



Seeds of Life
Fini ba Moris



Collaborative Efforts

The Story of 'Seeds of Life' and its Partners in Timor-Leste



Timor-Leste Ministry of Agriculture and Fisheries
Seeds of Life - Fini ba Moris

August 2015

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for

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Seeds of Life/Fini ba Moris

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Acronyms and Abbreviations

ACIAR	Australian Centre for International Agricultural Research
ALGIS	Agricultural Land Geographic Information System
ANAPROFIKO	National Association of Commercial Seed Producers
AusAID	Australian Agency for International Development
AVI	Australian Volunteers International
CCT	<i>Cooperativa Café Timor</i>
CGIAR	Consultative Group on International Agricultural Research
CIAT	<i>Centro Internacional de Agricultura Tropical</i>
CIMMYT	<i>Centro Internacional de Mejoramiento de Maiz y Trigo</i>
CIP	<i>Centro Internacional de Papa</i>
CNRT	National Council of Timorese Resistance
CRS	Catholic Relief Services
CSO	Civil Society Organisation
CSP	Commercial Seed Producer
CSPG	Community Seed Production Group
DFAT	Department of Foreign Affairs and Trade, Australia
DPs	Development Partners
DPWG	Development Partners Working Group
ETTA	East Timor Transitional Administration
EU	European Union
FAGRI	Faculty of Agriculture, UNTL
FAO	Food and Agriculture Organisation
GAFSP	Global Agriculture Food Security Program
GDP	Gross Domestic Product
GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i>
GM	Genetically modified
GoA	Government of Australia
GoTL	Government of Timor-Leste
HASATIL	Timor-Leste Sustainable Agriculture Network
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IITA	International Institute for Tropical Agriculture
ILETRI	Indonesian Legume and Tuber Crops Research Institute
IRRI	International Rice Research Institute
JICA	Japanese International Cooperation Agency
M&E	Monitoring and Evaluation
MAF	Ministry of Agriculture and Fisheries
MAFF	Ministry of Agriculture, Forestry and Fisheries
MEF	Monitoring and Evaluation Framework
MIRT	MAF Institutional Reform and Transformation Project

MC	Mercy Corps
MoU	Memorandum of Understanding
MSS	Municipal Seed System
NDACD	National Directorate of Agriculture and Community Development (MAF)
NDRSS	National Directorate for Research and Special Services (MAF)
NGO	Non-Governmental Organization
NSC	National Seed Council
NSP	National Seed Policy
NSPWG	National Seed Policy Working Group
NSS	National Seed System
NSSRV	National Seed System for Released Varieties
OFDA	Office for Foreign Disaster Assistance, USAID
OFDTs	On-Farm Demonstrations and Trials
PDD	Project Design Document
PNDP	National <i>Suco</i> Development Program
RDP4	Rural Development Program (Phase Four), EU
RDTL	Radio Timor-Leste
SEFI	Secretary of State for Institutional Strengthening
SEO	<i>Suco</i> Extension Officer
SoL1, 2, 3	Seeds of Life (Phases 1, 2, 3)
SRR	Seed Replacement Rate
SSSA	Seed System Security Assessment
TLARDI	Timor-Leste Agriculture Research and Development Institute
TLMSP	Timor-Leste Maize Storage Project
TLSDP	Timor-Leste Strategic Development Plan (2011-2030)
TOMAK	<i>To'os Ba Moris Diak</i> , Farming for Prosperity
UNTAET	United National Transitional Administration in East Timor
UNTL	National University of Timor Lorosa'e
USDA/NCBA	US Department of Agriculture, National Cooperative Business Association
UWA	University of Western Australia
WB	World Bank
WVTL	World Vision Timor-Leste

Executive Summary

The Seeds of Life (SoL) Program is a program within the Timor-Leste Ministry of Agriculture and Fisheries (MAF) with the goal of “Improved food security through increased productivity of major food crops”. Over the three phases of its implementation SoL provided support for strengthening of the MAF through a comprehensive range of activities to contribute to the Government’s objective of food self-sufficiency and improved food security at the household level by making seeds of improved food crop varieties available, decreasing food crop storage losses, improving agricultural practices and stimulating the involvement of the private sector to ensure availability and accessibility of seeds at local level.

The Program progressed from research identifying higher yielding varieties of food crops adapted to Timor-Leste to releasing these varieties and supporting the production of quality seed and cuttings for distribution to farmers. The third phase (SoL3) will end on 30 June 2016, is focused on establishing a national seed system and is set to achieve its objective that at least 50% (est. 65,000) of the nation’s crop producing households have access to and routinely use improved seed and planting material of staple food crops i.e.: maize, rice, peanut, cassava and sweet potato.

The Program is funded collaboratively by the Government of Timor-Leste (GoTL) and the Government of Australia (GoA) and has been implemented in Timor-Leste since 2000. Australian funding is through the Australian Department of Foreign Affairs and Trade (DFAT) and the Australian Centre for International Agricultural Research (ACIAR). The Centre for Plant Genetics and Breeding within the University of Western Australia (UWA) coordinates the Australian funded activities.

As part of documenting the learnings accrued during SoL3 a number of assessments have been planned. The one documented here deals with SoL’s collaboration with other development stakeholders including with research institutes and universities, bi-lateral and multilateral aid agencies, international and Timor-Leste non-governmental organizations (NGOs), and other civil society organizations.

