooperatives in the ENTAG pilot as well as adding 2000 smallholders with the same modality to increase the production of quality spices as well as increase the livelihood of the households involved.

Mainstreaming social inclusion and nutrition

In the inclusive business model ENTAG piloted the 270 women farmers have performed on different scales. While some have been able to earn more than 12,000 ETB per year others have only managed to get 1000-2000 ETB. The assessment done on this issue showed that those with low income earning have neglected the backyard business of the spices as a source of income only when they are short on money and focused on their other income sources (the main farm plot). Therefore, support system was built by the women on sharing burdens and lessons to the low performing groups from the good performing women. The lessons of the approach are now being scaled up to first 2000 women, which will later grow to 5000 by 2scale. These women use their backyards to earn extra income which they use for filling gaps in their household; either on food or clothing items.

Conclusions and recommendations

Setting up a follow up system is highly necessary to ensure that women involved in out growers do not get caught up in social events or family business and neglect their plot or find a modality where the women support each other with tight schedules.

Improved markets and trade

Increased demand for and use of ENTAG's market information services, and provision of hands on support to both domestic and foreign entrepreneurs/investors in selected sub-sectors

Technical Support, Front-desk service and Trainings

ENTAG supported more than 17 foreign and domestic producers, investors, NGO's, government stakeholders and other private companies. The technical supports that were provided to these clients were mainly related to start-up business information, investment opportunities, information on innovation funds & grants, farm management, local & export market information, sourcing of processing technologies, feed processing, and disease control. As a result of these technical supports, the backward and forward integration of producers, input suppliers, traders, processors and exporters has increased in the poultry and pulses value chains of the program. Commercial farmers and private companies have improved their production and the awareness of traders and suppliers has improved regarding local and international standards and requirements in supplying products. Private Ethiopian companies and commercial farmers are now aware of issues hindering their international trade competitiveness from growing despite the potential of the country.

Through the front desk advisory service of the program, companies received latest information about market trends and investment opportunities in Ethiopia. The support provided improved the capacity of the target companies in their operations as well as helped them establish market linkages.

Practical knowledge and skill were also identified as one of the gaps in the Ethiopian poultry sector, where ENTAG has been providing on farm technical support services. Considering the limitations imposed due to the COVID-19 pandemic, on farm technical service delivery has been provided only to 3 producers until mid-march. However, regular communication and support has been provided through telephone as requested.

Following the COVID-19 outbreak in Ethiopia in mid-March, the poultry sector has been going through a crisis due to the precautionary measures imposed to control the spread of the virus i.e. the declared state of emergency. Due to this, the following are the unfortunate effects of the pandemic on the poultry sector:

1. Reduced access to inputs
2. Reduced access to market
3. Negative impact on employees
4. Wastage of products (Lack of storage facilities)
5. Escalating feed price and unregulated market

To identify the exact damages to the sub-sector and recommend possible interventions that could rescue it, ENTAG has conducted an assessment and shared with all key stakeholders and the public in the presence of the state minister of livestock. The assessment entailed recommendations for a response plan which has been taken up as valuable input by MoA and to be incorporated in the MoA COVID-19 response plan. Currently, the ministry has secured budget to implement the response plan. Moreover, ENTAG has supported individual companies during this time of crisis through facilitating market linkage and technical support to minimize losses.

In order to comprehend the impact of COVID-19 on the pulse sector, a rapid assessment was conducted. The assessment briefly zoomed in and saw COVID-19's pressure on the availability of agricultural inputs, farmers' mobility, pulse production, export, price, and finally on the sector's employment. The assessment revealed that mainly due to lockdowns and movement restrictions the access to agricultural inputs has been limited. By the time of the report, in major regions of the country agri-input supply was less than the demand. Whereas due to the increment of transport cost and restrictions, farmers' mobility was affected and as a result of that farmers were unable to move around and access inputs. When it comes to production, the assessment indicates a possible reduction in the next year's pulse yield. Regarding price, the report indicated that the price of main pulse commodities has been increasing since the outbreak of the pandemic. In addition, based on the

findings of the assessment, export was declining particularly from January to March 2020. However, the pandemic has had a relatively small impact on employment in the pulse sector. The assessment wraps up by forwarding a few recommendations. The recommendation presented were: availing Agri-inputs, maintaining product supply chain, simplifying customs procedures, and increasing percentage share of pulse export. The last two were recommended in order for the country to maximise its benefits given new market dynamics due to COVID-19.

ENTAG has also been working on the latest version of business opportunity reports in its priority sectors that gives information on sector specific opportunities and areas of intervention for those who seek to launch a new business in these sectors, or who need to change their existing business. The updated business opportunity reports are now published in the first half of 2020. The documents have been shared on ENTAG website and sent as soft copy to MoA, EKN and private companies in the project database.

Enhanced performance of selected sub-sectors; raise the volume and value of trade in domestic and high-value international markets

Investment, Market and Trade

The Kunzila Horticulture Development participation involved three phases during the first six months. Early in January and February of 2020, the focus was handing over key tasks to the new project manager and also inducting him on the process and contents done until then. This was followed by managing incidents and challenges at the ground through different high-level networks. High-level discussions were undertaken between the investors and the regional leadership team including the president during the visit to the Netherlands. Comments to the Steering Committee Bylaw, communication strategies, and ideas for lessons learned as well as feedback on what has gone well and what could have been done differently were done during the later stages. Support for RVO in soliciting urban planners was also one of the tasks done.

The key things to improve on this assignment are (1) clear role and responsibility among different people and partner (2) ensure ENTAG role is vivid and accepted by all partners involved, and (3) communication. Besides, it would be good that within ENTAG team, processes are clear and participations are justified. Process facilitation remains a challenging task as it requires solid influence and persuasion power on the one hand and some degree of legitimacy on the other hand.

Soybean market assessment: As part of the assessment conducted to analyse the impact of COVID-19 on soybean, data have been collected from different soybean actors such as exporters, importers, producers, processors, unions, commercial farmers, and research institutes. Data were collected regarding soybean actors' access to finance, transport, labour, and inputs. In addition, information was gathered regarding farmers' mobility and motivation to produce soybean. Furthermore, data were collected regarding the effects of the pandemic in relation to soybean extension practices such as training, field visits or demonstration, and field management. On top of that, the data collection and analysis includes the pandemic effect on soybean seed production, promotion, and transportation.

Innovation fund and Support to Sectoral Associations

In this reporting year, seven ENTAG Innovation Fund (IF) projects have completed implementation and their achievements lessons/experiences for scaling are documented and shared to wider stakeholders. One innovation fund project was on improved dairy feed from local farm residues while the other was on green feed from alfalfa and other crops with local processing technology introduced. More than 317 smallholders benefited in market linkages and capacity building from these innovation fund projects and new jobs were also created from the completed projects. All of these projects are working on marketing in addition to production and processing. Accordingly, the program through its innovation fund has proven models of private agribusiness companies and commercial farmers progressing in their local and international market competitiveness, which eventually adds value to Ethiopian agribusiness and commercialization.

ENTAG Private sector associations support has resulted in an increase in the annual income of the associations and strengthened the membership bases of the associations for their sustainability and

sectoral development. In 2020 ENTAG supported three associations (poultry, aquaculture and ENLBA) financially – ETB 1.6 million in total. The program also collaborated with some of the private sector associations in providing updated information about the impact of COVID-19 in their sectors and possible recovery measures to curb the negative externalities of the pandemic. The support to these associations would strengthen the capacity of the private sector in dealing with issues within the agribusiness sector, and hence will have significant role in sustaining the interventions of ENTAG.

Sector platform meetings and International conferences:

To address the multi-faceted challenges of its priority subsectors, ENTAG organizes quarterly platform meetings that bring together multi-stakeholders from the government, private sector, research institutions, NGOs and associations. The aim of the platform meeting is to bring together all stakeholders and provide a means, in which to enable knowledge transfer, experience sharing, and new market information, technologies, policy and regulations to better equip the sector players. Furthermore, these platforms are structured in a way that allow the private sector to raise and discuss its challenges and pose questions to concerned governmental and non-governmental bodies that are present in the meeting.

In August 2020, ENTAG, in collaboration with Ethiopian Poultry Producers and Processors Association and MoA, held a virtual platform meeting, which was joined by representatives drawn from the government, private sector, research institutions and NGOs including H.E. State minister of Livestock. The objective of the meeting was to share the findings of the rapid assessment conducted by ENTAG to evaluate the effects of COVID-19 on the poultry sector and further capitalize on proposed recommendations for a response plan. The state minister of livestock, Dr. Fikru Regassa, acknowledged the value of the recommendations proposed by ENTAG and further noted that the ministry will take up the points into the Ministry's COVID-19 response strategy. It was also mentioned that the MoA will take the lead in providing short term support to producers, and establish a forum with other government stakeholders to prioritize long-term issues, such as availing forex. The relevance of working on import substitutions, especially parent stock costs was also highlighted, since relying on parent stock import is a major bottleneck of the sector. Apart from this, it was also stressed that promoting domestic consumption to stimulate the market and in general organizing forums related to enabling conditions for developing poultry health and breeding was mentioned as a way forward.

Another virtual meeting was conducted in the second half of 2020 focused on COVID-19 effect on the pulse sector. H.E. Wro Aynalem participated on the webinar and acknowledged the use of such assessments as an input to the ministry and ensured that the ministry will take the recommendations provided in the internal discussions in response to the COVID-19 impact on the overall agricultural sector.

Mainstreaming social inclusion and nutrition

ENTAG has been technically and financially supporting an inclusive business model, where a spice and essential oil processing company works with 270 smallholder women farmers. The 270 women farmers are organized into 5 cooperatives that have already entered into a contractual agreement with the company, Damascene. The concept of the project is that the 270 smallholder farmers organized in a 1:10 scheme will use the revolving fund to finance their seed and other inputs throughout the production season. They will then pay back their loan using the harvested spices to be delivered to Damascene. The 1 model farmer in the group of 10 will follow up the quality in production and semi-processing (drying) after harvest. She will also be responsible for the collection of the produce of the other 9 and bringing it to the respective cooperative. The 5 cooperatives then further check on quality and deliver to Damascene.

The results reached at the end of 2020 includes the below:

- 270 women smallholders organized within 5 cooperatives, namely Andenet, Shune wedo, Edget, Edel, and Ganiti from Two *woredas* of kafa zone have been supported by zonal steering committee, which has members from kafa zone women's and youth department, kafa zone coffee and tea authority and kafa zone cooperative association. There is also assigned *woreda* and *kebele* level team, which monitors and report for the zonal committee;

- The farmers have received continuous technical support from six hired experts of Damascene on seedling preparation, site selection, field production and management techniques of spices and herbs. The coop managers have also received management training to facilitate the administration work. The farmers have also participated in experience sharing field visits to other farms. Hermetic storage technology has also been distributed to the cooperatives to ensure product quality. Five measuring balances have been given to each cooperative; 2 turmeric drying facilities have been put in place and 1000 m mesh wire distributed to the women to serve as raised bed for drying the spices and herbs. Three nursery sites have been established at Decha, Gimbo and Chena *woreda*. A total of 35,965 kg of seeds and 61,151 seedlings have been distributed by the Damascene from the nurseries and Tepi research centre so far;
- The women used a total of around 100 Ha of their land (mostly back yard) to produce Korarima (Ethiopian Cardamom), Black Pepper, Long Pepper, Green Cardamom, Ginger, Thyme, Turmeric, Tenadam (Rue), Mint, Lominat (Lemon verbena), Oregano, Rosemary, Lavender, Koseret (Lippia Javanica), and Basil. So far the women have harvested 38,222 kg of spices to sell to Damascene from which they have earned around 285,000 birr. The earning per farmer ranges from 900 to 12,000 birr, the difference mainly arising from scale of production, sales and management of farm. The farmers have also sold their produce on the local market which is not accounted for. This mentioned sale is also from 120 farmers only while the rest have not sold to the company because either they sold to traders or they used their produce as seed to expand their production.

On the other hand, the company has managed to secure two MoUs with companies to purchase the (semi) processed products that are in stock and to be collected. It has also managed to pitch the model and cooperate with 2SCALE project hence, forming 5 more cooperatives with 2000 women smallholders with a plan to increase to 5000 the coming years. The company also planted an essential oil extraction machine in Kaffa to be close to the source. Generally, the model, though it has some individual partner and system challenges, can be duplicated for other crops and other areas.

Conclusions and recommendations

Achievements

- Front desk service provided to 17 stakeholders;
- Conducted a sectoral assessment on the impact of COVID-19 on the legumes, soybean, poultry and aquaculture sub-sectors;
- In 2019, ENTAG organized 2 national sectoral platform that was virtual and focused, among many other issues, on the challenges and opportunities of COVID-19 impact;
- In this reporting year, seven ENTAG Innovation Fund grantees completed project implementation;
- Publishing and dissemination of business opportunity reports on poultry, Spices and Herbs were conducted;
- Successfully piloted an inclusive business model which got scaled by other development partners.

Challenges, opportunities and lessons learnt

- The main challenge this year is related to the sectoral crisis caused by the outbreak of the pandemic. COVID-19 has affected the market and the whole value chains of ENTAG priority areas, bringing huge losses and product wastage as a result of reduced market and disconnecting international and local supply chain;
- Coupled with COVID-19 outbreak, volatile peace and instability throughout the country has also hindered some of the program's planned activities from effective implementation.

Way forward

- Producing project impact report and wrapping up of institutionalization activities done throughout 2020;
- Handover the ENTAG business platforms to respective sector associations or other sector leads such as MoA;
- Publication of achievements and policy level results.

Improved enabling environment

Strategies to solve selected sector-wide issues are developed and implemented

ENTAG has supported 3 private sector associations in developing and fine-tuning their strategic plans by providing technical support through its coordinators as well as hired local and international consultants. These supports along with the finance provided to run some of the planned activities are expected to strengthen the associations so they take over the lobby and advocacy work for their respective sectors. As the program is phasing out the sector associations are expected to take over major activities that have been implemented, such as organization of platform meetings, linking sector actors, and provision of sector specific information for potential and existing companies, individuals and investors. ENTAG also supports the Ethiopia-Netherlands Business Association (ENLBA) financially to work on lobby and assistance in regulatory issues for Dutch business in Ethiopia. As the ENTAG financial support to the sectoral associations will no longer continue after 2020, it has recruited an international consultant to coach the sectoral associations on soliciting funds and resource mobilization. Therefore, fund raising activities has been carried out by the Ethiopia Poultry Producers & Processors Association to secure a 2-year project funding (2.8 million ETB) from Initiative Africa and Feed the Future Ethiopia. Currently, from the proposed 2.8 million ETB, initiative Africa has confirmed a funding of ETB 400,000. Initiative Africa is reviewing the associations draft plan to approve the rest of the budget.

ENTAG supported the poultry private sector in contributing to the development of the draft poultry policy, which is prepared by the MoA. Currently, the draft policy is under review to be part of a compiled agricultural policy. ENTAG facilitated several platforms with the poultry directorate

ENTAG has long been lobbying on reopening of the National Poultry Training Centre for the last three years. Reopening of the national poultry training centre is expected to contribute to a more professional poultry sector in Ethiopia by facilitating the training of practical farm management of Ethiopian commercial poultry farmers, while at the same time promoting the technology and business of various company members of the HAPP and serving as a source of financial sustainability for EPPPA. Currently, an arrangement has been set up to keep the training centre in the current location (under the premises of EIAR in Bishoftu). As for the maintenance, MoA, poultry directorate, has been working on securing budget.

Another deliverable that has been handed over to the ministry is the poultry disease control strategic plan. This year, the MoA (Epidemiology directorate) has been approaching ENTAG to get support in starting off the initial stages of the strategic plan, such as identification and registration of commercial farms where support has been given as requested. However, full implementation requires resources therefore; the ministry is actively looking for funding sources.

Pulse sector governance has been a major subject of discussion for the last three years. The first draft proposal for establishing Ethiopian Pulse Council has now been developed and endorsed by the ministry of agriculture; a buying event of the Ethiopian Pulse Council by MoA has been conducted in November 2020.

ENTAG also conducted a rapid assessment on the impact of COVID-19 on the selected priority sectors – Legumes, Poultry and Aquaculture. The assessment identified the impacts of corona pandemic on these subsectors in terms of international and domestic market, production and productivity, input supply and export logistics. Especially on the Poultry sector the entire value chain was disrupted from production to market. Accordingly, the assessments made recommendations that would curb the adverse impacts of the pandemic from injecting financial resources to the hard-hit areas of the subsectors to enhancing local market opportunities and consumption. These recommendations were then handed over to MoA for consideration in their pandemic response plan.

Conclusions and recommendations

Achievements

ENTAG lobbied (variety of agendas) to solve the problems facing the Ethiopian Poultry, Spices, Aquaculture and Legumes sectors. Some of the critical issues in these sectors have been brought to the attention of respective government agencies and other relevant stakeholders. As a result of this effort:

- ENTAG has supported 3 private sector associations in developing and fine-tuning their strategic plan to take over lobby interventions beyond the program period;
- A poultry disease control strategy document has been developed and handed over to the Ministry of Agriculture;
- A poultry policy has been drafted to include private sector perspective and it is under review for approval;
- Reopening of the national poultry training centre is underway under the supervision of MoA;
- COVID-19 response for the private sector in the sectors of aquaculture, legumes and poultry has been recommended to MoA.

Challenges, opportunities and lessons learnt

- During the first few months of 2020, project activities were stranded because of emergency due to COVID-19 pandemic. COVID-19 pandemic has caused disruption of the whole project activity including engagement with policy makers and government agencies as the virus constrained many traditional business operation trends;
- Reaching out to government stakeholders to actively play their role in addressing the challenges of the poultry sector especially on biosecurity is still a major challenge;
- Volatile security issue throughout the country hinder implementation of planned activities as per schedule,
- High interest and motivation of most relevant government offices to consider suggested policy and strategic solutions to solve sector problems is an opportunity;
- The initiative of an agricultural and rural development policy paves the way for achieving the outcome of creating an enabling environment once strategies are formulated and implemented following the approval of the policy;
- The selection of Poultry as a priority commodity and the attention given to the sector signifies an opportunity for development. However, the collaboration from the government side is very delayed and needs constant follow up and mobilization. As a lesson learned, to improve this challenge a memorandum of understanding should be signed not only at a ministry level but also at a commodity level with the respective directorate;
- The lesson learnt on this aspect is the fact that there is a lack of well-defined and structured enabling environment for new investment and existing private businesses operating in the ENTAG priority sectors. But the relevant bodies are increasingly becoming keen to address issues that have been raised by the private sector.

Way forward

These policy and strategies under development need further regulations and standards to address specific issues of the ENTAG priority sectors. As a way forward, ENTAG supported associations will follow up on the ratification of the draft policies and strategies, as well as their corresponding specific implementation regulations and standards.

This will be done by handing over pending activities to sector associations, and MoA which will, in turn, strengthen their respective platform meetings that will aware relevant bodies further more on specific challenges within the sectors and giving support on how detailed implementation plans can be developed.

Collaboration

M&E and communication

In 2020, ENTAG produced various communication materials to enhance its visibility and communicate its impact to its stakeholders and partners including the EKN. The program produced more than ten publications on COVID-19 sectoral impacts, business opportunity reports, success and impact stories of IF and Internship program, and coping with COVID-19 impacts; as well as, articles for its website, social media and BENEFIT level newsletters. ENTAG made a case study videos on the experience and success of selected Innovation Fund winners, private companies and Intern graduates. As well as, End of Project (EoP) publication that highlights major harvested outcomes of the project for the last four years has been produced and is ready to be published.

The program website, which has received more than 98,000 views in 2020, is integrated with functional ENTAG social media pages and a YouTube channel. The website of ENTAG has also served as a source for some news and updates on the BENEFIT website. In 2020, ENTAG couldn't organize the regular business drinks on agribusiness, together with AgriProFocus - Ethiopia, because of the COVID-19 disruption.

Regarding M&E, ENTAG, based on its own theory of change and BENEFIT key performance indicators, has been regularly collecting data for the bi-annual BENEFIT report and ITT. Activities of the program have also been monitored based on the performance evaluation tools-biweekly regular meeting, weekly reports, regular management meetings to check activities against the set plan, and data collection for the ITTs. Harvesting outcomes and end line data collection has been done for the EoP publication that is anticipated to be published and disseminated at the end of the reporting year. Innovation Fund projects have also been monitored using a baseline and end line data for launched projects.

As 2020 is a closing year for the program implementation, ENTAG M&E developed a guideline to assess the outcomes of the program implementation for the last four and half years. Data collection for the assessment has already been done and analysis and synthesis of the assessment is now completed.

Collaboration

Collaboration with BENEFIT programmes

ENTAG has been collaborating with other BENEFIT umbrella projects on the development of the concept note and proposal of the follow up program of the current BENEFIT partnership program. ENTAG has also been partnering with these BENEFIT projects on end line assessment of the BENEFIT program as well as other end of project initiatives to document and share gathered outcomes of the BENEFIT first phase and handover to MoA.

ENTAG along with some of the projects (ISSD & CASCAPE) in BENEFIT as well as PCU have been serving in the Task forces set by MoA for input and output marketing under the chair of H.E. Wro Ayinalem, state minister of marketing of MoA. This has served all involved BENEFIT projects to have a means of institutionalizing some of the works they have developed through this platform.

ENTAG has also collaborated with ISSD, SBN and CASCAPE to conduct a quick assessment on the effect of COVID-19 on the soybean value chain. Recommendations from the assessment were made and shared with MoA to be included in the ministry's COVID-19 response plan.

Collaboration with other projects and partners

ENTAG priority sectors' platforms have maintained close partnership with Ministry of Agriculture at higher level (minister and state ministers). Also, close relations have been maintained with ATA, SITA, 2SCALE, FTF, CFRS and other programs that work on legumes to streamline scope and enhance level of influence. ENTAG's Poultry subsector collaborated with various Dutch based and national, governmental and non-governmental organizations on policy and strategy development, platform organization, training delivery, market and trade. Some of the collaborative organizations are poultry

directorate within MoA, EMDIDI, NAHDIC, NVI, VDFACA, EIAR, EVA, ATA, VDFACA, EPPPA, Ceva-Sante, SNV, ZOA, ILRI-ACGG, ECI-AFRICA, USAID-Feed the Future, and USAID-Fintrac. ENTAG has also collaborated with IDH, Amhara Investment and Industry Bureau, RVO and AAU for the Kunzila project coordination.

Collaboration with Dutch private sector

Some more Dutch based private sector collaborators are Agriprofocus Ethiopia, NABC, Pas Reform, Trow Nutrition, Impex, Hendrix Genetics, and PUM. The program is currently working on Kunzila Integrated Development Project collaborating with 4 companies (2 Dutch, 1 Belgian and 1 German) to implement an integrated sustainable development plan agreed upon between the Netherlands Embassy, the companies and the Amhara Regional government. The project is going to be running for the upcoming 3-5 years.

Mainstreaming Social Inclusion & Nutrition

For the inclusive business model pilot project ENTAG has been collaborating with Tepi Research Institute and 2Scale to ensure the success of the pilot project and avoid duplication respectively. Tepi research expert has been going around the fields of the 270 women to inspect their practice and provide advice as well as discussing and informing the development agents and company staffs supporting the women. 2Scale has been cross checking with ENTAG on supports being provided for the project beneficiaries and the partner company, Damascene Plc. This has made it easy to avoid duplication but also maximizing the support to the smallholders.

Conclusions and recommendations

Achievements

- The program produced more than ten publications on COVID-19 sectoral impacts, business opportunity reports, success and impact stories of IF and Internship program, and urban agriculture as a means of coping COVID-19 impacts; as well as, articles for its website, social media and BENEFIT level newsletters;
- ENTAG made a case study videos on the experience and success of selected Innovation Fund winners, private companies and Intern graduates. As well as, End of Project (EoP) publication that highlights major harvested outcomes of the project for the last four and so years has been produced and is ready to be published;
- Institutional collaboration with other stakeholder strengthened and expanded from 6 Institutions to 16 institutions (ECTSA, TNSRC, ARC, SARC, MARC, GARC, AAU, FBPIDI, USAID, GIZ, SITA, IPD, ITA (Italy Trade Agency), Germany Food and Beverage Industry Federation and world bank RED++).

Challenges

Collaborating with government stakeholders has been challenging as they need a lot of active follow up to engage them in our initiatives. COVID-19 pandemic has also impacted collaboration because public gathering and movements were constrained to an extent for quite some time.

