

# Final Impact Evaluation of the Seed Multiplication project to Empower Small Commercial Farmers

## Dutch Phase II



## *Evaluation Report*

*April 2019*

## **List of acronyms and abbreviations**

COPAZA	Cooperativa de Produtores da Alta Zambézia
EKN	The Kingdom of the Netherlands
FFS	Farmer Field Schools
FGD	Focus Group Discussion
INAS	National Institute for Social Protection
PASP	Productive Social Action Program
PEDSA	Strategic Plan for Development of the Agricultural Sector
RFIE	Report on the Final Impact Evaluation
SBS	Sociedade de Beneficiamento de Semente
SCFs	Small Commercial Farmers
SDAE	Serviços Distritais de Actividades Económicas
SDAP	Sociedade de Desenvolvimento Agro-Pecuário
SHFs	Smallholder Farmers
SM4ESCF	Seed Multiplication project to Empower Small Commercial Farmers project
SRHR	Sexual and Reproductive Health and Rights
TNS	TechnoServe
TOC	Theory of Change

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## Executive Summary

TechnoServe (TNS), funded by the Embassy of the Kingdom of the Netherlands (EKN), has been implementing the Seed Multiplication project to Empower Small Commercial Farmers (SM4ESCF) from March 1, 2016 to January 31, 2019. The overall objective of the project was to increase the productivity and profitability of Smallholder Farmers (SHFs) and Small Commercial Farmers (SCFs) in Zambézia Province, resulting in financial benefits for these rural farming communities. Specifically, the project sought to build a strong and sustainable local seed and service provider network in Alta Zambézia.

This report details the final impact evaluation, which was conducted in order to assess the SM4ESCF project in five main areas: *relevancy, effectiveness, efficiency, impact, and sustainability*. The final impact evaluation assessed the project in terms of several cross-cutting themes such as gender, environment, and youth. It also aimed to identify the determinants for a successful scaling up and possible replication of the Small Commercial Farmer and Seed Multiplication Model to other regions of Mozambique, most especially by highlighting best practices and areas for improvement or lessons learned during project implementation.

Both qualitative and quantitative approaches were used to conduct the final impact evaluation. Qualitative methods comprised interviews with five randomly selected Small Commercial Farmers; Focus Group Discussions with 71 Smallholder Farmers, both participants and non-participants of the program. Participants were smallholder farmers assisted by SCF whereas non-participants were not assisted. Quantitative methods entailed in-depth impact assessments using existing program data in line with M&E frameworks for the project. In addition to smallholders' survey data, the evaluation team also looked at the data from the small commercial farmers to assess short-term solvency, financial leverage, profitability, and other parameters.

**Relevancy:** The key findings indicate that one of the reasons the design of the SM4ESCF project was highly relevant is because it focuses mainly on both increased food production and better access to nutritious food, which is in line with the Dutch strategy. SM4ESCF is also in line with Mozambique's strategy to increase agricultural productivity and reduce poverty as witnessed in its Strategic Plan for Agricultural Development (PEDSA).

The project targeted SCFs, who are farmers with more than 5 hectares and a strong capacity and desire to expand his/ her farm, and SHFs, who are primarily farmers with less than 5 hectares. The evaluation found that another reason for the relevancy of the project is that within these two groups the project targeted the right individuals to implement the Small Commercial Farmer and Seed Multiplication Model efficiently and effectively, in order to achieve the project objective of increasing the productivity and profitability of these farmers, thus resulting in financial benefits for the rural farming communities.

**Effectiveness:** In terms of effectiveness, the results show that the project was largely successful at achieving its goals. Under the influence of small commercial farmers, smallholder farmers were able to double their sales of soybeans from about 10,000 Meticaís to 20,000 Meticaís and overall sales from 14,800 Meticaís to almost 29,000 Meticaís. Increased sales were observed for all 20 commodities included in the survey, except sesame. Both SHF and SCFs saw increases in income resulting from increased soybean yields mainly due to better access to high quality seeds and mechanization.

However, the lack of cash by SCF in critical periods and seed distribution free-of-charge by other organizations had a negative effect on the profitability of seed multiplication program by SCF. There were some unanticipated outcomes. SBS enlargement of customer base to include, Agro Business Partners (e.g., Companhia do Zambezi), Agro dealers, SHFs outside the project area is one example.

Another example is related to direct sales from SHFs to larger buyers, such as Malawians, Bangladesh traders and others, instead of selling to SCFs.

The evaluation found that the strategic planning approach adopted by the project and the proximity to the beneficiaries of project managers located at district level, allowed rapid identification of problems as they arise and appropriate solutions. The project was flexible in adjusting to market changes by enlarging the SCF customer base (besides SBS) for soybean, as a response to increased production volumes.

**Efficiency:** The evaluation found that the project operated efficiently as TechnoServe strived for rigorous oversight, management and implementation of the project to ensure efficient and effective delivery of results, ensuring compliance with standard, regulations and following organizational operating procedures. In this way TechnoServe was able to: i) deliver technical assistance to SCFs, leading to area expansion and agricultural growth; ii) facilitate partnerships between SCFs and commercial banks to access credit, and linked SCFs to input suppliers such as AgriFocus to purchase the inoculant; and iii) work closely with EKN, receiving critical feedback and guidance, which created the necessary foundation for mutual understanding and agreement on expected project, impact, outcome, logic of the project, and use of common approach to gender integration and environmental sustainability.

Furthermore, the M&E system developed by TechnoServe is strong and helped with the efficiency of the project. A detailed Excel dashboard was developed to facilitate information access. Most of the programs or projects in Mozambique usually collect data and store them in advanced spreadsheets such as SPSS and Stata, but the ordinary staff do not have access to the information contained in the data because managing those spreadsheets require special skills with are usually not available. By creating an Excel dashboard with pivot tables and dynamic graphs, TNS made the information readily available almost to everybody within the project.

The main factors that facilitated the efficiency of the program in achieving the intended objectives, results, and impacts, were as follows: (i) the presence of the TechnoServe team in the field to provide direct and timely technical assistance and training (in agronomy in particular); (ii) monitoring performance of independent use of demonstration plots by SCFs and organization of field days; (iii) implementation of contracts, such as seed multiplication contracts between COPAZA and SCF's members, and the contract between COPAZA and SBS to buy SCFs quality seed; and (iv) strengthening of the TechnoServe procurement, M&E and agribusiness teams through hiring new staff. The first two factors were instrumental in SCFs and SHFs adoption of agricultural best practices, that led to the efficient implementation of the SCFs roles as seed multipliers, and the adoption of improved seed and use of mechanized services by SHFs. TechnoServe direct approach to technical assistance, organizing visits to the site, conducting assessments, making recommendations, providing trainings, finding innovative solutions to the debt issue, created bonds with SCFs and SHF, who reported appreciation of the TNS presence in the field. The establishment of contracts between COPAZA and SCFs and between SCFs and SBS created the value chain structure necessary for stepwise transformation of inputs, to seed multiplication, to certified seed, and linkages with quality seed buyers.

The main constraints experienced in project implementation were as follows: (i) SCFs' lack of cash to purchase seed and inoculant; (ii) lack of evidence of soil requirements (analysis) for use of inoculant, especially for soils in which inoculant has been applied recently; (iii) distribution of seed free of charge by some organizations; (iv) lack of working capital for SBS to make prompt payment or at least reduce payment waiting time; (v) SCFs and SHFs' low level of (modern) business management competence (e.g.



forecasting); (vi) lack of strong messaging on the importance of prioritizing investment objectives within a family enterprise and lack of intensive monitoring of debt management by the banks; (vii) lack of savings' culture among SCF.

**Impact:** As for the impact of the project, the final evaluation found that between 10% and 25% of small commercial farmers require immediate payments of their products and services. These SCFs had either negative or zero returns on investment. At least 50% of SCF can afford to wait for payments from their customers 154 after they delivered the product or provided the service. These small commercial farmers had positive returns on investment. On average, SCFs had profit levels of about 244 Meticaïs per year, but there were a little more than 20% of SCFs with negative net returns, and more than 25% had net returns in excess of 500,000 Meticaïs per agricultural season.

The project has achieved a high percentage (88.5%) of the expected target of 3793 SHFs, i.e.m 3,358 SHF were benefiting from access to critical inputs, services, and infrastructure to increase their own productivity. This number is slightly below the target 3,793 SHFs given the reduction of 33 SCFs to 27 SCFs due to death or inability to continue in the business, and other factors that impeded the efficiency of the program in achieving the intended objectives (as mentioned above).

The demand for improved seeds has increased rapidly, and farmers know the names of all soybean varieties that are available locally. The demand for mechanization services has increased for SHFs. As SCFs have also expanded their own fields, SHFs have to wait for SCFs to plow their own plots first. Sometimes this leads to SHFs choosing manual plowing because the sowing window for soybean is narrow and they cannot afford to wait until SCFs are done plowing their own plots. The area plowed by tractors increased over time, although there was a decrease in the percentage of SHFs using mechanization services.

**Sustainability:** The project is financially, environmentally and socially sustainable. The evaluation indicates that 75% of SCFs have favourable gains to their costs, that is, a positive return on investment (ROI), in 2017. Only One-quarter of SCFs had either negative or zero returns. On average, the ROI is about 9, with a median of 6.2. There are SCFs with much higher ROI, being the highest 45.2. Margin analysis, to express profitability, indicates that about 80% of SCFs have reportedly positive net returns. The average net return was about 244 thousand Meticaïs, with a median of 213 thousand Meticaïs. Farmers are using improved seeds and crop diversification, crop rotation (soybean-maize), to increase resilience of farming system to the effects of climate change. Also, farmers are using controlled use of herbicides and controlled mechanization, which is a mitigation actions aimed at reducing the potential negative effects of herbicides and mechanization on the environment (plants and soil). To a large extent local implementing partners were able to take on the implementation of parts of project interventions. Mechanization services are likely to continue, conditional on continuous maintenance of tractors and other implements, and the threshers, because there is a high demand for such services. However, SCFs often rely on services provided in Malawi or Nampula for tractor repairing, and this is costly. Repairing workshops and spare parts should be made available locally.

As for the seed multiplication, the majority of SCF faced difficulties with the payment schedule from SBS, the seed processing company that was established during the course of this project, which threatens the sustainability of the project. The SCFs reported that once seeds are handled to SBS, it takes up to six or seven months to receive the payment. Seed companies have requested SCF to produce seeds for them,

and this could be an alternative to quicker payments than SBS. Seed multiplication is very likely to continue because there is a great demand for quality seeds, but this will require partnerships with seed companies and improvement of the relationship between SCF and SBS.

**Cross-cutting issues:** The integration in the project of crosscutting issues on gender, environment and youth were moderately satisfactory. Owning threshers and accessing their services were the major benefits for women provided by the project. Approximately 29% percent of 24 SCF family businesses in Gurúe have women as direct beneficiary of threshers. Women also gained knowledge on agronomic practices through participation in field days. . Women also participated in field days. In agricultural season 2016-17, 38% of 700 participants were women, some women (7) had demo plots, and approximately 29% percent of 24 SCF family businesses in Gurúe have women as direct beneficiary of threshers. 40 youth received tablets used for survey and three adolescents received scholarships. Regarding CSA-practices, the project implemented training sessions that contributed to awareness rising on CSA practices such as improved seeds, irrigation, crop diversification, contour cultivation, controlled use of herbicides and mechanization mulching and zero tillage.

#### **Lessons learned:**

The evaluation team learned that the timing of the business training is critical for the effectiveness of SCF - value chain model. Interviews with COPAZA indicated that business training should have been an integral and continuous activity since the start of the project, rather than concentrating training activities for the last year (2018). SCFs should have entered into the seed business after being trained in business management, and receive continuous training to allow for continuous improvement based on the experience gained during project implementation.

The team also learned the importance of continued delivery of message on prioritization of investment objectives among multiple household objectives. We believe that such message and related prioritizing exercise during individual visits, meetings, workshops and field days, would have influenced SCFs to prioritize the use of income to pay loans rather than to purchase assets such as cars and motorbikes.

The SFC-model demonstrates the potential of working as farmer-to-farmer extension model, which combines informal and unplanned communication between SCFs and SHFs - based on trust and shared cultural values – with planned communication based on demo plots and field days, where SCFs, with support of TechnoServe extensionists, explained the results and advantages of the experiments to SHFs.

The final evaluation found that the model can and should be replicated in other regions of the country. This project is good indication for the potential to replicate the SCF model. Local implementing partners were capacitated to carry out their important roles/functions, a link was established between SCFs and SHFs and despite being informal was effective, COPAZA and SBS were able to establish the contractual relationships necessary for carrying out processing and marketing linkages with input suppliers and buyers. Increased productivity was secured by the solid agronomic knowledge acquired, secure and stable input provision by the suppliers, availability of demand for seed by SHFs, larger dealers, improvement of a local network parts and repair services for equipment.

The major best practices that can be captured for replication in future projects are as follows: (i) The link between SCF and SHF. The link makes the SCF model an inclusive and powerful instrument to poverty reduction through planned inclusion of poor farmers in the value chain of the soybean production as the origin of the grain value chain. The strategies to link SHF to SCF were effective, despite being informal, and had the following dimensions: (i) SCFs provide improved/certified seed, and inputs to SHFs; (ii) SCFs provides services to SHFs; (iii) SCF disseminates knowledge and technologies SHFs; (iv) SCFs buy back grain, and aggregates grain in lot quantities that are consumed by large agricultural dealers; and SCFs through COPAZA provide marketing services, including client management for grain.

(ii) Implementation arrangement. Technical and management team located at district level, very close to the beneficiaries and use of strategic planning approach, facilitated continuous contact between TNS-team and farmers and eased relationship between extension officers and farmers, both commercial and smallholders as well as identification of key difficulties and solutions for improvement; and (iii) M&E system. This was quite strong and enabled program managers to adapt program activities as they learned more about the outcomes. Dutch Phase II's approach and strategy was indeed consistent with the challenges faced by smallholder farmers. The project did effectively identify the needs/constraints of SCFs and SHFs and was able in great proportion to address them. SCFs required organizational and business skills, and lacked the resources to make capital investments and operating capital to run seed multiplication activities and provide services and extension SHFs. When the project started SHFs lacked access to quality seed, inputs, services (e.g. mechanized services, aggregation and storage), as well as technical advice on good agronomic practices for quality seed multiplication and advice. The learning methods used to transfer agronomic best practices were effective and had direct influence on productivity. The project provided agronomic skills using demoplots and field days that were positively perceived by the SHFs. In addition, the provision of infrastructure for service provision by SCFs to SHFs was considered distinct and successful by SHFs. The establishment of partnerships which resulted in value chain structure, and strengthening of COPAZA help to consolidate the inputs needs of SCFs, and to consolidate the marketing needs. All those needs were addressed by the project through the three paths, capacity building, development of a value chain, and measurement of the benefits provided by the project to them.

## **1 Background (program description and purpose of the final evaluation)**

The present report on the final impact evaluation (RFIE) of the Seed Multiplication project to Empower Small Commercial Farmers – Dutch phase II, makes an objective and systematic assessment, of the Small Commercial Farmer Seed Multiplication Model, its design, implementation and results from March 1, 2016 to June 31, 2018. Based on this model, TechnoServe (TNS), funded by the Kingdom of the Netherlands (EKN), has been implementing Seed Multiplication project to Empower Small Commercial Farmers project (SM4ESCF) from March 1, 2016 ending January 31, 2019.

Under Phase I, TechnoServe learned the importance of small-and-medium size agriculture enterprises as part of the soy seed value chain and designed Phase II to continue to improve and scale up the Local Seed Multiplier Model for soy seed production and distribution in Zambézia.

The overall objective of the project was to increase the productivity and profitability of Smallholder Farmers (SHFs) and Small Commercial Farmers (SCFs) in Zambézia Province, while providing product for a solid value chain, resulting in financial benefits for these rural farming communities.<sup>1</sup> Specifically, the project sought to build a strong and sustainable Local Seed and Service Provider Network in Alta Zambézia based on the following project outputs:

- (1) Existing SCF network capacitated to scale up more SHF access to seed and agribusiness services, in Zambézia region;
- (2) Market Linkages facilitated between SCFs, SHFs and key market players (including agribusiness partners, financial institutions and input suppliers); and
- (3) Evidence Base for the benefits of the SCF model developed.

The evaluation took place between November, 26, 2018 and December, 15, 2018.

### **1.1 Scope and objectives of the impact evaluation of the Seed Multiplication project to Empower Small Commercial Farmers – Dutch Phase II**

The RFIE exercise covers all aspects related to the project activities developed since the beginning of the project implementation on March 1, 2016 to June 31, 2018. The evaluation assesses the SM4ESCF project performance, with particular emphasis on the quality of project design, taking into account its progress and constraints in the development of its activities, the attainment of its objectives, and analyzes the efficiency and effectiveness of the implementation processes. As a result of examination of factors that influenced the successful implementation of a SCF model, the RFIE attempts to identify the determinants for a successful scaling up of the Small Commercial Farmer Seed Multiplication Model to other regions of Mozambique.

Principles underpinning the approach to the evaluation are:

- Identify the effectiveness and impact of the Program;
- Account to local stakeholders and funder for the Program's performance;
- Assess how gender related issues were integrated into the program;
- Verify whether the funds were used effectively and efficiently to deliver results;
- Use data collected through the SCF demo plots and other data collection methods to assess the financial benefit of the SCF seed multiplication model and evaluate the short, medium, and long term benefits;
- Assess the extent to which the Program targeted and met the needs of the SCFs and SHFs in zones of implementation of Alta Zambézia;
- A qualitative analysis of the hard and soft skills transferred from the SCFs to SHFs, including but not limited to improved farming techniques, agriculture management, product storage, and an analysis of the impact on youth and gender;

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<sup>1</sup> TNS Technical Proposal. 2016.

- Usefulness of the evaluation findings and recommendations, through timely presentation of relevant, clear and concise information to decision makers;
- Understand the primary inputs and pre-conditions necessary to make a SCF model successful. What are the principle determinants for a successful scaling up of the model?
- Provide input that will lead to the development of a Seed Agribusiness Strategy for SCFs that outlines the step-by-step process for the strategy.

The specific goals of the Final Impact Evaluation were the following:

- Evaluate SCF and SHF performance and assess whether program objectives and target results have been attained;
- Determine the impact of the Dutch Phase II project goals of increased productivity and income creating and profitability in soy for SHFs and SCFs in Zambézia.
- Report on income creation, ideally differentiated by poverty categories, gender and youth; this will be done through an in-depth impact assessment using project data.
- Make recommendations to the donors, implementing agent, development practitioners and wider industry on how to develop and optimize similar Seed Multiplier Programs that will lead to a Seed Agribusiness Strategy for SCFs.
- Capture/document and share lessons learned by Dutch Phase II;
- Assess the effectiveness of Dutch Phase II – did it work? Did it achieve its goals and objectives? Is the model climate-smart? And what are the lessons learned and areas of improvement;

## 1.2 Evaluation Questions/Guide

The Final Evaluation was guided by the following major questions below.

**Relevance:** Assess how well the design/objectives of the SCF model fit to the priorities and needs of target beneficiaries and the policies of the host country, and donor country.

**Effectiveness:** Assess the effectiveness of the program in terms of its objectives and strategies, and progress against intended outcomes. Compare expected achievements of objectives at inception as stated in the project documentation against actual (or expected) achievements of objectives at the time of evaluation.

**Efficiency:** Based on the program plans, monitoring indicators and reports, assess how efficiently the program met the expected objectives by comparing outputs to targets and the use of resources set out for the project.

**Impact:** At program level, evaluate how well the various activities have transformed the available resources into the intended results, in terms of quantity, quality and timeliness. Comparison should be made against what was planned and the actual achievement at the end of the project.

The evaluation should assess to what extent there was evidence indicating that the Dutch Phase II program has met its intended overall objectives at the impact level.

**Sustainability:** Assess the extent to which the project benefits will continue to pay off into the foreseeable future.

### Other areas to be assessed:

- **Crosscutting Issues:** How well did the project address and integrate crosscutting issues that relate to the project, including gender, environment and youth.
- **Lessons learned:** What best practices can be captured for replication in future TNS projects? Where is room for further improvement?
- The potential need for and benefits of TNS funding a wider variety of inclusive agricultural growth projects with the target beneficiaries.

## **2. Project description**

### **2.1 Context and objectives**

Agriculture is a critical pillar of the Mozambican economy employing over 80% of the rural population, with small and medium farms accounting for about 95% of total agricultural production. However, productivity is generally low, national averages well below 1T/ha for the majority of food crops. Productivity is largely constrained by limited access to and use of improved inputs and poor agronomic practices. In addition, most rural populations and smallholder farmers remain disconnected from input and output markets; and have limited access to information, technologies and key basic services required to access markets.

The increased productivity of smallholder farmers (SHFs) is critical to bringing large tracts of arable land into productive use to increase food security and incomes in rural areas; create sustainable jobs and develop a competitive local agricultural industry.

Use of improved seed is one of the least expensive but greatest technology catalysts for improved smallholder productivity – directly influencing yield potential, adaptation and resistance to environmental conditions, pests and disease. In spite of the benefits, the increased use of improved seed is limited by some of the following: (i) No commercial seed system and high cost of inputs; (ii) Weak extension service (poor quality & limited reach), with only 1,000 extension officers available to serve over 3.7M SHFs; (iii) Limited access to finance (Banks are risk averse; interest rates are prohibitive); (iv) Limited private investment; (v) and weak linkages between buyers, producers and sellers.

In response to the challenges presented above, since 2012, a \$2, 028,235 Seed Multiplication to Empower Small Commercial Farmers project (SM4ESCF), a project based on small commercial farmer model, is being implemented by TechnoServe (TNS) with Embassy of the Kingdom of Netherlands financial support. The project is built upon the past 4 years BMGF funded soy value chain development programme.

At high level, SM4ESCF aims to increase the productivity and profitability of small commercial farmers (SCFs) and smallholder farmers (SHFs) in the Alta Zambézia region, specifically in the Gurué, Alto Molócue and Malema districts, resulting in increased financial benefits for rural farming communities through “strengthening, demonstrating and replicating the SCF network as an effective model for commercial smallholder seed/grain production as well as local agricultural service provision for smallholder farmers “

To achieve this goal, the project is creating a “Sustainable Local Seed & Service Provider network strengthened in Alta Zambézia”, based on COPAZA and their 33 SCFs members. COPAZA core activity is seed multiplication of a mix of crops that includes Soybean (biggest share), pigeon pea, sesame, and butter bean, along with growing grain production for sale, as well as provision of agriculture services. By the end of the last crop season COPAZA is expected to produce 1,125 ton of seed multiplied along the 3 crop seasons.

COPAZA is expected to sell to 3793 SHFs critical inputs (improved seed, inoculants, etc.) covering 6,500 ha, and provide agriculture mechanization in an area of 4950 ha, including marketing, impacting considerably SHF productivity.