Way forward

Some of the outcomes that have been achieved so far need further follow up by concerned bodies, such as sector associations and relevant government bodies that have to take over ENTAG's interventions after the program is closed. And hence, ENTAG will work on handing over pending issues and finalized documents of best practices, pilots and lessons to these actors for them to exert a continued effort towards accomplishment livelihood improvement.

Institutionalisation and way forward

Handing over / sharing lessons learnt

- Shared lessons on internship with SNV, EKN, Job Creation Commission and Maastricht University-BFS project. All four partners aim to implement either an internship or job creation interventions;
- Handed over the poultry disease control strategy document to MoA, poultry directorate;

-
- Shared innovation fund lessons learnt to ICCO, SNV and GIZ with a similar set up planned or under implementation;
 - Shared lessons and recommendation on inclusive business model to 2Scale project, which scaled it up from the 270 smallholders linked with a company to 5000 smallholders;
 - Shared its lessons on platform facilitation, market linkage facilitation and private sector support with GIZ, CBI, DAI, SITA, 2Scale, SNV, Feed the Future, and GFA;
 - Shared business opportunity reports on spices and herbs as well as Aflatoxin study conducted of Pulse and spice to ECX for their policy reform research department.

Institutionalisation and sustainability of results

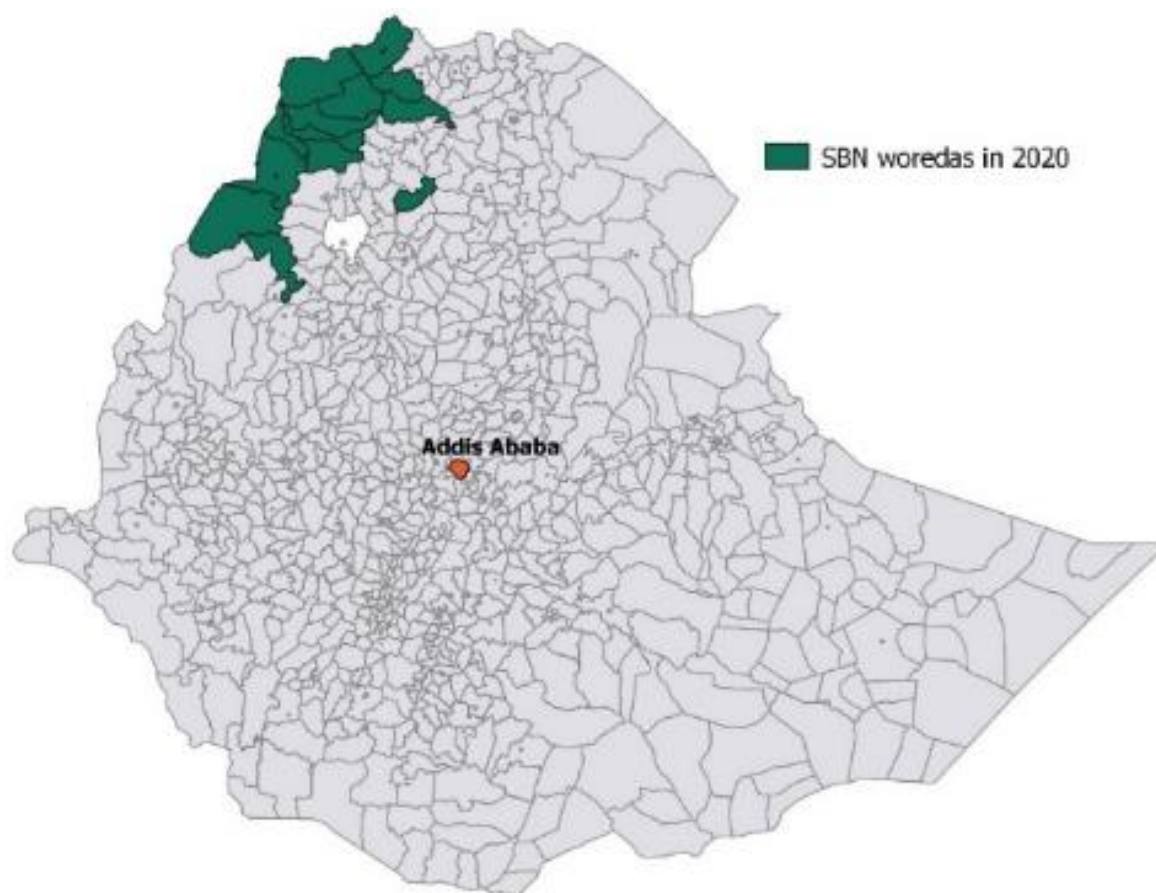
As ENTAG has been operational only for the 4 years, and its predecessor project was not a direct first phase, the institutionalization work is only 4 years work. Still the project, as its exit strategy, has been financially and technically supporting private sector associations. The sustainability of ENTAG's interventions is expected to continue through the associations however, it is different from association to association as some are more sustainable and are continuing with the ENTAG interventions and results while others still need support. Aside from this, policy level interventions and establishment of sector coordination units pursued by ENTAG have been handed over to MoA respective offices. I.e. Poultry policy and poultry disease control strategy handed over to the poultry directorate. Pulse council establishment, though it still needs support, has been delegated to the Crop directorate to play the lead role. ENTAG engagement in facilitation of the establishment of the Pulse Council has served as input in rather establishing a National Grain Council, which will cover the different important commodities. This is expected to ensure wider influence as commodity coverage will expand in addition to pulses.

Way forward

The way forward is, as the ministry of agriculture has accepted the validity of the interventions lobbied by ENTAG so far, handing over any documents and lessons learnt for adaptation in the ministries upcoming approaches. On the other hand, maintaining the linkage and following up with some major progresses now taken up by the ministry to support technically and pick innovation agendas that can be addressed in the follow up project of BENEFIT. Supporting the establishment of the Grain council with semi-autonomous status for each of the commodities will be very important. It is also expected that the linkage created between the private sector and the public offices will be maintained by the two bodies to ensure wider impact.



Appendix 6 SBN Annual report 2020



Executive summary

Introduction

The project goal, the three primary outcomes and the 10 intermediary outcomes, of which one is cross-cutting, are summarised in the figure below.

At impact level, SBN aims to contribute to a competitive, sustainable and inclusive sesame sector development, including related rotation crops, for farmers' income improvement and socio-economic spill-over effects. To achieve the overall project goal, SBN seeks to enhance the combined effect of three primary programme outcomes, which are aligned to the three main pillars of the overall BENEFIT result chain. The first two primary outcomes reflect the production-push and market-pull value chain development strategy. Planning, implementation and M&E are based on strong stakeholder involvement, both at local and strategic level, which reflects the agribusiness cluster and network approach that SBN applies for sesame sector development. The planning for 2020 put a strong emphasis on addressing strategic challenges for sesame sector transformation. Due to the COVID-19 pandemic, many of the planned activities could not take place. Instead, emphasis was put on capitalising lessons learned, a COVID-19 response plan, rapid multi-stakeholder sector assessments and action research on the situation of labourers.

Goal	Competitive, sustainable and inclusive sesame sector development for farmers' income improvement and spill-over effects		
	<i>Pillar 1</i>	<i>Pillar 2</i>	<i>Pillar 3</i>
Primary outcomes	Production cost price reduction	Product and market development	Strengthened enabling environment for the Ethiopian sesame sector
Intermediary outcomes	Yield and quality improvement	Post-harvest value creation	Evidence-based information and sharing
	Harvest, transport and storage loss reduction	Improved market linkages and sales	Stakeholder capacity development
	Improved farmers' access to input credit	Improved access to marketing credit	Enhanced stakeholder collaboration
	Strategic sesame sector innovation		

Main achievements

- **COVID-19 action plan** - The 2020 plan was revised following the COVID-19 pandemic. More attention was given to the provision of communication, extensions and other support, rapid assessments and action research on labour issues.
- **Action research on labour** - A thorough analysis on the labourers' health and wealth concerns, labour requirements and availability, the economic value of labour, labour characteristics, origin *woredas* of labourers' were made, results shared with stakeholders and their efforts were supported technically.
- **Rapid sesame sector assessments** - Impact of COVID on the development of activities in the sesame growing areas were assessed three times and action points were suggested. Stakeholders were supported in their effort to put the recommendations into practice.
- **Marketing credit** - The guarantee fund activity improved unions-bank relationship and built trust between the primary cooperatives and their members. The union and cooperatives have fully repaid the credit and received new loan for the 2020/21 production and marketing season based on cooperatives and union 20% cash guarantee. The level of understanding of cooperatives and unions towards loan management and resource mobilisation has improved.
- **Market linkage** - was created between commercial soya bean farmers and Richland oil processing company. Also, market connections established for Selet Hulling PLC with organic sesame farmers in the Amhara region.
- **Weather forecast** - The weather forecast SMS service availing activity scaled, reaching nearly 10,000 farmers and professionals.
- **Communication and extension** - Updates, newsletters, and documentaries shared with stakeholders; organized televised discussion forums; supported installation of wifi to facilitate stakeholders' communication; developed and broadcasted weekly radio programmes, and handed over all the printed and electronic extension materials to stakeholders.

Challenges, opportunities and lessons learnt

The major challenges, opportunities and lessons learned for the sesame sector are the following:

- The COVID-19 pandemic, locust, security and limited commitment of authorities and frequent changes in leadership have been major challenges that have delayed discussions and followed actions on strategic sector challenges and institutionalisation of the SBN achievements.
- Limited stakeholders' collaboration and commitment for example linkages between micro-financial institutions, *woreda* office of agriculture, farmers' cooperatives is still weak.
- The reduced sesame acreage (a decrease of 40% in Amhara and more than 50% in Tigray) will lead to reduced farmers household income and reduction in the country's export earnings.
- Strong awareness and interest created among farmer communities on cost recording. Improved practices on farm financial management might be further encouraged by the provision of credit based on documentation and performance.
- The top-down decision making hierarchy, bureaucracy with complicated and extended processes and slow decision make habits are major hindrances in achieving good results.
- The improved relationship between members and cooperatives due to the provision of training and input loans can be a fertile ground to strengthen the farmer organisations through active membership participation, internal capitalisation and increased business operations.

- The new marketing regulation preventing exporters buying at higher than the international market price may create new opportunities for value creation and establishing direct buyer-supplier relations.
- Direct exports become more attractive for cooperatives and unions to earn a premium on the international market. However, the regulation prohibiting unions to use export generated currency for importing goods is an obstacle for improving union performance.
- There is huge potential for using ICT solutions in the different intervention domains and areas.

Institutionalisation and way forward

Over the years, SBN has supported a number of activities, mostly good to very encouraging results have been achieved. But, these does not mean that all are successful. There were also some disappointing results. For different, yet complementary intervention areas, it has been shown that it is possible to achieve the goal and objective of SBN and the support programme (See details below). SBN has recommended 20 important points for addressing the sesame sector challenges and sketched a pathway for change for the coming years. This is documented in issue briefs and shared to stakeholders. It is important if stakeholders use those suggested recommendations.

Institutionalisation of 2016-2020 approaches, results and outcomes

- Scaling-out good agricultural practices of sesame and rotation crops institutionalised fully under BoA.
- Marketing of soya bean has become under ECX. It is important to further work on the marketing regulations for direct marketing of unions and cooperatives with processing companies.
- Financial literacy is adopted and included in the national extension package. Cooperatives also showed interest to continue training their member farmers.
- The four year successful experience on availing marketing credit to unions and cooperatives created trust and strong relationship between Abay and Cooperative bank of Oromia. Other banks can take lessons and involve in providing marketing finance to farmer organizations.
- Weather forecasting - MoA can work further with NMA and reach more farmers with farmers' contribution. Farmers are ready to pay for the weather forecast information service.
- Organising regional platforms were taken up by BoA, RARI's and ATA.
- Bottom-up planning, a digital information system, joint monitoring and evaluation and sector communication system have limited perspective for continuation.

Way forward

- Scale the practical planning tool, bottom-up agro-economic planning, piloted in 50 *kebeles*;
- Scale financial literacy training, which was endorsed by the MoA;
- Design input finance master plan to overcome the long standing problem of input finance;
- Commercial banks can finance the marketing activities of cooperatives, as demonstrated by the 100% repayment rate and ongoing banking relations;
- Work for the sustainable farming systems and diet diversity, especially for labourers and vulnerable groups, have *woreda* action plans for improving local food production and use. Scale seasonal and weekly weather forecast services as farmers demand it more and ready to pay for the service;
- Handover input supply functions to the private sector and the government play facilitation, coordination and quality control functions only;
- Farmer-to-farmer extension can be organised via farmers' organisations; Arrange lease financing and organise appropriate mechanisation;
- Market liberalisation leading to value chain development. Realistic domestic market prices can open doors for investments, value addition and new market relations;
- Making cooperatives stronger autonomous farmer-business organisations; Provide need based and tailored extension services for different categories of farmers;
- Design a digital information, planning, monitoring and evaluation system, to be used from *kebele* up to regional level, based on the experiences of the SBN and others;
- Connecting seasonal employment in sesame lowlands to poverty reduction and food production in mid- and high-lands;
- Launching strong national sesame sector platforms and strengthening the regional platforms; Strengthen the ongoing research and innovation activities.

Quality and quantity of sustainable agricultural production 2020

Without doubt, farmers can double yields and significantly reduce production costs per kg of sesame produced. For most intermediary outcomes good progress has been made and even more potential has been demonstrated. A full review of outcome indicators is available and summarised in this report. Because of training and exposure, farmers know and accept most of the recommended practices (20 steps) and are willing to adopt these because of economic attractiveness. Farmers are making efforts and most are partial adopters. Availability of row planters is a key constraint, which can be addressed by coherent action. The recommended practices could be accessible and affordable if farmers would have access to formal input credit and appropriate mechanisation services. A focus on yield improvement and cost price reduction remains very important for farmers to improve their profits. The financial literacy training, marginal rate of yield and return are important for treating farmers as entrepreneurs. Like coffee, sesame should receive much more attention in addressing fundamental challenges at federal and regional levels. Agri-finance (investments and innovations) and market system change will be the cornerstone for agricultural sector transformation.

Improved markets and trade 2020

Compared to set targets, results for product and market development have been disappointing. Sesame value chain and business development could not take off as planned because of the sesame price inflation at ECX in the quest for the hard currency. Farmers' that sale at spot markets took the advantage of the inflated EXC prices and invested on a risk sharing modality to promote bank loans for cooperative marketing. Due to lack of incentive for quality the potential high value markets are not reached. Ethiopia continued losing its competitive position in the international sesame market. This call for a fundamental sector reform and market system change. Realistic domestic prices and direct buyer and supplier relations would allow linking producers to promising market segments. With market system change, the time and effort that was put in preparatory studies, trainings and business plan development could materialise for the purpose of product and market development, both for sesame and rotation crops. SBN also promoted marketing of soya bean, mung bean, sunflower and cotton.

Improved enabling environment 2020

Has SBN suggested options for a more enabling environment? Definitely so. Is the performance of the sesame sector enhanced because of a more enabling environment? To a certain extent, but compared to what is needed, the structural change is too limited. This is disappointing as there is huge potential for bringing the Ethiopian sesame subsector to the next level. Failure to do so is costing farmers thousands of ETB, and the country millions of dollars per year. Stakeholders are quite unanimous about the necessary change. They impatiently ask for leadership to address persisting challenges: stagnant production, insufficient financing of the sector, insufficient support for appropriate mechanisation, market system and policies that separate farmers from buyers and blocks value chain development, digitalisation, bottom-up planning, regional and federal sesame network/platform, sustainable funding of communication activities (see Appendix 6 for a detailed agenda-for-action). Because of the centralised decision-making process, necessary resolutions for sesame sector transformation are not taken. Having tried for many years, sometimes successfully, but mostly in vain, it seems that only a special high level conference could lead to a breakthrough. The requirement from donors to have a coherent sector transformation plan can help bring decision-makers together.

Partnership and collaboration

Within BENEFIT, joint activities were the following: (i) multi-stakeholder rapid assessments (methodological collaboration with ISSD); (ii) analysis of zones of origin, migration routes, risks and opportunities for seasonal labourers (with REALISE); (iii) scaling of the weather forecasting (with ISSD and ENTAG) and (iv) soya bean quick scan (with ENTAG, ISSD, CASCAPE). The rapid assessment methodology is a very promising tool for multi-stakeholder collaboration. Considering their importance for sesame production, their number and poverty, more attention for labourers is warranted in development discourse on social inclusion. More attention can be given to the relations between the commercial sesame lowlands and the food insecure zones and *woredas* of origin of the labourers. As much as possible, collaboration with Ethiopian partners (ARI's, BoA's, banks, cooperatives and unions, cooperative promotion agency, NMA, labour and social affairs office ...) continued and was adapted to the COVID-19 context. In the private sector, collaboration continued with Weather Impact, Apposit, Selet Hulling and Richland Company.

Quality and quantity of sustainable agricultural production

Sustainable agricultural production – Production cost price reduction

Yield and quality improvement - The measures to contain the spread of the Corona virus had serious risk to disrupt seed and input supply, reduce production and complicate the transport and marketing of agricultural products, which would lead to lower production, income decline and food shortages. The figure below shows the analysis made before the start of the agricultural season:

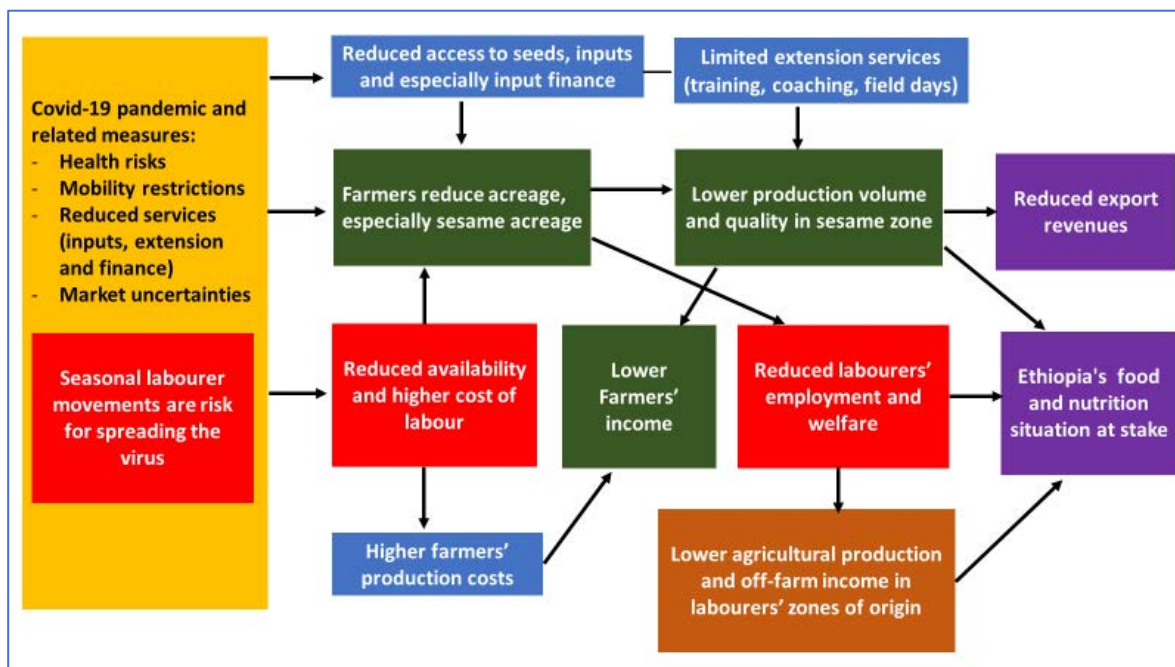


Figure Risk assessment of the COVID-19 pandemic on sesame and rotational crops production

To cope with the situation, the SBN team had virtual discussions and reflected on how to support farmers and SBN stakeholders with communication, seed distribution, market analysis and crop selection, weather forecasting and advisory services to farmers, labour movements and availability, contract farming and other important technical and logistical questions. Many of our planned activities, such as field work and trainings, were affected, however, many relevant services were provided to stakeholders in the COVID-19 context.

Seed distribution and multiplication - Seed distribution and production was taken as a major activity for ensuring optimal production in 2020 and for preparing for the 2021 season. To plant 600,000ha about 1800 ton of sesame seeds was required. However, available seed was less than 33%. As a result most farmers covered their field using own saved or second generation seeds. SBN informed users on the amount of available seeds by crop type at the research centres and seed producing cooperatives. It also facilitated timely distribution (see table below). Both GARC and HuARC have distributed more than one ton seed to 63 FTCs for demonstration. In Amhara, BoA, the Amhara Seed Enterprise and GARC distributed 22 ton seeds of different crops to seed multiplying organizations and farmers through the agricultural service centres and GARC. The area planted by different crops and the projected yield is depicted in the table below.

Crop type	Organization	Amount of seed distributed (ton)	Seed production (projection)	
			Area planted (ha)	Expected yield (ton)
Soya bean	GARC	19	20	20
	HuARC	-	3	3
	Jawi office of agriculture	-	165	181
Sesame	HuARC	41	91	45
	GARC	-	7.5	4.3
Mung bean	Hewet Mechanization	24	2.5	2
	HuARC	-	15	12
Sesame (var Abasena)	Kokit LSB	5	50	25
	Workamba coop	-	3	2
Sunflower	GARC	1	6.5	7
Sorghum	GARC	-	33.5	40
	HuARC	-	25	30
	Workamba coop	-	3	3.4
Total	-	90	425	374.7



Seed made ready for distribution to FTCs, farmers and LSBs

Input supply and use - SBN followed distribution of inputs and provided cars when there was a problem in transporting.

Fertilizer: in Amhara, 4 unions planned to distribute 51,019 ton, but managed to distribute 47,698 (93.5%). In the 8 sesame *woredas* the plan was to distribute 10,110 ton, however only 6,485.6 ton (63%) fertiliser was distributed. In Tigray 6,872 ton fertiliser was distributed to farmers, which is also less than planned. The reduced sesame area has contributed to the low fertiliser use in both regions.

Pesticides: herbicides and insecticides are supplied via farmer cooperative unions, farm service centres and private dealers. In Amhara farmers used about 29,589 litter herbicides, 2,389 litre liquid and 210 powder insecticides to control the different insect pests.

Machinery - available but not affordable and accessible

- In Tigray, Hiwot Agricultural Machineries PLC, HuARC, Mamay Miheret Nega Import and Export Company, Desta Berha FSC (Humera), Eyorica FSC (Sheraro), a union and one cooperative provided ploughing and sowing services to farmers in Humera and Shiraro areas.
- About 33 planters are available at Tigray side. Out of which the 29 functional planters have sown sesame on >4,672ha of land during the 2020 cropping season. However, the high rental price (1,200 ETB per ha) hold back farmers from using row planting service. From the Amhara side, there is no private company willing to provide machinery rental service to farmers.
- SBN communicated with the Development Bank of Ethiopia (DBE), Kaza and Walia to facilitate the lease financing for purchasing agricultural machineries in Amhara and Tigray. These organizations were ready to allocate some money for purchasing the machineries and requested beneficiaries to fulfil the necessary documentations. Though 450 farmers from Western and Central Gondar zones

were registered to get the machineries, finalising the documents took long time because of bureaucracy, resulting in discontinuation of the process.

Weather forecasting - An agreement for the delivery of weather forecasts via SMS was signed between the National Meteorological Agency (NMA), Weather Impact (WI), Apposit and WUR-WCDI.

- Since June 25th, over 8,400 farmers and agricultural experts from the 13 sesame growing *woredas* and nearly 300 farmers from ISSD and ENTAG clients have received weather forecast information.
- The service was unfortunately interrupted for two weeks in July, because of lack of internet connectivity. This affected farmers' decision making at peak weeding time.
- Newly joined recipients were not formally trained on interpreting the messages due to the COVID-19 pandemic, but coached by the SBN staff, often by phone.
- SBN supported the sharing of the seasonal and quarterly weather forecast of the Intergovernmental Authority on Development (IGAD).
- During the season, SBN staff continued verifying the accuracy of the weather forecasts and compared these with local rainfall data and collected users' feedback.

Acreages of sesame and rotation crops

The following table, based on reports of *woreda* offices of agriculture, show the acreages of sesame, sorghum and other rotation crops in the major sesame producing *woredas* of Amhara and Tigray regions. The acreage for sesame in both regions has much declined and sorghum area has much increased. Both regions used to grow sesame on nearly 600,000ha, currently however, the acreage is only 393,012ha, which is 65% of the acreage in previous years or 33% of the area (1172433) covered by all crops. The area under sorghum has increased by more than 100% (500,054ha) as compared to the data of the last ten years (220-250,000ha). In normal years the ratio of sesame to sorghum is generally 3:1. In Amhara, the sorghum acreage is close to the sesame acreage, while in Tigray the sorghum acreage doubled the sesame acreage (see table below). Other crops included cotton, soya bean, mung bean, maize, millet, sunflower, haricot beans, vegetables, and root- and tuber crops. The area under soya bean is increasing in Amhara, especially in western zones. The crop shift from sesame to sorghum is a result of fear of labour shortages, because of COVID-19 outbreak and the related movement restrictions that were expected to limit labour availability for weeding, harvesting and threshing. Thus, farmers decided to shift to sorghum as sorghum is less labour demanding and can remain longer in the field.



Soya bean



Mung bean



Sorghum

Generally, the increase in sorghum production is assumed to improve household food security, but to reduce household income. Therefore, it is very important to design a strategy for sorghum marketing as excess production may significantly lower farm gate price. Nevertheless, the very recent locust outbreak that devastated food crops in many parts of the country and predisposed the population to food shortage could be an opportunity for sorghum growers in the northwest. Similarly, the continued instability and the related displacements of people in many parts of the country also call for additional food sources locally. This could be also an additional opportunity for improved sorghum price. Yield data could not be collected because of security problem in the Amhara and Tigray regions.

Table *Acreage of sesame, sorghum and other crops in the SBN intervention woredas in 2020 crop season*

Woreda	Fertiliser (ton)	Acreage (ha)			Total
		Sesame	Sorghum	Other crops	
Metema	354	46,390	34,172	22,848	103,410
Quara	123	48,932	44,210	30,944	124,086
Mirab Armachiho	339	67,731	53,113	5,230	126,073
Tegede	154	25,747	29,331	17,166	72,244
Tach Armachiho	553	10,533	13,446	15,070	39,049
Jawi	3,800	11,659	7,286	67,407	86,352
Misrak Belesa	1,049	4,143	4,322	29,481	37,946
Makelawi Armachiho	78	13,232	12,900	9,550	35,682
Total for Amhara	6,485	228,367	198,780	197,696	624,843
	% -	37	31.5	31.5	100
Kafta Humera	2,161	107,735	180,564	15,741	304,040
Tsegede	372	25,340	49,875	21,155	96,370
Wolkaiet	1,109	10,891	14,915	17,072	42,878
Tahytay Adiyabo	1,006	14,115	22,340	13,420	49,875
Asgede Tsimbila	423	5,364	17,234	1,320	23,918
Tselemti	2,233	1,200	16,346	12,963	30,509
Total for Tigray	7,305	164,645	301,274	81,671	547,590
	% 63	30	55	15	-
Overall total	13,159	393,012	500,054	279,367	1,172,433
	% -	33.5	42.6	24	100

Home gardens - For the dry season planting of vegetables and fruits, trainings were provided to more than 100 family heads and other family members; DAs and experts in 8 *kebeles* of 5 *woredas* selected with very limited number of participants each session. From January to October 2020, field supervision and technical support services were provided, though limited. Households harvested the crops used for home consumption and marketed at farm gate and in the neighbouring markets, when surplus. Due to gathering and movement restrictions due to COVID-19, field days and trainings on nutrition and recipe preparation were cancelled.

Harvest, transport and storage loss reduction

In 2020 no activity conducted on post-harvest loss reduction. The recommended hermetic or PICS bags are under use in Belesa area for mung bean and sorghum seed storage.

Financial literacy and improved farmers' access to input credit

The year 2020 activities focused on finalising the previous training cycle and discussing with unions, cooperatives and the Regional Cooperative Promotion Agencies (RCPAs) on institutionalising the financial literacy training and printing of cashbooks. Training was not provided as planned due to the COVID-19 impact. The level of support to trained farmers varied from cooperative to cooperative. Cooperatives have been encouraged to collect the demand from member farmers for cashbooks and sell the available stock for 10 ETB each. In the Amhara region 1,292 cashbooks were sold through 21 cooperatives. Nevertheless, about 3398 cashbooks and 527 manuals in Amhara and 1578 cashbooks in Tigray region were found in stock during inventory. Some of these were reallocated among cooperatives based on request. In general, pro-activeness of cooperatives to take responsibility for continuing the financial literacy training is low. During discussions, stakeholders repeatedly confirmed the importance of the financial literacy training and promised to continue. The SBN staff participated in many union and cooperatives' General Assembly (GA) meetings to support them in reaching concrete decisions. In parallel, discussions were also held with the Ministry of Agriculture to adapt the cashbook according to regional circumstances and integrate the financial literacy into the national extension package trainings; print the cashbook permanently and distribute to farmers and agricultural experts free or in cash. Financial literacy package was simplified by the ministry and included in the national training package. However, because of high officials' turnover at different levels its applicability is not known exactly except in the Amhara and Tigray regions.

To evaluate the performance of farmers in filling the six steps of the cashbook correctly, 479 cashbooks were collected of which 10% was from female headed households. The table below gives an overview of the level of completion of the six steps of the cashbook. Almost all farmers in the sample completed filling the steps 1-3. Step 4 was completed by <50% of the farmers. The depreciation cost calculation in step 4 was found the most difficult one and only 38% of farmers managed to fill this part. Step 5 is the least completed part of the cashbook (see table). Half of the farmers tried to calculate the adjusted profit or loss statement. Step 6 helps farmers to make decisions for next season based on the expected costs of production, savings that can be invested and the needed loan amount.

Table Number of farmers completed cost recording (cashbook) following the six steps

Steps	Items	N	%
step 1	Expenditures, revenues and family labour	479	100
step 2	Revenue	436	91
	Expenditure	479	100
step 3	Cash in	436	91
	Cash out	479	100
	Cash balance	429	90
step 4	Family labour	384	80
	Fixed asset value	157	33
	Deprecation cost calculation	183	38
	Profit or loss calculation	206	43
step 5	Interest rate calculation	157	33
	In-kind payment not loan	61	13
	In-kind payment loan	75	16
	Stock value calculation	210	44
	Net profit/loss	240	50
step 6	Expected expenditure	195	41
	Saving estimation	205	43
	Expected loan estimation	140	29

Note: N = number of cashbooks recorded

The *kebele* agro-economic planning in 50 *kebeles* was not done because of the COVID-19 outbreak and lack of willingness from the Amhara Credit and Saving Institute (ACSI) to provide loan to selected farmers specifically for input credit. However, some farmers did receive input finance for harvesting through continuation of the loan provision by Abay Bank S.C. to Metema union, Godebe and Sanja cooperatives. Around 8.5 million ETB was distributed as input loans to 2,723 smallholder farmers (30% women) with interest rate ranging from 15 to 18% (see below Marketing credit).

Mainstreaming social inclusion and nutrition

Following the situation analysis of the 2020 agricultural season and the rapid assessment results, utmost attention was given to the living and working conditions of labourers. The conducted rapid assessment on labour and labourers' health and wealth concerns; labour availability, the economic value of labour, labour characteristics and *woredas* of origin; their patterns of movement and communication strategy; mitigating COVID-19 measures and the related risks. The results of the rapid assessment showed that 1) Seasonal labourers movements from origin to sesame area and back to home are high risk factors for spreading the corona virus; 2) Imposed movement restriction could result in reduced availability of workforce thereby pressing farmers to reduce sesame area and shift to sorghum and other less labour demanding crops; 3) Limited labour availability may result in high production cost and the inflated production cost will diminish farmer income; 4) Reduced sesame acreage may seriously affect employment, off-farm income and welfare of seasonal workers; and 5) The low production volume result in reduced revenues. The outcome of the rapid assessment was discussed by high-level regional authorities, recorded and broadcasted on regional television. As a result the social and labour affairs bureaus and departments, *woreda* health offices and the command posts at different levels gave due attention to labour issues. The major concern was on labour

availability and labourers' movement because this may increase the risks of spreading the corona virus from the sesame lowlands to surrounding higher altitude zones and vice versa. However, the anticipated risks did so far not refrain labourers from coming to the lowlands in search of work. Labour was available and labour costs were even lower than expected. The low wage during the weeding time affected labour availability during harvesting and threshing in September and October. Though not followed strictly, the risk of spreading the virus was also not as expected.



Labourers while weeding sesame at Delelo

Conclusions and recommendations

For 'Sustainable agricultural production', SBN has performance indicators related to the three intermediary outcomes, for which activities and results were presented in the preceding section.

Achievements, challenges, opportunities, lessons learnt, way forward

Achievements

- Despite the COVID-19 impact on movement, seed and other agricultural inputs were distributed for farmers and FTCs;
- Use of row planter machine is increasing especially in the Tigray side;
- Demonstration and scaling activities were fully handled by WoA;
- Encouraging developments have been recorded in seed multiplication by research and private seed multiplying LSBs;
- Nearly 8,500 farmers and agricultural experts received location specific weather information;
- A substantial number of farmers demanded the provision of additional cashbooks on cash to continue cost recording by their own interest;
- Regional cooperative promotion agency, unions and cooperatives were supported with establishing favourable conditions for continuing the financial literacy training;
- Nearly 2,723 smallholder farmers received loan to cover harvesting cost in Amhara region.

Challenges, opportunities, lessons learnt

- Movement restrictions due to COVID-19 pandemic affected the timely distribution of inputs and providing planned trainings;

-
- Erratic rainfall in some areas either delayed planting or forced farmers to replant sesame and sorghum incurring additional cost to farmers;
 - Low sesame price during the 2019 marketing season resulted in a significant reduction of sesame acreage (40% reduction in Amhara and >50% in Tigray). The reduced acreage of sesame lead to reduced household income and diminishing export earnings for the country;
 - The internet shutdown interrupted sending weather forecast information to farmers via SMS at the start of the season thereby impacting decision making on planting and weeding;
 - Due to the COVID-19 pandemic and higher official turnover, institutionalisation of the financial literacy training could not take place at higher level.

Challenges, opportunities and lessons learnt 5 years (2016-2020)

- Coordination among stakeholders is key for success but only in rare cases that stakeholders could take-up this role;
- Input finance and lease financing to mechanisation may remain a challenge in the sector;
- Shortage of tractors and row planters is unresolved problem for full adoption of the 20-steps;
- Awareness and interest created among farmers on cost recording. Improved farm financial management is anticipated to encourage the provision of credit;
- The improved relationship between members and cooperatives due to the provision of training and loans can be a fertile ground to strengthen the farmer organisations through active membership participation, internal capitalisation and increased business operations;
- Top down decision making hierarchy, bottom-up and step-by-step requesting processes, slow responding habit of dignitaries at various levels coupled with individual variability in bringing issues to the end often prevent achieving similar results;
- Institutionalise weather forecasting information as farmers are ready to pay for the service;
- Designing a master plan for access to finance so that MFIs and banks can avail input and output financing to farmers and their organizations;
- MoA, BoA and RCPA need to give due attention to printing of manuals and cashbooks for financial literacy training and run it in parallel with the agronomic training of development agents and farmers.

Improved markets and trade

The following primary outcome for contributing to improved markets and trade is targeted: "Sesame farmers and SME's involved in product and market development initiatives fetch a 10% higher price, as compared to spot market and ECX prices". Three, related intermediary outcomes were expected to contribute to this primary outcome: Post-harvest value creation; Improved market linkages and sales and Improved access to marketing credit.

Post-harvest value creation - There were no activities related to post-harvest value creation, except for the linkage of soya farmers to soya processing companies.

Improved market linkages and sales

Collection, analysis and distribution of market information - The sesame market situation of 2019/20 was significantly different as compared to previous years. The 2020/21 marketing season started in October at Gondar ECX with a higher minimum sesame price (5,500 ETB per 100kg seed) which was slightly lower than the previous year maximum (6,400 ETB per 100kg) in that month. SBN has collected sesame price information from the past years, at different levels and has used this information as input to analyse market price fluctuations and differences between spot market, ECX and world market prices. The analysis was shared with stakeholders via SBN websites and newsletters.

Cooperatives and unions presence in spot market improved - Market participation of cooperatives has increased by improving the purchasing capacity through the access to marketing credit (see improved access to marketing credit). Increased membership and loyalty results in more farmers supplying to the cooperative that now actually has the working capital to purchase the sesame. This benefits farmers by reducing the price collusion among traders and through improved dividends if cooperatives raise their market profitability. In the recently started 2020/21 marketing season, cooperatives' part of the marketing credit intervention procured 475 ton sesame worth nearly 23.3 million ETB (see table below).

Table Sesame seed purchase by cooperatives in 2020 (October –November)

Cooperative	Purchased volume (ton)	Average Unit price (ETB)	Total value (ETB)	Cooperative	Purchased volume (ton)	Average Unit price (ETB)	Total value (ETB)
Sanja	41	50,750	2,097,263	Metema Yohannes	40	49,940	2,002,594
Meka	28	49,500	1,386,000	Shinfa	18	46,000	837,200
Kokit	138	49,371	6,829,644	Tumet	20	45,004	896,664
Das	13	50,155	631,954	Dubaba	57	49,000	2,793,000
Mender 6,7,8	59	48,500	2,861,500	Gelego	60	48,500	2,934,250

Soya bean market linkage. Price volatility, high cost of production and soil fertility depletion are the most important reasons for sesame farmers to produce rotation crops, such as sorghum, cotton, soya bean and mung bean. Previously, farmers did not seem to be interested to grow soya bean because of limited market opportunities. Also, home-based soya bean product consumption is not a well-established practice. The establishment of giant agro-processing companies in the recently developed Bure industrial parks is leading to increased demand for soya bean. As a result, soya bean acreage is increasing, especially in Amhara region. SBN has supported the establishment of direct market linkages between these companies and producers.

An assessment of the potential soya bean production was made at woreda, *kebele*, union and commercial farmer level. Unions (Admas, Metema and Tsehay) sourcing from cooperatives in areas producing soya bean (Jawi, Quara, Tegede, Mirab Armachiho, Alefa and Metema) were approached and the interest to supply to processing companies discussed. For the first two quarters of 2020, table

below presents the production of soya bean and mung bean, amount traded and revenue obtained in the Amhara region.

Table *Soya bean and mung bean produced and traded in Amhara region, January-June 2020)*

Crop	Volume produced (ton)	Main buyers and sellers		Total volume traded via ECX (ton)	Price range per ton (ETB)
		Traders	Coops/unions		
Mung bean	4,354	3,914	164	4,078	20,000-25,000
Soya bean	92,186	71,544	1,180	72,724	11,000-13,000

Similarly, the demand of sourcing companies was investigated. Richland Biochemical Argo-processing Company and Phibela Industrial Company are sourcing companies that want to start and expand the production of edible oil from soya bean and other crops for the domestic and international markets. Richland Company is owned by Ethiopians (51%) and Chinese (49%). This company requires 150,000 ton soya bean annually which is 100% of what is currently produced in Amhara region and 80% of the total production in the country. The company will produce 80% protein powder, 15% edible oil and 5% by-product/animal feed. When fully functional, the company will produce 98,500 litre oil per day. Phibela Company needs 60,000 tons of soya bean per year. Currently, it imports crude oil and refines it in Ethiopia. The company exports roasted sesame, premium cleaned sesame and tahini.

The current soya bean marketing regulations do not allow processing companies to directly source from unions and cooperatives. Companies are allowed to buy soya bean either directly from producers at spot markets or from ECX platforms. Cooperatives and unions have two options to market soya bean, either directly export or sell to exporters and processors through ECX. The companies are lobbying the government to ban the export of raw soya bean to secure their demand with the argument that the processed products will generate higher foreign currency earnings. The current regulations explain why previous market linkages between Richland and Admas union were not successful and prevented the establishment of new market linkages between farmer organisations and processors. While contract farming exists for other crops (such as barley), this does not yet work for soya bean. This is a strategic subject, as farmer-company relations would allow for value chain development.

As direct linkages of agro-processors and producers are possible, SBN facilitated several rounds of meetings between commercial farmers and Richland Company. SBN also provided the soya bean production manual to the farmers. The parties thoroughly discussed the conditions and an agreement was reached with 25 investor farmers (from Quara 15, Tsgede 6, and Mierab Armachio 4) that planted soya bean on 1,087ha of land. The agreement with Richland Company was attractive for farmers, offering higher price than the ECX market price for a period of three months and with possible revision then after. The agreed lowest quality level was 95%, but any quality improvement has bonus or price incentive. For instance produce that contain low level of foreign matter content and low number of split beans; uniform seed size and colour were rewarding parameters included in the agreement. Farmers receive a 50% advance payment at the time of delivery.

Organic sesame market linkage - Another market linkage involved organic sesame producers and Selet Hulling PLC. Selet Hulling PLC remained sourcing organic sesame from Tigray region only. This year it started to assess the potential of organic sesame supply from Amhara region. With support of SBN the company was linked to investor farmers in Quara and Mirab Arimachiho. To test for organic the first batch of plant sample from 3,249ha was taken. The sample was found negative for fertilizer and pesticides. After harvest seed sample was taken from the same field for analysis. Unfortunately, some samples reported positive for 2, 4-D and an insecticide (propoxur/Baygon used to control cockroaches and storage pests). This practice was rectified after discussion between the company and the farmers. Farmers showed high interest to sell to the company as it offered 1,400 ETB per ton over the ECX market price and cover transportation cost starting from the production site to its store.

Improved access to marketing credit

In 2020, the major activity was following up of the loan repayment process and sustaining the bank union relationship. Metema union and the two cooperatives paid back the 20% guaranteed amount that SBN has deposited at Abay bank in March. The agreement was to payback 100% loan in May and additionally deposit 20% as a guarantee for a new marketing loan based on their own cash guarantee. After full loan repayment, Abay bank approved 18.3 million loan based on the 20% cash collateral at an interest rate of 12%. Out of the approved loan, 15 million ETB was allocated to Metema union that was distributed to nine its affiliated cooperatives. Similarly, 1.5 and 1.8 million ETB to Godebe and Sanja cooperatives, respectively. The cooperatives distributed about 8,517,100 ETB as input credit to 2,723 farmers of which 794 were female (see table below).

In collaboration with Fair & Sustainable, a final evaluation of the guarantee fund activity was made to extract the most important lessons learned since 2016. According to the SBN experience government and development partners should take calculated risks while availing the guarantee fund. Designing appropriate union/cooperative assessment tools; capacity building, regular monitoring (auditing) and providing technical backstopping; making phased disbursement of loan based on situation analysis; arranging platforms where success and limitations are discussed; strengthening linkage, building trust and establishing long term relationship between unions, cooperatives and banks are key lessons taken for realizing 100% repayment and sustaining the guarantee fund scheme. Lessons learned and the achieved results provides valuable experiences for the financial sector and policy makers to develop a new working environment in the sector to address smallholder farmers and their affiliated organisations.

SBN contacted international financing organisations to share the guarantee fund experience and explore opportunities to continue or build upon the successful intervention. Several discussions took place with FMO and Rabo Foundation to find solutions for the key challenge of repatriating foreign currency guarantee fees or loan repayments. The organisations are eager to learn from the experiences of SBN and Agriterro but their current policies and the security situation in the country did not allow the development of a specific case.

Abay bank loan provided to Metema union, cooperatives and farmers for the 2020/21 marketing season

Union/ coops	Amount collated	Loan disbursed to Coops	Loan disbursed to farmers			Farmers benefited		
			Own capital	Guarantee fund	Total	M	F	T
Metema yohannes	400,000	1,800,000	808,000	90,000	898,000	106	10	116
Kokit	600,000	2,700,000	1,960,000	1,312,600	3,272,600	1,037	628	1,665
Mender 6,7,8	400,000	1,800,000	-	1,281,500	1,281,500	253	79	332
Das	200,000	900,000	-	394,500	394,500	50	4	54
Meka	600,000	2,700,000	-	1,381,000	1,381,000	204	20	224
Shinfa	160,000	750,000	-	311,000	311,000	95	23	118
Tumet	200,000	900,000	-	-	-	-	-	-
Dubaba	200,000	900,000	-	-	-	-	-	-
Gelego	200,000	950,000	-	-	-	-	-	-
Union	2,960,000	13,400,000	2,768,000	4,770,600	7,538,600	1,745	764	2,509
Sanja	360,000	1,800,000	-	623,000	623,000	132	14	146
Godebe	300,000	1,500,000	-	355,500	355,500	52	16	68
Total	3,620,000	16,700,000	2,768,000	5,749,100	8,517,100	1,929	794	2,723

Mainstreaming social inclusion and nutrition

- Of the total number of farmers who benefited from the guarantee fund activities over the years, about 25% were women.

- More attention is given to the production and marketing of soya bean, attempts were also made to increase farmers' consumption of soya and mung bean based products through women training on recipe development and demonstration.

Achievements

- Market linkages created between commercial soya bean farmers and processing company Richland;
- Market connections established for Selet Hulling PLC with organic sesame farmers in Amhara region;
- The guarantee fund scheme was successful as union and cooperatives have fully repaid their credit and new loan for the 2020/21 production and marketing season provided based on their own cash guarantee;
- Banks show increased interest to support unions and cooperatives and this is leading to long-term relationships between farmers' organisations and financial institutions;
- The level of understanding of cooperatives and unions towards loan management and resource mobilisation has significantly improved;
- Improved relationship and trust between unions and member cooperatives and the primary cooperatives and farmers because of the availed marketing credit, which.

Challenges, opportunities and lessons learnt

- The recent Ministry of Trade directive that inhibit companies purchasing directly from unions and cooperatives is a strategic challenge as it hampers direct cooperative/union-company relations, which are essential for value chain development and market linkages;
- Trade Bureau and RCPA are not on the same page in addressing the unions and cooperatives problems. There is limited coordination and lack of mutual understanding in creating market linkages;
- The government support to bring relief on long standing fertiliser debts created new options for unions and cooperatives to access credit and generate revenues to improve their financial situation.

Challenges, opportunities and lessons learnt 5 years (2016-2020)

- Lack of a vision and subsequent strategies to address agricultural financing problems of farmers, cooperatives and unions, which is among the major bottlenecks for developing the sesame lowlands and for increasing foreign currency earnings;
- The provided amount of market credit is still insufficient for all unions and cooperatives in the sesame sector to strengthen their business operations and purchase all the produce from member farmers;
- The marketing credit intervention with commercial banks achieved strong results due to intense monitoring and should continue to receive support and follow up from financial institutions and cooperative promotion agency;
- The new market regulations that prevent purchasing sesame at ECX above the international market price creates new opportunity for local value creation and establishing direct buyer-supplier relations. This also encourage unions to export more sesame and earn a premium on the international market;
- Value chain development, including quality and transparency improvements and product development, is a huge potential that can attract additional investments in the sesame sector to improve the competitive position of Ethiopia on the world market and boost export revenues;
- The strategic direction of the government on import substitution and export promotion with right policy interventions such as eliminating subsidies on edible oil can enhance this transition.

Way forward (post 2020)

- The success of the marketing credit intervention can attract other banks to invest in the agriculture.
- Policies that influence market dynamics and agro-processing should be designed and reviewed.
- Quality measures should be improved and implemented starting from the spot markets.
- Price information (local and international) should become more accessible to farmers and traders.
- Private sector engagement in the sesame sector continues to increase and will stimulate post-harvest value creation, market relations, production efficiencies, mechanisation and innovations.



Credit disbursement at cooperatives

Enabling environment for the sesame sector

Evidence-based information gathering and sharing

Rapid assessment: Since the outbreak of COVID-19 pandemic, SBN has continuously assessed the impact of the virus on the development of activities in the sesame growing areas. For the impact assessments data was collected from different sources and stakeholders through a short online questionnaire and focus group discussions (FGDs). The collected data was analysed and most pressing challenges and the required action points were defined, these were broadly shared with concerned stakeholders including policy makers. Based on the 'Alert', new activities were formulated and stakeholders were supported to take appropriate actions.

SBN performed the first rapid assessment cycle in May just before the start of the new production season. The assessment included a wide range of stakeholders from both Amhara and Tigray regions that were reached through the support of the team. Four important alert areas were identified: 1) reduced area of sesame cultivation affects future export revenues; 2) Availability of labour and welfare of labourers are of major concern; 3) Mobility restrictions hamper input delivery and extension services; 4) Increased production costs result in more acute need for credit. The alert was published in English, Amharic and Tigrigna and distributed through several channels. SBN arranged media coverage on the radio and television programs involving decision makers to discuss the identified alert areas. The content was also shared with EKN and networks in the Netherlands and beyond.