To achieve these goals, the project is structured around three main planned outputs:

- Output 1. Existing SCF network capacitated to scale up SHF access to seed and key agribusiness services, in Zambézia region
- Output 2. Market Linkages are facilitated between SCFs, SHFs and key market players (including agri-business partners, financial institutions and input suppliers)
- Output 3. Evidence base for benefits of SCF model is developed

With following cross cutting issues:

- Promoting women's economic empowerment through all project activities
- Encouraging environmental sustainability of agricultural activities

## **2.2 Project implementation structure and national partners**

This section describes each project member and partner's responsibilities and roles within the SM4ESCF. Various partners bear distinct responsibilities in the areas of capacity building and knowledge sharing, seed multiplication, seed processing and packaging, warehousing, selling goods and services, negotiation and relationship building, financing, seed certification.

TechnoServe, with support of EKN, is responsible for strengthening the capacity of the 33 SCFs of the project to deliver key services to smallholder farmers; for supporting SCFs to identify opportunities to increase their product or service offering, and improve their technical and business capacity to manage the improved seed and crop market channel. TechnoServe Technical Assistance focuses on strengthening SCF organization and advanced agronomy, business management skills, and marketing capabilities. As a broker, it is involved in negotiating with banks and co-financing partners to facilitate access to working capital for SCF. Also, TechnoServe supports the promotion of relationships Handover of relationships with input suppliers and research institutions, Government Extension Officers, Farmer Organizations', large private companies among others. TechnoServe is also responsible for Tracking and demonstrating adoption of technologies, private SME investments and delivery of services to SHFs. TechnoServe prepare quarterly reports that are shared with EKN.

The profit oriented 33 SCFs are emerging farmers who own small agribusiness and benefit from training, equipment and form a network of SCF that deliver the necessary inputs, extension, mechanization and other services to the smallholder farmers on a commercial basis. SCF are involved in key activities: they invest in seed multiplication (particularly seed for soy, butterbean, pigeon peas and sesame), purchase improved inputs for grain production, The network of SCF providers offers to SHFs key inputs (particularly seed for soy, provide advice and services (e.g. mechanized services, transport), and buy back produce from SHFs and sell to large commercial farmers or other end users.

In May 2014, The 33 SCFs have formed COPAZA, a cooperative of local seed multipliers and grain producers established. COPAZA, main objective is to drive the development of a commercial seed market, and develop a viable business model for the SCF network, to enable SCFs to organize themselves and deliver services independently of donor funding; and effectively handover to a strong cohort of long-term change agents. COPAZA ensure value addition and delivery of key services and inputs to SHFs.

COPAZA is part of a Joint-venture, Sociedade de Beneficiamento de Sementes (SBS). SBS forward-purchase harvested seed and grains from SCF members and others; clean, calibrate/grade, treat, cool

and package it; and then make it available to the SCF network and others to sell directly to smallholder farmers.

Banks Millennium Bim and BCI, and GAPlare the main financial partners. Through MOU signed with TechnoServe, the banks offer to the SCFs a combination of subsidized capital investments, working capital and capacity building to facilitate SCFs to develop business plans and loan applications.

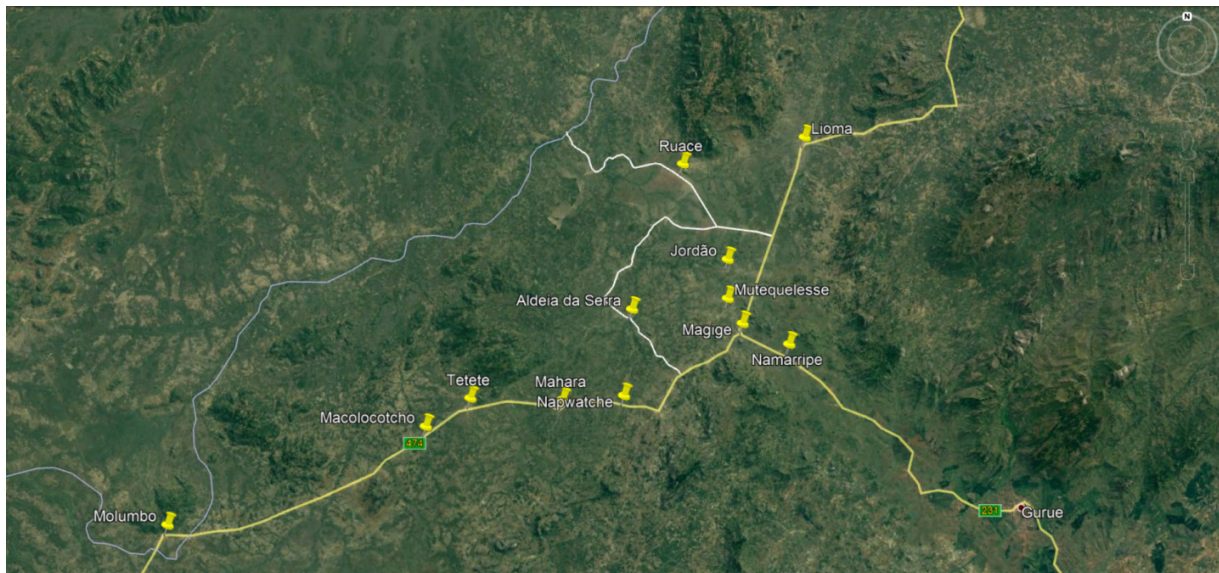
Other partners include input suppliers, warehouse operators, research institutions, breeding centres and other private seed companies that assist in acquiring and testing basic seed varieties, in providing training and participate in demonstration plots and farmer field days (e.g. IITA, IIAM, SEMOC, SeedCo, Pannar, AgriFocus, Biochem, etc.). Partners also, include provincial laboratories under National Seed Authority that oversee compliance of seed certification guidelines and grant certification to seed produced by seed multipliers within the project.

Approximately 3,793 SHFs are the business customers that buy improved seed for soy, butterbean, pigeon peas and sesame and other key inputs, receive advice and purchase services (e.g. mechanized services, aggregation, storage) directly from SCF in order to produce grain in their fields.

### 2.3 Geographical Coverage and targeted group

The region of Alta Zambézia consisting of Gurúe, Alto Molocue and Malema districts, is the area benefiting from the project SM4ESC. The criteria for its selection include diversity of agro climatic areas; fertile soils, excellent river network; Existing network of SCFs; foundation of Seed Multiplier Programme (2012-2015).

Figure 1 Map of Gurúe district



Source: TNS, 2018

The activities implemented by the Project SM4ESC and funded by EKN are complementary in term of building on the 4-year BMGF funded Soy Value Chain Development Programme and expanding this



experience to the design and development of a private local seed multiplication and distribution model in Alta Zambézia, that can be replicated across the country.

The major project beneficiaries are 33 existing SCFs that benefit from organizational and advanced agronomy, business management skills, and marketing capabilities, and financial services to improve the efficiency and effectiveness of their seed multiplication and grain production, offer an attractive product service portfolio to SHFs, access third party financial services and reap higher financial rewards.

SCFs' cooperative COPAZA benefit from augmented organizational and business capacity, agronomy and marketing skills, brokering skills to facilitate development of viable business model for the SCF network and to ensure value addition and delivery of key services and inputs to SHFs.

At least 3,793 smallholder farmers are expected to benefit from local availability of critical inputs including affordable quality seed, access to infrastructure such as mechanization and storage services, and enjoy increased yields and incomes.

## **2.4 Project logical framework**

The SM4ESC project technical proposal presents a comprehensive results matrix with satisfying quality based on hierarchy of objectives, expected outcomes, goods and services to be provided. The major goals and specific objectives are clear and relevant and build up in each other.

In accordance with Results' matrix the major outcomes are:

Output 1. Existing SCF network capacitated to scale up SHF access to seed and key agribusiness services, in Zambézia region

- Support COPAZA to deliver technical assistance to 33 SCFs and SHFs in agronomy and advanced business skills
- Build capacity of COPAZA in governance, management, marketing and business skills

Output 2. Market Linkages are facilitated between SCFs, SHFs and key market players (including agribusiness partners, financial institutions and input suppliers

- Facilitate SCFs linkages to buyers
- Broker partnerships between SCFs and commercial banks to access credit
- Link SCFs to input suppliers and warehouse operators

Output 3. Evidence base for benefits of SCF model is developed

- Conduct ongoing M&E
- Capture and demonstrate the benefit of the investment in productive technologies to SCFs
- Share learning with donors, private sector and other key shareholders
- Facilitate knowledge exchange and establish linkages between SCFs in Alta Zambézia

Outcomes are structured to increase productivity and profitability of SHFs in project area, and result in financial benefits to rural communities.

## **2.5 Theory of change**

In the designing phase, the project, developed a Theory of change (TOC), presented as [Annex 2](#). The TOC demonstrates how the purpose of the project will lead to a change in the long run, in respect to the impact goal of increased financial benefits for rural communities in Mozambique, and provides a clear path for the intermediate changes.

As we can conclude from summary of theory of change, the project SM4ESCF uses three main changing paths that lead to a sustainable and strengthened seed service provider network in Alta Zambézia. The theory of change describes how ultimately the projects efforts will lead to increased productivity and profitability of SHFs in Northern Mozambique, through full implementation of the SCF model, and further expansion in the Northern region of Mozambique.

The theory of change also identifies the risks that different levels of changing causal chain may operate as inhibitors for the project reaching the desired impact. The risks are related to participants not being able to undertake some of their activities and to external factors such as indirect consequences of other programmes.

The consultants added the risk of SCFs lacking resources to buy back grain produced by SHFs, what suggest the need of a careful streamlining of the downstream portion of grain value chain. By closing this portion of the loop, we openly deal with cash-to-cash cycle of the SHFs. Due to the existing risks of SHFs occasional not having the means to buy improved seeds or services, financial flows or credit schemes should be carefully designed to address that risk.

The consultants also highlight that the scalability of the model, in which depend the super goal of financial benefits for the Mozambican rural communities, to other regions of Mozambique will require full engagement of other stakeholders, government agencies, private sector, and research institutions.

### **3 Methodology and implementation, including strengths and weaknesses**

Both qualitative and quantitative approaches were used. Qualitative methods comprised interviews with five randomly selected Small Commercial Farmers; Focus Group Discussions with Smallholder Farmers, both participants and non-participants of the program. Participants were smallholder farmers assisted by SCF whereas non-participants were not assisted. A total of 8 FGDs were conducted separately for men (4 FGDs) and women (4 FGDs). In total 39 men and 32 women attended the FGDs. In addition to FGDs and interviews with small commercial farmers, key informant interviews were also conducted with SBS, COPAZA, and TechnoServe staff.

Quantitative methods, used by the evaluation team, entailed in-depth impact assessments using existing program data in line with M&E frameworks for the TNS Dutch Phase II Program. TechnoServe conducted a household survey covering the 2015/16 and 2016/17 agricultural seasons with a sample size of 1,146 households in each season. These were the same households, which allowed us to look at household dynamics of adoption for each agricultural technology: i) persistent adopters are those who used the technology in both seasons; ii) new adopters are smallholders who only adopted the technology in 2016/17 but not in 2015/16; iii) disadopters are those who used the technology in 2015/16 but not in 2016/17; and iv) non-adopters are smallholders who did not adopt neither in 2015/16 nor in 2016/17.

In addition to smallholders' survey data, we also looked at the data from the small commercial farmers to assess short-term solvency, financial leverage, profitability, and other parameters.

- Short-term solvency—the ability of the firm to meet its short-run obligations.
- Activity—the ability of the firm to control its investment in assets.
- Financial leverage—the extent to which a firm relies on debt financing.
- Profitability—the extent to which a firm is profitable.
- Value—the value of the firm.

The following three-phased approach was used for the evaluation:

#### **3.1 Phase 1: Inception**

The team travelled to Gurúe on November 26, 2018 to meet with Project staff and discuss the schedule of activities, main objectives, expected outcomes from the evaluation, timeframe, among others. To kick off this project the evaluators conducted a preliminary desk review of the relevant program documents as well as documents shaping the wider strategy/policy framework of the program.

Key documents reviewed include:

- TNS Operations Manual (and its appendices)
- TNS Dutch Phase II M&E Plan (and its appendices)
- TNS Dutch II Quarterly Reports
- TNS Dutch Workplan

The Evaluation Team developed, with support of the TNS project management, an evaluation matrix, based on established final impact evaluation objectives of the Terms of Reference (TOR), on the SM4ESCF's intervention logic and documentation review undertaken. The evaluation matrix is structured following the criteria outlined in the TORs guiding framework, and includes detailed set and subset of questions as well as project indicators.

In addition, to ensure that the evaluators had adequate context on the TNS program, interviews were held with key stakeholders during this inception phase, namely TNS staff. These key stakeholders

included representatives from the project management team and key stakeholders/beneficiaries.

Document review took about five days, and we met with TNS staff on December 1, 2018 to present and discuss the inception report that covered the following:

- Interviews conducted and key insights coming from those interviews;
- Data collection tools for the next phase (e.g. Key Informant Interviews and guides, In-depth interview and focus group discussion guides);
- Finalized methodology including strengths and weaknesses, detailed sampling plan, and field procedures;
- Workplan and foreseen activities for the program evaluation

### **3.2 Phase 2: Data collection**

This phase consisted of data collection on the TNS Dutch Phase II program, in Gurúe, between November 26, 2018 and December 7, 2018. The evaluation team conducted semi-structured interviews, based on the evaluation matrixes.

The following stakeholders were interviewed:

- Five SCFs randomly selected from a list of 24 existing SCF.
- Five TNS field officers,
- Four COPAZA board members
- SDAE - the director of the Economic Activities District Services
- One SBS consultant

In the communities of Tetete and Lioma, the Evaluation team organized 8 focus groups, four with SHFs project participants divided into two groups with woman's SHFs and two groups with men's SHF and four with non-project participants SHFs with similar gender grouping. The 2 hours' focus group aimed at expanding the evaluation team's understanding of the following: A) Beneficiaries' perception about Dutch phase II implementation, and extent of beneficiaries' participation, B) The changes experienced by the project target beneficiaries C) The impact of the project on increasing the access of technologies for the SHFs, D) The degree of SHFs' satisfaction about the services provided by SCFs, and F) How well did the project address and integrate crosscutting issues that relate to the project, including gender, environment and youth.

In addition, the Evaluation team conducted site visits to three SCFs' field, to make direct observation of the following: A) the use of competencies acquired throughout the project, B) the extent of utilization of the equipment provided by the project, and C) implementation of agronomic best practices.

### **3.3 Phase 3: Preparation of final report**

This phase was mainly devoted to the preparation of the draft final report. We strived to ensure that the assessments were objective and balanced, affirmations accurate and verifiable, and recommendations realistic.

The organization of the RFIE follows the TOR recommended format. The document presents the following sections: The executive summary, an introduction with objectives and methodology, the project context and description, the evaluation question, results, conclusions and recommendations.

### **3.4 Limitations**

The Evaluation team considers as limitations of this exercise the unviability of baseline survey at the outset of the project, and present randomly selected control group that could be used in the final evaluation for quantifying the project effect. Instead, the Evaluation team, to assist in understanding the change attributed to project, used a comparative group constituted of non-participants, which equivalent to a quasi-experimental design.

## 4 Results and findings

### 4.1 Relevance

The assessment of the relevance of the program was guided by eight questions. **First**, we wanted to know whether the implementation of Dutch Phase II was in line with the strategy of the Dutch and Mozambican policies and strategies. To address this question, we looked at the pillars of the Dutch strategy (i) water; ii) food and nutrition security; iii) sexual and reproductive health and rights (SRHR); and iv) energy), and the MoU signed between the Government of Mozambique and the Netherlands. The seed multiplication project falls under the food and nutrition pillar, which is very relevant for Mozambique in light of low productivity level and low use of improved seeds. The use of improved seeds can potentially result in productivity growth, particularly if seeds are combined with other complementary inputs, and farmers are able to market their surplus.

The Netherlands signed an MoU with the government of Mozambique (Kingdom of the Netherlands, 2013) for a food and nutrition security program focusing on i) increase of sustainable food production; ii) better access to nutritious food; and iii) efficient, inclusive markets and improved business climate. The seed multiplication project focus mainly on both increased food production and better access to nutritious food, and this is in line with the Dutch strategy. The seed multiplication project is also in line with Mozambique's strategy to increase agricultural productivity and reduce poverty as witnessed in its Strategic Plan for Agricultural Development (known by its Portuguese acronym PEDSA). PEDSA expected to improve the private sector's capacity to provide improved seeds. Moreover, the heads of African states (including Mozambique) signed the Abuja Declaration in 2006 and committed to increasing the use of improved inputs, including improved seeds.

The **second** question addressed under relevance of the program is whether the program targeted the right group(s) of people. The project targeted SCFs and SHFs. SCFs and SHFs are the right group(s) of people to implement efficiently and effectively, the Small Commercial Farmer Seed Multiplication Model, and achieve the pre-defined project objective of increasing the productivity and profitability of Smallholder Farmers (SHFs) and Small Commercial Farmers (SCFs) in Zambézia Province, resulting in financial benefits for the rural farming communities.

The project used two targeting criteria: equity and effectiveness. Both criteria indicate the project's desire to be more inclusive, by including small holder farmers, which constitute the largest proportion of the rural community, and the intention to select project participants more likely to succeed under the conditions and requirements (land size, financial resources to qualify for credit, previous experience with soybean production and commercialization) of the Small Commercial Farmer Seed Multiplication Model. Based on the criterion of effectiveness, the project targeted the pre-existing 33 SCFs from Phase I, after TechnoServe learned the importance of small-and-medium size agriculture enterprises as part of the soy seed value chain, and their favorable conditions to assimilate their roles in seed multiplication, input, and service provision to SHFs. In value chain approach, the SHFs constitute the origin of the grain value chain, which the use of certified seed increases its productivity, and consequently the volume of produce to be sold back to SCFs for further distribution at downstream of the value chain. With these two groups the project targeted the right group(s) of people to implement efficiently and effectively, the Small Commercial Farmer Seed Multiplication Model, in order to achieve the pre-defined project objective of increasing the productivity and profitability of Smallholder Farmers (SHFs) and Small Commercial Farmers (SCFs) in Zambézia Province, resulting in financial benefits for the rural farming communities.

The **third** question pertains to how beneficiaries of the program perceived Dutch Phase II implementation and to what extent were they involved in the design and implementation. Beneficiaries' reports (SCFs) indicate that they did not participate in the project design. Nevertheless, beneficiaries perceived favorably the implementation of Dutch Phase II because of great learning experience, perceived increased productivity and production, perceived increased revenue and perceived decreased labor effort in agricultural operations.

The education methods used by the project, combined with provision of inputs were instrumental in improving beneficiary's production skills, including good practices for quality seed multiplication. However, the SCFs reported experiencing challenges in financing their activities and managing bank loans, as well as negotiating favorable selling terms. Moreover, SCFs felt that business management training was not sufficient and timely to manage the seed business and payment of the debt.

TNS-management has highlighted that "although several management courses were provided, additional education efforts should be made available to this type of trainings in the future. Most of the population knows how to do business in the informal/parallel economy context, and to train farmers on formal economics when they are so used to the informal was not as efficient as desired." To change farmers informal business orientation into a formal orientation is challenging. The assimilation of formal economic concepts could be facilitated by integrating educational modules from formal curriculum, using adult learning principles.

SCFs reported that the activities implemented by the project, namely provision of seed on credit for multiplication, technical assistance in seed multiplication, training, demoplots, organization of seminars, and field days were relevant to them. The following statements illustrate the beneficiaries' assessment of the project,

"The project activities left a great learning experience. Before the project, we practice agriculture without any technique. I did not know that to produce I should first locate the site, have good practices for soil preparation, evaluate the soil type. No one knew how to sow in line. I will never cultivate just like anyone else, I have to do everything with rules." (SCF).

"Since the project started I have already built my house. I increased the soybean area. I have 15 ha. I increased production. Before I harvested 3 tons of soy and now I make 40 tons" (SCF).

"The production of the seed is very important and pays well, but it would be better if the commitments were honored. There is a delay in payments and loan interest goes up" (SCF).

"Without the tractor I worked with many difficulties" (SCF).

SCFs compared the seed multiplication project with other projects in which they participated, and presented advantages of this project over the others, saying:

"The previous projects with CLUSA and World Vision did not help us acquire the agricultural equipment. TNS gave us equipment, mobilized us to process our own produce. It was something we had not expected. This year (2018) we did not go to Nampula to process the seed ... we went here, to Magige" (SCF).

"I have had many seminars with projects that have passed here. The difference is that TNS is assisting us directly. TNS is not only passing on the message, it does so directly – the message is transmitted and executed. What you learn, you implement" (SCF).

"This project distinguishes itself by the facilitation of the equipment and the guarantee of the market. But the market still has problems because they pay late" (SCF)..

The beneficiaries reported the following project strengths:

- Facilitation in the acquisition of machines
- Seed market guarantee
- Training and seminars
- Increasing farm areas (ha) with the use of machines
- Facilitation of land legalization (for producers who were not in Hoyo-Hoyo lands)

The beneficiaries reported that the following points should improve:

Despite the time invested by TNS in negotiating low interest rates, the beneficiaries reported the need to continue that effort.

Facilitating funds to SCFs to buy SHF produce at more attractive prices than offered by Bengalis and Malawian buyers. However, this would unreasonably influence marketing of the produce. In accordance with TNS-management, estimates of working capital were very high and it demanded a heavy management structure. Therefore, we think this type of funding should be left to discretion of each SCF whether to seek these funds from financial institutions.

Using prompt payment scheme instead of phased payment (40% at SCFs seed delivery + 60% after SBS's seed sells). This scheme could be improved by keeping the 40% at SCFs seed delivery and 60% after SBS's seed processing.

Facilitating credit for the maintenance of machinery and to cover operating costs (diesel, filters, sowing, weeding, harvesting)

Availability of a local supplier for maintenance and spare parts provision for the agricultural equipment. Although there is a room for improvement, this issue has been addressed by the project.

The beneficiaries also expressed the need to improve communication (to avoid different interpretations) on such issues as the duration of the project vis-à-vis terms of payment of their loans, strategic changes, and the COPAZA-SBS commercial relationship, as the following statements illustrate:

"The project is leaving us without us having concluded to pay our loans on tractors, while they called us for this project. TNS took us to the bank, today it is saying that it is over, and we have not finished paying the bank. "

"When it was just TNS and COPAZA, but now SBS is emerging. How SBS is working with COPAZA? Have we become SBS employees? SBS pays us 40% upfront, the remaining 60% is due after (5-6 months) SBS process and sell the seed, lately SBS is retaining part of the 60% on the grounds that it is to be paid to the bank but SBS did not agree with the COPAZA members that it was going to withhold the bank money"(SFC).

Regarding the deadlines of repayment of the loans, the max time agreed with commercial banks for repayment is 5 years. TNS-management believes that the financial independence created in each farmer will allow them to pay their debts and additional support would lower the risk.

The **fourth** question relates to skills and knowledge gaps of the beneficiaries, and whether these correspond to capacity building efforts funded by Dutch Phase II. The training provided by the project corresponded to skills and knowledge gaps of the beneficiaries. However, beneficiaries felt their learning needs were more satisfied for agricultural production than for business management, for training in business management was recently administered (2018) and beneficiaries felt that they had



not done good use of this knowledge to manage the seed business and provision of mechanization services, as well as for payment of the debt.

The main training areas addressed by the project were good practices for seed multiplication and soybean production, seed business management, use and maintenance of agricultural equipment. The project also organized gender and environmental cross-cutting trainings.

The methods used by the project, to facilitate learning as well as the application of knowledge by SCFs, were standard methods for adult education guided by the principle of experiential learning and consisted of workshops/seminars, demo plots, individual visits to the producer, field trips and exchange visits of experience among producers from different regions within the country. The aforementioned methods, coupled with the provision of basic and/or certified seed and the availability of inoculant by the project through SBS were instrumental in improving beneficiaries' skills for the application of the transmitted knowledge.

The beneficiaries (SCFs) reported that their knowledge of, Soybean seed/grain production, Soybean seed business management and Provision of services to SHF improved with the project. Before the project, they were not aware of good practices for quality seed multiplication including the correct dates of soybean sowing and assembly of demoplots.

With the exception of agronomic training on seed multiplication which was always timely -before the start and at the end of the crop season - business management training was recently administered (2018). TNS management reported that management workshops were held to overcome the initial SCF's lack of competence to manage their clients, resulting in an increase of 11% on sales. However, the beneficiaries felt that they had not done good use of this knowledge to manage the seed business and provision of mechanization services, as well as for payment of the debt. In this sense, the efforts of the project for capacity building did not correspond, in a timely manner, to the learning business needs of the beneficiaries.

The **fifth** question had to do with whether the inputs and strategies identified were realistic, appropriate, and adequate to achieve the results. The main inputs under the project were improved seeds and inoculant. These were linked to improved agricultural practices such as line sowing, planting calendar, weeding, rouging, and mechanization. Inoculant, fertilizers and pesticides were used in demo plots, but its adoption among farmers, especially smallholder farmers, remains challenging (Table 1).

*Table 1 Adoption of selected agricultural technologies and practices by smallholder farmers*

Technology		Persistent adopters	New adopters	Disadopters	Non-adopters
Inoculant (%)	Control	0.0	0.5	0.5	99.1
	Intervention	2.2	2.9	2.9	92.1
Pesticides (%)	Control	0.0	0.5	0.5	99.1
	Intervention	2.0	2.4	2.1	93.5
Mechanized plowing (%)	Control	0.0	0.9	0.5	98.7
	Intervention	10.9	2.8	4.2	82.1
Harrowing (%)	Control	0.5	0.0	0.5	99.1
	Intervention	8.5	5.3	7.7	78.5
Mechanized	Control	0.0	0.0	0.9	99.1

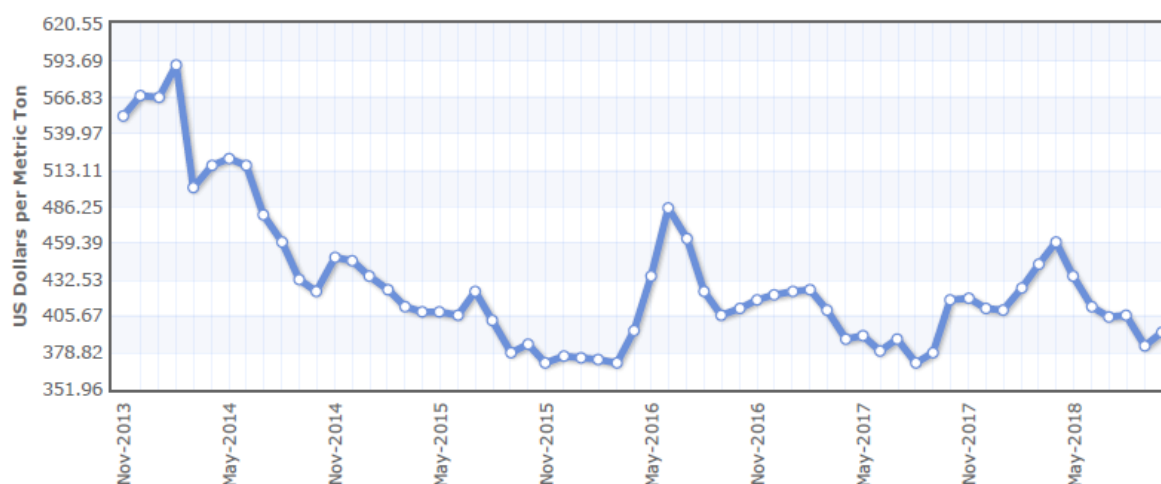
sowing (%)	Intervention	3.0	2.5	1.7	92.8
Line sowing (%)	Control	14.9	4.5	4.5	76.1
	Intervention	59.6	15.5	3.3	21.6

Source: Technoserve 2018

While there are proven benefits of the use of inoculant as it is discussed later in the report, 92.1% of smallholder farmers did not adopt it among the participant or intervention group, and almost nobody used it among smallholders outside the intervention area. In the case of mechanization services, it is worth noting that disadoption was higher than new adoption of mechanized plowing and harrowing. One explanation is that small commercial farmers have expanded their own cultivation area and therefore have less time to assist smallholder farmers. Smallholder farmers cannot afford to wait until SCF come to their plots because the planting window for soybean is very small, and delays in planting significantly and negatively impact on yields. Another reason is that some of the tractors require maintenance and such services are not always available, or if they are available, farmers do not have enough savings to pay for the services or purchase spare parts.

Disadoption or adoption of mechanized services can also be linked to the price of soybean in the previous agricultural season. Figure 1 shows soybean monthly prices in the international market, but these price trends are transmitted into local markets because total production of soybean in Mozambique is extremely low when compared to global production. After the peak of soybean prices around May 2016, soybean prices began to fall, and this may have discouraged smallholder farmers in Gurúe from spending resources on agricultural mechanization for the 2017/18 season, and hence higher disadoption than new adoption as shown in Table 1 above.

Figure 2 Soybean monthly price – US Dollars per metric ton<sup>2</sup>



Maize and beans in general (the other 2 main crops of the region) were even more affected by the international prices. Another relevant aspect is that not always the global prices affects the internal prices the same way. Sometimes the regional demand and offers dynamics do not work the same way as the global ones. For example, in 16/17, the reduced demand of pigeon pea coming from India, made the

<sup>2</sup> Source: <https://www.indexmundi.com/commodities/?commodity=soybeans&months=60> (visited 12/06/2018).

prices drop 4 times more in Mozambique than in the global markets.

Another research question relates to whether the program was relevant to address the identified needs/constraints. The strategies put in place for seed multiplication were based on the following activities:

- (1) Development of supply base for foundation seed and inputs. The supply base is constituted of research institutions, breeders that facilitate access, selection, and adoption of new varieties and input providers.
- (2) IITA was linked to the SCFs to facilitate training through demoplots
- (3) Provincial labs were involved in certifying the appropriateness and quality of SCFs' plots to meet the requirements for multiplying high quality seed

The three aforementioned activities are considered adequate and appropriate for seed multiplication.

The activities that supported the SCFs financing were the following:

- (4) Establishment of SCFs' supportive MOUs with banks facilitated by TNS
- (5) Capacitate SCFs for development of business plan, and loan application
- (6) Provision of subsidies by the project
- (7) Setting of requirements for SCFs accessing the subsidies and bank financing

The overall goal of activities from (4) to (7) were to increase the access of SCFs to a combination of subsidized capital investments, working capital and capacity building.

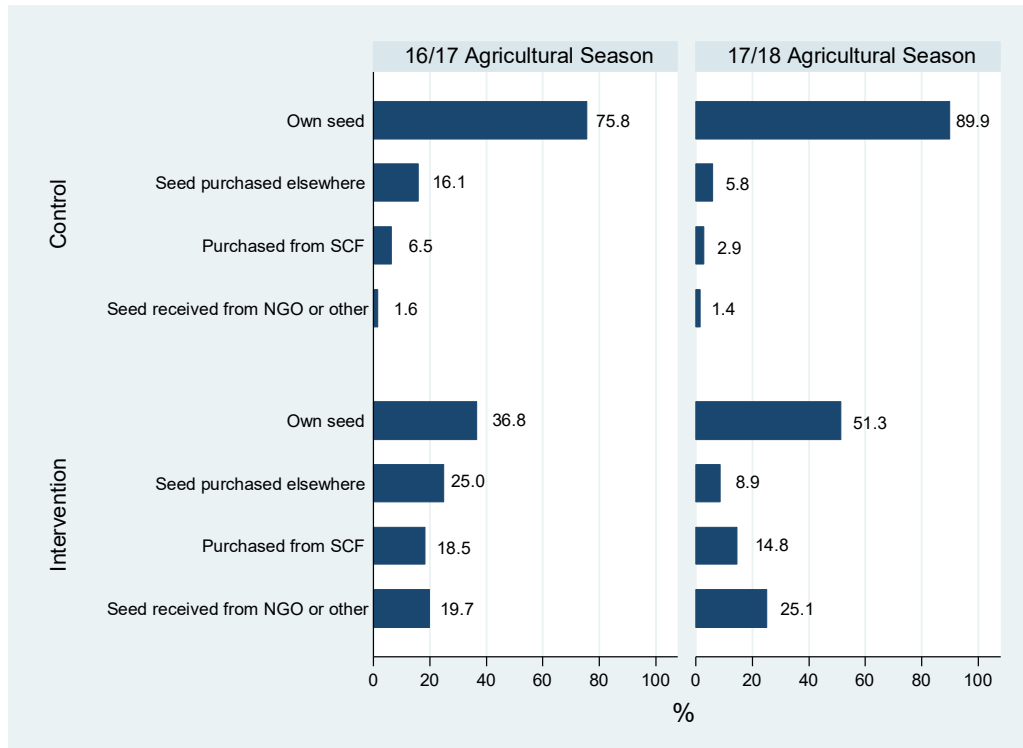
The **sixth** question relates to how SCF model could be refined to address the areas of improvement for future implementation. We have already talked about the use of inoculant being extremely low, despite its benefits in increasing smallholder farmers' yields. Inoculant is a live bacteria and needs to be handled with care, otherwise it loses its effectiveness. Orders of inoculant need to be placed on time, and inoculant is usually sourced from AgriFocus in Nampula. Better coordination of smallholder farmers and SCF is required in order to have the information about the appropriate quantity of inoculant that will be needed. However, availability of inoculant does not necessarily mean that farmers will use them. Interviews with key informants revealed that in previous seasons SCF had inoculant expiring because smallholder farmers would not take them. More extension work on the reasons why to use the inoculant, including safety issues, could help farmers adopt the inoculant.

One improved agricultural technology not yet discussed is the use of improved soybean seeds. Data from the smallholder survey conducted by TechnoServe show that the use of farmers' own grain as seeds has actually increased between 2015/16 and 2016/17. In 2015/16 SCF gave improved seeds to SHF on credit at the beginning of the season, and they had to return at harvest. However, many SHF did not return the seeds, and this led SCF to stop or reduce significantly the amount of improved seeds they provide to SHF. TNS also changed the distribution model to reduce the number of non-paid seeds. As a result, the percentage of smallholder farmers using improved seeds from SCF dropped from 18.5% to 14.8% among participant farmers, and from 6.5% to 2.9% among non-participant farmers (Figure 3).

Seed sales of SHF were also negatively impacted by seed distribution free of charge from some NGOs. Under the NGO group, there could be other institutions and/or programs. Perhaps a mapping of all institutions and programs working on seeds in Alta Zambézia would be relevant for coordination purposes. For example, if other organizations/institutions' policy is to distribute emergency seeds, then

they should coordinate with SBS to acquire their seeds, which tend to be of higher quality (as it will be shown later in the report). Last year alone seed multiplier farmers received four visits from the National Seed Authority to monitor and certify the seed. The source and quality of seeds distributed by NGOs is often unknown.

Figure 3 Source of seeds by type of farmer and agricultural season



The **seventh** question discussed under this topic is whether the program was relevant to address the identified needs/constraints. Qualitative results indicate that the project did effectively identify the needs/constraints of SCFs and SHFs and was able in great proportion to address them.

The SCFs are profit oriented emerging farmers and small agribusiness that at the outset of the project were experiencing considerable lack of knowledge to implement their roles in the Small Commercial Farmer Seed Multiplication Model. In addition to fulfill their role of seed multiplication and processing they needed not only to acquire agronomic knowledge, but also to have established facilities, setting well organized and managed seed multiplication and marketing operations. Therefore, they required organizational and business skills. Apart from that, the SCFs lacked the resources to make capital investments and operating capital to run the multiplication of seed and provide services and extension to their clients, in particular the SHFs. All those needs were addressed by the project through the three paths, capacity building, development of a value chain, and measurement of the benefits provided by the project to them.

SHFs are grain producers that buy seed from SCFs and sell their produce to the grain market in particular to traders, and to some extent to SCFs. When the project started SHFs lacked access to quality seed, inputs, services (e.g. mechanized services, aggregation, storage etc.), and advice. The project provided agronomic skills using demoplots and field days that were positively perceived by the SHFs.

**Lastly**, we assessed whether Dutch Phase II's overall approach and strategy was consistent with the challenges faced by its target beneficiaries. One of the main challenges faced by SHF is low agricultural productivity. Lack of productivity growth results in stagnation in poverty reduction in countries like Mozambique where the majority of its population relies on agriculture for employment and incomes. Dutch Phase II's overall approach was to improve the seed value chain while simultaneously fostering the adoption of improved agricultural practices, mechanization, the use of inoculant, strong extension services as well as a sound monitoring and evaluation system. Dutch Phase II's approach and strategy was indeed consistent with the challenges faced by smallholder farmers.

## 4.2 Effectiveness

The analysis presented in this section is guided by six questions. **First**, have specific seed multiplier interventions that were designed worked? The short answer is yes, they worked to some extent but two key challenges remain: lack of cash by SCF in critical periods, and seed distribution by other organizations. Small commercial farmers multiply the seeds following rigid guidelines and receive technical assistance from both TechnoServe and other institutions such as the National Seed Authority. It has become almost mandatory that seed multipliers use inoculant, and this is being strictly followed by small commercial farmers. Then the seeds are sent to SBS, the seed factory in Magige. Any impurity that the seed might have is returned to the SCF (and later sold as grain), and only the final weight of the seed is paid.

Interviews with the five SCF revealed that payments from SBS usually take five or six months. Not receiving the payment on time meant that some SCF did not have enough cash to support the cost of plowing, as they had not received the payment by late November although they sold the seed to SBS in July. SCF need timely payments to allow them to pay for fuel, for example, to plow smallholders' plots on credit. One SCF mentioned that he was still waiting for SBS payment in order to travel to Malawi to purchase a spare part for his tractor.

As briefly discussed above, seed distribution free-of-charge by other organizations have a negative effect on the profitability of seed multiplication program by SCF. The quality of the seed that is distributed is also questionable, and this can affect farmers' perception of the benefits of using improved seeds if the "improved seed" that is distributed is tarnished.

The **second** question addressed in this section is whether there were any unanticipated/unintended outcomes of Dutch Phase II (both positive and negative). The main observed outcomes were anticipated, and the unanticipated positive outcomes were at some extent anticipated in the long term with increasing income (see project document).

The main outcomes anticipated by the project were: (i) approximately 3,793 smallholder farmers receiving support from a network of **33** SCFs. Results in the performance matrix indicated that for the agricultural season 2017-18, the project has achieved high percentage (88.53%) of expected target (3,793 SHFs); (ii) establishment of partnership agreements/MoU between SCFs and input suppliers, warehouse operators etc. The project established 4 relationships with Agricon, Agrifocus, IITA and SBS provides agro chemicals and training; and (ii) sharing learning with donor, private sector and other key stakeholders. The project was able to present a video of the work currently being done at the EKN in Maputo.

There are indications that possible positive unanticipated outcomes (in the short) are as follows: some SCFs have expanded other sources of income such as small shops/restaurants and room renting; SHFs

non-participants cultivate crops promoted by the project such as soybean; SBS enlargement of customer base to include, Agro Business Partners, Agro dealers SHFs outside the project area.

Major unanticipated negative outcomes were: SCFs using revenues from seed sells for accomplishment of other family objectives, such as buying cars and building houses rather than paying installments on a regular basis and SDAE reporting of project activities and results without the necessary coordination with project officers leading to conflicting information. TNS management believes that SDAE personnel turnover might have left the new mandate without complete information from the previous one, and the new mandate consistently reported inaccurate information about productivity.

**Third**, has the context for Dutch Phase II changed? If so, how has the context changed, and how has this influenced the effectiveness of Phase II? The context for Dutch Phase II has changed. At macro level, there have been price fluctuations of important inputs such as gas prices, seed prices among others that have affected negatively SCFs capacity to pay their loans to the banks, and the availability of operational capital. At micro level, productivity has increased, for instance for the year 2017, the SCFs production of certified seed exceeded the processing and purchasing capacity of SBSs. That fact prompted COPAZA to seek other large quality seed processors to buy seed produced by SCFs.

Some factors of the general context have not changed. Mozambique agricultural policies are still guided by Strategic Plan for Agricultural Development (known by its Portuguese acronym PEDSA) aiming at increasing agricultural productivity and reducing rural poverty. However, there have been price fluctuations of important inputs such as gas prices, seed prices among others that have affected negatively SCFs capacity to pay their loans to the banks, and the availability of operational capital. The decrease of prices for grain has lowered the SCFs margins, since they have paid higher prices for the seed, as reported in the 2016-2017 agricultural season. Reduced margins coupled with inability to obtain loans for operational capital, has reduced SCFs' ability to buy back and aggregate grain for larger dealers. Increased fuel prices have reduced the ability of SHFs to use mechanized services offered by SHFs.

Specifically, in accordance with project document, the context for Dutch Phase II was characterized by low agricultural productivity (constrained largely by limited access to and use of improved inputs and poor agronomic practices). Our evaluation indicates that project activities have changed the original context in the project area. Productivity has increased, for instance for the year 2017, the SCFs production of certified seed exceeded the processing and purchasing capacity of SBSs. That fact prompted COPAZA to seek other large quality seed processors to buy seed produced by SCFs. In the area of the project, the productivity is less constrained by access and use of improved inputs or poor agronomic practices. In addition, both SBS and SHFs are trying to expand its customer base for improved seed and produce. However, the financial challenges faced by the SCFs, and SHFs including SBS suggest the refinement of the business model, existing market channels, relationships with partners including banks.

In respect to the question, what real changes have been noted within project target beneficiaries? The impacts of knowledge on good practices of seed multiplication, use of mechanization and money gained from soy sales, within project target beneficiaries, are as follows: Mechanization, improved seed (inoculant), and soybean market have led to the expansion of production areas (of both SCFs and SHFs). There have been increasing requirements in quantity and quality of labor. Productivity has increased and the amount of commercialized soy has also increased. Revenues increased and purchasing power increased. SCF used some of the money to pay the debt. They purchased more inputs (mainly certified seed), SHF's produce, motorbikes, bicycles, vehicles, TV, clothing, crockery; food such as meat, fish and,

chickens. The money was also used for enlarging or building new brick/block and houses, electrical wiring assembly, and milling house improvements. However, nothing was mentioned about improvements in access to water and sanitation.

The expected changes were that SCFs/SHFs would have access to inputs (quality seed in particular), mechanized services, storage facilities and other technologies/services from COPAZA; and each SCF would create an average of 5-6 permanent jobs and approximately 0.27 FTE jobs (based on approximately 50-70 man days hired in by each SCF per hectare), increased revenues of up to approximately \$3.5M by 2018, and increase on productivity/incremental income per farmer.

SCFs (and members of COPAZA) <sup>3</sup>were asked the types of services they have been providing to SHFs. The main services listed were soil tillage and harrowing, provision of seed, as well as transport of produce. Threshing was also mentioned by two of the 5 SCFs interviewed. Usually SHFs do not purchase services for mechanized planting. According to SCFs, SHFs prefer manual planting. SCFs estimates of SHFs assisted, indicate that SHFs purchasing services are mainly men. Two SCFs reported that out of 10 and 88 SHFs, 3(30%) and 10 (11%) were women. As explained by an SCF, women ask for services on credit, and this is not attractive for service providers who prefer cash (SCFs).

Slight differences emerged during Focus Groups Interviews between participant SHFs and non-participant SHFs. The first group indicated being more engaged with soybean production than the second group, which seemed more involved with tobacco crop. Another noticeable different is that SHFs assisted by SCFs repeatedly reported participating in demo plots and field visits and SHFs not assisted did not mention any of these extension methods.

SHFs participants and non-participants reported using/demanding similar mechanized services. However, reasons for not using SCFs services were slightly different between the two groups of SHF, with non-participants referring to lack awareness of SCF as well as of technologies, and participants emphasizing low production, preference for family labor and having fields with remnants of tree trunks, which are an impediment for mechanization tillage.

SHFs participants reported demanding for threshing, transport, tillage and seed, SHFs non-participants reported same services, excluding transport. Some SHFs participants reported not accessing services from SCFs due to low production, use of family labor, fields with remnants of tree trunks and high price of services. For SHFs non-participants, they do not access services from SCFs because they have other alternatives (*parque de maquinas do FDA*, local market for seed) or they lack awareness of SCF as well as of technologies.

#### *SHFs participants by gender*

Interviews indicated men demand more for tillage services and women for threshing.  
(*n=11 women and n=12men*)

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<sup>3</sup> A common understanding is that services are provided by SCFs, who are members of COPAZA, and not provided by COPAZA as an organization. This understanding reveals a need for strengthening and increasing visibility of COPAZA as an organization that provides services.

Few women (1 out of 11) reported purchasing tillage services from SCF, others (10) reported hiring seasonal labor, because hiring a tractor is expensive for them (0,25 ha cost 1000 Mt) and their fields have remnants of tree trunks, which limits mobility of a tractor. According to women, scarcity of threshers limits the number of women using this technology. For example, in Tetete-Mahara there is only one thresher, and it was broken at the time of the final evaluation. Women indicated that they could pay for threshing services.

For men (9 out of 12) reported purchasing, from two SCFs, tillage services, transport and seed (at least once and most of the time they use own seed). Among the 9 men, 3 reported hiring threshers. Three men out of 12 consistently reported not hiring any type of mechanized services because it is expensive, compared to seasonal and family labor. As participants explained

“Mechanization is important because makes our life easier. Mechanization speeds field operations. There are differences, with mechanization, production is high. Those who do not use mechanization, have no money to pay for it...”

SHFs, also think the quantity of their produce is low, and do not require mechanized threshing.

SHFs non-participants  
(n=15 women)

Two women presented themselves as tobacco producers and cultivate  $\geq 3$ ha, approximately  $\frac{1}{4}$  ha is used to cultivate soybeans. They reported that buy soybean seed from other farmers, and do not use mechanized services partly because are not well informed of the price of services, and rely on family labor. They are also not knowledgeable of inoculant.