The second rapid assessment cycle took place in August. The survey was revised to integrate new topics relevant for that stage of the production season and for inclusion of other vulnerable groups. The attentive areas in the second alert were: 1) health and safety of labourers are of major concern; 2) small businesses are at risk of collapse; 3) a financial action plan is needed for timely provision of credit; 4) resource-poor farmers are facing particularly severe challenges. Similar to the first alert the results were broadly communicated and stakeholders used the information to determine their priorities and working plans.

COVID-19 CRISIS

Sesame Alert

#02 August 2020

Sesame Alerts identify current challenges and outline urgent action needed in the Ethiopian sesame sector, based on surveys and focus group discussions with various stakeholders

Ethiopia

Photo: Hagos Tadesse

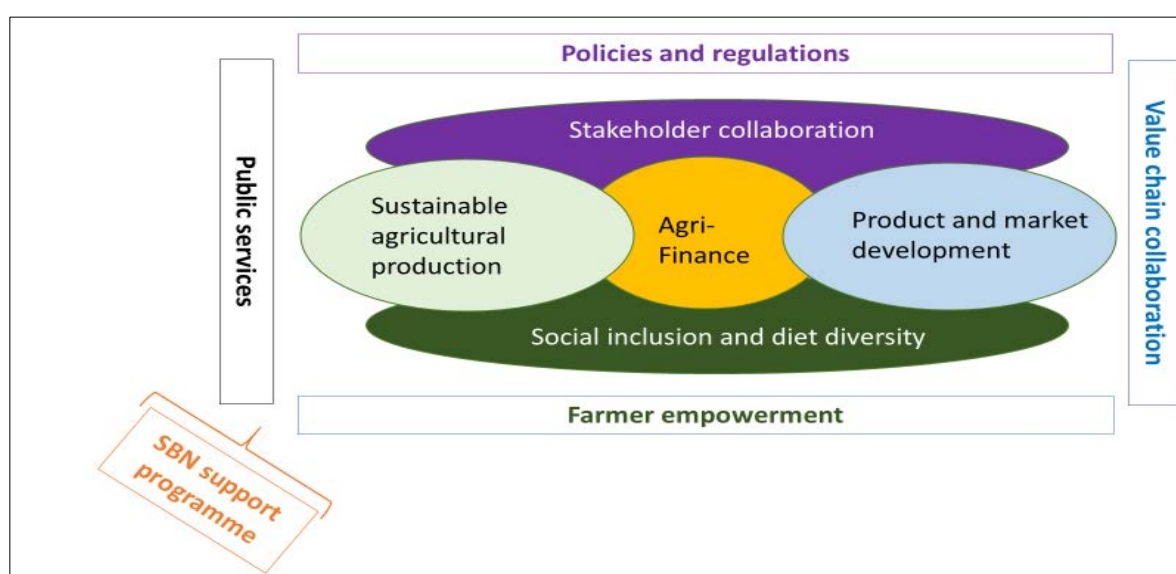
Alert 1	Alert 2	Alert 3	Alert 4
Health and safety of labourers are of major concern	Small businesses are at risk of collapse	A financial action plan is needed for timely provision of credit	Resource-poor farmers are facing particularly severe challenges

A third round rapid assessment that focused on the 2020/21 marketing season was conducted in October. The questionnaires were inclined to the status of sector functions and activities. Those elements rated as very poor or poor were discussed in more detail in the focus group discussions. The four alert areas included: 1) Unions and cooperatives have limited access to marketing credit; 2) Sorghum production, storage and marketing need urgent attention to prevent losses; 3) Information on markets is lacking and quality award processes are lacking; 4) Basic food is less affordable owing to increased food prices and lower incomes. One of the most powerful functions of the tool is to bring stakeholders together on a short notice to discuss the most pressing issues and

focus on mitigating actions. Lesson was drawn that an institution is able to conduct such studies to signal impacts and address issues timely with limited resources. SBN exerted efforts to organise a high-level officials meeting to address the outcomes of the third alert, mainly availing marketing credit to unions but, the limited availability of decision makers and occurrence of other urgencies (locust and security issues) made it difficult to achieve the plan.

The SBN book: Agricultural sector transformation is a team work: Experiences and lessons learned of the Sesame Business Network support programme in Ethiopia is completed. The book has eight chapters. It endeavours to tell the story of sector transformation with experiences from five major intervention areas:

- Sustainable agricultural production → for cost price reduction
- Product and market development → for value creation
- Agri-finance → supportive to both the production and market side
- Social inclusion and diet diversity → receiving special attention
- Stakeholder collaboration → of major importance for arriving at effective change, as highlighted in the proposed title of the book (see figure below).



Biweekly updates - Following the COVID-19 outbreak, the programme produced a bi-weekly updates on pressing issues of the sesame sub-sector. In the six updates news and technical themes on extension communication strategy; mechanisation, seed, weather, soya bean market linkage, credit through guarantee fund, pests, results of the rapid assessments and ad on corona protection were included and shared printed and electronic copies with more than 450 stakeholders. The updates were also posted on the SBN website and Facebook pages (visit <https://sbnethiopia.org/2020/06/24/updates-from-the-sbn>).

Radio programme - The white gold radio programme was on air to support the extension activities in sesame area as mobility restrictions hampered staff reach. Agreements have been signed with Amhara mass media agency (AMMA) and Dimtseweyane Tigray (DEWIT) for weekly radio programmes development and airing for a period of five months following production and marketing seasons. SBN staff and stakeholders are setting the agenda for the programme producers.

Television Forum - SBN initiated and supported the production and broadcasting of a televised discussion forum in which the Amhara Bureau of Agriculture and Trade heads, ARARI director general and a representative from health office have participated. The discussion focused on the anticipated challenges during the pandemic and the possible actions to be taken. Similar discussions were made by Tigray region BoA and TARI. Such discussions contributed for example to availability of labourers in the sesame sector.

Documentaries - A labour documentary film was produced in collaboration with AMMA and run in Amhara television four times. The documentary depicted health condition of labourers, precautionary measures being taken and the contribution of different stakeholders in the time of the COVID-19 crises. It also attempted to show the link between the sesame producing lowlands with the highland *woredas* by portraying a labourer from one *woreda* who was about to go to the sesame area. Professionals from labour and social affairs office, daily labourers, investor farmers, health office, and administrators were interviewed. Production of a final SBN documentary film is also completed.

Extension material distribution - The hard and soft copies of cotton, soya and mung bean production manuals; sesame insect pests and disease management guide have been distributed to *Woreda* Offices of Agriculture and commercial farmers in Amhara and Tigray regions. Five hundred copies of the cotton manual was sent to Ethiopian textile industry development institute upon request. Similarly, MoA requested two thousand hard copies of the cotton production guide to distribute to all cotton growing regions. The remaining copies will be distributed to commercial farmers through the cotton growers association.

SBN website and social media - Major activities and documents have been shared via the SBN website, on Facebook, Twitter and LinkedIn. Stakeholders have been informed that electronic copies of all extension and communication materials are available at the SBN website. Similarly, some major activities of stakeholders reported in their Facebook pages have been shared in SBN Facebook page.

SBN Newsletter - The 23rd and 24th issues of the SBN newsletters were published and shared to more than 700 electronic copy receivers and they were also posted in the SBN website and social media.

Stakeholder capacity development

Due to the prevalence of the COVID-19 pandemic organising training sessions has been a challenge. To cope with movement restrictions radio, television, Skype, telegram, zoom meetings and other social media have been used and information and knowledge was shared with stakeholders. In spite of the challenges, the *woreda* offices of agriculture organised some training sessions earlier in the season with minimal financial (fuel and expert per diem), and providing printed materials and technical support. In the various training sessions more than 1207 development agents and agricultural professionals were trained in good agricultural practices. The agricultural professionals in turn trained more than 69,824 farmers, out of which 17,498 (25%) were female.

A two-day training to tractor operators from western and north western Tigray zones was organised in collaboration with HuARC and Mamaye plc.

Field days - As part of institutionalization, field days with more than 55,665 participants have been organised at *kebele*, *woreda* and zone levels in both regions. SBN staff were also invited to participate in the field days.

Strategic sector innovation

In the previous years, 12 strategically important topics for sesame sector transformation have been identified and discussed with stakeholders during regional workshops and national strategic meetings made mostly after field days with the aim to come to important decisions for fundamental change and performance improvement. Though assignments were given to different bureau heads, ground touching decisions could not be made due to the changing political and security situations, the COVID-19 pandemic and locust outbreak. The lesson taken from these meetings indicate that regional authority's give more attention to political assignments than to strategic sector challenges.

Mainstreaming social inclusion and nutrition

SBN gives utmost attention to labourers working in the sesame zone. Based on the rapid assessment and the detailed analysis supports have been made to labourers and vulnerable farmers. Distribution of extension materials allowed stakeholders to continue working with women and youth farmers.

Achievements

- Radio programmes broadcasted via the Amhara mass media and Dimtseweyane radio channels;
- Information and extension messages shared on SBN website and through the social media;
- TV discussion forums were organised in collaboration with ARARI and Amhara BoA on issue related to the required preparations for the 2020 production season; labour availability and movements and health during the COVID-19 pandemic;
- Electronic and hard copy extension materials including production guides, short films, PowerPoint presentations and other extension materials were provided to *Woreda* offices of Agriculture;
- Bi-weekly updates helped SBN stakeholders get informed on current issues of the sector;
- Installation of wifi connections in all the 13 *woredas* and two Unions improved communications among and between *woredas*, zones and regions;
- Conducted rapid assessments and shared results with stakeholders;
- Finalised the SBN experience book.

Challenges, opportunities, lessons learnt and way forward

- Frequent power cuts affected internal communications and zoom meetings;
- Security situation and movement restrictions affected on results of the final year activities;
- COVID-19 pandemic and the measures taken to control the spread of the virus have affected some of the activities including thematic meetings, trainings, workshops etc.;
- Getting higher officials in their office was a major challenge that hindered timely organizing of finance thematic meetings and platforms.

Challenges, opportunities and lessons learnt 5 years (2016-2020)

- Turnover of high officials and limited commitment was a major challenge that hampered institutionalisation of achievements. It is also not easy to get authorities in office for making decisions that are required for system change;
- Adoption of improved technologies is not going as expected- there are attitude, finance, commitment etc., challenges;
- Linkage between financial organisations, *woreda* office of agriculture & cooperatives is still weak;
- Changing the top-down decision making approach to participatory and employing demand driven training is still a challenge;
- Despite all the efforts, the sesame national platform, which is a key for identifying and addressing key sector challenges, has not been realised.

Way forward (post 2020)

- In capacity building activities it is important to focus on farmer-to-farmer training, re-design of DA incentive systems, local farmer field and farmer business schools, focusing on outcomes rather than outputs, supporting training sessions with ICT;
- Bottom-up and collaborative planning needs to be the building block and an integral part of regional stakeholders planning;
- MoA need to take the lead in establishing a national sesame platform. The platform can work for not only identifying and addressing the sector challenges but, can work for the continuation of the communication outlets (SBN website, social media and radio programmes);
- Stakeholders can mobilise resources for developing sector information management system that base on ICT solutions. This could be financed through a levy system.



Discussions during the field visit at Lemlem Terara, Metema woreda, Amhara region

Collaboration

M&E and communication

Monitoring and evaluation - The main M&E activities were collection and documenting of basic information on training, communication and farming activities (output level), some qualitative studies (e.g. most significant change studies) and the assessment of all outcomes, comparing set targets with the current situation. All databases and documentation was brought together and shared. The E-Prod digital information system was finalised for 4 *kebeles*, just before COVID-19 pandemic started. It was not possible to continue the *kebele* agro-economic planning due to the COVID-19 pandemic.

Studies and surveys - Rapid assessments were made on the sesame sector, labourers' origin and movements; and on labourers' health and wealth risks. Furthermore, an analysis was made on the understanding and use of the cash book by farmers trained on financial literacy.

Communication - As SBN is based on collaboration with stakeholders, information was shared with a range of partners and the general public, using website, newsletter, social media (Facebook, Twitter and LinkedIn). Specific initiatives (bi-weekly updates and the continuation of radio programmes) were undertaken to respond to the COVID-19 situation and to support connectivity at *woreda* level. The extension and communication materials (production guides, posters, brochures, radio shows, short movies ... etc.) were shared to stakeholders, in printed and electronic copies. In 2020, SBN produced a short film for the World Food Day seminar in The Hague. An end of phase documentary is also published.

Collaboration

Collaboration within the BENEFIT partnership - The sesame sector rapid assessments were conducted in close collaboration with major stakeholders, especially the MoA, ARARI and TARI. For the development of the assessment methodology and the design of the alerts, SBN worked intensively with ISSD. For the soya bean quick scan, SBN collaborated with BENEFIT programmes (ENTAG, ISSD, and CASCAPE). For scaling of the weather forecast services, SBN collaborated with ISSD and ENTAG. SBN collaborated with REALISE for the analysis of the effect of the COVID-19 pandemic on labourers in the sesame lowlands. The sesame zone offers seasonal employment for close to half a million labourers, mainly youngsters, from some 50 *woredas*. Unfortunately, quite some of the planned collaborative activities (PVS and CS work with ISSD, scaling of financial literacy, training of trainers) could not take place.

Collaboration with other projects and partners - Collaboration with Agriterro continued to ensure a good dismantling of the guarantee fund, to capitalise lessons learned and to reflect on options to scale the experience. A collaboration agreement was made with Amhara region ATA to partner on capacity building and providing technical support to farmer production clusters, and to organise together the quarterly and annual ACC alliance meetings. To prepare the contract farming relation between soya bean farmers and Richland, a lot of action research was done.

Collaboration with [Dutch] private sector companies or partners - Collaborations were established with Weather Impact, and the National Meteorological Agency (NMA), and Apposit PLC for developing and sharing weather forecast information via SMS to registered farmers. The number increased to 10,000 with the inclusion of farmers from ISSD and ENTAG reach areas. Accuracy and usefulness of the information delivered to users was assessed and feedback was provided to technology developers (NMA and WI) and the disseminator (Apposit). An elaborate lessons learned paper was also prepared by WI, NMA and SBN and shared with stakeholders. Field mission was facilitated to Selet Hulling PLC to explore organic sesame sourcing options in the Amhara region.

Mainstreaming social inclusion and nutrition

In the sesame zone, an estimated 16% of the 170,000 farmer households are female headed. The percentage of female headed households is much higher in Tigray (23%), than in Amhara (9%). At peak times during the agricultural season, the number of wage labourers is higher than family labourers. In total, more than half a million seasonal labourers arrive in the sesame lowlands. They are generally young and poor and originating from food insecure mid- and high-lands in Tigray and

Amhara. Most people in the sesame zone, especially labourers, have a very monotone diet. Over the years, social inclusion (gender, youth, labour) and nutrition became an integral part of SBN.

Efforts have been made to raise stakeholders' awareness on the possibilities of improving women and youth participation. It has been learned that organizing separate training sessions for men and women had a positive result. Household approach seems acceptable for technical, social, economic and cultural reasons as farms are family enterprises with complementary roles of family members.

Labourers are essential for sesame production. However, the attention given to them is negligent when compared to their number and poverty. They are not residents of the sesame zone; weak and vulnerable to shocks. There is limited attention for labourers in the development discourse as compared to the attention given to gender and youth. More attention should be given to the relations between the sesame lowlands and the food insecure *woredas* of origin of the labourers. Perspectives for local value addition exist for mung and soya beans and for fruits and vegetables. Many women are interested in soya and mung beans, especially as crops for sale. If opportunities for local business development arise, specific attention has to be given to female and youth entrepreneurship.

Achievements

- Three rapid sesame sector assessments were done with active participation of stakeholders;
- In-depth analysis of the labour movement and conditions;
- Scaling of the weather forecast services;
- Increased opportunities for farmer-company relations for soya bean and (organic) sesame.

Challenges, opportunities, lessons learnt and way forward

A key lesson is that collaboration reduces the cost of activities, avoids duplication of efforts, improves reach and increase the results and impact at the level of end users. Planning and working with stakeholders at local, regional and national level is essential to sustain the outcomes. Therefore, local implementing partners should always be part of the design of project activities. For several subjects piloted and developed by the SBN, there are good perspectives for scaling out and scaling up, especially: financial literacy training, marketing credit and collaboration with banks, bottom-up planning, translation of research findings into practical extension materials and participatory training, communication channels for sharing information and experiences.

Collaboration that concentrates on sharing methodologies and experiences is more important than physical collaboration in the field. In the past years, this proved to be difficult because of the distant location of the sesame zone in Northwest Ethiopia. What is also very promising is the complementarity of commercial and food insecure areas and the possible SBN-REALISE collaboration. There is huge potential for ICT solutions that could be used in several intervention domains and geographical areas.

Way forward

An agenda for action for the way forward is outlined in the next session. More attention should be given to labourers and the relations between the sesame lowlands and the food insecure mid- and high-lands in Tigray and Amhara where the seasonal labourers are originating from.

Institutionalisation and way forward

Handing over / sharing lessons learnt

On average the SBN action research and support programme has achieved some disappointing, but mostly from good to very encouraging results. For different, yet complementary intervention areas, it has been shown that it is – in principle – possible to:

1. Improve research-extension linkages by translating research results in to user-friendly extension messages;	16. Sensitise labourers and their employers about labourers' rights and minimum standards for working and living conditions;
2. Reach all farmers with attractive, yet low-cost production guides for different crops grown;	17. Have professionally managed cooperatives acting as enterprise and working for members' benefit;
3. Double sesame yields by applying good agricultural practices and increased input use;	18. Improve the internal capitalisation, hardware and collateral of these farmers' organisations;
4. Promote integrated farming systems and reduce risks of mono-cropping;	19. Raise the interest of financial institutions and develop trust-based relations between financial institutions and farmers' organisations;
5. Produce high quality sesame that responds to the demand of several high-value markets;	20. Improve farmers' access to finance, both through input finance and through internal on-lending;
6. Locally develop, produce, multiply and use quality seeds for sesame and rotation crops;	21. Minimize the practice of informal money lending;
7. Tailor ISFM and IPM recommendations to local realities, with due attention for both agronomic and economic considerations;	22. Develop business of small, medium and large enterprises (seeds, cleaning, oil extraction, mechanisation, new food products, ...);
8. Mechanise the sesame lowlands through lease financing and machinery rental services.	23. Support the emerging industry for food, textile and edible oil production through improved soya, cotton, sesame and sunflower production;
9. Reduce harvest and storage losses of sesame and rotation crops;	24. Arrange contract farming agreements between companies and farmers and their organisations;
10. Promote the production of pulses, fruits and vegetables for improved diet diversity;	25. Have a level playing field for unions and coops;
11. Provide reliable weather forecasts and advice to farmers for adapting climate change;	26. Plan activities bottom-up for a new season;
12. Convince farmers become entrepreneurial, keep farm cost records, increase savings and improve their eligibility to bank loans;	27. Share information on a sector-specific website and keep it up-to-date and to inform stakeholders;
13. Move towards a more participatory, farmer-oriented extension system;	28. Collaborate with mass media agencies for producing and broadcasting programmes and documentaries;
14. Tailor training & coaching services to groups;	29. Mobilise stakeholders to rapidly and regularly assess the prevailing situation and take action;
15. Use a digital information management system;	30. Establish stakeholder collaboration and networks at different levels.

Institutionalisation and sustainability of results

SBN is very proud of the scaling and institutionalisation of the following:

- **Scaling out good agricultural practices.** The Amhara and Tigray Bureaus of Agriculture have taken up the 20 steps and rotational crops production technologies and scale out by their own.
- **Rotation crops.** Rotation crops can be marketed through ECX. First contract farming relations between (large) farmers and an agro-processing company have been established.
- **Financial literacy:** It is adapted and included in the national extension package. *Woreda* offices of agriculture started to organise cost recording and calculating cost benefit analysis training together with the agronomic subjects. Cooperatives showing interest to train their members and farmers buying the cashbook also shows as the activity is somehow institutionalised.
- **Marketing credit for unions and cooperatives.** The guarantee fund supported risk-sharing of marketing credit for unions and cooperatives was successfully run for four consecutive years, with a 100% repayment rate. Though SBN dismantled the guarantee fund in 2020, Abay bank and the Metema union and Sanja and Godbie cooperatives have continued their relationship. The union and the two cooperatives deposited only 20% security deposit at Abay bank and acquired 18.3 million ETB. The increased risk taking (80%) by commercial banks is an indication for sustainability of the relationship between banks and unions.

- **Weather forecasting.** The activities done with NMA in availing weather information was successful and farmers demand is increasing. Farmers are ready to pay for the weather information service.
- **Regional and national platforms.** The regional platforms have been regularly organised and are taken up by BoA, ARI's, regional governments and ATA. But, the efforts to establish the national stakeholders' platform was unsuccessful because of high official turnover and the difference in understanding on its importance.
- **Information management and bottom-up planning.** A start has been made with bottom-up planning, a digital information system, joint monitoring and evaluation and a sector communication system that used multiple channels, but the activities have limited perspective for continuation.

These results notwithstanding, it has to be observed that so much more could have been possible. Evidence abounds that innovation and improved performance are possible if fundamental challenges are addressed. The process towards further improvement is however stalled due to lack of leadership for addressing the key challenges. Structural change for addressing fundamental challenges are required. An externally funded programme can only support and contribute but cannot enforce structural changes. This has to come from coordinated action of the stakeholders as sector transformation is teamwork. More than ever a functional Sesame Business Network is needed. With good leadership the network can make a flying start, based on the signposted agenda for action.

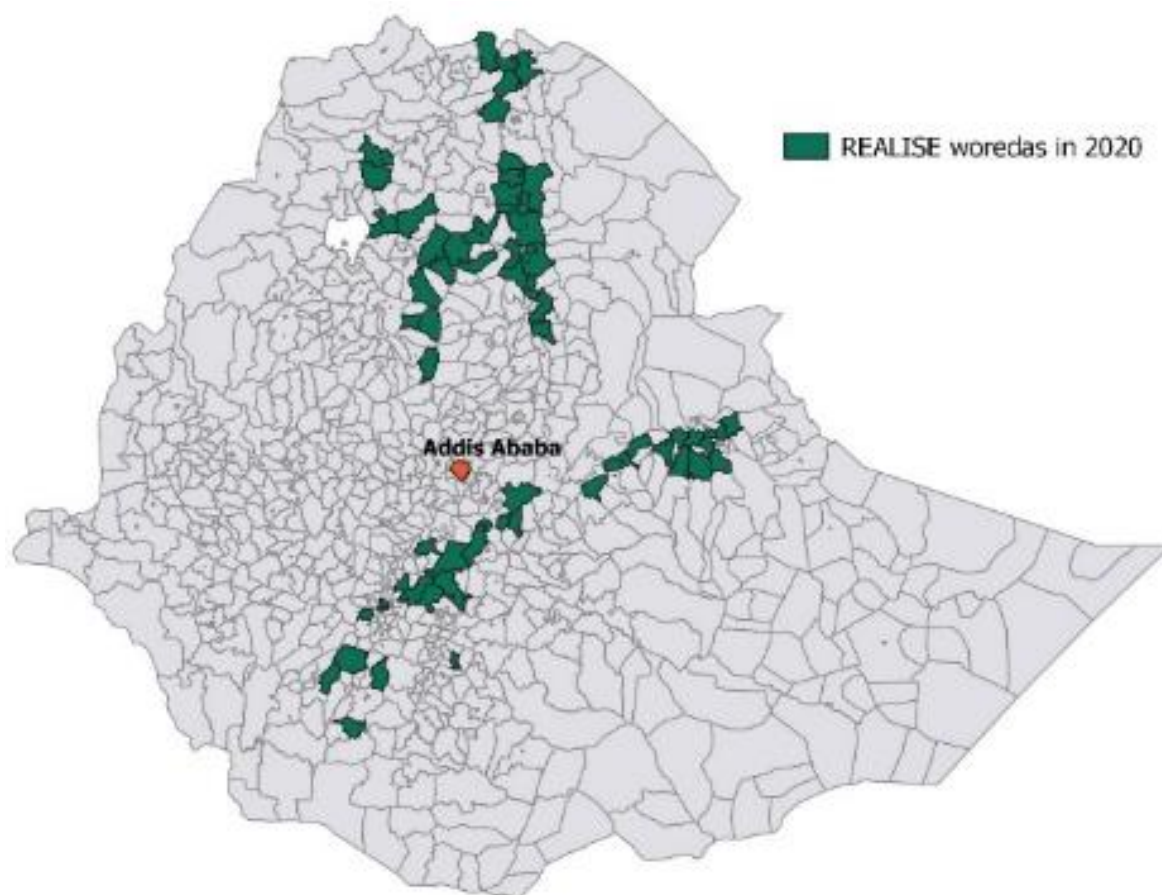
Way forward – agenda for action

The sesame sector is directly important for 200,000 sesame growing farming households and half a million seasonal labourers and indirectly for many others finding employment or small business opportunities. The sector has the potential to become the number one export earner for the country. Compared to other priority sectors, such as coffee, horticulture and livestock, the limited government and donor support is very remarkable. To change the situation, it is essential to have a coherent sector transformation plan, which outlines an interdependent set of policy changes, priority actions, investments and related commitments of key stakeholders. Based on SBN experiences and lessons learned during the past 8 years, practical, comprehensive and far-reaching 20 top agendas have been outlined below for decision making at regional and federal levels for real sesame sector transformation.