Another group of 13 women reported cultivating areas between  $\frac{1}{4}$  - 6ha. There were 8 women cultivating soybean. Those who do not cultivate soybean claimed no access to seed. Among women cultivating soybeans 7 reported buying seed from SCF and 1 woman reported buying seed in local markets in smaller quantities, because seed from SCF is expensive. Still in this group, 5 women reported using mechanized tillage provided by Parque de Máquinas FDA.

### **Changes within project target beneficiaries**

SCFs reported a set of changes assigned to the project. They reported increases of the size of cultivated land, increased quantity of inputs, increased number of workers and assets, improvement in education and health. The following statements illustrate changes reported,

"I increased the area to 36 ha. I bought a sower, a grid, and built a bank to sell supplies. I increased the quantities of inputs purchased (seed, herbicide and pesticide) ".

"I increased the area from 10 ha to 40 ha. I increased seasonal workers (from 50 to 100) and permanent workers (from 2 to 5) including tractor driver and helper”

“I have increased the area from 10 ha to 15ha. I now employ more seasonal workers (from 17 to 25) and permanent workers (from 6 to 10) including tractor driver and helper

"Our life has changed because we take seed on credit (this helps in terms of funding). Imagine if you had to add the value of the seed to the costs of production"



"I improved two houses for the grain mills"  
 "I built an annex, and I bought a car".  
 "I built 3 zinc houses. I bought 2 bikes, 3 motorized, 2 scales, 2 mattresses"  
 "We have no food problems (we take the farm and buy more beef and chicken)"  
 "The quality of food has improved. We have a freezer. We got meat and fish"  
 "Now the children study well and are happy. They are not worried about food. They know they're having tea at home"  
 "School attendance has improved due to diet. Improved clothing, phones for kids. Especially the child in 10<sup>th</sup> grade is being helped with the soy business. Paid school, computer and a room for my child"  
 "I was able to enroll my daughter at the Pedagogical University and my son at the driving school. TNS paid 2 years of my daughter's studies in Chimoio"  
 "We have money to buy medicines. We have transportation to go to hospital in Gurúe."

**SHFs** reported similar change, but at smaller scale, the following changes in their life attributed to the production of soybeans:

"I bought new farm (1ha)".  
 "I increased my area from 5 to 10 ha."  
 "Corn production is now for eating. We no longer sell corn to cover expenses".  
 "We use soybean money to buy inputs for horticultural production."  
 "Clothes, bicycle, cooking pans, food; motorbike, TV, electricity (NP)"  
 "Built new brick house with sheet coverage"  
 "With the soy money can support the house and pay transportation to hospital"  
 "There's no shortage of food. Oil is not lacking. The food comes from the farm."  
 "Children have uniforms and notebooks".  
 "There have been many cases of malaria. But have access to health services"

Overall SCFs were positive of project effects (seed multiplication) on their income and wellbeing. They reported that the price of soy seed is higher than that of grain and SBS has guaranteed market. But think their role as service providers is being challenged, by the low purchasing power of SHFs, and in some cases small size of cultivated area (0,5-1ha). Farmers think soy production practices are environmental friendly, for soy residues are left on soil after harvesting.

*Table 2 Perception of 5 SCFs on soybean multiplication activity and provision of services to the SHFs*

Item	Agree	Disagree
Multiplication of soybean seed is profitable.	5	-
Multiplication / seed production / soybeans helped my family to improve life.	5	-
Agronomic practices for the multiplication of soybean seed spoil the soils.	1	4
It is difficult to sell seed to the SHFs.	3	2
SHFs should buy the seed in the stands and SBS, but not with me (SCF).	2	3
My ability to provide mechanization services (tillage, harrowing, etc.) is very limited.	4	1
(N=5)		

*Table 3 Perception of 15 non participant SHFs women in 2 FG on soybean production and access to services/inputs*

Item	Agree	Disagree
Production of soybean is profitable.	1	1

Soybean seed is very expensive.	2	-
More producers were expected to produce soybeans (grain).	2	-
Agronomic practices for the production of soybean spoil the soils.	-	2
The best place to buy the seed is in the stalls / market and not with the PAC.	2	-
The mechanization services (plowing, harrowing, etc.) should continue.	2	-

(N= 2 Women FG)

Non participant SHFs women explained their perception as follows:

“We are living on soy. It provides good income”

“Soy is sells better than maize”

“Land is not being spoiled. Maize and pigeon pea grow well after soy (crop rotation)”

“Seed at the SCF is expensive”

“Mechanisation helps with tillage and threshing”

“More farmers should produce soy to increase bargaining power”

*Table 4 Perception of 11 women and 12 men participant SHFs in FG on soybean production and access to services/inputs*

Item	Agree		Disagree	
	H	M	H	M
Grain production is profitable.	1	1		
We have been able to increase the income (money) per year with the production of soybeans.	1	1		
Soybean seed is very expensive.	1	1		
More producers were expected to produce soybeans (grain).	1	1		
Agronomic practices for the production of soybean spoil the soils.			1	1
Soybean production has greatly helped my family improve their lives.	1	1		
The best place to buy the seed is in the stalls / market and not with the SCF.				1
Mechanization services (plowing, harrowing, etc.) should continue.	1	1		1

(N = 2 FG)

Participant SHFs explained their perception as follows:

“If you use good seed, you have good production”

“We have increased our purchased power thanks to soy. We bought bicycles, radio etc.”

“There is risk of ensuring quality of seed. Some seed do not germinate (low % germination)”

“Soybean fixes nitrogen. Maize after soy have good yield”

“We prefer to buy seed from SCF because he is reliable in quality. Other inputs providers mix good and bad seed. Moreover the SCF is close to us and we can approach him easily if something goes wrong with seed”

“Mechanization services (plowing, harrowing, etc.) should continue because help increase productivity.

**Fourth**, what challenges did the project beneficiaries face in applying the knowledge/new skills gained from Dutch Phase II funded projects? How did Dutch Phase II improve their ability to apply the knowledge/new skills gained from the program? In general, beneficiaries (SCFs, SHFs and COPAZA) expressed satisfaction with new knowledge gained from the project. Nevertheless, there are some challenges for SHFs, regarding the application of knowledge of line sowing, use of inoculant and use of improved seed and application of agribusiness skills by COPAZA. SHFs reported as major reasons for no adoption, non-compatibility of line sowing with sowing in ridges, lack of supply of improved seed by SCF and lack of information on where to obtain inoculant. COPAZA claimed that training in business

management took place recently and COPAZA has not yet consolidated knowledge on business management.

SCFs reported that gained knowledge from the project, in various fields including agricultural practices for seed multiplication, market information, and use of agricultural machinery, as follows,

“I learned to produce soybean seed to sell and recommended planting dates”.

“I learned about row planting, early and late maturity soybean seed varieties, recommended planting dates, agrochemicals to combat fall armyworm (*Spodoptera frugiperda*); pre-emergent herbicides and the advantage of the inoculant”.

“Before the project I did not know how to produce soybean seed and use machinery. All that, I learned from the project”.

“I learned how to save seed, how to store the equipment, and chemicals. I learned so many things from them”.

“The project helped with market information, organized meetings for information on the price of soy”.

SHFs reported that gained knowledge of agricultural practices, from SCFs, through demo plots and field days.

A group of 11 women explained, “We learned line sowing, use of inoculant and improved seed”. Despite having knowledge about these practices, 10 out of 11 women reported not using them. The reasons reported were non-compatibility of line sowing with sowing in ridges, lack of supply of improved seed by SCF and lack of information on where to obtain inoculant. Only one woman reported using an inoculant in the 2017-2018 agricultural seasons.

A group of 12 men stated, “We learned line sowing, use of inoculant and improved seed.” Half of the men (6) reported applying line sowing, other participants claimed not to sow in line because the fields were small, and they were still learning, and others mentioned that line sowing was not compatible with their mode of sowing. One participant affirmed, “I did not get used to line sowing”.

Three of the (12) participants reported having used inoculant at least once. Among these one indicated to have used inoculant the last three crop seasons, while two discontinued because in the following years the inoculant was to be paid for and not offered as in the first year.

All participants they do not use improved seed. The fact that they have to purchase seed was reported as the main reason for non-use because they lack cash, and the producer can make a trade-off between buying certified seed or inoculant to apply to the seed of the barn, as illustrated by the following explanation of a participant.

“Yes, we learned about improved seed, but I am saving my pocket. The money I would use for the seed I buy inoculant to apply to my seed from the barn.”

COPAZA reported they increased knowledge, through training sessions organized by the project, in agricultural practices for seed multiplication, machinery operations and maintenance, as well as management and gender equality in agriculture.

COPAZA also reported that training was more directed to agricultural practices than agribusiness. TNS management explained training sessions on agribusiness were offered in May, September and October of 2018. COPAZA claimed that

“agribusiness management should have been provided since the beginning of the project”. They believe that with more knowledge on agribusiness management they would have had fewer difficulties paying debt since they would have been able to do a profitable business, as one member

of COPAZA declared, “Late agribusiness training made us loose lot of money. We are now saying we have no money...if we were trained, we would do good business and mange better our debt. What we have been doing so far is not business...”

Nevertheless, COPAZA think knowledge gained was that they **needed to learn** to produce quality soybean seed. As they explained, “We now know how to use inoculant, row spacing, and pest and disease management. Other farmers (not COPAZA members) might know how to plant, but lack knowledge of pest and disease management. We also know how to plant in slopes to avoid soil erosion.”

**Fifth**, was the project period sufficient to create the anticipated change among the participants? The project period could have been longer. Small commercial farmers who own tractors and threshers need maintenance of their equipment, and such services have to be sourced outside Gurúe. It is difficult to purchase spare parts and maintenance services locally, and farmers have to travel either to Malawi or to Nampula. Interview with SDAE revealed that government extension officers were also trained by the project, and it would take more time for them to pass on the acquired knowledge to smallholder farmers. More importantly, the project period was not enough to change the mindset of some of the SCF as they have not paid back the loan from the bank, and they are afraid that their machines and equipment will be confiscated by the bank once the project ends. Most of the SCF if not all were financially capable of paying off the debt but that did not happen because some of them might have assumed that the project would pay off the debt if they did not do so, as it has happened in the past with other projects.

Qualitative evaluation indicates that there was time-based shortcomings in providing a complete transfer of marketing and business skills to SCFs and in particular governance capacity to COPAZA. A quarterly report has suggested the use of third party services to fulfil this need. In addition, our evaluation suggest that the time period was insufficient to build up sufficient financial relationships capable of sustaining the operational and capital needs of SCF, COPAZA/SBS and SHFs.

The project defined 9 indicators of improvement in governance, management, marketing and business skills: (i) Gender-sensitive Training-of-Trainer modules developed for delivery/dissemination by COPAZA; (ii) Gender-sensitive policies introduced within COPAZA leadership; (iii) COPAZA systems in governance, marketing and management developed; (iv) COPAZA Growth Strategy and business model developed; (v) # additional SCFs/SHFs accessing inputs, mechanized services, storage facilities and other technologies/services from COPAZA; (vi) #structured partnerships established with COPAZA and SHFs/SCFs; (vii) Change (%) in ha under improved seed and mechanization; (viii) Change (%) in revenue/commercial performance of COPAZA; and (ix) No. leadership positions taken up by women in COPAZA and other SCF organizations/MSMEs (at least 5%).

Under activity 2, 3 sub-activities were planned<sup>4</sup> as follows: (i) Build capacity of COPAZA leadership in management skills and support set up strategic management, governance and control systems; (ii) Develop a Growth Strategy, providing advisory to COPAZA on how to develop its business model and gender empowerment strategy; and (iii) Conduct capacity diagnostic; and provide tailored training. Link COPAZA/SCFs to promising BDS providers, where possible.

By June 2018, the project accomplished the following: *Diagnostic of COPAZA management capabilities gaps, provision of business management trainings and verification of SHFs needs and characteristics*. To assist development of COPAZA management capabilities, governance and control systems as well as to

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<sup>4</sup> TechnoServe workplan 2018

conduct capacity diagnostic, provide tailored training and link COPAZA/SCFs to promising BDS providers, the project organized 2 meetings with COPAZA to discuss organization and governance issues and conducted an assessment of SCF/COPAZA management capabilities gaps and identified short and long term solutions (local consulting firm, Miruku and future permanent manager Mr. Sumalge Issufo). A set of 7 business trainings were identified and 2 (29%) business trainings out of 7, were implemented. The remaining business trainings will cover the following subjects: Financial management part 2; Customer relations; Seed Marketing; Debt management; Logistics and Transportation. The project also conducted a survey of 120 SHF clients for identifying their characteristics and needs. The project also initiated the systematization of debt information of each SCF to assist in debt management.

*Support of SBS strategy and gender strategy. This involved work on SBS strategy and TNS support in seed production for on-sale (still in progress), gender analysis, development of gender strategy and action plan in year 1 and Training of COPAZA (and women) on gender and women's contribution to seed production and mechanisms for inclusion of women in COPAZA in year 2; establishment of partnership between COPAZA and SDAP through SBS; and implementation of SBS' strategy for seed production.*

The activities implemented until June 2018 indicate, that COPAZA still needs to improve its management, i.e. COPAZA's level of management capability, is not yet sufficient to manage the organization by themselves. As stated in the in the TECHNOSERVE / SM4ESC Phase II REPORT, Jan 1- June 30 2017

“COPAZA members have recognized that they need to improve their management, but believe that no one inside the organization has the capacity or time needed to properly manage. They believe that it would be best to bring someone from outside to support with management for the first year, get systems in place, and train the members”.

Moreover, timing of business training that would lead to improve the capacity of COPAZA in business management took place recently and the majority (5) of trainings is still ongoing, which leads to conclude that COPAZA has not yet consolidated knowledge on business management.

Looking at the number of performance indicators vis-à-vis the cumulative results (as presented in the Project Logframe) 3 out of 9 indicators present 0 or negative results. Two indicators on gender policy and number of women leaders in COPAZA have 0 results meaning that there was no implementation of gender strategy and no inclusion of women in COPAZA. One indicator on change in COPAZA revenue presents negative result of -22%. The remaining 6 indicators have positive results. This indicates (approximately) 66% achievement of expected results.

Our evaluation indicates that strategic planning approach adopted by the project, and the proximity of project managers, located at district level, to the beneficiaries, allowed rapid identification of key aspects for improvement and appropriate solutions.

The focus group interview with COPAZA brought to attention the need of improvement of communication between COPAZA and (SDAP) through SBS, on information of criteria used for selecting seed multipliers among COPAZA members, payment of seed, functioning for processing machine, % of material rejected during seed processing and revolving fund. As COPAZA expressed,

“We acquired machinery to multiply seed and assist smallholder famers with soil preparation...We have to multiply and sell seed every season in order to be able to pay the debt, but only few members sell seed every season. In 2016, the majority failed to sell seed to SBS because it was C3,

after SBS instructed us to multiply seed C2. We followed all the instruction and carried costs for seed multiplication ...but they did not accept our seed”.

Regarding this, TNS-management explained that several factors were involved “SBS had low liquidity during the 16/17 season (it happened in 2016/17 and not 2015/16). Because of that, SBS decided not to buy more seed. However, in the 17/18 season the situation was reverted and SBS managed to buy the whole seed again”.

As COPAZA also claimed,

“When we formed the joint venture COPAZA-SBS was to have guaranteed market. But now we realize we are producing for SBS. We wait 7-8 months for processing and payment. They first pay 40% for the seed and they deduct the value of installment from the remaining 60% without previous information. We are also not sure of the quantity that is rejected during processing. People hired for processing are not trained for the job and the supervision is not rigorous. We use to send seed to Nampula for processing and never had large quantities (as 24%) of rejected material. At SBS processing machine are not well calibrated!”

However, TNS explained “late payment of seed is related to cash flow problem of SBS that. TNS tried to support and even informed SDAP’s shareholders. The situation is improving but not fully solved. SBS never paid installments. The money was always deposited on the farmer’s bank account. What did happen was that once the money entered the farmer’s account, sometimes if the payment of the installment was delayed the bank captivated the money. There must have misunderstanding from the farmers.”

Regarding the rejected material, TNS explained sometimes farmers exhibit opportunistic behavior “we have proof that some farmers included waste in the bags to increase the weight and therefore, their revenue. This is a common practice in several seed businesses where the seed comes from out growers. However, the farmers also have a point in the sense that the machines screens were calibrated in a way that made the seed that was slightly different not approved. Therefore, the farmers can say that the quality requirements from SBS were questionable”.

On the other hand, SBS suggested that rejection of 15-24% of seed is expected given the calibration of the processing machine. In addition, late payment of seed is associated with the time needed for SBS to process and sell seed, as explained in progress report 30 June 2018

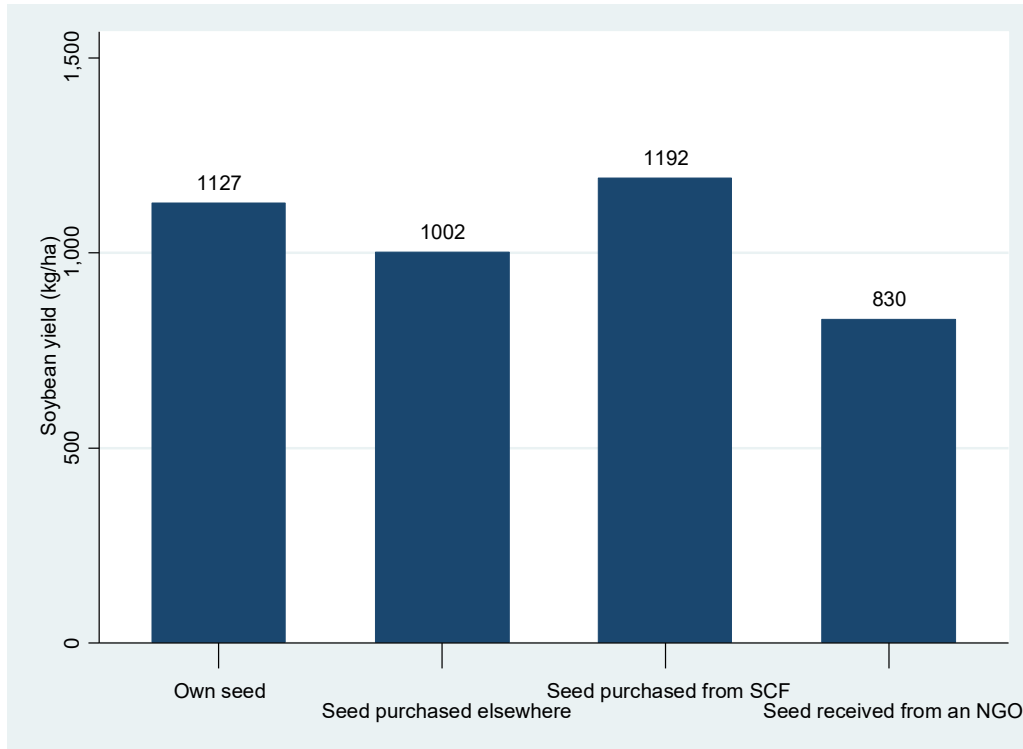
“Commercial size seed sales require a large amount of liquid capital. This liquid capital is necessary to pay upfront for seed and be able to sustain operation until costs are recuperated at point of sale months later. At the time of purchasing the seed in May, SBS was only able to pay the SCFs 40% with the remaining 60% to come once SBS makes the final sale which is expected to take place between November 2018 and January 2019”.

The apparent misunderstands presented above indicate the need of improvement in planned communication, to improve communication between COPAZA and SBS. In addition, whenever possible farmers should be allowed to witness the processing of their seed to avoid misunderstandings on the quantity of seed/material delivered.

The **sixth** question covered in this section was whether or not the program delivered its intended outcomes. In accordance with theory of change, the expected outcome of the project was increased productivity and profitability of smallholder farmers in northern Mozambique. Increased productivity would stem from better access to improved seeds and mechanization services. Figure 4 shows that the use of improved seeds from SCF increased productivity levels compared to seeds from other sources.

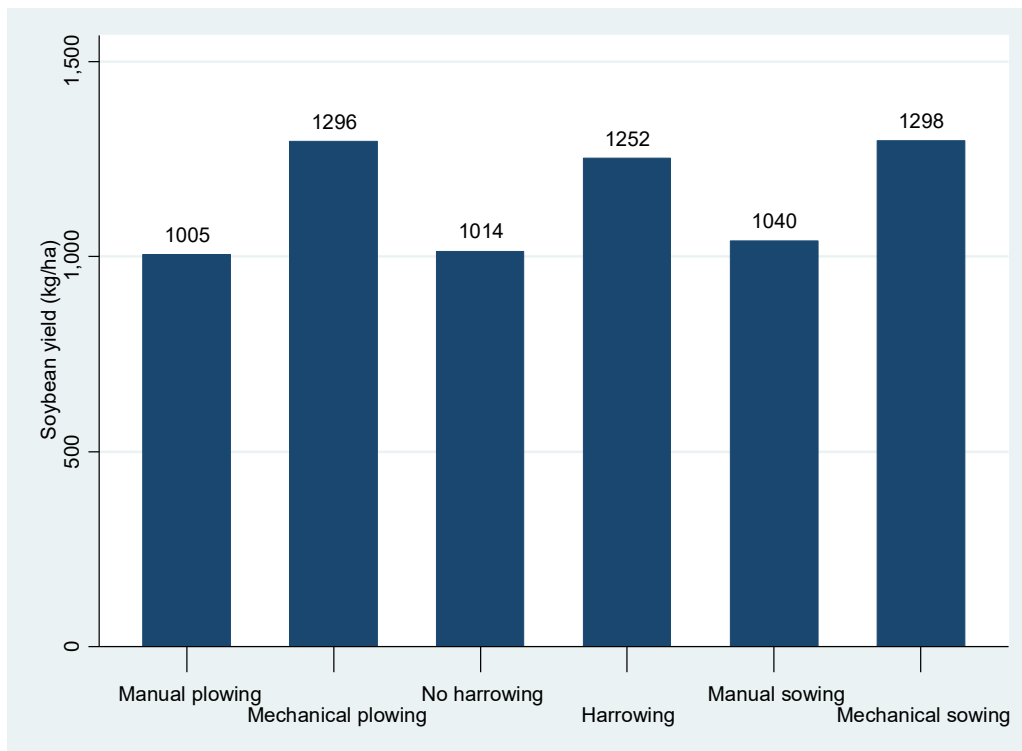
Furthermore, the use of recycled seed (most likely from SCF) also increased productivity levels. NGOs and other institutions that distribute seeds to farmers should acquire them from SCF.

Figure 4 Average smallholder farmers' soybean yields by seed type (kg/ha)



While access to mechanization services may have resulted in increased productivity levels, it is more difficult to attribute its impact to the Seed Multiplication Program because many others were also providing similar services. This includes tractor hiring services from SDAE, and farmers who acquired tractor and other machinery through IDRC/AGRA project, and SUSTENTA. Nevertheless, the results from the smallholder farmer survey conducted by TechnoServe show that soybean productivity levels are higher among those who used mechanization services (Figure 5).

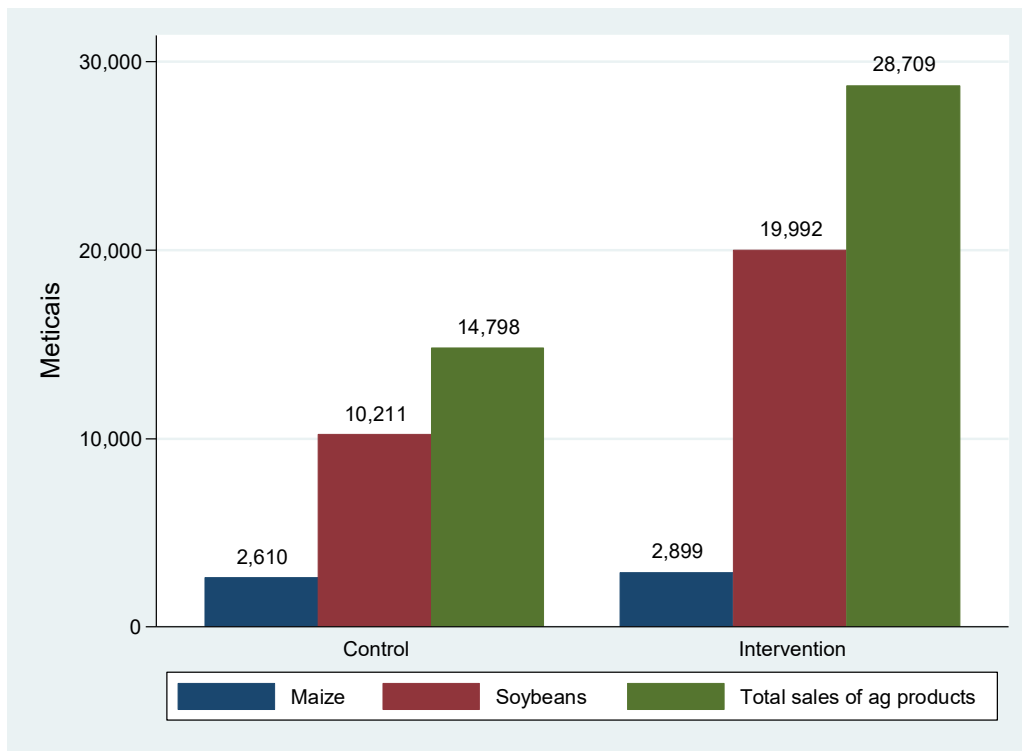
Figure 5 Average smallholder farmers' soybean yields by mechanization service used



Increased profitability stems from increased sales of various agricultural commodities, including soybeans. Smallholder farmers in the intervention area, i.e., under the influence of small commercial farmers, were able to double their sales of soybeans and overall sales compared to the control group (Figure 6). Increased sales were observed for all 20 commodities included in the survey, except sesame. However, only 20 farmers sold sesame, which represents less than 2% of the total number of smallholder farmers that were sampled.



Figure 6 Sales of agricultural commodities by type of smallholder farmer (Meticais)



In short, the results discussed above showed that the existing SCFs were well capacitated to scale up SHF access to seed and services, and the market linkages established resulted in higher sales.

### 4.3 Efficiency

The discussion in this section is guided by three questions. **First question**, to what extent were program resources/inputs (funds, expertise, time, human resources) economically converted into program outputs? How does this compare to the efficiency and cost-effectiveness of other similar capacity building and market development efforts?

The main outcomes of the project were the following:

a) Existing SCF network capacitated to scale up SHF access to seed and key agribusiness services, in Zambézia region. This was supposed to be achieved by the support provided to COPAZA to deliver technical assistance to SCFs and SHFs in agronomy and advanced business skills; and to build capacity of COPAZA in governance, management, and marketing skills. TNS was indeed able to deliver technical assistance in agronomy, and such assistance was well-received, which translated into the adoption of improved practices and agricultural technologies, leading to area expansion and agricultural growth. In terms of management and business skills, both SCFs and SHFs are still weak, as demonstrated by their current debt status with the commercial bank, and lack of saving to support fuel and maintenance costs at the beginning of the agricultural season, which is usually before receiving seed payments from SBS.

b) Market linkages facilitated between SCFs, SHFs and key market players, including agribusiness partners, financial institutions and input suppliers. SCFs sell soybean grain to many buyers, such as large

buyers that travel to Gurúe; they also travel and sell soybean grain in Malawi; Bangladesh traders that come to the communities and buy soybean grains. TNS facilitated partnerships between SCFs and commercial banks to access credit, and TNS also links SCFs to input suppliers such as AgriFocus to purchase the inoculant.

c) Development of evidence base for benefits of SCF model. The M&E system developed by TechnoServe is strong. A detailed Excel dashboard was developed to facilitate information access. Most of the programs or projects in Mozambique usually collect data and store them in advanced spreadsheets such as SPSS and Stata, but the ordinary staff do not have access to the information contained in the data because managing those spreadsheets require special skills with are usually not available. By creating an Excel dashboard with pivot tables and dynamic graphs, TNS made the information readily available almost to everybody within the project.

TNS database can be used to demonstrate the benefits of the investment that was done in productive technologies to SCFs. This information is available, and the results show increased acreage, increased use of agricultural technologies and practices, and increased productivity. The existing database also facilitates knowledge sharing with donors, private sector and other key stakeholders.

**Second question**, how was the status of the relations between EKN, TechnoServe, and other Program beneficiaries and stakeholders? How were the challenges addressed? There were good working relations between EKN, TechnoServe, and other Program beneficiaries and stakeholders. TechnoServe worked closely with EKN and there was mutual understanding and agreement on expected project, impact, outcome, logic of the project, and use of common approach to gender integration and environmental sustainability.

Interviews with program management, beneficiaries and other stakeholders indicated that since the outset of the Seed Multiplier Programme, TechnoServe worked closely with EKN, receiving critical feedback and guidance, which created the necessary foundation for mutual understanding and agreement on expected project, impact, outcome, logic of the project, and use of common approach to gender integration and environmental sustainability.

The SCF model represented a solid platform, for the EKN to impact the financial benefits to the rural communities and address challenges in the broader agricultural market system, other geographies and crops. TechnoServe strived for rigorous oversight, management and implementation of the project to ensure efficient and effective delivery of results, ensuring compliance with standard, regulation and following organizational operating procedures. TechnoServe and EKN put in place relationship mechanisms, through the cheat sheet in excel. The cheat sheet provided for structured information content, major benchmarks, project activity scheduling, and periodic information exchange and sharing with SCFs, agricultural players and other stakeholders that included: quarterly reports about all SCFs process, capturing and demonstrating the economic benefit of investment in productive technologies; payment schedule; program audits; monitoring & evaluation; disposition of assets; modifications; best practice tools and findings; and project management information (real time financial data, financial reports, cost and financing schedules, budget updates and forecasts).

The mechanisms described above were important for collaboration, build-up of trust among project stakeholders, and served as a relationship platform to sustain project implementation. However, as explained by program management there were some deadlines that were not met due to conflicting

agenda between donors' agenda and those of TNS and beneficiaries; and e-mails from TNS-Maputo requiring urgent response.

Regarding the relationship with program beneficiaries and stakeholders, TechnoServe direct approach to technical assistance, organizing visits to the site, conducting assessments, making recommendations, providing trainings, finding innovative solutions to the debt issue, created bonds with SCFs and SHF, who reported appreciation of the TNS presence in the field. SDAE reported collaboration with TNS including participation of public extensionists in training sessions organized by TNS

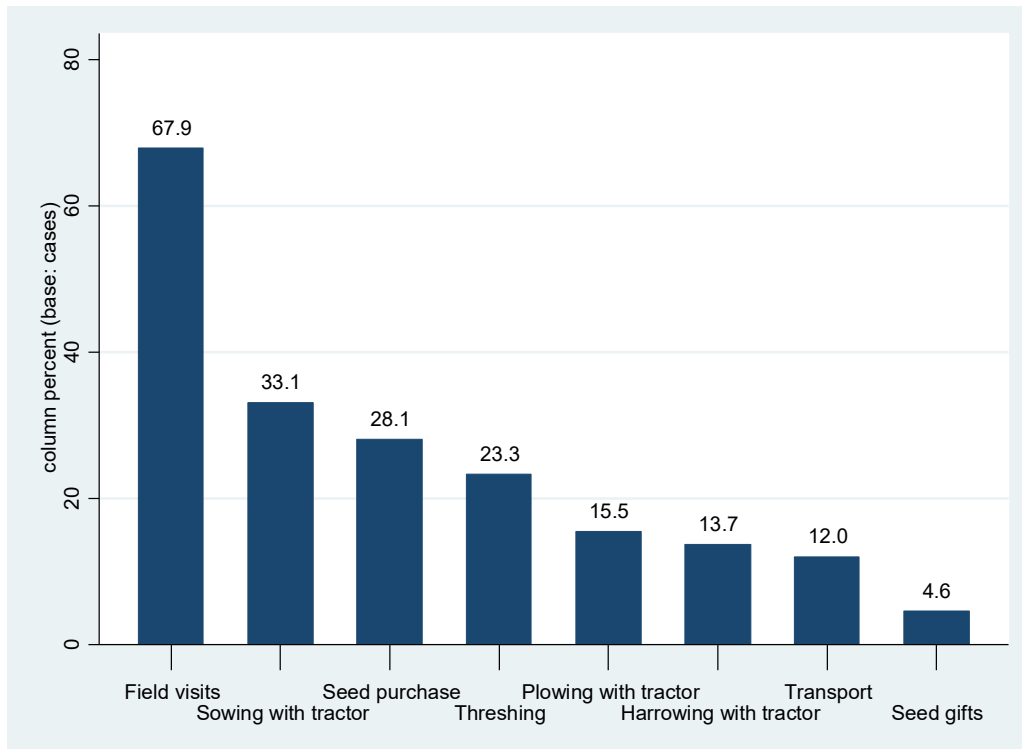
**Third question**, what main operational, implementation, and management factors facilitated or impeded the efficiency of the program in achieving the intended objectives, results, and impacts? The main factors that facilitated the efficiency of the program in achieving the intended objectives, results, and impacts, were as follows: (i) the presence of TechnoServe team in the field to provide direct a timely technical assistance (in agronomy in particular); (ii) training sessions in agronomy, agribusiness, gender and CSA; (iii) monitoring performance of independent use of demonstration plots by SCFs and organization of field days; (iv) implementation of contracts, such as seed multiplication contracts between COPAZA and SCF's members, and the contract between COPAZA and SBS to buy SCFs quality seed; and (v) strengthening of TechnoServe –procurement, M&E, and agribusiness teams through hiring new staff.

The main factors that impeded the efficiency of the program in achieving the intended objectives, results, and impacts, were as follows: (i) lack of cash to purchase seed and inoculant; (ii) lack of evidence of soil requirements (analysis) for use of inoculant especially for soils in which inoculant have been applied recently; (iii) distribution of seed free of charge; (iv) lack of working capital for SBS to make prompt payment or at least reduce payment waiting time; (v) SCFs and SHFs' low level of (modern) business management competence (e.g. forecasting); (vi) lack of strong message on the importance of prioritizing investment objectives among multiple objectives of family enterprise and lack of intensive monitoring of debt management by the banks; (vii) lack of savings' culture among SCF and seed distribution by other stakeholders; and (viii) death or the inability by some SCFs to continue in the business.

In respect to the output Capacitating SCFs to scale up SHF access to seed & services, monitoring performance of independent use of demonstration plots by SCFs and organization of field days, were important factors to facilitate the SCFs and SHFs to gain the agricultural knowledge they needed to learn how to produce quality soybean seed; how to use inoculant, row spacing, and pest and disease management.

Constant extension services provided by TechnoServe to smallholder farmers as well as a reasonably strong monitoring and evaluation system enabled TechnoServe to build more trust among smallholder and commercial farmers, leading to the adoption of improved agricultural practices and technologies. Continuous contact with the communities resulted in frequent field visits. About 68% of smallholder farmers attended field visits (Figure 7), and focus group discussions with smallholder farmers revealed that field visits were very elucidative of the benefits of the adoption of improved agricultural practices and technologies.

Figure 4 Type of support received by smallholder farmers from commercial farmers (%)



While demo plots used pesticides, inoculant, and chemical fertilizers, very few smallholder farmers adopted them. Seed multipliers used inoculant for seed production, but seldom for soybean grain production. The project was unsuccessful in convincing smallholder farmers to use inoculant for grain production. Interviews with TNS field staff indicated that both (SCFs and SHFs) farmers are not willing to buy inoculant. While financial factors influence adoption of agricultural technologies, soil requirements (analysis) should also be considered, especially for soils in which inoculant have been applied recently. There were also problems with SBS payment of the seed. All SCF interviewed, and COPAZA regretted that payment of their seed takes up to seven months.

Moreover, SCFs and SHFs' low level of (modern) business management competence (e.g. forecasting), negatively impacted the fast build-up of a business mind set by SCFs and SHFs, and the necessary understanding to manage a profit oriented operation. This resulted in SHFs' poor decision-making in respect to purchase and use of improved seed, and inoculant.

Concerning the outcome of establishing marketing linkages to SCFs and SHFs, the major facilitating factor was the implementation of contracts, such as seed multiplication contracts between COPAZA and SCF's members, and the contract between COPAZA and SBS to buy SCFs quality seed. The contracts were instrumental to for specifying the responsibilities and roles of SCFs, SBS, COPAZA. In accordance to the TNS management, the development of relationships with inputs suppliers and warehousing service providers were facilitated, by strengthening of procurement team.

Other factors that impeded the efficiency of the program were lack of savings' culture among SCF and seed distribution by other stakeholders. A significant number of SCF has not been able to clear their debt with the bank, and they are not worried that the Bank will seize their equipment. Development projects also operating in the area sometimes distribute seeds free of charge to smallholder farmers, which competes, with the seed from SCF.

#### 4.4 Impact

Three questions guide the discussion presented here. **First**, how can COPAZA be assisted to develop its business and management capacity to drive the development of a commercial seed market; and develop a viable business model for the SCF network that can exist after the life of the project: what was planned and what had been achieved?

The objective of COPAZA was to help smallholder farmers in plowing, harrowing, threshing, and seed production. Fuel prices at the beginning of the project were reasonably low but right now the prices are high and the smallholder farmers reduced the demand for the services that are provided. Fuel prices increased from 50 meticaís/liter to 72 meticaís/liter or 75 meticaís/liter depending on the location, Ruace/Lioma or Magige. Smallholder farmers are reducing the use of threshers and tractors because fuel prices are high, and they cannot pay up front for the services provided. Plowing one hectare costs about 4,000 Meticaís. When plowing services are required, farmers have long sold their surpluses.

There have been a few other changes as well. Farmers now know what the best seed is, even the names of soybean varieties; they now know how to distinguish between seeds and grains. Now that they know where to go get the tractors, they can expand the land, and many smallholder farmers have succeeded in doing so. The main objective of the project was to multiply the seed and have the money to pay back the bank loan, but many COPAZA members are still indebted.

Initially all COPAZA members were supposed to multiply seeds, but in some years only a few were chosen to multiply seeds. According to interviewed farmers, SBS often does not have money to buy all the seed produced, and COPAZA says that in some years they bought seeds as grain, which has a cheaper price. Only those who received C1 seed (five farmers) sold the seeds. The other 24 farmers multiplied C2 and this resulted in C3 seed, which is no longer, seed but grain. However, TNS assured that all farmers that complied with the activities requested both by TNS and SBS kept being included for the seed multiplication. This is 27 of the initial 33 small commercial farmers, and records exist of the number of SCFs that SBS bought certified seed from.

However, COPAZA members in some years rented their tractors to Portucel, and they should have been able to pay off the debt with revenues from Portucel. As shown in Figure 7, COPAZA members provide mechanization services to about one-third of all smallholder farmers, and hence receive payment for those services. Both SCF and SHF need to strengthen their savings habits. That way SCF would easily pay off their debt, and could have enough cash to provide mechanization services on credit to some farmers. On the other hand, if SHF were able to save money, they would have enough cash to pay for tractor services on cash at the beginning of the agricultural season.

The **second** question relates to whether the existing SCFs that make up COPAZA will benefit from continued support to advance business and management capacity to reap higher rewards in terms of seed sales and deliver services effectively to women and men smallholder farmers. Critical to this point is the relationship between COPAZA and SBS. Farmers produce the seed, take it to SBS, but then SBS captivate the payment, and interest rates in the bank increased, apparently as a result of lack of

payment. Farmers have to pay twice a year but they only sell once, and payment of seeds from SBS to SCF is delayed. Seed processing takes about six or seven months, and this period SCF have to wait for those seven or eight months. So farmers are hit twice: farmers said sometimes they are paid as grain; the portion that is approved as seed, it takes 8 months to be processed. When SBS delays payment, the bank increases the interest rate and overdue taxes. When payments are done, sometimes SBS withholds the money to pay the bank, but this was not previously agreed. There is lack of clear information about how much farmers are entitled to receive from SBS, how much goes to bank loan repayment, and interest rate, etc. Sometimes at SBS when farmers provide them with seeds, the seed approved plus the grain rejected is smaller than the quantity provided by farmers.

The **third** question is related to whether at least 3,793 smallholder farmers will benefit from access to critical inputs, services, and infrastructure to increase their own productivity. The project has achieved high percentage (88.53%) of expected target (3,793) SHFs were benefiting from access to critical inputs, services, and infrastructure to increase their own productivity.

The projected anticipated approximately 3,793 smallholder farmers receiving support from a network of 33 SCFs. Results in the performance matrix indicated that for the agricultural season 2017-18, the project has achieved high percentage (88.53%) of expected target (3,793 SHFs), i.e. 3,358 SHF were benefiting from access to critical inputs, services, and infrastructure to increase their own productivity. This number is slightly below the target 3,793 SHFs. This result may be explained by the reduction of 33 SCFs to 27 SCFs due to death or inability to continue in the business, and other factors that impeded the efficiency of the program in achieving the intended objectives (as mentioned above) might have contributed for this result.

#### **4.5 Sustainability**

The objective of this section is eleven-fold. Five SCFs were randomly selected and both the farmer and his spouse were interviewed. Most of them did not keep a diary of financial statements, and they told us that TechnoServe already have the financial information that we needed to assess the financial performance. As such, we resort to TechnoServe database of SCFs.

The **first** question relates to the financial performance impact of SCFs. This is assessed through the following ratios: i) short-term solvency, which is the ability of SCFs to meet its short-term obligations; ii) activity, which is the ability of SCFs to control its investments in assets; iii) financial leverage, the extent to which a firm relies on debt financing; iv) profitability, the extent to which a firm is profitable; and v) value, which is the value of the firm.

Starting with the short-term solvency, also known as liquidity, the ratio is calculated by dividing SCFs cash flow (net income + amortization) by its total debt obligation, both short and long-term. As a rule of thumb, a solvency ratio higher than 20% is considered to be financial sound<sup>5</sup>.

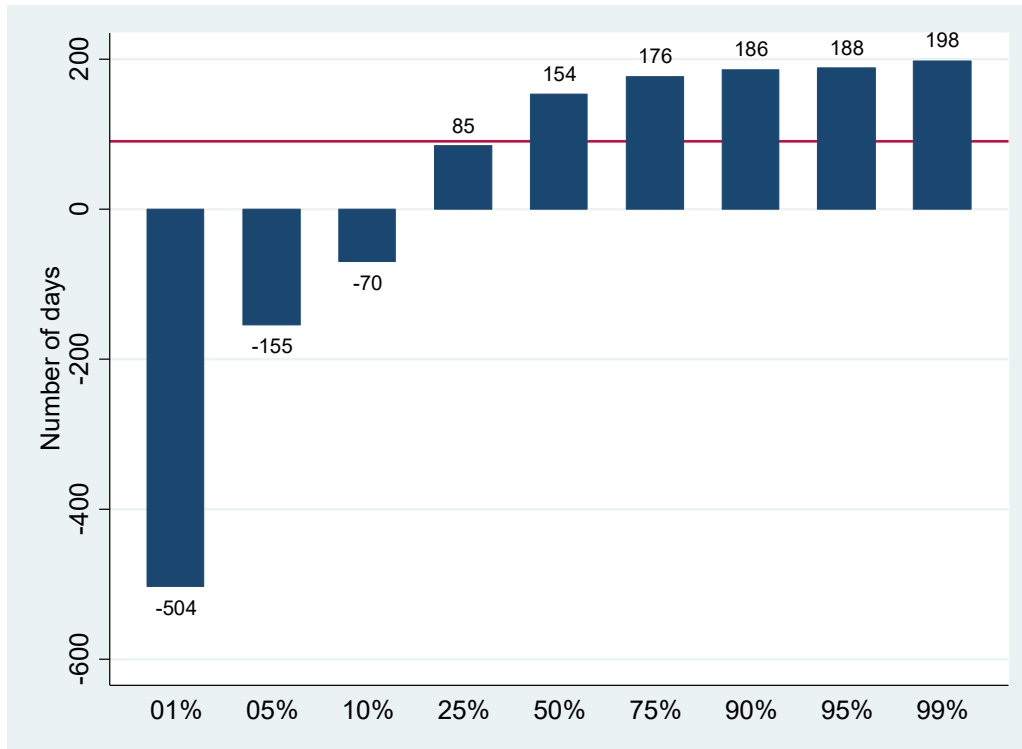
Activity ratio indicates how much a company has invested in a particular type of asset or group of assets, and it is commonly expressed as the average collection period ratio and inventory turnover ratio. The average collection rate indicates the average length of time in days the SCF must wait before it receives payment from customers such as SBS. Data show that in 2017 SCFs on average could wait for about 91 days (the red line shown in the Figure below). The median value was 154, which means that at least half

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<sup>5</sup> Detailed debt data, both short and long-term debt are not available, and hence this ratio will not be covered.

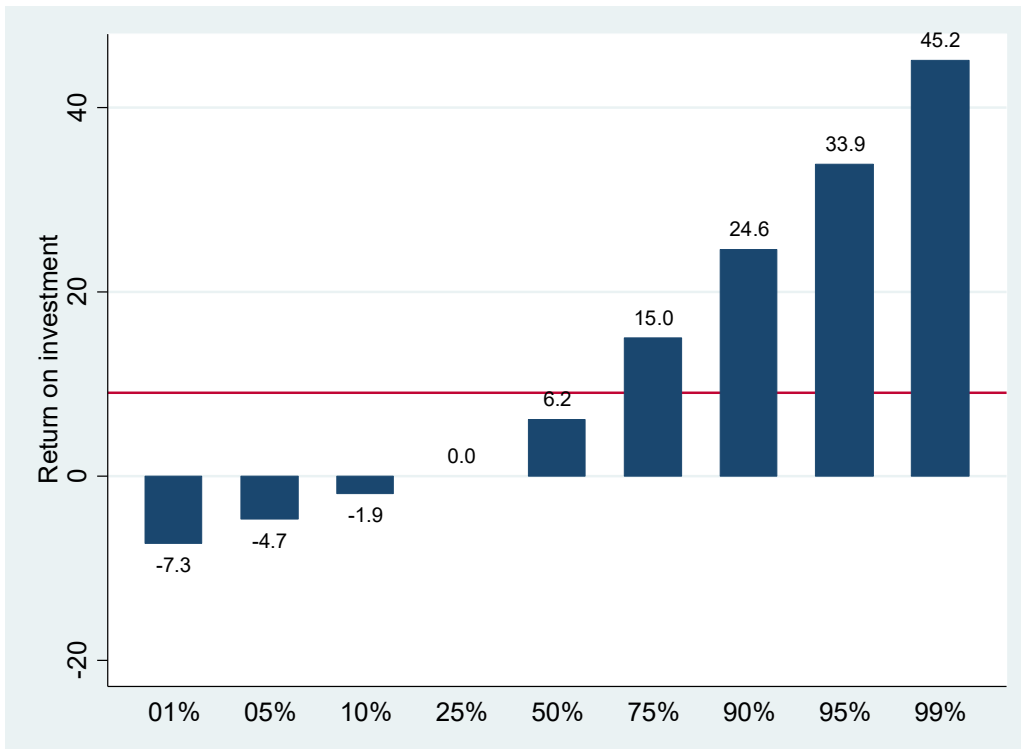
of the SCFs could wait about five months before receiving payment. However, at least 10% of SCF required immediate payments.