1. **Bottom-up agro-economic planning.** Applying the piloted KAEP tool is recommended for training need assessment, input use and credit amount planning, and selection of creditworthy farmers. The bottom-up planning (from *kebele* to regional level) should expand to all *kebeles*.
2. **Financial literacy.** Scale financial literacy training, which reached 20,000 farmers and has been endorsed by the MoA, in the sesame zone and beyond. Cost recording and cost-benefit analysis improve farm management, develop entrepreneurship and increase eligibility to credit.
3. **Input finance.** An input finance plan is of the highest priority. Without a structural solution for providing affordable input finance, the adoption levels of GAP are not likely to increase.
4. **Financing marketing credit for unions and cooperatives.** Commercial banks are willing to finance the marketing activities of cooperatives with 20% guarantee fund modality which has a multiplier effect. Cooperatives can provide loan to members for financing crop production. This bonds members to the cooperative and reduces dependency on informal money lenders.
5. **Sustainable farming systems and diet diversity.** Considering the very low diet diversity scores, especially for labourers and poorest households, it is important to have woreda action plans for improving food production and use. Focus on crop diversification and crop-livestock integration.
6. **Weather forecasting, climate change adaptation and related advisory services.** Seasonal and weekly weather forecast services are in very high demand of farmers, who are ready to pay for the service. The current collaboration with NMA and Weather impact, reaching 10,000 farmers, could be scaled to all farmers beyond the sesame zones.
7. **Fertiliser debt relief unions.** Because of the outstanding fertiliser debts, most unions have been registered under non-performing loan (NLP) that deprived getting credit from any of the commercial banks. Therefore, for improved union/cooperative performance the outstanding fertilizer debt has to be cancelled or it should not be an obstacle for getting new loan.

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8. **Private input supply services to farmers.** The private sector (farm service centres, local input shops, seed producers, machinery rental service providers) can take over input supply functions, with facilitation, coordination and quality control functions from the Government.
 9. **Farmer-to-farmer extension** can be organised via farmers' organisations to support farmers in areas that are insufficiently reached or where there is high DA turnover.
 10. **Financing and organising appropriate mechanisation.** Farmers are very much interested and are ready to invest on row planting, improve efficiency of field operations and reduce production cost price. The mechanisation process has to be accompanied by lease financing and private and cooperative machinery rental services.
 11. **Market liberalisation leading to value chain development.** Realistic domestic market prices can open doors for investments, value addition and new market relations. Give priority for quality-oriented production in order to regain a competitive position in world market and get better prices.
 12. **Cooperatives as autonomous farmer-business organisations.** Due attention should be given to capacitating cooperatives to work together and provide different services (input supply, storage, cleaning, oil extraction, marketing) to their members. Create a fair business climate for cooperatives and unions to export commodities and import goods as other exporters do.
 13. **Tailored services for different categories of farmers.** Support services should consider the specific needs of large, intermediate and smallholder and of female and young farmers. Specific modalities for supporting and assessing the performance of investor farmers need to be defined.
 14. **Reach farmers and approach family farms as small enterprises.** Invest on training materials production and use of complementary communication channels to reach more farmers. Consider the different roles, responsibilities and vulnerabilities of men, women and youth. Target trainings based on household member tasks and needs.
 15. **Digitalisation.** Design a digital information, planning, monitoring and evaluation system from *kebele* up to regional level, based on the experiences of SBN-SP and others.
 16. **ICT solutions.** Attention must be given to use of ICT for data collection, information sharing, mobile banking, recommendation mapping, and monitoring cultivated area by crop type, soil moisture content, tracing products, information management and for communication.
 17. **Connecting seasonal employment in sesame lowlands to poverty reduction and food production in mid- and highlands.** Large number of seasonal labourers migrate to the sesame zones from the nearby food insecure zones and *woredas*. Therefore, linking the commercial sesame lowlands with food insecure mid- and highland *woredas* of origins of labourers might benefit both.
 18. **Sesame sector platforms.** Network of partners that are attended by all relevant stakeholders and decision makers are needed at *kebele*, *woreda*, zone, regional and national levels for discussing on specific sector challenges and pass resolutions.
 19. **Levy system.** For example applying 1ETB levy per 100kg seed could generate 2-3 million ETB per year, which is could sustainably fund all platform activities (salary, managing website, producing newsletters, short documentaries, printing costs, field days, regional and thematic meetings).
 20. **Ongoing research and innovation.** Standstill is decline in business. A sector thus has to invest in on-going (technical, financial, digital, business) innovations (refer SBN book page 362-63).





Executive summary

Introduction

REALISE (Realising Sustainable Agricultural Livelihood Security in Ethiopia) is one of the five programmes in the BENEFIT Partnership. It was designed for three years (2018-2020). The BENEFIT-REALISE programme here after called REALISE has been implemented in alignment with Productive Safety Net programme (PSNP) of the Ethiopian government.

Taking the experience of BENEFIT-CASCAPE and BENEFIT-ISSD into account, the programme focuses on validating, adapting and scaling of best fit practices (BFPs) in 60 Productive Safety Net Programme (PSNP) *woredas* (which are now 61 *woredas*, because of the formation of a new *woreda* from the existing *woreda* of Halaba.) In 2020, the programme focused on demonstration, pre-scaling, strengthening linkages in the seed system and piloting; whereas validation and crowdsourcing were conducted only in 2019. Eight Ethiopian Universities (Araba Minch, Arsi, Bahir Dar, Haramaya, Hawassa, Mekelle, Oda Bultum and Woldia), the federal and four regional agricultural research institutes (EIAR, SARI, OARI, TARI and ARARI), the federal ministry of Agriculture and the four regional bureaux of agriculture (BoAs) and the PSNP office are the main implementing partners. The programme was contracted by Wageningen University and Research (WUR) in the Netherlands. The advisory board that are established early in the programme inception at national level has played a critical role in terms of strengthening the programme alignment with government policy and strategy as well as in institutional embedding. The members are drawn from the MoA, represented by the state Minister for agricultural and the extension director, the food security coordination director and

Ethiopian Institute of Agricultural Research represented by its Director General. Mirror regional advisory boards were established with representatives of BoAs, Regional Agricultural Research Institutes, food security coordination and the universities for the same purpose.

At impact level, REALISE aims to contribute to improved sustainable food security, income and trade among food insecure rural households in Ethiopia. The programme goal is to bring enhanced human, organizational and institutional capacities for validating, adapting and scaling best fit practices for smallholder agriculture for increasing productivity and thus improving sustainable livelihoods in chronically food insecure PSNP *woredas*. Programme outcomes are:

1. Developed best fit practices, that meet expressed needs and have the potential to contribute to increased productivity and resilience, are available for scaling in selected PSNP *woredas*;
2. Increased availability, timely delivery and use of quality seed of new, improved, and/or farmer preferred varieties through diverse channels;
3. Enhanced human, organizational and institutional capacities for matching, adapting, validating and scaling best fit practices; and
4. A conducive environment exists for the institutionalization of evidence-based system innovation.

Major achievements

Quality and quantity of sustainable production

- Over 110 demonstration and pre-scaling activities and strengthening linkages in seed system were conducted to generate best fit practices for PSNP agro-ecologies and socio-economic conditions;
- 54 best fit practices have been identified after validation, which will help smallholder farmers to increase their productivity;
- 194,284 smallholder farmers (34.6% females), both directly and indirectly²⁴ accessed innovations (as indicated in Table 1);
- A total of 159,492 smallholder farmers used best fit practices of the REALISE programme, with 35% female beneficiaries, covering a total 22,464 hectares of land, out of which 3561 hectares were managed by directly involved farmers who benefited from using the practices to increase their productivity; and the programme also generated evidences for further scaling;
- Productivity of major crops increased, for the farmers involved in REALISE interventions, between 35-900% over the baseline in 2020; majority of the crops giving more than a 150% yield increase;
- 18,944 farmers (44.7% female) directly accessed nutrition dense crops of legumes, fruits, orange fleshed sweet potato, quality protein maize and vegetables;
- 160,517 smallholder farmers (directly 23% and 77% indirectly) got access to quality seeds, out of which 35.8% are female;
- Crop portfolio (diversity of varieties) increased between 120 and 600% with an average 285% showing that the REALISE programme is creating a basket of options for locally adapted varieties for food insecure farmers;
- 43 linkages were strengthened/established and supported between seed producers, seed users and service providers;
- and SNNP regions with 367 PSNP farmers (M=234, F=133) to generate evidences for further scaling;
- TOT was organised to 518 subject matter specialist (SMS), researchers, office heads and administrators. The progress is below the plan due to the COVI-19 pandemic;
- In-situ training was given to 29188 farmers on the use of best fit practices;
- 10,486 participants comprising farmers, experts, researchers, policy makers, NGO staffs and private sector actors attended field days organised by the university clusters. Out of the total participants 29% were females;
- Two institutional advisory board meeting were held during the reporting period. One of the meetings was accompanied by a high- level delegation visit to Hawassa and Arsi University clusters;
- Capacity building training was organised to partner institutions on 'Digital Soil Mapping' and 'Innovation Recommendation Mapping' by ISRIC and WENR.

²⁴ Indirectly reach farmers are those farmers who access seed from direct beneficiaries of REALISE programme, who attended demonstration plots, field days and other innovation popularization events.

Improved enabling environment

- In order to promote soil type based interventions, a soil resource survey at semi-detailed scale was conducted in 15 REALISE intervention *woredas* in Ethiopia and produced a soil resource dataset including a soil profiles database and a soil class map.
- The training and backstopping provided by ISRIC contributed directly to the further strengthening of the capacity of the Soil Resource Information and Mapping Directorate of the Ministry of Agriculture of Ethiopia in its ambition to survey and map soil resources at scale and become the Ethiopian Soil Resources Institute. The implemented work activities are reported here relative to the original work plan.
- IRM method was used to assess and identify optimal areas for growing two sweet potato varieties in Oromia region (both Adu and Hawassa in Arsi and Adu in East Hararghe zones) and maize and haricot bean potential for intercropping in SNNP region, Siliti zone as an evidence of the importance of the method.
- 13 piloting activities were implemented from 2019- 2020. The purpose of these pilots was to generate evidence on scalable youth employment opportunities, improving household resilience through women empowerment, affordable extension packages for small holder farmers, increasing access to weather information for small holder farmers to inform their investment decisions.

Collaboration

- REALISE established strong collaboration with federal level stakeholders such as Ministry of Agriculture PSNP/Food security coordination office, extension directorate and soil information and mapping directorate Bureaus of agriculture, Ethiopian Agricultural Research Institute (EIAR).
- Fertiliser type and rate recommendation validation joint activities was repeated for bread wheat and tef in 2020. The result indicate that the highest grain and straw yields of bread wheat were attained from the application of 150% recommended nitrogen and phosphorous (RNP) ($62-30 \text{ N-P ha}^{-1}$) from NPS and urea fertilizer sources and the application of 150% of recommended N and P ($69-25 \text{ N-P ha}^{-1}$) from NPSB and Urea fertilizer for tef.
- The clusters have been collaborating with bureau/office of agriculture at region, zonal, *woreda* and *kebele* levels, food security offices, and Regional Agricultural Research Institutes (RARIs).

Challenges, opportunities, lessons learned and way forward

Challenges

- The movement restrictions and market closures imposed due to COVID-19 have affected availability of and access to essential inputs such as seeds and fertilizers, which required to strategize different options to ensure access;
- Trainings such as ToTs could not be given as planned, field visits were limited and technical support to regions and from WUR was also limited to other means including Webinars due to COVID-19;
- Security problem during planting in Oromia and later in Tigray was also a challenge. In Mekelle cluster, final data collection was not possible and communication was shutdown later in the year;
 - IRM planned activities in Tigray and Amhara regions was disrupted due to the security issues;
 - The soil mapping activities planned in Oromia region was downscaled due to the security problem and inflated fee of consultants.
- Commitment of some stakeholders, DAs and focal persons was weak in some cases and frequent staff turnover more at *kebele* level was also encountered;
- Excessive rainfall (e.g., in Arba Minch, Bahir Dar, Hawassa and Woldia University clusters) that affected crop growth and productivity;
- Short life of the REALISE programme which impedes to properly see contribution of the programme to food security of PSNP households;
- The locust invasion occurred in Ethiopia in 2020 is the worst in 25 years (FAO, 2020). It has damaged an estimated 200,000 hectares (490,000 acres) of land since January, threatening food supplies. Incidents were reported from five clusters of REALISE. The actual damage in our target *woredas* is modest.

The impact of COVID-19 on REALISE 2020 plan implementation

The implementation of partial lockdown and state of emergency has affected all sectors in Ethiopia including agriculture. The transport system has come to a standstill which hampered the ability of project staff mobility to procure agricultural inputs and to implement planned activities in full force. The REALISE PMU designed adaptive strategy and cascaded to clusters where the implementation mandate is moved from University clusters to *woreda* and *kebele* office of agriculture due to the advantage of positioned staff and ease of physical access to farmers. The cluster role is reduced to capacity building, technical backstopping on limited scale and procurement of agricultural inputs. Hence, REALISE designed training modules and orientation sessions on the implementation modalities to the grassroot staff and supplied the necessary agricultural inputs on time. The disruption on the agricultural inputs supply and the delay at the sources for *belg* season has caused shortages of seeds for some crops and fertilizers in some target areas. The adaptive strategy payoff as the progress in implementation of *belg* and *meher* seasons which fall under the partial shutdown were remarkable both in terms of reach and achieving stated objectives. In the process of plan revision, the REALISE programme avoided testing and validation, in-depth studies initiated at national levels and policy dialogue events. On the other hand, it sized down soil mapping activities, encouraged demonstration, pre-scaling and one timad package for which the grassroot staff have experiences from 2019. A weekly reporting mechanism and periodic virtual meeting was designed as M&E. The programme produced five alerts and shared them with partners and stakeholders. The alerts provided sufficient insight and recommendations to overcome challenges of PSNP to maintain livelihood gains they experienced overtime.

Opportunities

- Active involvement of agricultural extension staffs in different *woredas* in the implementation of REALISE activities during the COVID-19 helped to properly undertake the planned activities and tremendously improved working relationships with them, which will contribute to institutional embedment of REALISE approaches and practices;
- Presence of cooperative unions, which were strengthened as quality seed supplier by ISSD and REALISE, in the surrounding helped the project to get seeds of different crops on time;
- Presence of supportive government offices that encourage alignment (extension, PSNP, research, NGOs) that facilitated taking up/mainstreaming of the demonstrated evidences;
- Presence of knowledge, experience and expertise within and outside the programme;
- Availability of crop varieties and crop management suitable to divers agro-ecologies with the members of the national agricultural research system;
- Interest of farmers to test and adopt new technologies; and
- Strong stakeholders' collaboration at national, regional, zonal, *woreda* and *kebele* levels.

Lessons learned

- Adjusting working modality proactively, which gave more responsibility to bureaus/offices of agriculture, helped to implement the planned activities; active involvement of the extension staff at zone, *woreda* and *kebele* levels is very crucial for successful implementation of the project activities as well as for creating sense of ownership on the interventions, paving the way for institutional embedding;
- Action research coupled with building on existing experience of other projects enhance implementation capacity and helped to see impact more quickly;
- Diversification of interventions is important to enable farmers to avert risks (e.g., farmers who planted crops like sweet potato and early maturing maize were less affected by Desert Locust infestation as the crops escaped);
- Use of organic fertilizer (compost) reduced the amount of inorganic fertilizers needed in the one timad package. The package attracted interest of farmers as they harvested higher yields while reducing the expenses they would have paid for the full rate of inorganic fertilizers;
- Supporting youths to off-farm activities generated income and thus increased their participation (e.g., PSNP supported youths to work on fruit nursery until the group started generating income);
- Targeting of context specific interventions has allowed identification of proven technologies relevant for specific agro-ecologies and socio-economic conditions;
- With locally adapted best fit practices and technical support, PSNP farmers can achieve better yields to fill/reduce food gap months; and
- Customising extension service can improve inclusiveness of the poor, women and youth.

Way forward

- Work on institutional embedding of REALISE programme key achievements into the local institutions;
- Organise national and regional workshops and present programme results and handover key outputs;
- Finalize documentation and preparation of best fit practice manuals (extension manuals) and handover to concerned institutions;
- Support extension directorate on piloting of "One timad package" in two universities, which have *belg* season.

Quality and quantity of sustainable agricultural production

Practice, Seed and Capacity building pathways

The REALISE programme contributes to increased quality and quantity of agricultural production through its practice, seed and capacity pathways. Best fit practices on crops and forages were matched and validated in REALISE intervention PSNP *woredas*. Practices including crops/varieties that are tested/validated for conditions similar to PSNP *woredas* were demonstrated and pre-scaled.

Best Practice validation, adaptation and pre-scaling

Over 54 best-fit practices were demonstrated and pre-scaled across PSNP *woredas* directly involving 34,816 farmers. In total (direct and indirect), 159,492 farmers got access to best fit practices. Demonstration and pre-scaling activities of different crop technologies were carried out in 2020 (e.g., Plate 1) by the clusters. From maize varieties developed for lowland areas receiving limited rainfall, Melkassa 2 and Melkassa 4 were widely disseminated by the programme in *woredas* of Arba Minch, Arsi, Haramaya, and Hawassa clusters. The varieties are “open pollinating” and farm saved seeds can be used at least for 3 years. Wheat varieties (Ogolcho, Senate, King bird and Danda’a), food barley variety (HB1307), teff varieties (Tsedey and Boset for lowland short season areas and Kuncho for areas with sufficient rain) with their crop management practices are best fit practices identified. Potato (Belete and Gudene varieties), sweet potato (Hawassa 09 and Adu white fleshed and Alamura and Dilla orange fleshed varieties) with their crop management were identified as best fit practices in many clusters. *Woreda* offices of agriculture are eager to take up these improved practices and include in their scaling programmes. Some varieties are already picked by LSBs and could sustainably be used.

Maize-haricot intercropping was promoted through demonstration and pre-scaling by Arsi, Haramaya, Hawassa and Oda Bultum University clusters. It helped to show to farmers that land productivity can be increased through properly managed multiple cropping. The economic analysis done for the intercropping practice by Arsi University cluster showed the marginal rate of return (MRR) of 253.55%, which is above the minimum acceptable rate, was attained under the practices of shifting from sole maize cropping to maize common bean intercropping, indicating that a one more Birr investment results in a return of about 2.54 Birr.

The beneficiary farmers witnessed that the application of vermi-compost to maize and wheat fields increases the productivity of the crop by improving the water retention capacity as well fertility of the soil and reduce the production cost.

Table 1 Number of farmers reached with best fit practices in 2020

University cluster	Direct			Indirect			Direct + Indirect		
	M	F	Total	M	F	Total	M	F	Total
Arba Minch	2,583	2,582	5,165	4,588	4,587	9,175	7,170	7,170	14,340
Arsi	1,885	2,345	4,230	10,629	5,328	15,957	12,514	7,673	20,187
Bahir Dar	3,568	1,430	4,998	17,840	7,150	24,990	21,408	8,580	29,988
Haramaya	1,714	1,100	2,814	6,963	4,187	11,150	8,677	5,287	13,964
Hawassa	5,015	2,627	7,691	23,900	11,155	35,055	28,915	13,782	42,746
Mekelle	2,946	2,228	5,174	8,396	6,350	14,746	11,342	8,578	19,920
Oda Bultum	408	272	680	2,564	1,626	4,190	2,972	1,898	4,870
Woldia	3,080	984	4,064	7,764	1,649	9,413	10,844	2,633	13,477
Total	21,199	13,568	34,816	82,644	42,032	124,676	103,842	55,601	159,492



Plate 1 Demonstration agricultural practices on sorghum by Arba Minch cluster (left) and faba bean by Hawassa cluster (right) with PSNP farmers

Productivity of the farmers who participated in the intervention of the programme increased for many of the crops between 35-900% (Table 3) in 2020. Yield of bread wheat and haricot bean was affected by irregularly high rainfall in *woredas* of Bahir Dar cluster. The results showed that it is possible to increase yield tremendously using quality seed of improved crop varieties and good crop management practices. Such increase in yield will definitely contribute to improved food security of PSNP farmers.

Table 2 Productivity of major crops under REALISE interventions in 2020

University cluster	Crop/variety	Trial yield 2020 (qt/ha)	Baseline yield 2018 (qt/ha)	Yield increment over the baseline (%) *
Arba Minch	Potato (Belete)*	387	90	330
	Potato (Gudene)*	256	90	184
	Maize (BH546)	50	5	900
	Haricot bean	25	4	525
Arsi	Maize (OPV)	65.05	15.09	331
	Bread wheat	35.25	14.65	141
	Teff	13.33	7.13	93
	Sweet potato (Hawassa 09)	285.60	na	na
Bahir Dar	Bread wheat	22.76	16.4	38
	Food barley	28.2	11.2	152
	Haricot bean	10.67	7.9	35
	Potato	200	62.84	218
Haramaya	Maize (OPV)	34.34	14.86	131
	Bread wheat	33.09	9.61	244
	Potato (Gudene)	250.57	41.49	504
	Potato (Bubu)	184.23	41.49	344
	Sweet potato (Adu)	268.5	80.65	233
Hawassa	Maize (OPV)	64.2	12.6	410
	Finger millet	27.25	10.6	157
	Teff	16.5	4.5	267
	Haricot bean	25.71	5.9	336
Oda Bultum	Maize (OPV Melkassa 2)	37	12.3	201
	Maize (hybrid BH540)	41.73	12.3	239
	Haricot bean (Awash-2)	21.2	4.46	375
Woldia	Sorghum (Grana 1)	34.5	6.06	469
	Wheat (Ogolcho)	31	9.99	210
	Teff (Zobel)	15.55	3.52	342

* Potato yield increment is compared with local variety

na- not available

Increased access to quality seed of adaptive and farmers' preferred varieties

Increased production and dissemination/marketing of quality seed

Over 160,000 smallholder farmers (35.7% female) in PSNP *woredas* got access to quality seeds of improved and farmers' preferred varieties in 2020 (Table 4). From this, 23% accessed quality seed through direct involvement in demonstration, pre-scaling, pilot trials or growing seeds being a member of supported LSBs/seed producers' cooperatives. Arba Minch University cluster, for example, established a primary seed producers' cooperative 'Birbir Improved Potato Seed Multiplication and Marketing Cooperative' with a membership of 25 farmers. The Cooperative was supported to develop by-law, received training on agronomic techniques to produce good quality seed tubers and supported to build diffused light store (DLS). Two improved potato varieties (Belete and Gudene) were selected by farmers and will be in seed multiplication. This will enable farmers to access good quality potato seed.

Arsi University cluster supported 300 farmers (in clustering and individually) who produced 2310 quintals of quality seed of different bread wheat varieties (Ogolcho, Senate and Kingbird) in 2020.



Plate 2 Mini packages of wheat

Seed mini packs were introduced to farmers by Haramaya (Plate 2) and Oda Bultum University clusters based on ISSD Ethiopia experience, attracted cooperatives to use the innovation and farmers to easily access seeds in the amount they need. Seed mini packaging and marketing has created high demand among the farmers since it enabled resource poor farmers with small land sizes to access improved variety seeds at affordable sizes and prices. Bread wheat (Senate and Ogolcho varieties) in 5 and 7 kg and common bean (Nasir variety) in 2 and 3 kg package sizes were prepared and sold to farmers by Afran Kello farmer's cooperative union.

Three-layer portable DLS, which can be used store seed tuber for each household, were demonstrated and handed over to farmers by Haramaya cluster.