Figure 5 Average collection rate in days by percentile



The inventory turnover ratio provides an indication on whether a company has excessive or inadequate goods in inventory. It requires the inventory of all goods owned by SCFs. Since such information is not readily available, the inventory turnover ratio is not covered in this report. Turning to financial leverage, this ratio refers to the use of different financial instruments or borrowed capital in order to increase SCF's potential return on investment. It indicates the extent of reliance of SCF's business over the available debt, as is calculated as the total debt, both short and long-term debt, divided by shareholder's equity. The results of return on investment are shown in the Figure below. At least 10% of SCFs showed negative returns on investment in 2017, and up to one-quarter of SCFs had either negative or zero returns. On average the rate of return on investment is about 9 (the red line) with a median of 6.2. There are SCFs with much higher return, the highest being 45.2. The higher the return on investment the higher will be the investment's gains favorably to its cost.

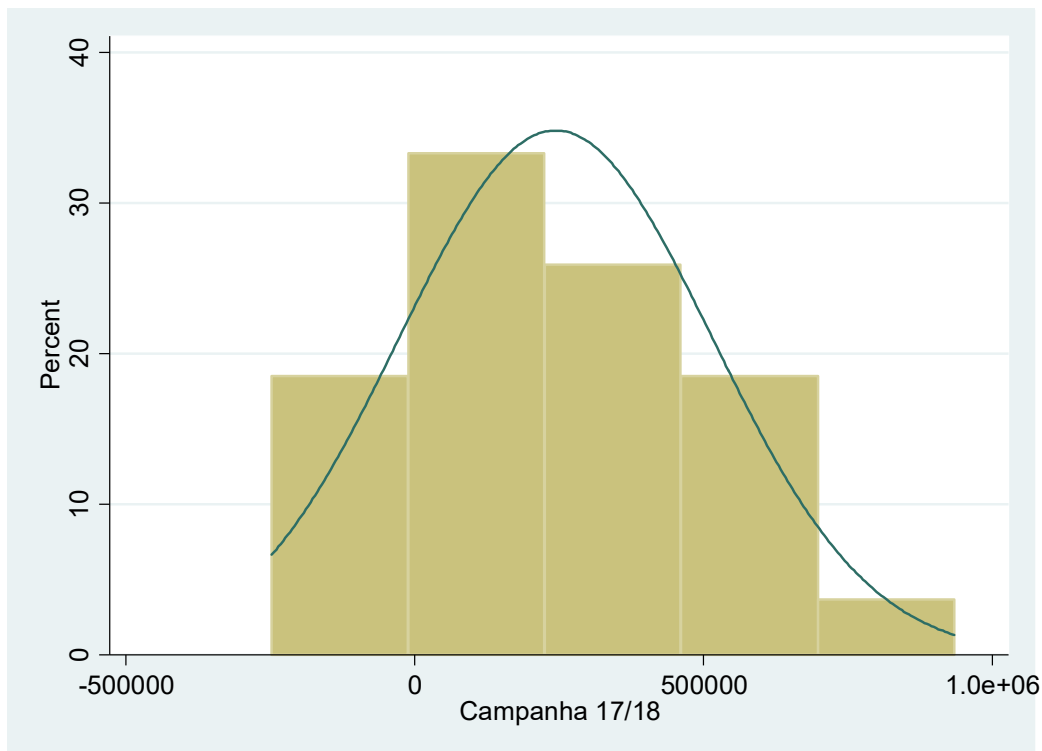
Figure 6 Return on investment by percentile



For profitability analysis, we resort to gross margins analysis. The histogram presented below shows net returns by SCFs. A little more than 20% of SCFs have reportedly negative net returns. The average net return was about 244 thousand Meticaís, with a median of 213 thousand Meticaís.



Figure 7 Net returns in Meticals



Lastly, the value of the firm is basically the sum of the firm's equity and the value of the debt. It requires data that are not available, and hence it was not covered in the report.

The **second** question pertains to developing a seed agribusiness strategy for SCFs. This can be summarized into six steps: i) selection of small commercial farmers to breed the seed; ii) main sources of revenues; iii) intended customer base; iv) details on financing; v) technical support; and vi) M&E system.

The selection of SCF to breed the seed is done to ensure that all farmers will comply with the required activities. The selection criteria should be made public and emphasized as many times as possible to avoid farmers from complaining that they were left out and not given the same opportunity to breed seeds. It should also be highlighted that the selection criteria are complementary to each other, and failure to comply with one aspect basically disqualifies the farmer as a seed breeder. While some attention should be paid to include women and youth as project beneficiaries, the selection criteria described in the next paragraph should be the first step.

The area chosen for seed multiplication must be approved by the project technician and it should be isolated from other crops. Farmers should use inoculant and comply with the recommended sowing date, which has a very narrow window. Farmers should do line sowing and monoculture. An effective and timely thinning and cutting, as well as roguing should also be on farmers' to-do-list. The harvest should be done in good time, and post-harvest measures put in place to avoid seed mixtures. Finally, farmers should pay particular attention to threshing, cleaning, transportation, bagging, and storage.

The main sources of income/revenue should be assessed carefully, and disaggregated by household typology (e.g., female-headed household; youth; etc.). One of the complaints raised by interviewed SCFs

is the delay in receiving payment from SBS, and because of the delay, they supposedly did not have money to purchase fuel and do maintenance of their equipment. However, besides seed sales to SBS, many SCFs have other sources of revenues. These include crop sales (soybean grain and other crops), and machine hiring. It costs about 4,000 Meticaís to plow 1 hectare. In addition to plowing, SCF also do threshing, harrowing, tractor rental services to Portucel, sowing, and transport. While there has been some delays in SBS payment, most of the SCFs have other income sources, and payment from SBS should be considered as savings, and used for debt repayment, a topic discussed later.

The intended customer base of seed multipliers included smallholder farmers, traders, SBS, and other seed companies such as Companhia do Zembe, Phoenix, and others. Project staff should forecast the amount of seed that will be demanded from each of the customers prior to seed production to allow for a better planning of the total area allocated for seed multiplication. Forecasts will be based on historical data, both national and international. National data include both project and data from national surveys conducted by the Ministry of Agriculture and Food Security. Forecast analysis should also include price information, as this seems to be one of the determinants of the decision to plant soybeans. Discussion with SBS and seed companies should be conducted in each season to estimate their seed stocks, and use this information to predict the amount of extra seed that will be required.

Seed multipliers own machinery acquired through bank loans. Details about financing to acquire tractors and agricultural implements are important. In order to minimize loan default the business model should include mechanisms to make the banks increase the frequency of field/direct visits/contact to SCFs. The commercial banks should be aware of the family enterprise objectives towards investment. Better coordination between the commercial banks, SBS and other seed companies should be envisaged so that payments from these stakeholders to seed breeders is done through bank transfers to allow to bank for direct deduction of the principal. Such system should be set up from the beginning and monitored closely, and would very likely result in much lower default rates. SCFs would also perceive bank involvement as “normal” and avoid misunderstandings that when the bank gets closer to the SCFs and builds a better relationship with SCFs, this does not entail that the bank wants to retrieve the assets in case of default, but the intention is to avoid loan default in the first place.

A successful business model requires a strong technical support, which includes training on both technical agriculture-related issues and financial counseling. The training needs to be extensive and include more detailed discussions about the understanding of loans, payments, finances, and budgets. Such training is extensive in nature and complex, and requires more than a training series. It requires better coordination with the commercial bank to assist with some of the training, the IIAM in general and USEBA in particular (the Basic Seed Unit at IIAM). Technical support should also include forecast of quantity of seed demanded in each season, as discussed earlier. On the agronomic side, some effort is necessary to entice farmers to adopt the improved technologies in their own fields, not only for seed production. For example, while the demo plots and seed multiplication plots use inoculant, chemical fertilizers, and pesticides, those inputs are rarely used in agricultural production other than seed production even though SCFs are already aware of the benefits. The overarching objective is to produce good quality seeds, but the project should use this to introduce improved technologies in their agricultural systems, and the overall returns would be higher.

Lastly, it is of paramount importance to have a strong monitoring and evaluation system in place. Depending on the level of detail required by the project, project staff should include at least one person

with strong quantitative and qualitative skills to document project activities, progress, farmers' revenues, among others.

**Third question**, what is the environmental impact of the SCF model vs traditional farming practices? Is the SCF model sustainable in terms of a climate smart perspective? Does the model have the potential for expansion, and what impact could the expansion have on the environment? The main environmental impact of the SCF model is its contribution to resilience of farming systems and mitigation actions. Interviews with SCFs and field direct observations indicated that among the CSA practices foreseen by the project, farmers are using improved seeds, and some farmers use crop diversification, crop rotation (soybean-maize), controlled use of herbicides and equipment for controlled mechanization such as rippers. Improved seeds and crop diversification increase resilience of farming system to the effects of climate change. Controlled use of herbicides and controlled mechanization are mitigation actions aimed at reducing the potential negative effects of herbicides and mechanization on the environment (plants and soil).

By June 2018 the project implemented training activities and developed CSA strategy and action plan, awareness rising on CSA. TNS has been promoting CSA techniques through trainings and discussions held during field days. Interviews with SCFs and direct observations in farmers' field indicated that farmers are aware of CSA practices foreseen by the project but there is limited usage of them.

The basic requirement for expansion of the model is to increase SCFs and SHFs' CSA awareness and adoption rate, and monitoring of implementation of CSA practices in order to produce evidence of CSA efficacy for strengthening the resilience of farming systems to climate change effects. The continued usage of demoplots and field days to demonstrate CSA techniques and its benefits by SCFs to SHFs is crucial for increasing the awareness. FFS extension methodology can be adapted to promote adoption of CSA practices. The continued productivity and profitability of the SCFs and SHFs is a major factor for increased adoption of CSA practices, these require the strengthening of COPAZA governance and capacity to deliver services, strengthening of financial relationships with banks to provide resources to SHFs to pay for seed and services, and continuous expansion of the customer base to absorb the impact of price change. The adoption of SCF-model combined with CSA practices has a potential of contributing to environmental sustainability and increased resilience of farming systems.

**Fourth**, to what extent were local implementing partners able to take on the implementation of parts or all of project interventions? To a large extent local implementing partners were able to take on the implementation of parts of project interventions. **SCFs** were able to implement the seed multiplication function assigned to them by the project. Data from TNS progress reports indicate that 26 SCFs out of 32 were eligible for seed certification. SCFs expanded their land, expanded the seed they produced, and sold to SBS for further processing. SCFs provided mechanized services, such as transportation, threshers, and mechanized tillage to SHFs. SCFs also served as intermediaries between SHFs and large buyers of soy grain produced by SHFs. SCF bought back the grain from SHFs for resale to large commercial farmers or other buyers.

**SHFs** performed their role as direct beneficiaries of SCFs' tillage services and of knowledge on good agricultural practices through demoplots and field days. In accordance with performance matrix 3,358 SHFs used improved seed for soy, butterbean, pigeon peas and sesame and other key inputs, receive advice and purchase services (mechanized services, transportation) from SCF in order to produce grain in their fields.

In accordance with performance results matrix<sup>6</sup> COPAZA has delivered satisfactorily on parts of project assigned to it. COPAZA implemented the following parts of the projects: COPAZA facilitated access to a total of 4,672 SCFs and SHFs to inputs, threshing services, rental of machines; delivered 12 courses to the SCF and SHFs in subjects that included agriculture, CSA and accounting; COPAZA members received a total of 4 courses in systems governance, marketing, management, retail, sales management and financial; COPAZA has structured partnerships with SDAP through SBS; COPAZA has developed SBS's strategy for seed production (growth strategy and business model); COPAZA fell short in implementing gender policies, no gender policies were adopted, no woman were assigned in leadership positions despite receiving training on gender.

TNS 2018 semiannual report indicates that COPAZA has been taking into account the marketing trends, growth of seed production volume, to make change in SCF produced seed buyers' portfolio. COPAZA has been able to solve problematic situations, for instance it is reported that when SBS did not function COPAZA bought back 189 T of seed to sell to SHFs. COPAZA members seed production has been growing reaching 360 T, which is well above SBS processing capacity.

Regarding **input suppliers**, during the three agricultural seasons, COPAZA has established strong relationships with suppliers of foundation seed, covering several seed varieties. TNS 2018 semi-annual report indicates that input suppliers, such as, IITA, Phoenix, and Agromoz, that across the three agricultural seasons introduced a total of six seed varieties were linked to the SCFs to facilitate training through demoplots. IITA periodically supplied foundation seed quantities to refresh the genetic material for soybean, pigeon peas and sesame. In the crop season 16/17, ITTA supplied 3 varieties (52% of total production) and Seed Co/Zimbabwe supplied 2 varieties (48% of total production). AgriFocus supplied inoculant and some pesticides/sprayers usage.

**Banks** Millennium BIM, BCI, and GAPI were the main financial partners. To a great extent banks contributed to the project with capital investments for buying equipment, but SCF's weak management of their loans, constrained participation of banks on working capital. Through MOU signed with TechnoServe, the banks have offered to the SCFs a combination of subsidized capital investments, and capacity building to facilitate SCFs to develop business plans and loan applications.

Partners also, included provincial laboratories under National Seed Authority that oversee compliance of **Seed certification** guidelines and grant certification to seed produced by seed multipliers within the project. The inspectors of the Namacurra Seed Laboratory completed 4 visits in the 17/18 campaign, and certify 26 SCFs.

A follow-up question would be how have capacities been strengthened at the individual and organizational level to run some or all of project interventions independently? In general, capacities of local implementing partners were strengthened mainly through provision of trainings in good practices<sup>7</sup> for seed multiplication and soybean production, seed business management, use and maintenance of agricultural equipment. The project also organized gender and environmental cross-cutting trainings, *supported development of SBS strategy, gender strategy* and action plan, and CSA strategy and action plan. The project also conducted a survey of 120 SHF clients for identifying their characteristics and needs for further strengthening of their capacities.

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<sup>6</sup> No target were specified

<sup>7</sup> Manual dos dez mandamentos para a multiplicação de sementes

COPAZA, however, still needs to improve its management, i.e. COPAZA's level of management capability, is not yet sufficient to manage the organization by themselves. As stated in the in the TECHNOSERVE / SM4ESC Phase II REPORT, Jan 1- June 30 2017 "COPAZA members have recognized that they need to improve their management, but believe that no one inside the organization has the capacity or time needed to properly manage. They believe that it would be best to bring someone from outside to support with management for the first year, get systems in place, and train the members".

The project organized *2 meetings with COPAZA to discuss organization and governance issues* and conducted an assessment of SCF/COPAZA management capabilities gaps and identified short and long-term solutions (local consulting firm, Miruku and future permanent manager Mr. Sumalge Issufo). A set of 7 business trainings were identified and 2 (29%) business trainings out 7, were implemented. The remaining business trainings will cover the following subjects: Financial management part 2; Customer relations; Seed Marketing; Debt management; Logistics and Transportation. The project also initiated the systematization of debt information of each SCF to assist in debt management.

Maintenance of equipment and provision of mechanical services remains a challenge. It is inefficient, lengthy and costly process. To facilitate access to services for beneficiaries AGRICON has recently started operations in Gurué and Mulumbo.

**Fifth question**, how effective were the strategies to link SHF to SCF? The strategies to link SHF to SCF were effective in rising awareness and influencing adoption of improved seed of 14.8% of SHFs. However, financial considerations require special attention and absence of formal seed purchasing contracts between SCFs and SHFs is a challenge that will have to be addressed.

The following linkages between SHFs and SCFs can be distinguished from SCF model and throughout the implementation of the project as follows: SCFs provide improved/certified seed, and inputs to SHFs; SCFs provides services to SHFs; SCF disseminates knowledge and technologies SHFs; SCFs buy back grain, and aggregates grain in lot quantities that are consumed by large agricultural dealers; and SCFs through COPAZA provide marketing services, including client management for grain.

These strategies were effective in rising awareness and influencing adoption of improved seed of 14.8% of SHFs. Farmers now know what the best seed is, even the names of soybean varieties; they now know how to distinguish between seeds and grains. However, despite the fact that SCFs produced seed has proved to have the best yields, the lack of purchasing power by the SHFs, and weak credit system, and absence of formal seed purchasing contracts between SCFs and SHFs is a challenge that will have to be addressed.

COPAZA's objective for helping smallholder farmers in plowing, harrowing, threshing, did correspond to the needs of SHFs, our interviewees reported demand for threshing, transport and tillage, non-participants reported demand for similar services except transport. But SHFs demand of mechanized services is dependent on fuel prices, and equipment availability. There is trend of SHFs' with low production to prefer to use family labor in place of mechanized tillage.

Will these strategies be maintained beyond the project period? The maintenance of these strategies is conditioned by COPAZA's capabilities to provide improved seed, tillage and extension services to SHFs. As mentioned before, COPAZA's level of management capability is not yet sufficient to manage the organization by themselves. It will rely on local consulting firms such as Miruku and future permanent manager Mr. Sumalge Issufo to improve its capacity. Therefore, sustainability of strategies to link SHF to

SCF will strongly depend on availability of financial and human resources to support COPAZA perform its role as service provider to SHFs.

**Sixth question**, to what extent are the outcomes of Dutch Phase II likely to continue beyond the project period? Demoplots and field days are likely to continue, because SCFs have gained knowledge on how to implement these extension methods. But since SCFs reported that they never used demoplots and field days without TNS assistance, the new permanent manager of COPAZA should coordinate with public extension (SDAE), IIAM and IITA to oversee the quality of demoplots before, gradually SCFs can take over and implement them with less assistance. Mechanization services are likely to continue, conditional on continuous maintenance of tractors and other implements, and the threshers, because there is a high demand for such services. However, SCF often rely on services provided in Malawi or Nampula for tractor repairing, and this is costly. Repairing workshops and spare parts should be made available locally. Another challenge faced by SCF is that many still owe the bank as they have not been able to fully repay the loan. They misunderstood revenues for profits, and assumed that all the money they made was profit to be spent on other activities. Credit default resulted in coercive return of the tractor and equipment to the bank, and many SCF are afraid that their tractors and equipment will receive the same treatment from the commercial bank.

As for the seed multiplication activity, the majority of SCF disagree with the payment schedule from SBS. They reported that once seeds are handled to SBS, it takes up to six or seven months to receive the payment. Seed companies have requested SCF to produce seeds for them, and this could be an alternative to quicker payments than SBS. Seed multiplication is very likely to continue because there is a great demand for quality seeds, but this will require partnerships with seed companies and improvement of the relationship between SCF and SBS.

**Seventh question**, what was needed to ensure the long-term viability of project outcomes beyond the project period, including involvement of both government and the private sector? In addition, whether this is or is not in place? COPAZA business, finance and marketing capabilities to lead and manage the seed value chain are still not sufficient; therefore, business advice and support should continue to be provided after the end of the project. Business advice could be obtained via Service business providers or through management collaboration with SBS. COPAZA will need the business and negotiating skills necessary to promote, as broker, viable relationships between SCF members and banks. The basic tenants of good finance management is striving to obtain the lowest cost of borrowing, make decisions about the technologies that offer the best returns, and ensure the SCFs/SBS liquidity is not in jeopardy. Liquidity has been one of the most salient problems faced by SCF, and was reported by the beneficiaries

Better financial training at the beginning of the project would most likely result in less credit default as some farmers thought the project would pay back the loan to the bank if SCF did not make the bank payments. There should be a better coordination of the government and the private sector for seed distribution. Some institutions distribute seeds free-of-charge and this is in conflict with SCF trying to sell their seeds. Such coordination would entail that seed distribution from either the government or NGOs is based on seeds multiplied by SCF. This is currently not in place. As soybean grain and seed production is expanding, farmers are exploring plots that are farther away than their homes. Often the condition of the roads is not the best, and travel time and cost (e.g., moving tractors to the new plots) are high.

The government through INAS (National Institute of Social Action) is currently implementing PASP (Productive Social Action Program) in 40 rural districts of Mozambique. The program is financed by the World Bank with a total budget of USD \$50 million. Beneficiaries of PASP receive 650 Meticaís to work

for four hours a day, four days a week, to repair access roads. SCF in Ruace and Lioma are opening new plots close to Niassa, and perhaps a partnership could be done between the government and COPAZA to prioritize access roads from Ruace and Lioma to the new plots that are located close to Niassa province.

**Eighth question**, how effective were the exit strategies, and approaches to phase out assistance provided by the project including contributing factors and constraints? According to the project document, the objective of the exit strategy was to create the necessary conditions for the growth of a responsive seed distribution network with potential to expand nationwide. To accomplish this goal the tasks defined are relevant and consistent and included such as, refining the business model, improving the service-product portfolio, strengthening organizational, operational capabilities, refining the understanding of the market needs to be served; readjusting the marketing channels structure. We also think the exit strategy should have strengthened the dual role of COPAZA as seed multiplier, and seed retailer for the SHFs segment.

The key for the effectiveness of the exit strategy is to ensure that the tasks above will be implemented efficiently and effectively and whether the competences are available among the supply chain members or should be brought in from the outside. There is a wide recognition of managerial and business skills gaps, both at COPAZA and SBS level. Despite improvements of the roles undertaken by each of these members in seed multiplication, seed processing, provision of inputs and services to SHFs, these two organizations are still experiencing difficulties in managing their financial operational resources. To close these gaps, outsourcing the management tasks above to a business management service provider (BMSP) would bring in to the seed value chain the needed managerial expertise, while allowing COPAZA and SBS to focus on their core competencies. It is important that, the value added by BMSP's management activities can be clearly measured and it should exceed the cost of BMSP's participation in the value chain.

The difficult financial situation of COPAZA members should have been taken into consideration in the exit strategy approaches. Many SCF asked the evaluation team "how come how father [TechnoServe] is leaving us before we complete payment of our bank loan" as if payment depends on TechnoServe. Farmers now fear that the commercial bank will not want to negotiate any longer and will only approach SCF and seize the machinery. This shows that SCF are more apprehensive of losing the machinery than to actually settle the debt. The questions they ask are leaned towards why is TechnoServe leaving instead of what should have been done to make loan payments more effective.