Table 3 Number of farmers reached with quality seeds in 2020

University cluster	Direct			Indirect			Direct + Indirect		
	M	F	Total	M	F	Total	M	F	Total
Arba Minch	2,368	2,367	4,735	4,588	4,587	9,175	6,955	6,955	13,910
Arsi	2,035	2,495	4,530	11,396	5,720	17,116	13,431	8,215	21,646
Bahir Dar	3,498	3,400	4,898	12,256	4,909	17,165	15,754	8,309	22,063
Haramaya	2,101	1,149	3,250	8,667	4,740	13,407	10,768	5,889	16,657
Hawassa	5,765	3,026	8,791	23,900	11,155	35,055	29,665	14,181	43,846
Mekelle	3,060	2,275	5,335	9,765	5,450	15,215	12,825	7,725	20,550
Oda Bultum	777	544	1,321	3,885	2,720	6,605	4,662	3,264	7,926
Woldia	3,122	1,017	4,139	7,970	1,810	9,780	11,092	2,827	1,3919
Total	22,726	16,273	36,999	82,427	41,091	123,518	105,152	57,365	160,517

Increased demand for and availability of new, improved, and/or farmer preferred varieties among farmers

Preferred and selected varieties from 2019 interventions were promoted through demonstration and pre-scaling in 2020. The diversity of crop variety portfolio increased by 120 to 600% over the two years for the participating farmers (Table 5), which is far more than target of the programme to diversify crops/and varieties by 50%. The most preferred and selected varieties were promoted in 2020 from the large number introduced to the PSNP farmers in 2019 through crowdsourcing but still increased the diversity very well. The availability of diversified varieties of different crops broadens options for farmers to select for different purposes like adaptation of varieties for specific moisture regimes. Under the same setting, for example, farmers consider varieties as suitable in bad years with low-moisture stress and other varieties as suitable for good years with sufficient rainfall. For example, farmers in Shalla *woreda* in Oromia preferred to use Tessema and Tedesse finger millet varieties interchangeably when moisture is sufficiently available while they put Boneya variety as their first choice in the context of moisture stress season, considering relative earliness of the variety.

Table 4 *Diversifying crop varieties in the hands of farmers through REALISE interventions*

University cluster	#varieties in 2 years	Baseline	% increase over the baseline
AMU	13	5	120
Arsi	39	13	200
Bahir Dar	39	15	160
Haramaya	28	4	600
Hawassa	39	11	255
Mekelle	53	11	382
Oda Bultum	17	5	240
Woldia	17	4	325

Linkages established between seed producers and seed users for sustainable seed supply

In 2020, 43 linkages were either strengthened or established so that the farmers can have easy access to quality seeds and services in a sustainable manner (Table 6). In total, 59 linkages are kept functional bringing the achievement to 197% of the programme target (30 linkages).

Table 5 *Linkage established/strengthened 2019-2020*

University cluster	#linkages in 2019	# Linkage in 2020	Total linkage	Remarks
AMU	1	10	11	LSB established; MoU signed among government offices and multipurpose cooperatives (MPCs); the seed producers' cooperatives started producing potato seed tubers.
Arsi	0	3	3	linkages have been facilitated and created among seed producers such as farmers' cooperative unions and seed enterprises, research centers and farmers.
Bahir Dar	5	10	15	
Haramaya	2	3	5	The three linkages in 2020 are with Afran Kello farmer's cooperative union, Haji Faj SPC in Kersa woreda, and Gara Abdula SPC in Jarso woreda. Moreover, implementation of seed mini packaging and marketing was done in collaboration with Afran Kello farmer's cooperative union.
Hawassa	0	1	1	
Mekelle	5	8	13	Seed producer cooperatives supported in store construction and in production of seed for locally preferred varieties
Oda Bultum	1	4	5	
Woldia	2	4	6	
Total	16	43	59	

Capacity Building

The capacity of extension, NGOs and other service delivery mechanisms to disseminate best fit technologies through implementing scaling strategies is enhanced

REALISE works to enhance human, organizational and institutional capacities for matching, adapting, validating and scaling of best fit practices under the capacity building pillar. Increased capacities of local government and NGO staff, extension frontline workers, cooperatives, community leaders and large number of farmers is one of the key drivers of the programme intervention logics. Thus, enhancing the capacities of partners and stakeholders who have a stake in the implementation of the different programme interventions are crucial for increased agricultural production and productivity, closing the food gap months, enhancing diet diversity and resilience building which has been among the primary focuses of REALISE. During the reporting year, because of the challenges imposed by COVID-19 pandemic and associated state of emergencies declared in the country, the modalities of the implementations were changed and due attention was given to improve the implementation capacity the grass root staff positioned at *woreda* and *kebele* level. Farmers also received practical training on range of topics related to programme interventions. Accordingly, the achievement in the capacity building activities is more than planned target.

National and regional annual review and planning workshops

REALISE follow Iterative and Incremental approach in its annual programme planning. The iterative and incremental approach means that a series of events (iterative) and in smaller portions at a time (incremental), allowing the project team to take advantage of what was learned during development of earlier parts or versions of the system and incorporate external feedback from project stakeholders considered. It starts from *kebele* administration and pass through *woreda*, regional and national level. While the *kebele* and *woreda* level iteration was facilitated by the university cluster, the regional and national level iteration is facilitated by the REALISE PMU.

REALISE held four regional and one national annual review and planning meeting in 2020. The purpose of the meetings was to reflect on 2019 accomplishments across 8 implementing clusters in four regions, review of 2020 work plan, identify areas of collaboration, and agree on the mechanism of institutionalization. Over 350 participants, representing Ministry of Agriculture (MoA) at federal level, Embassy of the Kingdom of the Netherlands in Ethiopia (EKN), Universities, Ethiopian Institute of Agricultural Research (EIAR), Bureau of Agriculture (BoA), Southern Agricultural Research Institute (SARI), INGOs, BENEFIT Partnership programme (REALISE, SBN, CASCAPE-CANAG, PCU) from Addis Ababa and WUR attended the meeting.

Technical backstopping

Technical backstopping is carried out for two university clusters during the reporting period. The achievements were below the target due to the COVID-19 associated state of emergency which restricted mobility. However, to overcome the gap, a weekly reporting system and periodic virtual meetings were put in place between the clusters and PMU. The approach worked well to track progress and design strategy to improve the implementation capacity.

Training of trainers

During the reporting period it was planned to conduct ToT for extension, Research and NGO staff on training themes identified through the training need assessment conducted in 2019. Accordingly, ToT trainings was provided to 518 (Male=401. Female=117) *woreda* subject matter specialist and *Woreda* agriculture office heads and administrators. The proportion of female participants attended the ToT training in 2020 was 23% which is more than the achievements reported during 2019 (16.1%). A range of topics were covered in the ToT such as nutrition sensitive agriculture, seed production and management, agricultural technologies, scaling strategies, climate smart agriculture, post-harvest handling and integrated pest management, agronomic and crop protection management of recently introduced crops in PSNP areas, and demonstration and scaling up of proven technologies.

Table 6 No of experts, office heads and administrators reached in TOT

S/N	Cluster	Topic of the Training	Number of Participants		
			Male	Female	Total
1	Bahir Dar	ToT on demonstration of vermin-compost	285	89	324
2	Woldia	Training for experts on different crop packages	66	4	70
3	Haramaya	Seed production and management	10	0	10
4	Oda Bultum	Agricultural technologies scaling strategies, agricultural input-output value chain and climate smart agricultural technologies	37	1	38
5	Hawassa	Nutrition Sensitive Agriculture	30	2	32
5	Arba Minch	Climate smart agriculture, Post-harvest handling and integrated pest management	23	21	44
Total			401	117	518
% of participation			77	23	

In situ Trainings

During this reporting period, in-situ trainings were delivered to farmers on improved agricultural technologies utilization and agronomic practices to improve their knowledge and skills. DAs and experts have delivered in-situ trainings to the farmers. Both theoretical and hand-on trainings were organized on crops included in the demonstration and pre-scaling to all targeted farmers. The trainings allowed participants to gain both theoretical and practical understanding on the production, storage, consumption and management of each introduced technology. The in-situ trainings were attended by 29,188 farmers of which 19040 (45%) of the were women, while 28% of the participants were youth. Due attention was given to mainstream gender and social inclusion in the in-situ trainings, where both spouses (husband and wife) and youth were invited in most trainings to improve the capacity of women and youth farmers.

Due to COVID-19, the mode of delivery for the series of in situ trainings were revised to adapt safety measures such as keeping social distancing, using face masks and providing sanitisers as well as modalities of delivery outlined in the programme. Unlike the previous years, the programme staff were not in a position to deliver the in-situ training to farmers directly due to mobility restrictions. Hence, the programme staff and seconded staff trained the *woreda* experts and DAs in regional or zonal towns, while respecting all the COVID-19 precaution measures. Trained DAs and experts (mainly for focal persons), thereby cascaded the in-situ trainings for farmers participating in various programme activities at on-farm settings. A total of 29,188 farmers were trained in in-situ practical training. The proportion of women in the in-situ training accounts for 45% while youth participation level was 28%.

Table 7 No of farmers participated in in Situ trainings

S/N	Cluster	Male			Female			Total
		<35	≥35	Male Total	<35	≥35	Female Total	
1	Mekelle	713	2347	3060	535	1740	2275	5,335
2	Bahir Dar	967	1988	2955	1077	733	1810	4,765
3	Woldia	272	2850	3122	58	959	1017	4,139
4	Haramaya	103	122	225	129	268	397	622
5	Arsi	1240	2531	3771	2013	2677	4690	8,461
6	Oda Bultum	58	218	276	31	169	200	476
7	Hawassa	63	93	156	25	44	69	225
8	Arba Minch	516	2067	2583	516	2066	2582	5,165
Total		3,932	12,216	16148	4,384	8,656	13040	29,188
% of participation		13%	42%	55%	15%	30%	45%	

Farmer field days

A number of technologies have been tested, demonstrated and pre-scaled at farmer's field level through the university cluster in 2020. Field days and exchange visits were to promote information exchange and technology transfer from farmers to farmers or among different stakeholders. Thus,

farmer field days were organized at different growing stages of the crops, to ensure mutual learning, facilitate exchange of knowledge between farmers and support the dissemination agricultural practices. Research institutions, extension staffs, administrators at different level, project staffs and farmers participated in these field days. The field days were hosted following the lifting of state of emergency declared on the COVID-19 pandemic. During this reporting period, **10,486** participants participated in the field days, where 3038 (29%) were female farmers.

Table 8 Number of field days participants

S/N	Cluster	Male	Female	Total
1	Mekelle	1906	934	2,840
2	Bahir Dar	1883	552	2,435
3	Woldia	2045	1112	3,157
4	Haramaya	139	113	252
5	Arsi	1323	270	1,593
6	Oda Bultum	112	17	129
7	Hawassa	74	17	91
8	Arba Minch	40	40	80
Total		7,522	3,038	10,577
% of participation		71%	29%	

Institutionalization of recommended best-fit-practices and bottom-up planning in *woreda* agricultural development plan

During the reporting period, *woreda* agriculture offices were regularly supported in the overall implementation of planned activities, specific support was also given to the planning team of the offices. List of best fit technologies that have been identified through validation and demonstration in different *woredas* were also provided to the *woreda* offices. Some *woredas* (e.g., *woredas* of Arba Minch and Bahir Dar University clusters) have already integrated REALISE activities in their work plans and cascaded them to the *kebele* agricultural offices. Supportive supervisions were organised in these intervention *woredas*, zones and agricultural offices by the project staff to support and technically backstop the institutionalizing process. The pre-scaled up best fit practices were also monitored by respective clusters as organically expanded from farmers to farmers with little influences from the outsiders. Furthermore, zonal joint planning was conducted in the presence of all *woredas* office of agriculture heads, department heads and experts in all the clusters to ensure institutional embedding of REALISE best fit practices.

High-level delegation visits and institutional advisory board meeting

A high-level delegation of REALISE programme institutional advisors and Embassy of the Kingdom of Netherlands (EKN) in Ethiopia visited REALISE programmes activities in Oromia and SNNP regions on August 7 – 8, 2020. The delegation included State Minister of Agriculture, Directors of Extension Directorate and Food Security Coordination Directorate from Ministry of Agriculture (MoA); Director of Ethiopian Institute of Agricultural Research (EIAR); Senior Director of Production & Productivity Projects vertical, Agricultural Transformation Agency (ATA); Deputy Head of Mission, EKN; Senior Policy Officer for Food Security & Sustainable Development of EKN; and BENEFIT senior staff. The visit was a great opportunity to have a fruitful discussion with local stakeholders and PSNP farmers on the achievements and challenges of the programme. The participants acknowledged the success achieved in bridging the food gaps with increased productivity, introduction of locally appropriate technology including early maturing varieties, intercropping, use of farmyard manure, nutrition sensitive agriculture; promotion of agribusiness models for youth employment and ensuring quality seed access. The major challenges raised included sustainability, dependency syndrome and the slow pace of stakeholders and partners to take the successes to scale.

Capacity building to national partners

The state-of-the-art training, as one of the knowledge and skill transfer from WUR, was organised on Digital Soil Mapping (DSM) to transform and institutionalize the soil mapping practices to 20 soil surveyors and geospatial experts drawn from MoA soil information and mapping directorate, Ethiopian

institute of agricultural research and selected universities. The virtual training titled “Introduction to Digital Soil Mapping (DSM) with focus on WRB soil class mapping” was organized from 23 November to Tuesday 01 December, 2020.

Nutrition sensitive agriculture

REALISE programme activities have been implemented in PSNP *woredas*, which are both food and nutrition sensitive. The programme has set a target of increasing the Dietary Diversity Score (DDS) of its target households over programme period as one of key performance indicators along with validating approaches for enhancing DDS. As part of the program baseline survey, DDS of the target households was measured to learn the existing consumption patterns so as to inform the appropriate interventions to be planned. From the baseline, it was learned that most of the target beneficiaries predominantly consume cereal based foods with limited consumption of vegetables, fruits and animal source foods. REALISE, then, opted to intervene to increase the production of diversified vegetables and fruits to increase availability of these foods.



Plate 3 OFSP (*Alamura* variety) root tubers at harvest (Arsi cluster) and papaya (*Maradol* variety) (*Woldia* cluster) demonstration, 2020

The programme reached 18,944 farmers with nutrition dense crops in 2020 out of which 44.7% were female farmers. The crops were quality protein maize, orange fleshed sweet potato (Plate 3 left), fruits (papaya, mango and avocado, banana), and vegetables (head cabbage, kale, Swiss chard, carrot and beetroot). Vegetable crops and papaya were demonstrated or pre-scaled by all clusters as home-gardening. Out of the total, over 10,000 farmers planted papaya along with other fruits and vegetables. Passion fruit has been introduced in 2020 to PSNP farmers by Arsi and Hawassa clusters. The inclusion of nutrition dense crops in the farming system of PSNP farmers helped the farmers to diversify their diet. Youth managed and owned nurseries we incubated to support the scaling along with youth employment creation. Arsi University Cluster has organized 22 youth (14 male, 8 female) in Ziway Dugda *woreda* to be engaged in nursery development as an income generation activity. The group is focusing on planting and selling fruit seedlings such papaya, passion fruit, etc. they also plant coffee and other ornamental plants.

Table 9 Inclusion of nutrition dense crops by REALISE clusters

University cluster	M	F	T	Type of crops
Arba Minch	1460	1460	2920	Haricot bean, orange fleshed sweet potato (OFSP), papaya and vegetables (cabbage, kale, Swiss chard, carrot and beetroot)
Arsi	242	2012	2254	Quality protein maize (QPM), OFSP, papaya, passion fruits & vegetables
Bahir Dar	1640	620	2260	Haricot bean, papaya and vegetables
Haramaya	364	503	867	Haricot bean, apple mango, avocado, papaya & vegetables
Hawassa	3611	2189	5800	QPM, haricot bean, faba bean, passion fruit, papaya and vegetables
Mekelle	964	845	2162	Faba bean, papaya & vegetables
Oda Bultum	150	126	276	Haricot bean, chickpea, papaya, banana & vegetables
Woldia	1695	710	2405	Bio-fortified haricot bean, faba bean, OFSP, papaya & vegetables
Total	10126	8465	18944	
% of participation	53.4	46.6		

Gender mainstreaming and social inclusion

REALISE program document stipulates that at least 30% of program beneficiaries should be women. During the PRA study, women and youth specific problems and challenges were identified. And as such, the programme adopted a two-way approach to plan and implement activities that contribute to addressing existing issues. These are mainstreaming and targeted action.

Gender and social inclusion

- As part of gender mainstreaming and social inclusion 42% (17,535) female farmers and 28% (11,961) youth under the age of 35 benefited from the programme. The reach of women from the indirect reach is 34%.
- In targeted actions which are mainly designed to address the structural problems of women and youths, time and labour-saving technologies (TLSTs) were introduced and promoted. 540 farmers benefited and 446 were female farmers.
- In the 13 piloting activities implemented in 2020, 7 were mixed group, 6 were women only. 605 target beneficiaries were engaged in these pilots (164 male, 441 female). 40% of the target group were youth under the age of 35.
- In terms of capacity building, 45% of the farmers who received in-situ trainings on improved agronomic practices were female farmers. Moreover, 29% of the farmers who participated in field days were women.
- Female farmers and wives in male headed households were the prime targets for nutrition activities particularly in-home gardening of vegetables and fruits mainly for household consumption. The programme reached 18,944 farmers with nutrition dense crops in 2020 out of which 44.7% were female farmers.
- The use of administrative targeting (selection of geographical and target households and individuals) instead of self-targeting improves the programme ability to mainstream gender and social inclusions.

Targeted Action

The PRA study identified that poverty, lack of access to productive resources and employment are the main challenges faced by women and youth. Moreover, it was learned that rural women are overburdened by multiple layers of productive and reproductive tasks. In other words, over and above their household responsibilities, they are expected to contribute labour to farming activities. In order to address these challenges, a set of targeted activities were designed and implemented. These are: introduction of Time and Labour-saving technologies and pilot activities.

As part of its targeted action interventions, time and labour-saving technologies were identified, introduced and promoted to the beneficiary farmers. The introduction of these technologies is cognizant of existing farming practices in the selected *woredas*. The objective of these interventions is to minimize the amount of labour spent on farming activities especially by women. Four University clusters planned to introduce and promote time and labour-saving technologies (TLSTs) in 2020. These are potato digger in Mekelle, teff row planter in Bahir Dar, multi-crop thresher in Woldia and

maize sheller in Arba Minch Universities. 550 farmers in 13 *woredas* were targeted to benefit from these technologies, out of which 446 (81%) were female farmers. In terms of status, the technologies introduced in Bahir Dar, Woldia and Arba Minch universities are well accepted by the community members and being used. Woldia university has recently received the Multi-crop threshing machine and is trying it on wheat crop in Wadila *woreda* Timtimat Kebele. It is reported that threshing about 5 quintals of wheat has taken about 3hrs being operated by 4 men using the MCT whereas 7 oxen days and 4 man-days would be required if it was threshed traditionally. The thresher has fuel consumption of 1.5 liters per hour.

However, the progress of the planned activity in Mekelle is significantly affected by the COVID-19 pandemic and the subsequent mobility restrictions. After finalizing all preparations, Mekelle cluster staff could not travel to procure and bring the required technology from Melkassa ARC. Therefore, the intervention has been dropped.

Table 10 Time and labour saving technologies and their progress by Cluster

Cluster	TLST Technology	Target <i>woredas</i>	No. of Target Farmers			Progress
			Male	Female	Total	
Mekelle	Potato Digger	2	14	6	20	Dropped
Bahir Dar	Teff Row Planter	5	70	30	100	Technology distributed to farmers and being used
Woldia	Multi-crop Thresher	1	20	10	30	Will start the trial in the upcoming harvest season
Arba Minch	Maize sheller	4	0	400	400	Technology distributed to farmers and being used
Total		12	104	446	550	
% of participation			19	81		

There are also ongoing activities from last year. Hawassa and Arba Minch clusters have started demonstration of 'Enset processor' in 2019. Hawassa demonstrated the technology in two *woredas* of Kachabira and Bona Zuria by targeting 40 women (20 per *woreda*). The cluster collaborated with Wolaita Sodo Rural Development Technology Centre for technology production and provision of technical training to the target farmers. Arba Minch cluster has been collaborating with the same Wolaita Sodo Rural Technology Development Centre for technology provision as well as training of farmers on how to use the Enset scrapper. A total of 30 female farmers in three *woredas* of Mirab Abaya, Kucha and Zala were engaged in this activity. Both clusters have reported very good progress and high level of acceptance of the technology by the target farmers because it significantly saves time and labour of women.

Out of 13 piloting activities implemented, to generate evidences for further scaling, in 2020, 7 targeted mixed group while 6 were women only. The prime target of the pilot activities were women and youth who are marginalised in the conventional free targeting development endeavours. REALISE programme avoided self-targeting (used administrative targeting) to reach the intended beneficiaries which improves the programme ability to mainstream gender and social inclusion.

Conclusions and recommendations

Achievements

- A number of best fit practices which have been validated, demonstrated and pre-scaled. The programme-initially targeted to validate 60 best fit practices but validated 154 with 257% achievements.
- Reached 328,836 smallholder farmers (365% achievements) in two years as the target was 90,000 farmers; out of the total 65,506 directed involved in the adaptation and adoption of best fit practices.
- Productivity increase (% over the baseline) reached on average 285% for different crops, which is very high achievement against the target of 30% productivity increase.

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- The introduction of best fit practices, which significantly resulted in yield increment under conditions of PSNP farmers have already been linked to the regular extension system for further scaling in many of the intervention woredas. However, inclusion of best fit practices in national extension package would help the scaling efforts.
 - Best fit practice manuals in a simple extension messaging format, currently under preparation, should be finalized to support the up taking.
 - Number of farmers regularly using quality seed from the programme was 232,403 with 194% achievement over the initial programme target of 120,000 farmers.
 - It was targeted to establish 30 linkages between seed producers and inputs, service providers and markets, however, 59 linkages (16 in 2019 and 43 in 2020) were established/strengthened.
 - On average crop varieties were diversified by 285% (with a range of 120 to 600% over the two years) far greater than the 50% diversity targeted by the programme.
 - Seed production is linked to LSBs in many cases but needs strengthening.
 - The inclusion of nutrition dense crops including green leafy vegetables and fruit like papaya should be supported by the regular extension.
 - Key programme results should be presented to the higher officials and senior experts so that they understand and support the up taking of best fit practices by the woredas.
 - Awareness creation and efforts on institutional embedding should continue during the remaining programme life.

Challenges, opportunities and lessons learnt

COVID-19 created a great challenge. However, the programme addressed this challenge into an opportunity through increasing the involvement and giving the leadership of grass root implementation to woreda and *kebele* offices of agriculture with minimum support from programme staff. This enabled *woreda* people to properly understand about best practices, created sense of ownership and thus paved the way for institutional embedding. As a lesson, flexible (agile and adaptive project management) and proactive adjustment of the working modality that gave more responsibility to the key stakeholder helped smooth implementation of the planned activities. Close guidance and virtual follow up by the project management team also helped. The programme was designed for three years with the hope to extend for more years to contribute to the PSNP household food security but it seems to it is to be terminated. Nevertheless, commitment of programme staff at all levels and better rainfall amount in the two years helped us to show encouraging results.

Way forward

Focus will be given for the institutionalization of REALISE achievements: closing food gap months, improved dietary diversity, social inclusion, one *timad* package for PSNP households, scalable youth employment model, bridging capacity gaps. The post-BENEFIT programme to ensure the continuity of key achievements of REALISE programme.

Improved enabling environment

A conducive environment for the institutional embedding of evidence-based system innovation

Soil characterization and mapping

Soil resource survey and mapping has been undertaken by REALISE based on the strong demand from Soil Information and Mapping Directorate of Ministry of Agriculture. Soil maps are very important for the correct implementation of sustainable land use management and agricultural extension. The major aim was to build capacity of Ethiopian experts mainly experts of the Ministry in soil characterization and mapping as the Ministry has a plan to conduct soil characterization and mapping at semi-detailed scale (1:50,000), which is high in spatial precision, in contrary to the coarser scale used in the past in the country. For the capacity building a) experts of the Ministry participated in soil survey at semi-detailed level with training and strong backstopping from ISRIC- World Soil Information senior experts, b) received training, which was again provided by ISRIC on Digital Soil Mapping (DSM).

Besides capacity building of Ethiopian experts, there were additional outputs that will support the Ministry to further characterize and map Ethiopian soils. These outputs include i) Base map at 50m resolution: this base map is used to conduct soil survey at semi-detailed scale. The base map, which based on geological classes, represents not all but the most important mappable soil forming factors at targeted 50 m scale. The base map was handed over to partners and stakeholders in the workshop organized on 9 March 2020. ii) Countrywide 50 meter-covariates: country-wide 300 covariate representing country-wide soil forming factors, at 50 m resolution was handed over to MoA by ISRIC/REALISE. These consistent countrywide covariates are instrumental for the MoA to carryout similar tasks on soil resource characterization and mapping missions and to successfully implement and institutionalize digital soil mapping in Ethiopia. iii) Soil characterization in 15 selected REALISE *woredas*: Using the data (both from the field and the laboratory), ISRIC has produced the soil-landscape resources maps for each *woreda* at a final scale of 1: 50,000 to be used as a basis for future similar endeavour. This achievement is the first of its kind for agricultural development purposes. The Ministry promised to scale the experience gained to 480 *woredas* in the coming 10 years.

Innovation Recommendation Mapping

Innovation recommendation mapping (IRM), based on CASCAPE experience, has been developed by REALISE in collaboration with WUR for four use cases: sweet potato, maize-haricot bean intercropping, faba bean and potato. This method is a GIS based multi-criteria evaluation tool that builds on the suitability of each innovation taking biophysical aptitude and socio-economic feasibility aspects into account (Tomasso and Andrew, 2020). It is a methodological tool that allows users to generate maps that show how and where best fit innovations can be scaled in specific areas.

The IRM method was used to assess and identify optimal areas for growing two sweet potato varieties in Oromia region (both Adu and Hawassa09 in Arsi and only Adu in East Hararghe zones). Based on the result from fuzzy rule-based modelling, areas where climatic, landscape, soil physical property and soil fertility suitability coincided show high biophysical optimality compared to others. In Arsi zone, a total of 86,883 ha of land has been identified as biophysically optimal for producing Hawassa09 variety from which 27,839 ha and 21,663 found in Zeway Dugda and Dodota *woredas* respectively. From previous research trials, the result aligns with actual conditions in these *woredas*. In East Hararghe zone, on the other hand, a total of 1,817,318 ha of land is biophysically optimal for growing Adu variety from which 8,179ha and 3,844 ha found in Haramaya and Melka Belo *woredas* respectively. For Adu, however, almost all areas in Arsi zone are biophysically suboptimal.

Similarly, the IRM analysis for maize and haricot bean potential for intercropping was done in SNNP region, Siliti zone. The findings show that much of Lanifaro and Sankura, and southern parts of Dalocha and south eastern part of Wilbareg *woredas* are optimal for the BH 546 maize variety. Soil physical limitations are prevalent in the centre and north-east of the zone, with multiple limiting factors in the west of Silte zone. Among the *woredas* in Silte zone, Lanifaro has the largest area most

suitable for the production of BH 546 24,533 hectares (55.9%) while Sankura has a greater proportion suitable (62.1%).

A similar result was shown for haricot bean Hawassa Dume, where almost all of Lanifaro and Sankura, and southern parts of Dalocha and south eastern part of Wilbareg *woredas* are optimal. Soil physical limitations are prevalent in the centre and north-east of the zone, landscape limitations are common in western Mirab Azerenet Berbere *woreda*, whereas there are multiple limiting factors in the north of Silte zone. Among the *woredas* in Silte zone, Lanifaro has the largest area most suitable for the production of Hawassa Dume with 24,775 hectares (56.5%) while Sankura has a greater proportion suitable (86.3%). The overlapping of biophysically suitable areas for BH546 maize variety and Hawassa Dume haricot bean variety indicates that these crops can be intercropped in those areas. The use cases for faba bean and potato is in progress and will be finalised within the period of the no cost extension.

Fertilizer type and rate validation

Ethiopian Soil Information System (EthioSIS) project under Ethiopian Agricultural Transformation Agency (ATA) has developed soil fertility maps for the country. The soil fertility maps indicate types of fertilizers to be used by the *woredas*, not the amount of fertilizers for different crops. As a next step, amount (rate) of the fertilizers for different crops and locations needs to be determined. As a result, in support the efforts of national research system, REALISE has initiated collaborative activities with EthioSIS project of ATA, Ethiopian Institute of Agricultural Research (EIAR) and Ministry of Agriculture (MoA) with tripartite MoU agreement to undertake site and crop specific fertilizer validation. This year the experiment was repeated for bread wheat and tef crops. The finding shows that soil fertilization using multi-nutrients balanced fertilizer or conventional fertilizers in Dodota and Silti districts in the lowlands of Arsi and Selte zones, respectively significantly boosted the yield of bread wheat and tef. The highest grain and straw yields of bread wheat were attained from the application of 150% recommended nitrogen and phosphorous (RNP) ($62-30 \text{ N-P ha}^{-1}$) from NPS and urea fertilizer sources. The grain and straw yields of bread wheat obtained from the application of 100% RNP from NPS + urea, and 100% RNP from conventional (TSP) source were found statically lower compared to the 150% RNP. Reduction of the recommended rate of N and P from NPS and urea sources by half yielded significantly lower grain and straw yields of bread wheat. The unfertilized treatment produced the lowest yields of bread wheat. The trend generally showed linear increments in bread wheat yield with increased rate of N and P from the blended form of fertilizers. Similarly, the highest grain and straw yields of tef were obtained from the application of 150% of recommended N and P ($69-25 \text{ N-P ha}^{-1}$) from NPSB and Urea fertilizer followed by 100% RNP from TSP and urea fertilizers sources. The lowest yield of tef was harvested from the unfertilized treatment.

Given the enhanced yield and yield attributes in 2020 cropping season, the application of 150% RNP from NPS (NPSB) and urea fertilizers sources have been provisionally recommended for bread wheat and tef productions in Dodota and Silti districts in the southern Ethiopia. The final recommendation will be made pulling the two seasons data together combined with soil chemical analysis results and an economic profitability analysis.



Plate 3 Fertilizer validation experiment on wheat and tef

System innovation for ensuring enabling environment through pilots and In-depth studies

The system innovation pathway of REALISE is designed to generate new insight and evidences by addressing systemic bottlenecks through piloting of innovative practices and conducting in-depth studies. As the PSNP areas where the REALISE programme is operating are experiencing systemic challenges that couldn't be addressed by technology transfers and conventional wisdoms, piloting nonconventional approaches and knowledge generation is critically important. The system innovation pathway, therefore, gave the programme greater opportunity to pilot promising innovative practices and study systemic bottlenecks to inform action and initiate policy dialogues. The programme involved top professionals and government officials during the early planning and incorporates their view in the designing of the pilot interventions and defining in-depth studies. The participation of stakeholders in the implementation and monitoring and evaluation of the pilot interventions and in-depth studies were strong and ensured ownership and commitment for institutional embedding. The implementation brings together regional (research, extension, private sectors, NGOs) and grassroot level actors (*woreda* office of agricultures, development agents, youth and women) for facilitating joint learning and inform actions.

Pilots

Pilot trials are implemented under REALISE with a context of generating evidences for future wider scaling and policy influences. A total of 14 pilot activities were planned, out of which 13 were implemented in 2020. Most of these activities are a carryover from the previous year. They are designed to address systemic challenges related to resilience building, youth employment, risk management and nutrition. Looking at the nature of these pilots 7 (seven) are based on a business model, i.e., aiming to create jobs and generate income for vulnerable groups especially youth and women; 4 (four) are proof of concept pilots, i.e., aiming to generate evidence for wider scale up of practices as well as inform/ influence policies and regulations; 3 (three) aim to contribute to improve household resilience and nutrition. The pilots reached a total of 504 beneficiaries of which 54% are women. A special report is in progress to share to partners and stakeholders to support the scalability of the successful business and intervention models. Most of the cluster implementing the pilots also organised periodic backstopping missions and random visits with pertinent stakeholders for ensuring mutual learning and experience sharing.

Table 11 List of pilot intervention activities and key achievements

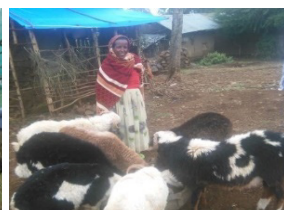
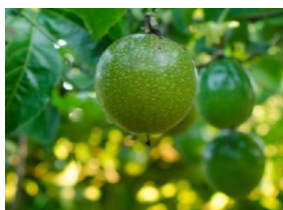
S/ No	Pilots	University cluster	Beneficiaries		Achievements
			M	F	
1	Poultry supply chain	Hawassa	13	7	Job created, annual net profit of Birr 180,000.00 obtained, 4000 improved poultry breed supplied to smallholder farmers
2	Essential Oil Extraction from <i>Eucalyptus globulus</i>	Hawassa			Need assessment and feasibility study conducted, full implementation is suspended due to the COVID-19 pandemic
3	One Timad package technology on food barley	Hawassa	20	10	Ensuring inclusiveness of poor and marginalized PSNP farmers, customising extension service, micro packaging of inputs, MoU with WoA and multipurpose coops, Productivity increase (32.8 Qt/ha for inorganic fertilizer and 33.9 Qt/ha for integrated use of organic and inorganic fertilizers)
4	One Timad Package Technology on Improved Bread Wheat and Sorghum	Woldia	60	30	Ensuring inclusiveness of poor and marginalized PSNP farmers, customising extension service, micro packaging of inputs, MoU with WoA and multipurpose coops, Productivity increase (29 qt/ha for wheat and 34qt/ha for sorghum)
5	Small scale commercial poultry production for youth employment	Woldia	8	8	job creations, organic scaling of the business model, 2nd round loan distributed, RUSACO revolve the grant to 3 new jobless youth, timely loan repayment, 42,163 Birr revenue per person achieved,

S/ No	Pilots	University cluster	Beneficiaries		Achievements
			M	F	
6	Small ruminant fattening for asset and resilience building	Woldia	0	16	Job creation, successful business model, 2nd round loan distributed, 33,960 Birr revenue per person achieved
7	Small-scale poultry production for nutrition, income and resilience building	Haramaya	0	40	Egg consumption, Egg marketing started which reduce transaction costs and increases income,
8	Piloting of goat fattening for income and resilience building	Haramaya	0	40	Some of the farmers sold the fattened goat and purchased cattle and bull fattening-early sign of improvement in livelihood
9	One Timad package technology on wheat and potato	Haramaya	25	6	Ensuring inclusiveness of poor and marginalized PSNP farmers, customising extension service, micro packaging of inputs, MoU with WoA and multipurpose coops, Productivity increase (251 qt/ha for potato, yield data for wheat not collected)
10	One Timad package technology on wheat, sorghum and wheat	Bahir Dar	129	87	Ensuring inclusiveness of poor and marginalized PSNP farmers, customising extension service, micro packaging of inputs, MoU with WoA and multipurpose coops, Productivity increase (wheat with inorganic 28.1qt/ha, wheat with compost and inorganic 31.6qt/ha; sorghum with inorganic 10qt/ha, sorghum with compost and inorganic 14 qt/ha; maize with inorganic 39qt/ha, maize with compost and inorganic 41 qt/ha)
11	Improved charcoal making technology for youth job creation	Bahir Dar	8	12	Group organization finalised, training on business development, group dynamics provided, Green Mad Retort (GMDR) external combustion chamber kiln construction is in progress
12	Integrated nursery development for youth employment	Arsi	19	0	In 2020 the group produced 9,184 Maradol papaya and 2,246 locally adapted papaya variety and 4,736 passion fruit seedlings and already sold the estimated of more than 95% of their produce, earned 396,720 Birr
13	Small-scale poultry production for nutrition, income and resilience building	Arsi		30	Egg consumption, Egg marketing started which reduced transaction cost and increased income,
14	Dairy goat production for nutrition and resilience building	Mekelle		35	The beneficiaries got 70 offspring and 60 were pregnant for second time, they milk goats for consumption and income from live animal sale, the dairy goat introduction built resilience and increased assets



Maradol papaya seedlings and tree with fruits

Poultry production for nutrition and income



Passion fruit seedlings and fruit

High level Delegates visit Sheep fattening

Plate 4 *Piloting activities of nursery business for youth employment (initiated in 2019)*

The REALISE programme pilot interventions are designed with partners and stakeholders to facilitate Joint Learning Initiative (JLI). JLI was formed because beneficiaries, partners and stakeholders identified an urgent need to build collective understanding of the potential of local specific solutions for change and improvement. The initiative focuses on excellence in evidence, communications and scaling. The partnership with JLI is a great example of how working in coalition, case studies, best practices, learnings and more with other groups and organisations can build everyone's knowledge and capacity. In this regard the pilot interventions provide the following insight for critical reflection, learning and action:

1. Improving the role of poultry in human nutrition, income and resilience building. Chicken meat and eggs are the best source of quality protein, and are badly needed by people who live in poverty such as PSNP households who are chronically food insecure and lack financial means to meet their protein requirements. Poultry production has a less detrimental impact on the environment than other livestock, and uses less water and fast in reproduction cycles. Non-scavenging and semi-scavenging backyard poultry production are extremely important in providing income and high-quality protein in the diets of rural people whose traditional foods are typically rich in carbohydrate but low in protein.
2. Integrating fruits in the cereal-based farming. The cultivation of fruit trees is one strategy to fight hunger and malnutrition on a long-term and sustainable basis. One of the pilot interventions REALISE introduced is making the supply of fruit seedling reach smallholder farmers by establishing fruit nursery businesses run by organised youth group. We witnessed multifaceted benefits: job creating, fruit seedling supply at local level with reasonable distance and affordable price, improving dietary diversity, income from surplus production and better resilience.
3. Tailor made extension service to PSNP. The one *timad* package is a classic example of how the extension service should customised to a different typology of farmers based on their capacity, resource endowments and demand. REALISE showed that to reach the marginalised section of community it needs institutional commitments and coordination to endorse micro packaging, redefine recommended packages such as the incorporation of compost, less popular varieties (OPV and early maturing), tailor made in-situ training for farmers on agronomic practices and joint monitoring and evaluation. REALISE, *Woreda* office of agriculture, the PSNP directorate, cooperatives and unions, microfinance and research centres were actively involved.
4. Small ruminant fattening for income and resilience. Mostly women were involved in this business model and benefited from high return on investment, stable income flow that otherwise fluctuate due to climate risk in crop production, linking finishing time with holidays and festivities.
5. The youth employment pilots initiated should be different in terms of design and aspiration as compared to the conventional income generating activities. The youth groups preferred knowledge intensive, full time, profitable and market linked businesses. Success rates are high if access to finance, institutional support and market linkage ensured.

In-depth studies

Rural youth unemployment is a significant challenge in REALISE intervention areas and some of the employment generation efforts failed to be sustainable. The REALISE programme assessed employment creating opportunities in rural area settings taking into account the capacity of the targeted beneficiaries, experiences, the intervention success rate, potential support from other stakeholders and market linkages. Six of the 13 pilot interventions were on scalable youth employment and include the introduction of improved charcoal making technology, small scale poultry production, small ruminant fattening, essential oil extraction and nursery development. Half of youth employment pilots are on preparatory phase while the other half is implemented and were continued in 2020. The implemented pilots carefully designed to ensure sustainability and exploiting success factors. The implemented small-scale poultry production and small ruminant fattening demonstrated high potential for youth employment.

Nine in-depth studies involving 3272 research subjects on the theme of nutrition, risk management, future scenarios, synthesis of literature review on rural youth employment and case study on youth employment in Arsi zone have been initiated out of which seven were conducted. The main objectives of the in-depth studies were to generate evidence and feedback on systemic and sector related issues to initiate policy level dialogue and action. The findings of all the in-depth studies are compiled in reports, policy briefs and scientific articles to initiate dialogues with policy makers and ensure wider circulation to stakeholders and partners. The in-depth studies reveal the following key findings worth to be considered in sector wide planning and policy revision and formulation.

1. Agriculture Nutrition Linkages (ANL) used as a key strategy to improve smallholder's nutrition in general and mother and child nutrition status in particular. This has been implemented in all our implementing university clusters through nutrition sensitive interventions such as home garden vegetable production, promotion of fruit trees and pulse crops. In-depth studies conducted in Mekelle and Hawassa clusters uncover that nutrition-sensitive interventions address underlying and basic causes of malnutrition by integrating nutrition goals into interventions from other sectors, such as agriculture, education, health and WASH. Hence, REALISE underscored the need for multi-sectoral and multi-institutional coordination to address nutrition. The nature of the interventions also has multi-dimensional achievements including:
 - a. Improving the production of a staple crop mainly cereals, root and pulse crops. This would increase food availability for household consumption, which would in turn increase dietary intake of protein and energy, which could result in improved nutritional outcomes.
 - b. Promoting the cultivation and consumption of micronutrient-rich foods (e.g., from home gardens) among households that depend mainly on staple crops. This could improve the quality and diversity of the family's diet.
 - c. Substituting a known crop or variety with a similar one that contains more iron or Vitamin A, more protein, or better-quality protein. Examples include orange-fleshed sweet potato, quality protein maize, and beans biofortified with iron.
2. Climate risks management entails individuals and communities who are seeking suitable information, tools and techniques to enable appropriate management decisions to be made get empowered. Baseline, data were collected from 120 randomly selected sampled Productive Safety Net Programme (PSNP) households before weather information was delivered while end line data were collected from the same household to track the planned and actual farming practices and change in decision based on access to weather information. The results of the assessment shed light on the value of climate information dissemination as risk management:
 - a. Differences in agronomic practices against the baseline based on the access to information were observed.
 - b. Different types of coping and adaptation strategies were deployed by the farmers to reduce the weather induced risks and hazards.
 - c. Through the participatory scenario planning (PSP) the sampled household's food security is highly enhanced. For example, the average daily calorie production, excluding purchased and other sources, of grains was 2355.56 kcal which is above the minimum daily calorie requirement.
 - d. Further, the synergy among stakeholders in promotion and dissemination of weather information should be aggressively implemented to improve informed decision-making capacity of the vulnerable households.

3. Pro-poor financial services. Increased access to finance could generate pro-poor and inclusive development if liquidity constrained poor households benefited from the affordable financial services. If people are unable to finance their agricultural activities and other basic necessities themselves, they have to borrow from formal lending institutions or informal sources. The key findings include:
 - a. Financial services for the poor can be a powerful tool for poverty reduction by enhancing the ability of poor people to increase incomes from investment, build assets, and reduce vulnerability in times of economic stress.
 - b. Institutional barrier for the poor to access formal finance (single instalment, short-term loan, lack of flexibility, lots of paperwork and sluggish loan processing) forced them to use informal sources with high interest rate which in turn perpetuate poverty and destitutions.
 - c. Provision of support services such as training, market information, technical advice and periodic and random visit increase the capacity of borrowers to fetch a better return from the loan and enhance their loan repayment capacity.
4. Youth employment. The majority of youth employment initiatives evaluated are not effective in creating long-term employment and raising earnings for beneficiaries. The gap between current income forgone from the present livelihood and the waiting time popularly known as income flow lag from the new business is a critical challenge. Bridging the income flow disruption is essential to motivate the youth and get their full commitment and dedication to success. PSNP in Arsi zones granted cash transfer for six months for youth group members until their fruit nursery business started to generate income.

Table 12 List of in-depth studies and summary progresses

S/No	In-depth studies	University cluster	Research subject			Policy implication of the in-depth studies
			M	F	C	
1	Maternal and child nutritional status, household food security, and crop diversity analysis in Selected PSNP <i>woredas</i> of Southern Ethiopia	Hawassa		443	443	Introduction and promotion of improved agronomic practices to increase productivity and crops diversity, food processing and storage practices and improve opportunities for income generating activities of the local communities
2	Dissemination of weather information to the PSNP community towards reducing the risk of climatic variability	Mekelle	78	42	120	Weather information dissemination will reduce weather induced risks and hazards, change improved varieties and crops, changing planting dates and changing fertilizer rate application were the major adaptation strategies, participatory scenario planning to the prevailing weather risk emerged
3	Integrated nutrition development for resilience building in selected PSNP <i>woredas</i> of Tigray	Mekelle	0	180	180	The baseline data collection finalised and the second-round data collection disrupted due to the recent unrest in the region
4	Assessment of scalable youth employment opportunities and interventions: the case of PSNP <i>woredas</i> of Ziway Dudga and Nagelle Arsi <i>woredas</i>	Arsi				Access to productive resource such as land varies across youth segments, youth group involved both in agricultural and non-agricultural jobs, exclusion of some segments of youth from some job type observed, some of the jobs are less sustainable, scalable and inefficient, most the job created are externally imposed with less participation of the youths
5	Study on pro-poor financial services		34	22	56	PSNP households have experienced one of the lowest rates for financial inclusion, the study indicated the limited availability of financial service providers in the areas, high-interest rate, single installment, short-term loans, lack of flexibility as well as lots of

S/No	In-depth studies	University cluster	Research subject			Policy implication of the in-depth studies
			M	F	C	
						paperwork and lagging of loan processing were the major bottlenecks farmers facing to acquire financial services, inclusion of low asset base, women, and Muslim farmers through the provision of tailor-made financial services recommended
6	Endline study	All cluster	1233	441		Tablet based data collection completed, report writing in progress. The endline survey is not conducted in Mekelle.
7	A Synthesis of Literature Review on Policies and Interventions for Rural Youth Employment in Ethiopia	National level				The review identified strengths, weakness and opportunities existing in Ethiopia for rural youth employment. It also recommends to fill the existing gaps.
8	Population Pressure, Migration and Land Use Dynamics: The Case of PSNP Communities of Eastern Ethiopia	Haramaya				Not done because of COVID-19 pandemic
9	Seasonal youth migration in Lay Gaynt and Shebel Berenta <i>woredas</i>	Bahir Dar				Not done because of COVID-19 pandemic

Mainstreaming social inclusion and nutrition

The pilot interventions and the in-depth studies were mainly initiated to deal with systemic bottlenecks and issues of social exclusion among the youth, women and economically weak section of the community. Most of the pilot interventions designed to ensure social inclusion and income integration of the marginalized section of the community. REALISE demonstrated that if appropriate interventions are designed and institutional support is provided to women and youths, the poor and vulnerable groups can actively participate in development activities and share from equitable distribution of benefits. In the total of 13 pilot activities implemented or started in 2019, 441 participants were reached out of which 59% and 47% were women and youths respectively. The figures show adequate attention has been given by REALISE programme to ensure social inclusion.

Conclusions and recommendations

Achievements

- Out of the 15 pilot interventions planned 14 were successfully implemented. The pilot interventions contributed to food security, income generation, nutrition improvement, institutional innovation and scaling.
- Six in-depth studies pertaining to scalable youth employment opportunities, weather information dissemination, nutrition, pro-poor financial services and end line survey carried out and the preliminary findings have been generated.
- The social inclusion of women, youth and economically marginalised section of the community through context specific and tailored made interventions ensures economic integration, sense of self-worth and empowerment.
- Special reports, policy briefs and brochures were prepared and dialogue were initiated with key partners to facilitate institutional embedding.
- Participating relevant partner's office heads in technical training together with organized youths, before starting the actual work, which ensured stakeholders commitment in supporting youth with required technical and resource gaps.

Challenges, opportunities and lessons learnt

Challenges

- The incidence of COVID-19 pandemic and the associated mobility restriction and partial shutdown affected the national level scenario study planned and sharing of finalised in-depth studies
- Motivation of relevant *woreda* experts in supporting and guiding the organized youth was low, and it needed much effort to engage some of them in the activity; preference was given to shortcut approaches for success among youths and other potential beneficiaries
- Poor supply system and inadequate capacity of suppliers for some inputs such as pullets, feed, vaccine, machineries etc.
- Lack of appropriate consultants for some of the intended in-depth studies
- The short life span of REALISE programme hampers the evidence generation and institutionalization
- Shortage of skilled manpower for construction of the improved charcoal technology and its associated huge cost
- Piloting of essential oil extraction and future scenario as in-depth study were parked due to mobility restrictions of COVID-19 pandemic.