Bank payments by SCF should have been prioritized by TechnoServe as a key issue from the outset of the project, given the history of lack of payment in other programs and projects throughout Mozambique, notably the "7 million Meticaís" program. This issue has been raised several times in TNS reports, and TNS has spent a lot of time on this. The diversity of approaches done by TNS on this subject was mentioned previously. The farmers were behaving quite well until the financial situation of the country became more difficult. The fact that the leader of the project passed away in the middle of the project also created a lot of constraints since the SCF model is a pioneer model and the new management team had to spend the first months of the project recovering all the structure of the model. However, after prioritizing the recovery of the model, the payment of the debts became a priority again.

**Ninth question**, what are the key factors that will require attention in order to improve prospects of sustainability of project outcomes and the potential for replication of the approach? Key factors include

the following: i) the relationship between SBS and SCF – this needs to be improved, and seed payment schedule also improved; ii) training of SCF on financial aspects, ensure that farmers know the difference between profits and revenue, while also encouraging them to save money; iii) coordination between COPAZA/Seed multipliers and both public and private institutions that distribute seeds to smallholder farmers for free – such institutions should acquire seeds from COPAZA; iv) broaden seed multiplication to other crops given that soybean production is only possible in a specific agro-ecology in the country **(although in lower quantities (basically first trials and some commercial multiplication) the project promoted seed multiplication of sesame, pigeon pea and butter bean. It is the monitoring data base)**; v) the condition of main roads, in particular the EN1 – Abílio Antunes in Chimoio used to send trucks to Gurúe to buy soybeans, but the current condition of the national highway (EN1) between Inchope and Caia is extremely bad that makes the connection between central and northern provinces much more expensive.

Other factors that will require attention to improve the prospects of sustainability for increased productivity and profitability of SHFs in the Northern channel are: (1) managing relationships among value chain members (SCFs, SHFs, COPAZA, SBS, Service Providers and Customers); (2) managerial and business competence to manage the inputs supply base; (3) availability of working capital to sustain SCFs and SBS operations; (4) planning and operational capability to run efficiently SBS processing; (5) continue to ensure efficient warehousing operations; (6) ensuring customer fulfillment capabilities (supply planning and forecasting, and product delivering) (7) marketing capabilities and marketing channel development capabilities (8) effective customer segmentation; and (9) strong SCF distribution network.

**Tenth question**, make recommendations to the donors, implementing agent, development practitioners and wider industry on how to develop and optimize similar Seed Multiplier Programs. To develop and optimize SCF model, from the outset the project as to be viewed as seed value chain based model, that is based on collaborative partnerships among channel members with specified roles , purchasing of inputs, seed multiplication, processing, packaging and delivering to the customers.

A diagnosis of the weaknesses and strengths of the technical, knowledge and other competencies of prospective participant channel members should be accessed at the beginning of the project to design training packages that address, a comprehensive set of agronomic, business, marketing, financing and relational competencies. In this context, programming of the training should be carefully matched to the implementation needs.

Attention should be given to roles specification and responsibilities of each channel member in order for the project to focus on developing the channel members' capabilities to manage and operate the productive assets and resources assigned to them.

Special attention should to the criteria to select and transfer competencies to the leading channel member with responsibility to ensure the smooth coordination and synchronization of the supply-demand chain activities.

The exit strategy, and approaches should be revised along the project implementation and be adjusted accordingly

Project performance should also include metrics for the exit strategy and approaches along with implementation metrics.

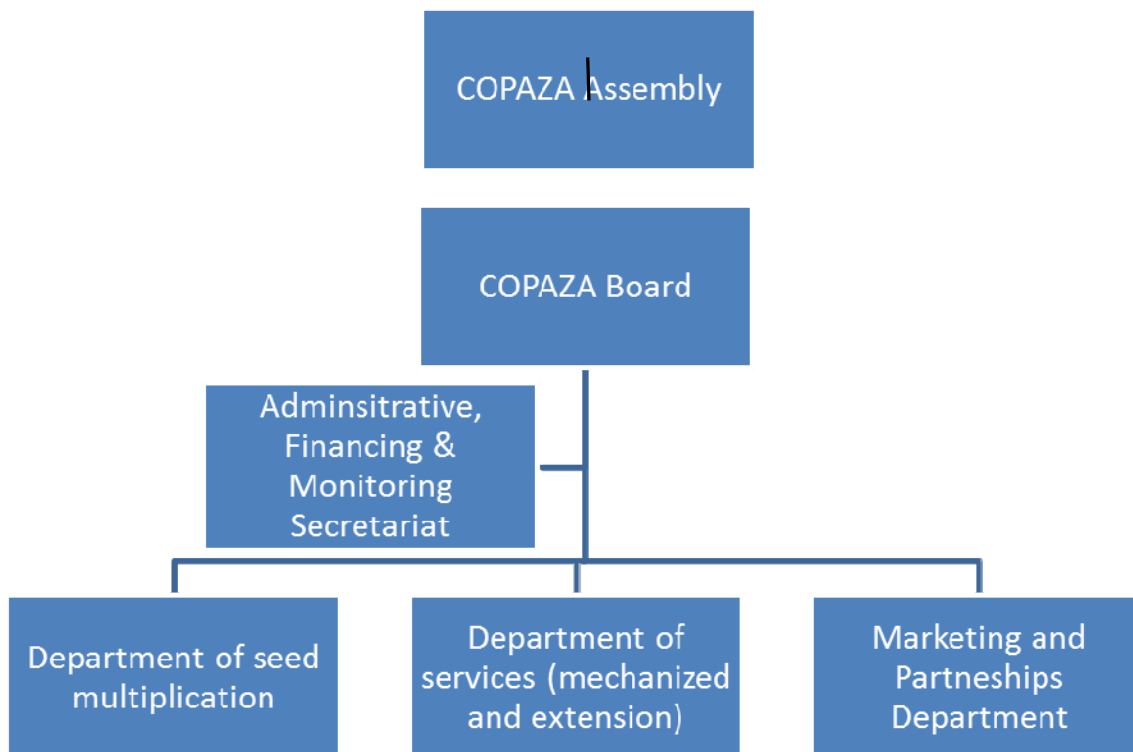


**Eleventh**, study the organizational structure of COPAZA and the ability to be a sustainable farming cooperative. In accordance with provision 13 and 15 of the constitution of the Cooperativa dos Produtores de Alta Zambézia (COPAZA), COPAZA has an assembly and is managed by the board of directors.

There is a need for the COPAZA structure to reflect the strategic positioning of COPAZA in the value chain with special emphasis on its roles and responsibilities.

COPAZA roles and responsibilities should focus on SCFs multiplication activities, services provision to the SHFs, marketing and distribution activities to SHFs, and managing the relationships mainly with SBS, other customers and banks. The figure below represents the proposed structure that adds functional departments responsible for carrying out the above-mentioned responsibilities.

*Figure 8 COPAZA organigram*



#### 4.6 Other areas

Three questions are discussed in this section. First, how well did the project address and integrate crosscutting issues that relate to the project, including gender, environment and youth? Regarding

gender there were 8 sub-activities planned as follows: (i) Assess and document key constraints facing women SCFs and SHFs in project activities and geographic target locations; (ii) Develop strategy and action plan (with emphasis on increased participation in SCF family businesses, increased access to finance and leadership in SCF family businesses/organizations); (iii) Integrate gender activities into logframe; and support finalization of gender-sensitive logframe; (iv) Develop training materials based on TechnoServe existing materials, tailored to needs of women SCFs and SHFs; (v) Implement farming as a family business course and training of trainers as part of mainstream training in Outputs 1 & 2; and (vi) Deliver gender-sensitive training to COPAZA in business and management skills; (vii) Develop case studies and success stories on a rolling basis and package for relevant audiences; and (viii) Share documents with EKN, industry stakeholders, donors and other key stakeholders.

For gender, 6 sub-activities were implemented during Q3 in 2016 and in Q2 in 2017. By June 2018, most of the results were accomplished and included: gender analysis, gender strategy and action plan which include performance indicators, monitoring of implementation of gender activities, and provision TOT gender-sensitive training to COPAZA and women SCFs and SHFs. Mission reports were shared with TNS and EKN.

Farmer's reports indicated threshers (owning it) or being able to purchase threshing services are the main benefits women gained from the project. Approximately 29% percent of 24 SCF family businesses in Gurúe have women as direct beneficiary of threshers. Nevertheless, decision making on lending of threshers as well as on the application of money gained with threshers and tillage equipment and sales of seed and grain, is mostly by men and in some cases in conjunction with women. Moreover, men claimed high maintenance cost of threshers. This suggests a need for better understanding of negotiations models within household, in order to identify opportunities to empower women. Farmers think youth have gained tablets used for survey and some were given scholarship to pursue agricultural education.

"Women have benefited from threshing machines. Approximately 40 young people benefited from tablets. Three adolescents received scholarships (1 in Alto Molecue and 2 in Gurúe) to study in Mocuba "(COPAZA).

"Some women are being trained in processing soybean derivatives (bread & milk). Youth received tablets for survey". (SCF)

"Youth benefited from the project through their participation in the demoplots and field days. Threshers benefited women. However, the idea was not welcome because the thresher has to make money to pay the loan, i.e. it has to be paid with the production /services that the beneficiary producer does. However, the work is seasonal and threshing has a lot of expenses. For the lady to leave and stay 7 days in Ruace on the farm of someone waiting for the thresher is very difficult. Transporting the thresher to the threshing site. The project did not consider machine malfunctions. The thresher needs oil every day. It is difficult to control the use of the thresher. The business for the woman has to be in place (fixed shops, milling, raising chickens) so she can attend to other things in the house. The thresher only processes soy. Producers do not need to thresher corn. They only use a soybean thresher because they know they are going to sell the soybeans. The thresher has an advantage in controlling the amount of grain that is threshed."(SCF)

Soy business extended to women within beneficiary families

**W#1:** "I am 39 years old. In the 2017-18 crop season, I cultivated 2 hectares of soybeans. The land was purchased and offered to me by my husband. I was able to collect 27 bags of soy. We sell together (with the husband) because he is the one who gave the seed. I got 14,000 meticaís from

revenues. SBS gave us butter beans to 0.5ha and pigeon pea to 0.5ha. SBS promised that they would buy the product but in the end did not take it, maybe they had no money. I sold beans in Magige and kept the pigeon pea in the warehouse.

I had a benefit with the thresher in the first year. I worked hard and succeeded. Things changed when the thresher began to break down. The money we got from the thresher was just to pay for damages. The thresher is there; we are afraid of breakdowns. This year we used little. In the first year, we use a lot. The application of the money from the thresher was to raise 3ha and reduce the debt. Bean money goes to the farms this crop season and I took ten thousand meticaís to pay the thresher's bill. Of the 14,000 meticaís, I took 5,000 meticaís to help my husband. Regarding the decision-making on the use of the thresher, in the first year, I decided. However, when it happened to have breakdowns my husband is who decides. However, maybe it's because I was pregnant. When the thresher has malfunctions, he pays the repair. The men's mentality continues macho. We need to continue with awareness-raising seminars. The threshers are in our names but men use them as if they were theirs! "(SCF's wife)

**W#2:** "I am 36 years old and I cultivated soybeans in an area of 3ha. My husband gave me the soybean seed. I've had this farm for many years. I decided to make soy to help the kids. I was able to pick up 60 bags of 50 kg (or 3000 kg). I took 3 sacks (150 kg) to pay the seed to my husband. The remaining 57 bags sold at 20mts / kg and I counted the money with my husband. My husband took some of the money (30,000) he kept in the bank and the rest stayed with me. I spent the money, "like that," dressed the children, bought items from the house, soap, and small things I needed. Now I increased the area to 5 ha but I have no seed." (SCF's wife)

**For CSA-Climate Smart Agriculture** there were 5 sub-activities planned: (i) Assess and document environmental context and key risks in each target area; (ii) Integrate climate smart agricultural practices to training materials, SCF selection criteria and log frame; (iii) Climate change advisory to project team, SCFs and SHFs; (iv) Ongoing implementation of strategy; and (iii) Climate smart agriculture/ integrated agronomy training. The main results included CSA strategy and action plan, awareness rising on CSA and training through discussion (during field days) regarding CSA practices, including crop diversification; and training for farmers on May 9th 2018 on CSA and irrigation.

By June 2018, "TNS has been promoting CSA techniques throughout all moments of the season. All trainings are now including CSA sections. One of the techniques that TNS is advocating is "low tillage", as demonstrated by Embassy of Argentina technicians that visited in 2017. During the 2017/18 a selected group of farmers is committed to use this and we are currently collecting data on the results" (TECHNOSERVE / SM4ESC Phase II REPORT Jan 1- June 30 2018).

Nevertheless, adoption of CSA practices is very limited. The list of CSA practices foreseen by the project is longer than some of CSA practices (improved seed, crop diversification, controlled use of herbicides and mechanization (rippers) used by some farmers.

Farmer's reports indicate awareness rising on CSA practices such as mulching and zero tillage, but area not yet applying these practices.

"We learned about soil cover, contour lines to prevent soil erosion. We leave soybean and pigeon pea the residues on the soils. (COPAZA)"

"I heard about AC practices. Zero tillage and mulching. I am not using these practices, but there are some CA equipment in the community"(SCF).

Second, what best practices can be captured for replication in future TNS projects? Where is room for

further improvement? The major best practices that can be captured for replication in future TNS projects are as follows: (i) The link between SCF and SHF. This makes SCF-model inclusive and powerful instrument to poverty reduction through planned inclusion of poor farmers in the value chain of the soybean production as the origin of the grain value chain; (ii) Implementation arrangement. Technical and management team located at district level, very close to the beneficiaries and use of strategic planning approach, facilitated continuous contact between TNS-team and farmers and contributed to eased relationship between extension officers and farmers, both commercial and smallholders as well as identification of key difficulties and solutions for improvement; and (iii) M&E system. The monitoring and evaluation system which was quite strong, and enabled program managers to adapt program activities as they learned more about the outcomes;

As discussed earlier, the contact with farmers was continuous and this eased the relationship between extension officers and farmers, both commercial and smallholders. The monitoring and evaluation system was also quite strong, and this enabled program managers to adapt program activities as they learned more about the outcomes. However, the M&E system in place would benefit from improvements in terms of the way data is collected (for example, production estimates of cassava cannot be possibly accurate if collected with a single question of how much cassava did you harvest in the last two agricultural seasons), how it is stored (for example, numeric vs alphanumeric characters), and analyzed (for example, take advantage of the panel data TechnoServe possesses on smallholder farmers). A detailed Excel dashboard was created for SCF, but there are a few data cleaning issues.

Discussions with TNS revealed that such level of M&E detail was not required for the project. The M&E system put in place was done with the team resources to improve the capacity of analysis of the results. TNS team acknowledges that the suggestions for M&E improvements are accurate. However, the implementation of a M&E system as suggested would require a different level of investment in the M&E budget line and different targets by the donor. The initial budget and targets were for a much lower level of detail in terms of M&E, given the extra skills that would be required from the team.

One weakness of the available data on smallholder farmers is that it lacks socio-economic variables, which researchers would use to study the determinants of adoption. The data is extremely rich to show things like the incremental yield that is associated to adoption of improved practices and agricultural technologies, but quite poor in explaining why one farmer adopted, say the inoculant.

There is potential need for and benefits of TNS funding a wider variety of inclusive agricultural growth projects with the target beneficiaries. Mozambique agricultural policies are still guided by Strategic Plan for Agricultural Development (known by its Portuguese acronym PEDSA) aiming at increasing agricultural productivity and reducing rural poverty. The SCF-model project uses equity and effectiveness targeting criteria, to be more include smallholder farmers, which are poor and constitute the largest proportion of the rural communities and to select project participants more likely to succeed under the conditions and requirements of the SCF-Model. Therefore, in the context of poverty reduction through agricultural development, the SCF-model, by linking SCF to SHF, is inclusive and a powerful instrument for poverty reduction.

## **5 Recommendations**

### **Relevance**

- SBS - COPAZA should plan intensive communication - facilitated by management or a communication specialist - among the elements of the value chain to assist SCFs prioritizing farm investment among multiple family objectives, negotiating low interest rates, identifying sources of working capital for SCFs to buy SHF produce at more attractive prices than offered by Bengalis and Malawian buyers and reducing the waiting time for total payment of seed delivered at SBS.
- COPAZA should give priority to strengthening business management skills. Better financial training at the beginning of the project would most likely result in less credit default as some farmers thought the project would pay back the loan to the bank if SCF did not make the bank payments.

### **Effectiveness**

- The SCF-model should include mechanisms (prioritization exercises) for keeping SCFs aware of continual prioritization of family enterprise objectives, towards investment. The model also should include mechanisms for “pressing the banks to provide more intensive and direct finance assistance to the borrowers/SCFs”. This implies the Banks should increase the frequency of field/direct visits to SCFs. And to improve coordination between the project and SDAE and avoid reporting of conflicting information, communication mechanisms such as participation in planning sessions and formal exchange of key production information, should be adopted for regular and valid communication between the project and SDAE.
- Improve understanding of constraints to line sowing, because despite its apparent simplicity, some farmers are not adopting line sowing. For improved seed and inoculant, these inputs should be provided on credit based on formal contract to facilitate their uptake by SHFs.

### **Efficiency**

- To improve management of work intensity and multiple agendas, donors, implementing team and TNS–Maputo should improve coordination.
- There should be a better coordination of the government and the private sector for seed distribution. Some institutions distribute seeds free-of-charge and this is in conflict with SCF trying to sell their seeds. Such coordination would entail that seed distribution from either the government or NGOs is based on seeds multiplied by SCF. This is currently not in place.
- As soybean grain and seed production is expanding, farmers are exploring plots that are further away than their homes. Often the condition of the roads is not the best, and travel time and cost (e.g., moving tractors to the new plots) are high.

### **Impact**

- Assuming that SCFs and SHFs have multiple objectives, there is a need to educate and assist them to become profit oriented, and prioritizing investments objectives on agriculture productivity including in payment of the debt to improve the efficiency of the program in achieving the intended objectives, results, and impacts.

### **Sustainability**

- Capacitate SBS-COPAZA to continue improve access to improved seed, and conservation agriculture equipment, as well as increase knowledge on CSA practices by farmers, to ensure environmental sustainability. For increasing the awareness, COPAZA should continue to use demoplots and field days to demonstrate CSA techniques and its benefits to SHF. COPAZA can also consider adapting FFS extension methodology to promote adoption of CSA practices.

- Implement gender strategy to empower women and institutionalize their participation in COPAZA. In addition, continue negotiating the debt with commercial banks to help SCFs manage bank loans.
- Continue to implement training plans to deliver remaining business courses to COPAZA. TNS believes that “the understanding of loans, payments, finances, and budgets is extensive and complex and requires more than a training series. This is a large challenge to undertake in the next phase”. The challenge can be addressed by facilitating the integration of educational modules from formal curriculum, using adult learning principles.
- To improve strategies to link SHF to SCF, SCFs efforts should be direct to target potential SHFs adopters, through previous situational analysis to understand the conditions, needs and capabilities of SHFs to adopt improved seed and mechanization as well as to select SHFs according to their entrepreneurial talent. With potential SHFs adopters identified, simplified contracts should be signed between SHFs and SCFs, to formalize the link and improve organization of provision of services and inputs by SCFs.
- TNS also believes that “for the success of the project, the selection process of the beneficiaries is critical”. As they have done in this project, they believe that the selection tools “should be less quantitative and more qualitative and focus on the following aspects: direct contact with the farmers; and the profile of the person doing the selection process is of the utmost importance and relevance. He/she should have a lot of experience in the region, in the field of expertise and with people in general”.

#### **Gender and CSA practices**

- To improve integration of gender, environment and youth and farmers favorable attitudes towards these crosscutting issues, continue implementation of gender and CSA strategies and action plans, as well as training on gender analysis focusing on the contribution of women in soybean business and environmental sustainability through adoption of CSA-practices.

In the design of SM4ESC/Seed Multiplication Project to Empower Small Commercial farmers – Phase II, the household, as a whole, was assumed as the direct beneficiary of the project. This was not favorable to women because they have a lower bargaining power than men, especially in a situation where assets (equipment) and resources (land) are registered in the name of man. To improve integration of gender in the project, a model based on negotiation must be adopted, assuming that in the family individuals have different interests if not even opposites. This does not mean that women are powerless, but it calls into attention the power imbalance within the households interviewed in Gurúe, which can undermine development goal of empowering woman if the project assumes that by targeting men directly it automatically translates into benefiting (equally) all household members. Regarding targeting criteria for selecting business women beneficiaries we share the idea of TNS of effectiveness criterion to empower already powerful women, but we also think it should be combined with inclusive criterion to target the powerless and address their specific needs in the value chain. By a model based on negotiation, we mean a gender approach that focus on understanding the distribution of power and decision making within the household and help identify interventions that have high potential of being controlled by women.

- SBS-COPAZA should Continue to identify business opportunities (such as threshing machines, poultry, processing and sale of soy derivatives, mills, savings schemes) to enable women to gradually empower themselves so that they can be members of COPAZA. The youth can also benefit from processing and sale of soy derivatives after school.

**Best practices**

- Improve the M&E system in place in terms of the way data is collected (for example, production estimates of crop cannot be possibly accurate if collected with a single question of how much crop did you harvest in the last two agricultural seasons), how it is stored (for example, numeric vs alphanumeric characters). Improve data cleaning for data in the Excel dashboard. And include socio-economic variables that can be used to study the determinants of adoption. The M&E system, performance matrix in particular should include clear targets to facilitate objective evaluation of progress in implementation.

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TNS-Performance Results Matrix

TNS-Workplan 2018

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## **Annexes**

### **Annex 1. Terms of Reference for the evaluation**

**Location:** Remote and Gurúe, Mozambique

**Period:** November – December 2018 (20 days of LOE)

#### **Overview of TechnoServe's project**

TechnoServe has been implementing the almost 3-year Seed Multiplication project to Empower Small Commercial Farmers project since March 2016. This project, which is funded by the Kingdom of the Netherlands (EKN) and is closing in January 2019, is aimed at increasing productivity and profitability of Smallholder Farmers (SHFs) and Small Commercial Farmers (SCFs) in Zambézia Province, resulting in financial benefits for these rural farming communities. The project also aims to enhance the long-term seed production by closing the gap between the formal saved seed system and the farmer saved seed system.

This project built on the preceding EKN *Seed Multiplication project to Empower Small Commercial Farmers* that ran from November 2012- October 2015, where TechnoServe worked to increase the production and uptake of soy seed by smallholder farmers in Alta Zambézia. Under Phase I, TechnoServe learned the importance of small-and-medium size agriculture enterprises as part of the soy seed value chain and designed Phase II to continue to improve and scale up the Local Seed Multiplier Model for soy seed production and distribution in Zambézia. Through improved technology and trainings to build capacity at the SCF and SHF level, high quality soy derivatives are being produced and made available to larger companies.

The Seed Multiplication Programme to Empower Small Commercial Farmers – Phase II intended to facilitate the strengthening of a sustainable Local Seed and Service Provider Network in Alta Zambézia. Specifically, this project aimed to deliver the following outputs:

1. Existing SCF network capacitated to scale up more SHF access to seed and agribusiness services, in Zambézia region;
2. Market Linkages facilitated between SCFs, SHFs and key market players (including agribusiness partners, financial institutions and input suppliers); and
3. Evidence Base for the benefits of the SCF model developed.

#### **Purpose of Final Impact evaluation**

The primary purpose of the Final Impact Evaluation is to make an assessment, as systematic and objective as possible, of the Small Commercial Farmer Seed Multiplication Model, its design, implementation and results from March 1, 2016 to June 31, 2018. The evaluation will involve a joint program evaluation to be conducted by a Rural Development Sociologist and an Agriculture Economist. The aim is to determine the relevance and Fulfilment of objectives, developmental effectiveness, efficiency, impact and sustainability, paying particular attention to the impact of the programme/projects actions in order to achieve its objectives and sustainability of the results. The evaluation will provide information that is credible and useful, enabling the incorporation of lessons learned into the decision-making process among the stakeholders.

Principles underpinning the approach to the evaluation are:

- Identify the effectiveness and impact of the Program
- Account to local stakeholders and funder for the Program's performance.
- Assess how gender related issues were integrated into the programme
- Verify whether the funds were used effectively and efficiently to deliver results.
- Use data collected through the SCF demo plots and other data collection methods to assess the financial benefit of the SCF seed multiplication model and evaluate the short, medium, and long term benefits.
- Assess the extent to which the Programme targeted and met the needs of the SCFs and SHFs in zones of implementation of Alta Zambézia.
- A qualitative analysis of the hard and soft skills transferred from the SCFs to SHFs, including but not limited to improved farming techniques, agriculture management, product storage, and an analysis of the impact on youth and gender.
- Usefulness of the evaluation findings and recommendations, through timely presentation of relevant, clear and concise information to decision makers.
- Understand the primary inputs and pre-conditions necessary to make a SCF model successful. What are the principle determinants for a successful scaling up of the model?
- Provide input that will lead to the development of a Seed Agribusiness Strategy for SCFs that outlines the step-by-step process for the strategy.

The specific goals of the Final Impact Evaluation are to:

Both consultants need to evaluate:

- Evaluate SCF and SHF performance and assess whether programme objectives and target results have been attained;
- Determine the impact of the Dutch Phase II project goals of increased productivity and income creating and profitability in soy for SHFs and SCFs in Zambézia.
- Report on income creation, ideally differentiated by poverty categories, gender and youth; this will be done through an in-depth impact assessment using project data.
- Make recommendations to the donors, implementing agent, development practitioners and wider industry on how to develop and optimize similar Seed Multiplier Programmes that will lead to a Seed Agribusiness Strategy for SCFs.
- Capture/document and share lessons learned by Dutch Phase II;
- Assess the effectiveness of Dutch Phase II – did it work? Did it achieve its goals and objectives? Is the model climate-smart? And what are the lessons learned and areas of improvement;

### **Evaluation Questions/Guide**

To guide the Final Evaluation scope, the evaluator(s) will seek to respond to the questions below. These questions are intended to be a guiding framework to help the evaluator(s) develop more precise recommendations. It is expected that a precise set of key issues to be addressed will be refined and agreed upon by the TNS Manager, EKN and the evaluator as part of the inception/work planning phase of the evaluation.

**Relevance:** Assess how well the design/objectives of the SCF model fit to the priorities and needs of target beneficiaries and the policies of the host country, and donor country, by assessing the following:

Agriculture Economist:

- Was the implementation of Dutch Phase II in line with the strategy of the Dutch and Mozambican policies and strategies?

Rural Development Sociologist:

- Did the programme target the right group(s) of people?
- How did beneficiaries perceive Dutch Phase II implementation and to what extent were they involved in the design and implementation?
- Did the skills and knowledge gaps of the beneficiaries correspond to capacity building efforts funded by Dutch Phase II?

Both consultants need to evaluate:

- Were the inputs and strategies identified, and were they realistic, appropriate and adequate to achieve the results?
- How could the SCF model be refined to address the areas of improvement for future implementation?
- In general, was the programme relevant to address the identified needs/constraints?
- Was Dutch Phase II's overall approach and strategy consistent with the challenges faced by its target beneficiaries?

**Effectiveness:** Assess the effectiveness of the programme in terms of its objectives and strategies, and progress against intended outcomes. Compare expected achievements of objectives at inception as stated in the project documentation against actual (or expected) achievements of objectives at the time of evaluation by assessing the following:

Agriculture Economist:

- Have specific seed multiplier interventions that were designed worked (e.g. have SHF schemes worked, why or why not? with which beneficiaries? In which circumstances?)

Rural Development Sociologist:

- Were there any unanticipated/unintended outcomes of Dutch Phase II (both positive and negative)? What real changes have been noted within project target beneficiaries?
- Has the context for Dutch Phase II changed? If so, how has the context changed, and how has this influenced the effectiveness of Phase II?
- What challenges did the project beneficiaries face in applying the knowledge/new skills gained from Dutch Phase II funded projects? How did Dutch Phase II improve their ability to apply the knowledge/new skills gained from the programme?

Both consultants need to evaluate:

- Was the project period sufficient to create the anticipated change among the participants?
- Did the programme deliver its intended outcomes?

**Efficiency:** Based on the programme plans, monitoring indicators and reports, assess how efficiently the programme met the expected objectives by comparing outputs to targets and the use of resources set out for the project.

Agriculture Economist:

- To what extent were programme resources/inputs (funds, expertise, time, human resource) economically converted into programme outputs? How does this compare to the efficiency and cost-effectiveness of other similar capacity building and market development efforts?

Rural Development Sociologist:

- How was the status of the relations between EKN, TechnoServe, and other Programme beneficiaries and stakeholders? How were the challenges addressed?

Both consultants need to evaluate:

- What main operational, implementation and management factors facilitated or impeded the efficiency of the programme in achieving the intended objectives, results and impacts?

**Impact:** At programme level, evaluate how well the various activities have transformed the available resources into the intended results, in terms of quantity, quality and timeliness. Comparison should be made against what was planned and the actual achievement at the end of the project.

The evaluation should assess to what extent there was evidence indicating that the Dutch Phase II programme has met its intended overall objectives at the impact level. A summary of key verifiable indicators and end of project targets is captured here for ease of reference:

Agriculture Economist:

- COPAZA will be assisted to develop its business and management capacity to drive the development of a commercial seed market; and develop a viable business model for the SCF network that can exist after the life of the project.

Both consultants need to evaluate:

- 32 existing SCFs that make up COPAZA will benefit from continued support to advance business and management capacity to reap higher rewards in terms of seed sales and deliver services effectively to women and men smallholder farmers.
- At least 3,793 smallholder farmers will benefit from access to critical inputs, services and infrastructure to increase their own productivity.

**Sustainability:** Assess the extent to which the project benefits will continue to pay off into the foreseeable future.

Agriculture Economist:

- What is the financial performance impact on 5 specific SCF
  - o Randomly select 5 SCFs and evaluate the accounting statement and cash flow to include the balance sheet, income statement, net working capital, and financial cash flow
  - o Include in the assessment the following ratios:
    - Short-term solvency—the ability of the firm to meet its short-run obligations.
    - Activity—the ability of the firm to control its investment in assets.
    - Financial leverage—the extent to which a firm relies on debt financing.
    - Profitability—the extent to which a firm is profitable.
    - Value—the value of the firm.
- Develop a Seed Agribusiness Strategy for SCFs.

Rural Development Sociologist:

- What is the environmental impact of the SCF model vs traditional farming practices? Is the SCF model sustainable in terms of a climate smart perspective? Does the model have the potential for expansion, and what impact could the expansion have on the environment?
- To what extent were local implementing partners able to take on the implementation of parts or all of project interventions? How have capacities been strengthened at the individual and organizational level to run some or all of project interventions independently?
- How effective were the strategies to link SHF to SCF? Will these strategies will be maintained beyond the project period?

Both consultants need to evaluate:

- To what extent are the outcomes of Dutch Phase II likely to continue beyond the project period?
- What was needed to ensure the long-term viability of project outcomes beyond the project

period, including involvement of both government and the private sector? And whether this is or is not in place?

- How effective were the exit strategies, and approaches to phase out assistance provided by the project including contributing factors and constraints?
- Describe key factors that will require attention in order to improve prospects of sustainability of project outcomes and the potential for replication of the approach?
- Make recommendations to the donors, implementing agent, development practitioners and wider industry on how to develop and optimize similar Seed Multiplier Programmes.
- Study the organizational structure of COPAZA and the ability to be a sustainable farming cooperative.

### **Other areas to be assessed:**

#### Rural Development Sociologist:

- **Crosscutting Issues:** How well did the project address and integrate crosscutting issues that relate to the project, including gender, environment and youth.

#### Both consultants need to evaluate:

- **Lessons learned:** What best practices can be captured for replication in future TNS projects? Where is room for further improvement?
- The potential need for and benefits of TNS funding a wider variety of inclusive agricultural growth projects with the target beneficiaries.

### **Evaluation approach**

The evaluator(s) should propose the most appropriate methodologies, including in-depth impact assessments using existing Programme data, in order to meet the intended evaluation objectives. These should align with M&E frameworks for the TNS Dutch Phase II programme.

The following three-phased approach will be used for the evaluation:

#### **Phase 1: Inception (Duration 5 days)**

To kick off this project the evaluator(s) will conduct a desk review of the relevant programme documents as well as documents shaping the wider strategy/policy framework of the programme.

The evaluation team will need to sign confidentiality agreement(s) in order to access confidential information.

Key documents to be reviewed include:

- TNS Operations Manual (and its appendices)
- TNS Dutch Phase II M&E Plan (and its appendices)
- TNS Dutch II Quarterly Reports
- TNS Dutch Workplan

In addition, to ensure that the evaluator(s) have adequate context on the TNS programme, interviews should be held with key stakeholders during this inception phase (EKN, TNS). These key stakeholders must include representatives from the project management team and key stakeholders/beneficiaries.

At the end of this phase, the evaluation consultant will prepare an inception phase report that will cover at least the following:

- Interviews conducted and key insights coming from those interviews
- Data collection tools for the next phase (e.g. household survey questionnaires, Key Informant Interviews and guides, In-depth interview and focus group discussion guides among others)
- Finalized methodology including strengths and weaknesses, detailed sampling plan, and field procedures
- Workplan and foreseen activities for the programme evaluation

## **2. Phase 2: Data collection (Duration 10 days)**

This phase will consist of data collection on the TNS Dutch Phase II programme. These activities can be conducted in parallel. These activities are:

- a) Site visits
- b) Stakeholder interviews

## **3. Phase 3: Preparation of final report (Duration 5 days)**

This phase is mainly devoted to the preparation of the draft final report. The consultant(s) will make sure that their assessments are objective and balanced, affirmations accurate and verifiable, and recommendations realistic.

The final report must include the following sections and be in English:

- Acknowledgements
- List of Acronyms and abbreviations
- Table of Contents
- Executive Summary
- Background (programme description and purpose of final evaluation)
- Methodology and Implementation, including strengths and weaknesses
- Results and Findings (in accordance with the objectives and activity components- Relevance, effectiveness, efficiency, impact and sustainability)
- Recommendations
- Annexes
  - Terms of Reference for the evaluation
  - Table of key programme indicators with baseline and end-line values
  - Evaluation team profile(s)
  - Evaluation methodology used
  - Inception report
  - Summary of findings from field trips
  - Summary of findings from stakeholder interviews
  - Recommendations
  - Other as needed/relevant

When a high-quality draft is ready, the evaluator(s) will circulate it for comments to TNS. If relevant and useful, a meeting will be convened to discuss the key findings of the evaluation with TNS. The evaluator(s) will then finalize the report taking into account TNS feedback. TNS comments on the substance of the report may be either accepted or rejected by the evaluator(s). In the latter instance,

the evaluation team should explain the reason for rejecting the comments in the report.

### Timing

The evaluation will commence in mid-November 2018. Field trips will take place in late September to October 2018. A first draft of the final report will be prepared by mid-November. The final report will be submitted by 31 November 2018. The total duration of the evaluation will be a maximum of 20 days.

Phase	Location	Duration	Proposed timing
1. Inception phase	Gurúe	5 days	Mid-November
2. Data collection	Site visits in Gurúe	10 days	End of November – Early December
3. Preparation of final report	Home based	5 days	Due by December 15

### Management and Steering of the Evaluation

The evaluator(s) will report to the Programme Director (Paulo Cunha) who will be a key point of contact during the evaluation. The TNS Programme Coordinator, Danny Brown (supported by the TNS M&E Coordinator Reginaldo Monjane) will provide significant support.

The Programme Director and Country Director will review the draft of the final report and comment on it before it is finalized.

### Budget

A total of up to \$20,000 is available for the cost of implementing this evaluation. This will be a cost reimbursable project. The budget should cover all fees and expenses relating to the project.

### Deliverables

The deliverables of the Final Evaluation will be:

1. Inception report completed jointly by both Key Personnel (10-15 pages with details as outlined above and in presented in English)
2. Electronic copies of all clean and final English-version of data collection tools
3. Raw data sets of the respondents
4. Fifteen to twenty high-quality pictures of the evaluation process.
5. Summary of findings from field trips
6. Summary of findings from stakeholder interviews
7. A two to three-page stand-alone summary describing the evaluation design, key findings and lessons learned
8. Provide input that will lead to the development of a Seed Agribusiness Strategy for SCFs.
9. Final report completed jointly by both Key Personnel (30-40 pages In the format described above and presented in English)

### Qualifications of Evaluation Team

**Key personnel:** Agriculture Economist in the proposed team must demonstrate the following experience and expertise:

- Professional experience in the field of agriculture economics specific to seed production in



Mozambique (experience designing/evaluating SCF and SHF programs)

- Professional experience in private sector development (experience of private sector development in agriculture preferred) and/or SME capacity building
- Experience working in sub-Saharan Africa strongly preferred; Mozambique experience a major plus
- Full working knowledge of English; working knowledge of Portuguese desirable
- Excellent report writing, quantitative analysis and analytical skills

**Key personnel:** Rural Development Sociologist in the proposed team must demonstrate the following experience and expertise:

- Extensive work in the area of social impact evaluation and the sociology of rural development for SCF related programmes.
- Professional experience in private sector development (experience of private sector development in agriculture preferred) and/or SME capacity building
- Experience working in sub-Saharan Africa strongly preferred; Mozambique experience a major plus
- Full working knowledge of English; working knowledge of Portuguese desirable
- Excellent report writing, quantitative analysis and analytical skills.

The composition of the team should be balanced to enable complete coverage of the different aspects of project evaluation as set out in these terms of reference, including cross-cutting issues (environmental impact assessment, gender analysis, good governance, information and communication, visibility). That said, TechnoServe would prefer to engage a single individual to conduct this evaluation.

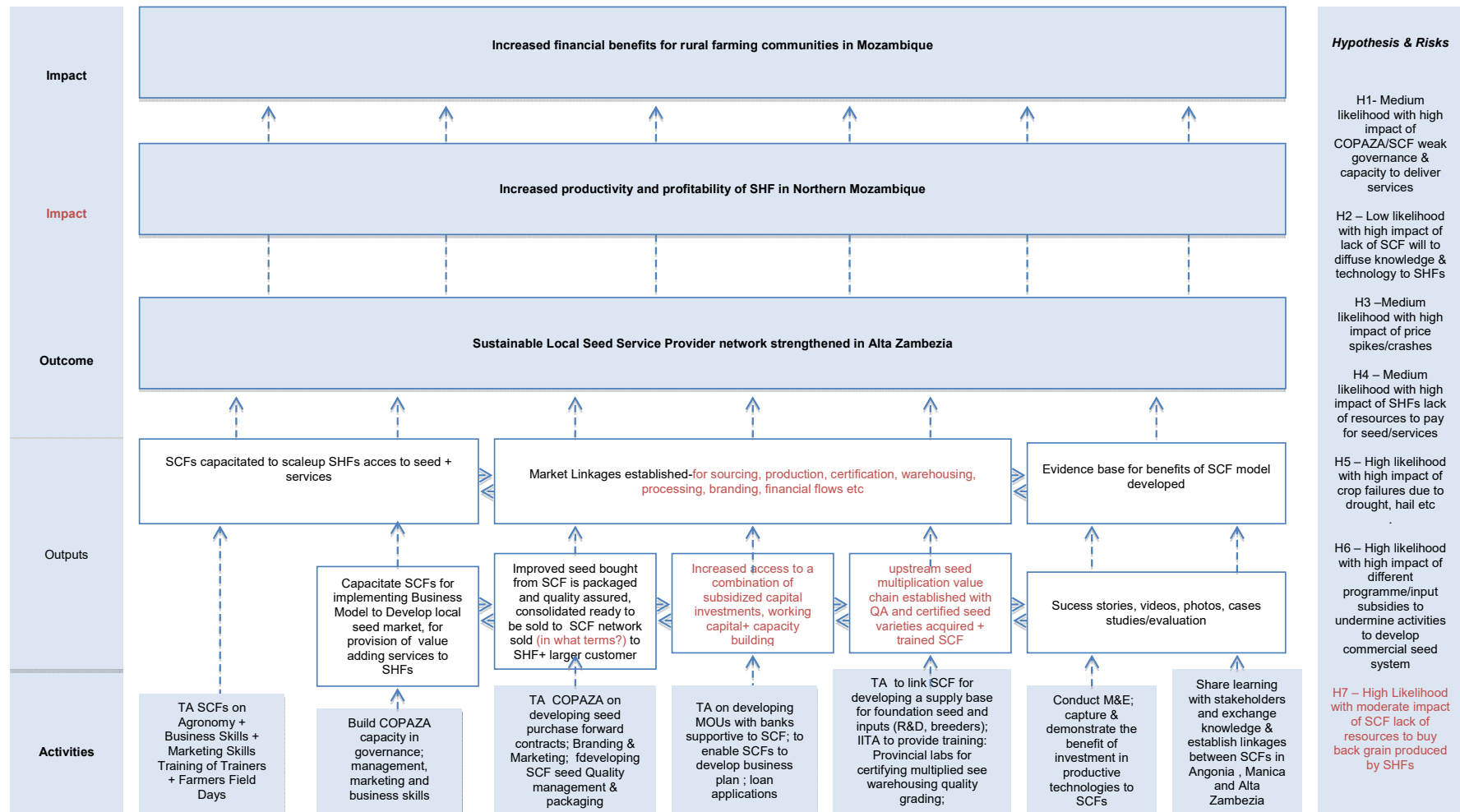
#### **Services to be provided by TechnoServe**

The TNS team will provide the following:

- Access to all relevant project documentation
- Input into methodology for all data collection
- Introductions to key beneficiaries and stakeholders
- Support in obtaining visas and arranging logistics for site visits
- Introductions to all stakeholders for interviews
- Monitoring of all field activities, including data quality assurance

**Annex 2. Theory of change**

**TOC - Seed Multiplication project to Empower Small Commercial Farmers – Dutch Phase II**



**Annex 2. Table of key program indicators with baseline and end-line values**

**Annex 3. Evaluation team profile(s)**

**Eunice Cavane** is an agronomist with specialization in agricultural extension and education. Since 1997 she has been working, as a consultant and researcher in the field of agricultural and rural development. She has large experience in designing and implementing program/project evaluation studies, including: design and implementation of Mid-term and final evaluation of Value Chain Project (ProRenda) for World Vision in Angola for World Vision in Angola; participatory evaluation of decentralized planning and finance (district planning) program, agricultural extension, good governance, and community participation in rural development, in Nampula, Zambézia, Manica Sofala and Inhambane provinces; participatory assessment of the Zambézia Agricultural Development Project (ZADP) and the training needs of extension agents; qualitative Mid Term Review of PROSAN for CARE-Mozambique; and mid-term evaluation of GEF project on FFS for Climate Change Practices for FAO. Eunice holds a PhD degree in Agricultural Extension and Education from Michigan State University, USA; a MSc degree in Management of Agricultural Knowledge Systems from Wageningen University, Netherlands; and a BSc degree in Agronomy (Crop Production and Protection) from Eduardo Mondlane University.

**Benedito Cunguara** has been collecting, processing, cleaning, and analyzing data for almost two decades. He has analyzed LSMS-ISA data from Tanzania, Malawi, Nigeria, and Uganda. He has analyzed all national agricultural surveys and agricultural census data from Mozambique and published several papers in top-tier journals, including 15 journal articles, 27 working papers and research reports, a couple of books and book chapters, and magazines. He has also analyzed data from various other surveys, including the Demographic and Health Surveys, Consumption Expenditure Surveys, Education data, just to name a few. He has coached/mentored (and is currently mentoring) several PhD, MSc, and BSc students from various universities both in Mozambique and abroad, and colleagues from the Ministry of Agriculture and Food Security. He has taught) data analysis using Stata, quantitative analysis of agricultural policies, and agricultural value chains for MSc students at UEM/FAEF. He holds a PhD degree in Social and Economic Sciences from University of Boku in Vienna, Austria; a MSc degree in Agricultural Economics from Michigan State University; and a BSc degree in agricultural engineering from Eduardo Mondlane University.

**Annex 4. Summary of findings from field trips****Annex 5. Summary of findings from stakeholder interviews****Annex 6. List of people interviewed**

Name	Institution	Position	Phone	Email
Reginaldo Monjane	TechnoServe	Financial Consultant	852936389	rmonjane@tns.org
Paulo Cunha	TechnoServe	Portfolio Director	846826891	pcunha@tns.org
Narciso Rodrigues	TechnoServe	Senior Agronomist	844715372	
Manuel Tomé	TechnoServe	Extension officer	846595752	
Ivan Montany	TechnoServe	Agribusiness manager	844001280	amomtany@tns.org
José Manuel	SDAE	Director	842208474	
Arlindo Alexandre	Farmer	SCF	861062852	
Vitorino Mauricio Mugaua	Farmer	SCF		
Fernando Maliango	Farmer	SCF		
Alberto Manuel Quente	Farmer	SCF	861090791	
Joia Muchenguete	Farmer	SCF	861692058	
Heinrich Van Der Merwe	SBS	Agronomist, SBS consultant and private input supplier (Agricon)		agriconhvm@gmail.com
Jorge Saraiva	COPAZA	Vice-president	827034994	
Genésio Douglas	COPAZA	Administration	869408495	
Raimundo Saraiva	COPAZA	Member	861062757	
Alberto Muchenguete	COPAZA	Adviser		

**Annex 7. Focus Groups with SHF**

Localidade/Community	Category	N° participants	
		Gender	
		H	M
Tetete-Mahara	SHF-Participants	11	
	SHF-Participants		11
Tetete-Mahara	SHF-Non-Participants	9	
	SHF-Non-Participants		2
Lioma	SHF-Participants	16	
	SHF-Participants		6
Lioma	SHF-Non-Participants	3	
	SHF-Non-Participants		13
Total		39	32