Lessons learnt

- The pilots and in-depth studies provided adequate evidence on what works and what doesn't
- The pilot interventions ensure social inclusion particularly for women, youth and poor farmers
- Stakeholders require time and space to endorse new way practices and way of doings
- Small ruminant and poultry are good entry points for resilience building, job creation, income and nutrition improvements
- Non-agricultural investments require huge investment, market linkage, multi-institutional players and proven market demand
- The rounds of discussion we had with stakeholders and expert panel narrow down the focus of pilot interventions and in-depth studies scope and type

Way forward

- Documentation and Sharing of pilots and in-depth studies
- Organize events at regional and national levels for handing over of key achievements
- Conference proceedings will be produced which amongst others will properly document the key achievements and development pathways of REALISE programme

Collaboration

M&E and communication

Results-based monitoring and evaluation is used to tracking results and performance, based on a transparent and reflective logical and results framework approach, and to measure impact through evaluation. This year due to COVID-19 the monitoring practice was based on virtual meetings and phone conversations to get an internal oversight that continuously provides management with an early indication of progress, or lack thereof, in the achievement of results in both operational and financial activities. This serves the dual purpose of increasing effectiveness, programme learning and informed decision making, as well as ensuring accountability and transparency to all partners and stakeholders. As part of evaluation, endline survey were conducted by seven of our cluster (excluding Mekelle) to systematically and objectively assess an ongoing or completed programme interventions, its design relevance, implementation and results, but also include analysis of issues that were never identified in reporting, such as relevance issues, sustainability, as well as interviews of stakeholders and beneficiaries. These factors come together as an independent culmination of all reporting activities and an in-depth analysis of the programme's performance.

BENEFIT Collaboration

REALISE carried out collaborative activities which was started in 2019 with ISSD and CASCAPE. REALISE and the ISSD programme have implemented collaborate activities on five commodities and seed pathways with three university clusters and five *woredas* with the objective of ensuring seed security and going to scale in PSNP *woredas*. The programme collaborated with CASCAPE on papaya, malt barley, potato and faba bean commodities in Mekelle. Seed related collaboration was initiated with ISSD in OBU and WU. Despite the strong start the collaborative activities were weak and the implementation was left to REALISE as the other sister programmes were operating in a no cost extension phase. Periodic meetings and events such as field days were organised to invite the sister programmes for reflection and technical backstopping. Exchange of alerts and communication materials were done.

Table 13 REALISE collaborative activities

Cluster	Collaboration with	Places	Commodity/Sector	Focus	Status
OBU	ISSD		Seed	Micro packaging	
WU	ISSD	Meket	Bread wheat	Crowdsourcing	
MU	ISSD, CASCAPE	Ofa, Endamekhoni and Alaje	Male barely	Value chain	
	CASCAPE	Alaje	Papaya	Pre-scaling	Training
	CASCAPE		Bread wheat and faba bean	Innovation recommendation mapping	Joint workshop
	CASCAPE	Emba Alaje	Potato	Demonstration	
	ISSD		Seed	Compilation of evidences in book chapter	

Stakeholder collaboration

The entry point for validation of knowledge and best fit practices in REALISE was designed in a multi-institutional setting involving PSNP, Extension and the Research systems. REALISE started its implementation of programme activities with understanding the context of PSNP and NPSNP households through PRA and Baseline studies and identified key problems and challenges of the potential target areas and households.

All REALISE University clusters have worked with government organizations, the private sectors and NGOs to achieve programme objectives and sustain the key findings through institutional embedding. The collaboration with the Bureau of Agriculture, the *woreda* offices of agriculture and *kebele* administration are stronger than ever as REALISE revisits the plan implementation mandate to agriculture offices from University clusters. Before the partial shutdown and mobility restrictions due

to COVID-19, REALISE designed the 2020 plan and implementation modalities and introduced them to target *woredas* and *kebeles*. The necessary inputs and logistic were organized for proper implantation. The research system supported our clusters in the supply of early generation seeds, the primary coops and unions engaged in micro packaging, MFI and RUSACO in managing grants and loans, NGOs in layering of interventions and exchange of experiences. A total of 131 engagements were reported in 2020 with various stakeholders (Table 15).

The PMU at national level collaborated with key stakeholders such as MoA, EIAR, ATA, PSNP Directorate, Extension Directorate, SNV etc. Joint collaborative activities were implemented with MoA, ATA and EIAR with the signing of MoU for site and crop specific fertilizer validation. The second MoU was signed between MoA and REALISE to map the soils of 18 PSNP *woredas*. As a continuation of 2019 fertilizer validation activities, fertilizer recommendation validation was done in 2020 on two crops in two *woredas* while the soil mapping activities were implemented in 15 PSNP *woredas*.

REALISE shared its experience on customized extension pilots via a webinar on 17th of December, 2020, that brought together 52 Agriculture practitioners, policy makers and researchers from Ethiopia, Kenya, Ghana, Mozambique, Nigeria, Rwanda, Uganda, Tanzania and India. The customized extension pilot, popularly known as 'one timad' package is designed for Productive Safety Net Programme (PSNP) households. The customised extension emphasised designing a package for the poor and the youth segments of the population considering their commodity choice, resource endowment, scale of operation and extension message. The pilots demonstrated that tailoring the extension message to the needs of the poor has contributed to better use of best fit practices.

Table 14 Stakeholders' collaboration at PMU and University clusters

Reach indicator	Arba Minch	Arsi	Bahir Dar	Hara-maya	Hawassa	Mekelle	Oda Bultum	Woldia	Reach in 2020
Farmers' organizations	7	3	2	30	24	2	7	0	75
SMEs / entrepreneurs	0	2	0	2	1	0	0	0	5
Platforms	1	1	0	2	2	1	2	0	9
Knowledge and research institutes	4	3	2	2	2	2	2	0	17
Banks and MFIs	1	0	0	2	0	0	0	0	3
Policy dialogue	0	1	0	0	0	1	0	0	2
Evidence-based policy options	0	1	0	3	2	0	0	2	8
Private sector association	0	1	0	2	5	0	0	4	12
	13	12	4	43	36	6	11	6	131

Communication and sharing

Extension materials developed for use by farmers, DAs and SMSs and promotion for wider communities

Extension manuals, leaflets, poster, brochure, newsletters, success stories and stories of change were prepared and disseminated to relevant stakeholders on different events organized by the programme. Twenty-nine extension manuals have been prepared and are ready to be submitted to Ministry of Agriculture and Regional Bureau of Agriculture. The materials were compiled from REALISE experience and crossed checked with CASCAPE, EIAR manuals and other relevant organizations materials for format and content adequacy. The leaflets prepared at regional levels were translated into local languages. Twenty-two story of change demonstrating the programme key achievements were prepared and published for wider dissemination.

Mass media broadcasts

National and regional mass media were used to communicate the programme results and its overall image. Short documentaries were also produced and shared. Radio was also used as medium for disseminating information to rural audiences, as radio coverage and penetration rate is high.

Accordingly, nine radio programs have been broadcasted in local languages. To facilitate the learning process, online platforms such as websites, social media / Facebook and tweeter were also used by clusters to promote / disseminate results of the program to the community and stakeholders. The PMU also used its website and twitter to disseminate and share the programme progress.

Mainstreaming social inclusion & nutrition

Effective mainstreaming of gender equality and social inclusion is essential for achieving food security, improvement of dietary diversity and economic integration of women and youth. In all collaborative engagements the participation and proper engagement of youth, women and the poor who experiences institutional barriers and challenges was ensured.

Conclusions and recommendations

The overall achievement of the programme in 2020 have been good in terms of attaining reach targets, yield increment, best practice validation and pre-scaling of proven technologies and capacity development. The system innovation pillars designed to address systemic challenges and uncover complex bottlenecks through in-depth studies. We witnessed promising results from the system innovation lab in terms of piloting what works and learning what does not.

Achievements

- M&E frame work which is aligned with BENEFIT M&E operationalised and facilitate the tracking of progress
- REALISE was able to collaborate with Agricultural research centres (federal as well as regional centres), seed enterprises, unions and cooperatives, extension system (from national to *kebele* levels), microfinance institutions, relevant NGOs and private sectors (input suppliers, cooperatives)
- BENEFIT Collaborative activities were designed and implemented with ISSD and CASCAPE on five commodities and five *woredas* and with the participation of three university clusters
- Thematic collaboration was established with MoA on soil mapping and recommendation mapping
- The soil characterization and mapping activities are implemented in 15 PSNP *woredas*
- The IRM activities implemented in four user cases with the partnership of WENR, MU and MoA soil information and mapping directorate
- Thematic collaboration was established with MoA, EIAR and ATA on validation of fertiliser recommendation on two crops (maize and tef)
- Partnerships were established with national, regional, zonal, *woreda* and *kebele* level stakeholders

Challenges, opportunities and lessons learnt

Challenges

- The COVID-19 pandemic limited physical gathering and field visit of collaborating institutions
- Shortage of qualified pedologists for soil survey within the budget limit allocated by the programme
- Varying priority and level of commitment among collaborating institutions

Opportunities

- The revision of plan implementation, which shared mandate to ministry of agriculture mainly into *woreda* and *kebele* level structures, provided a unique opportunity for institutionalization of REALISE achievements into the ministry's mandate and operation arenas
- The capacity building activities provided to MoA soil mapping information and mapping directorate by ISRIC and WENR on soil survey, digital soil mapping and innovation recommendation mapping was rewarding in capacitating the experts to undertake soil surveying and IRM activities
- The BENEFIT partnership emphasis on collaborative activities for mutual learning and joint action
- High interest form stakeholders in collaborative implementation of the pilot activities
- Strong willingness of farmers to adopt the introduced technologies
- The programme interventions enhanced the dietary diversity and closed the food gaps

Lesson learned

- Off-farm activities on the livestock (goats and poultry) for unemployed youths contributed to livelihood diversification and risk management, and attracted collaboration

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- Tailored made training such as the state-of-the-art approaches on Digital Soil Mapping and innovation recommendation mapping improved the institutional capacity of MoA and other partners
 - Adaptive programme management employed in operating risk prone and chronically food insecure areas of PSNP (e.g., discussing with partners on relevance of the activities) contributed to better achievements
 - A Memorandum of understanding is essential to clarify roles and responsibilities for partnership
 - Participatory approaches followed in definition of problems and intervention ensures the commitment of stakeholders

Way forward

- The key achievements of REALISE will contribute to PSNP five design
- The capacity building support provided to our partners on soil mapping and recommendation mapping contributes to institutionalization and to accomplish similar work in the future
- The joint activities carried out with MoA and EIAR ensure continuity without REALISE involvement in the future.

Institutionalisation and way forward

The REALISE programme has designed a well-articulated and structured theory of change where the end desirable outcomes are defined with balance of flexibility and agility. The project phase in stage was grounded through a comprehensive PRA and baseline studies. The key findings of the two studies were used to define interventions by matching the problem with the existing best practices available within the BENEFIT partnership programmes and partners and stakeholder high level engagement. The phase down stage was characterised by implementation of key solutions to address the key challenges of PSNP households: food insecurity, low diet diversity, inadequate access to quality seed, limited access to extension advice and technical backstopping, inappropriate nature of the extension package. The implementation was facilitated with adequate involvement and decision making of key actors. The phase out stage is mainly focused on institutional embedding of key achievements.

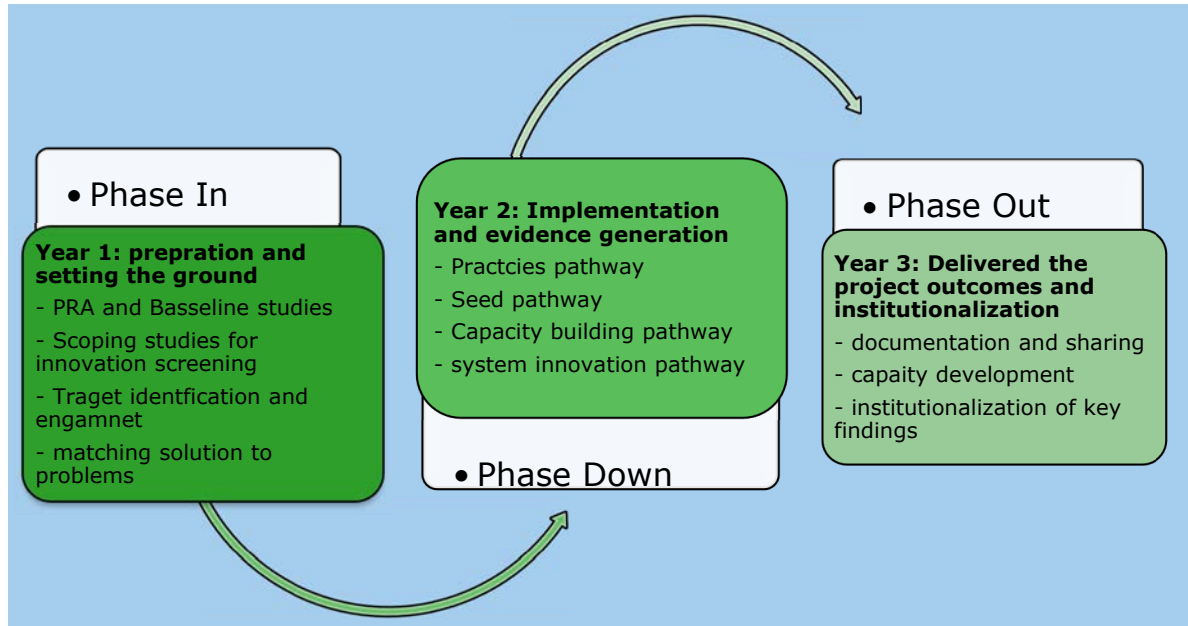


Figure Project positioning and institutionalization framework

Mechanism of exist strategies

1. **Documentation and sharing** - the REALISE program has produced adequate evidence in best fit agricultural practice validation and demonstration, nutritional sensitive agriculture, resilient seed system, participatory experimentation on inclusive interventions such as group business, customised extension, resilience household livelihood etc. The evidences show the potential of the solution to improve food self-sufficiency, diet diversity, access to tailored made improved practices and extension messages and institutional learning. REALISE documents all the evidences in the form of extension manuals, national proceeding, policy briefs and technical reports. It also organised policy dialogue events. Four regional and one institutional workshop, two policy dialogue and one hand overing events will be organised.
2. **Seconded staff from partner institutions** - REALISE has adopted a strategy to involve seconded staff from key partners institutions to work for the project for about 50% of their time. The strategy has contributed for early institutionalization of key achievements and organic scaling. The seconded staff from PSNP, BoA and RARIs to REALISE assures strong linkages and complete involvement in planning and execution.
3. **Advisory board** - national and regional levels advisory board was established to properly align REALISE programme interventions with national and regional levels priorities. The chair for the advisory board at national and regional levels is from Ministry of agriculture and BoA respectively.
4. **Capacity building** - three key capacity building areas defined and implemented to ensure continuity and sustainability of REALISE program. The first focus is one farmer's in-situ training to improve the agronomic practices, close the yield gap and to empower them to take charge of

innovation development. The second one is on thematic training for experts for enhancing their knowledge and skill levels. The third one is on ToT which is given to selected Subject Matter Specialist (SMS) to be cascaded to DAs and farmer's level.

5. **Using grassroots structure** - REALISE depend strongly on government grass root structure for field level execution of our activities, target identification and institutional embedding of successful activities. This contributes for the sustainability of the promoted interventions.

Appendix 8 List of abbreviations and acronyms

AACCSA	Addis Ababa Chamber of Commerce and Sectoral Associations
AAU	Addis Ababa University
ABSF	Agribusiness Support Facility
ACC	Agricultural Commercialization Cluster
ACGG	African Chicken Genetic Gains
ACSI	Amhara Credit and Saving Institution
ADPLAC	Agricultural Development Partners Linkage Advisory Council
AGOA	African growth Opportunity Act 2019-2025
AGP	Agricultural Growth Program
Agriterra	Agri-agency established by Dutch farmers' organisations
ALEC	African Livestock Exhibition and Congress
ARARI	Amhara Regional Agricultural Research Institute
ARC	Agricultural Research Centre
Ardaita	Centre of Excellence for cooperative training in Ethiopia
ARI	Agricultural Research Institute
ASMA	Appropriate Solutions for Mechanization of Agriculture in Ethiopia
ATA	Agricultural Transformation Agency
B2B	Business to business
BDU	Bahir Dar University
BEAR II	Better Education for Africa's Rise
BENEFIT	Bilateral Ethio-Netherlands Effort for Food Security; Income and Trade
BFP	Best Fit Practice Manuals
BFPM	Best Fit Practice Manuals
BMGF	Bill & Melinda Gates Foundation
BoA	Bureau of Agriculture
C4C	Cooperatives for Change
CAADP	Comprehensive Africa Agriculture Development Program
CANAG	CASCAPE Nutrition and Gender project
CASCAPE	CApacity building for SCAling up of evidence based Practices in agricultural production in Ethiopia
CBO	Cooperative Bank of Oromia
CBSF	Cooperative Based Seed Production
CDI	Centre for Development Innovation
CDSF	Capacity Development Support Facility
CGIAR	Consultative Group on International Agricultural Research
CIG	Common Interest Group
CoC	Certificate of Competence
CPA	Cooperative Promotion Agency
CPO	Cooperative Promotion Office
CS	Crowd Sourcing
CSA	Central Statistical Agency
D4A	Drivers for Adoption
DA	Development Agent
DBE	Development Bank of Ethiopia
DDS	Dietary Diversity Score
DECSI	Dedebit Credit and Savings Institution (Tigray)
DFID	Department for International Development
DGIS	Directorate General for International Cooperation
DLS	Diffused Light Storage
DSM	Direct Seed Marketing
ECI	Environmental Compliance Institute

ECTS	European Credit Transfer System
ECX	Ethiopian Commodity Exchange
EGS	Early Generation Seed
EIAR	Ethiopian Institute of Agricultural Research
EKN	Embassy of the Kingdom of the Netherlands
EMCWF	European Centre for Medium-Range Weather Forecasts
EMDIDI	Ethiopian Meat and Dairy Industry Development Institute
ENLBA	Ethiopia Netherlands Business Association
ENTAG	Ethiopia-Netherlands Trade for Agricultural Growth
EPPPA	Ethiopian Poultry Producer Processors Association
EPOSPEA	Ethiopian Pulses, Oilseeds and Spices Processors-Exporters Association
ERCA	Ethiopian Revenue and Customers Authority
ESA	Ethiopian Seed Association
ESAHGPA	Ethiopian Spice Aromatic and Herbs Growers and Processors Association
ESE	Ethiopian Seed Enterprise
ESRI	Ethiopian Soil Resource Institute
ETB	Ethiopian Birr
ETC	Ethiopian Telecom Cooperation
EthioSIS	Ethiopian Soil information system
ETM	Extension Training Materials
EVA	Ethiopian Veterinary Association
F&S Ethiopia	Fair and Sustainable Ethiopia
FBPIDI	Food, Beverage and Pharmaceutical Industry Development Institute
FCA	Federal Cooperative Agency
FDOV	Faciliteit Duurzaam Ondernemen en Voedselzekerheid (Facility for Sustainable Entrepreneurship and Food Security)
FGI	Fertile Grounds Initiative
FHH	Female Headed Household
FP	Farmers' Practices
FPC	Farmer Production Cluster
FSC	Farm Service Centre
FTC	Farmer Training Centre
GAIN	Global Alliance for Improved Nutrition
GALS	Gender Action Learning System
GAP	Good Agricultural Practice
GARC	Gondar Agricultural Research Centre
GF	Guarantee Fund
GIC	Green Innovation Centre
GIZ	German Corporation for International Cooperation
GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
ha	Hectare
HH	Household
HU	Haramaya University
HuARC	Humera Agricultural Research Centre
HwU	Hawassa University
IAIP	Integrated Agro-Industrial Park
IATI	International Aid Transparency Initiative
ICT	Information and Communication Technology
IF	Investor farmer
IFDC	International Fertilizer Development Centre
IFDC/2SCALE	Agribusiness development project '2SCALE' of IFDC
IFPRI	International Food Policy Research Institute
IICD	International Institution for Communications and Development
ILRI	International Livestock Research Institute
IML	Informal Money Lenders
IPD	Import Promotion Desk

IPM	Integrated Pest Management
IRM	Innovative Recommendation Mapping
ISFM	Integrated Soil Fertility Management
ISRIC	International Soil Reference and Information Centre
ISSD	Integrated Seed Sector Development in Ethiopia
IT	Innovation Teams
ITA	Italy Trade Agency
ITT	Indicator Tracking Table
ITVP	Integrated Technology Validation Protocol
JU	Jimma University
KAEP	Kebele Agro-Economic Planning
Kaza	Kaza Capital Goods Lease Financing PLC
KB	Kennis Basis (Knowledge Base)
KIT	Royal Tropical Institute
KPI	Key Performance Indicator
LIFT	Land Investment for Transformation
LSB	Local Seed Business
M&E	Monitoring and Evaluation
MARC	Melkassa Agricultural Research Centre
MASP	Multi-Annual Strategic Plan
MFI	Micro Finance Institute
MHH	Male Headed Household
MoA	Ministry of Agriculture
MoH	Ministry of Health
MoI	Ministry of Industry
MPC	Multi-purpose Cooperative
MRR	Marginal Rate of Return
MRY	Marginal Rate of Yield
MSC	Most Significant Change
MU	Mekelle University
NABC	Netherlands Africa Business Council
NAHDIC	National Animal Health Diagnostic and Investigation Centre
NARS	National Agricultural Research System
NBE	National Bank of Ethiopia
NGO	Non-Governmental Organization
NMA	National Meteorological Agency
NPMU	National Program Management Unit
NRM	Natural Resource Management
NVI	National Veterinary Institute
OAIRA	Oromia Agricultural Input Regulatory Authority
OSE	Oromia Seed Enterprise
P2P	Peer to Peer
PC	Primary Cooperative
PCU	Portfolio Coordination Unit
PED	Pre-Extension Demonstration
PGR	Plant Genetic Resources
PICS	Purdue Improved Crop Storage
PIM	Project Implementation Manual
PMEC System	Planning, Monitoring, Evaluation and Communication System
PMU	Project Management Unit
PPP	Public Private Partnership
PPP-O	Public Private Partnership on Oilseeds
PRA	Participatory Rural Appraisal
PSA	Private Sector Association
PSE	Public Seed Enterprises
PSNP	Productive Safety Net Programme
PSP	Private Seed Producers

PVS	Participatory Variety Selection
QPM	Quality Protein Maize
RAB	Rwanda Agriculture Board
RARI	Regional Agricultural Research Institute
RCI	Rwanda Cooperation Initiative
RPCA	Regional Cooperative Promotion Agency
RED&FS	Rural Economic Development & Food Security committee
RIAS	RABO International Advisory Services
RSE	Regional Seed Enterprise
RUSACCO	Rural Savings And Credit Cooperative Organization
RVO	Netherlands Enterprise Agency
SACCO	Savings And Credit Cooperative Organization
SARC	Sirinka Agricultural Research Centre
SBC	Sesame Business Cluster
SBN	Sesame Business Network
SH / SHF	Small Holder / Smallholder Farmer
SITA	Supporting Indian Trade and Investment for Africa
SLLC	Second Level Land Certification
SMEs	Small and Medium Enterprises
SMS	Subject Matter Specialists
SNNP	Southern Nations Nationalities and People
SNNPR	Southern Nations Nationalities and Peoples Region
SNV	Netherlands Development Organisation
SNV	Netherlands Development Organisation
SPC	Seed Producer Cooperative
SSAP	Supporting Sustainable Agricultural Productivity
SVC	Seed Value Chain
t	metric ton
TA	Technical Assistance
TAG	Ethiopia-Netherlands Trade for Agricultural Growth
TARI	Tigray Agricultural Research Institute
TC	Technical Committee
TGT	Tebebe General Trading
TLST	Time and Labour-Saving Technologies
TNSRC	Tepi National Spices Research Centre
ToC	Theory of Change
ToT	Training of Trainers
UAE	United Arab Emirates
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
USD	United States Dollar
VC	Value Chain
VDAFACA	Veterinary Drug and Animal Feed Administration and Control Authority
Walya	Walya Capital Goods Lease Financing PLC
WCDI	Wageningen Centre for Development Innovation, Wageningen University & Research
WCPO	Woreda Cooperative Promotion Office
WHO	World Health Organisation
WOA	Woreda Office of Agriculture
WUR	Wageningen University & Research
ZOA	International relief and recovery organization
ZoDA	Zonal Department of Agriculture

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Wageningen Centre for Development Innovation supports value creation by strengthening capacities for sustainable development. As the international expertise and capacity building institute of Wageningen University & Research we bring knowledge into action, with the aim to explore the potential of nature to improve the quality of life. With approximately 30 locations, 6,500 members (5,500 fte) of staff and 12,500 students, Wageningen University & Research is a world leader in its domain. An integral way of working, and cooperation between the exact sciences and the technological and social disciplines are key to its approach



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