The assessment identified seven main achievements, closely interlinked, and looked at the collaborative efforts employed by SoL to achieve them. These include: (i) Ministry of Agriculture and Fisheries (MAF) - Institutional Development Support; (ii) Improved Food Crop Varieties; (iii) Timor-Leste National Seed Policy (NSP); (iv) Timor-Leste National Seed System (for Released Varieties) (NSS(RV)); (v) Community Seed Production Groups (CSPGs), Commercial Seed Producers (CSPs) and Linkages; (vi) Food Crop and Seed Storage; and (vii) Optimizing Information for Collaborative Use.

SoL initiated a number of collaborative initiatives in search of alignment with other development stakeholders in the sector to accomplish jointly something that the program alone could not do.

The collaboration between MAF and SoL can be called a critical one, in which both parties consider each other as indispensable in accomplishing targets and goals and work together on more long-term strategic arrangements. MAF provided the institutional framework and umbrella enabling SoL to work, while SoL was influential in providing the direction and technical substance of a national seed system in coordination and collaboration with MAF and other stakeholders.

SoL’s interaction with research institutes and universities can be categorized as collaboration according to Himmelmann who describes “Collaboration as exchanging information, altering activities, sharing resources and enhancing the capacity of partner organizations for mutual benefit and toward attaining shared goals. Partners are willing to share risks, responsibilities, rewards and resources”. The program emerged out of global collaboration between ACIAR and CGIAR (Consultative Group on International Agricultural Research) centers and expanded its reach by engaging with Australian, Indonesian, Philippines and Thai programs and universities.

Multi-lateral and bilateral development partners acknowledged the benefits of SoL's integration in MAF and its role in trying to reinvigorate the MAF-Development Partners Working Group (DPWG) to ensure development effectiveness (rather than only aid effectiveness) by trying to focus aid contributions towards a more coherent approach of support to MAF and the Government's goal in the sector. They applauded the way SoL pro-actively interacted with other stakeholders. Specific appreciation was given on the efforts to make seeds available for other initiatives, to provide information on the new varieties, to contribute to efforts to produce extension materials on agricultural practices, to bring MAF and MAF DPs closer together and to produce materials on climate, soil and diverse mapping efforts useful to many development agencies. They recognized that SoL was influential in initiating discussion on the decentralization agenda by initiating the efforts for the implementation of the municipal seed system to ensure self-sufficiency in seed supply and distribution in the municipalities.

INGOs found SoL very approachable and very present in the sector and showing an attitude of letting others benefit from SoL initiatives and success including access to the variety information and research based information. SoL provided a key-role in linking (I)NGOs with MAF (and its network) as well as with other MAF DPs. The (I)NGOs highlighted they were benefitting from the accessibility to quality seeds through local networks including CSPs; opportunities for staff development in the specific sector; opportunities for collaboration with SoL staff in support of farmers development and SoL making available interesting and valuable base and thematic maps, climate and soil information gathered from different and historic sources and packaged for easy use and the encouragement for innovation.

Constructively linking with HASATIL, the Timor-Leste Sustainable Agriculture Network, a member of the National Seed Policy Working Group (NSPWG), and especially with some of its more vocal member NGOs has often been a challenge given the ideological differences in views dealing and persisting with relation to the 'improved seed' subject matter as well as the misinformation that seems to be going around. Even though approaches and interactions have been initiated, even though some of the members collaborate closely with SoL3, suspicion remains that the Program has a hidden agenda to privatize the seed business, purposely support gradual erosion of diversity of food crops, extract genetic material from Timor-Leste, purposely over-emphasize new recently imported varieties at the expense of the currently available varieties and disregard the position of the farmers in the discussion.

Through its three phases SoL adapted its collaborative strategy. The Program was borne out of a collaborative effort between ACIAR and CGIAR centers. At the time its resources were limited, and very much focused on the research and initial seed production, it joined with organizations to ensure involvement of farmers in On-Farm Demonstrations and Trials (OFDTs).

In SoL3 a more focused alignment was present in outreaching to ensure that improved seeds were accessible to a wide audience through involvement with other organizations and projects including International Fund for Agricultural Development (IFAD), EU and various INGOs (e.g. CARE, Catholic Relief Services, World Vision, Hivos, Mercy Corps). By building the relationships and responding to a need of these organizations win-win situation were created and built on. By working with them and their field staff SoL succeeded in reaching a much bigger audience. More recently SoL linked with other organizations such as BIFANO for capacity building and mentoring for the savings and loans activities; with *Cooperativa Café Timor* (CCT) for expanding their Men's Health Program to a wider number of local organizations. In collaboration with MAF, suco chiefs and local administrators in Raumoco watershed of Lautem and JICA, RAEBIA, Hivos and other local partners SoL3 built on their participatory land use planning and watershed management experiences.

By working with these organizations SoL has provided access to locally appropriate knowledge on specific approaches, strategies and techniques that will sustain the NSS, Municipal Seed System) MSS and their CSPGs and CSPs and also be useful to various pipeline projects of DPs that are focused

on improving rural livelihoods. In return these organizations obtain resources for expanding their success-stories and add-value to other programs. This multi-stakeholder collaboration fosters an opportunity to build broader support for sustainability issues. By working across diverse sectors and involving them in development of the NSS SoL aims to improve its sustainability by highlighting the complementarity of the NSS with other areas of concern, such as public health, local economic development and environmental development.

Some of the features contributing to the success and lessons of the Program working with and within a ministry in a newly developing country in general and more specifically related to the collaborative efforts include:

- a. The need for donors to commit and provide longer-term sector support in order to contribute to institutional development and influence government systems while ensuring sufficient flexibility to cater for the changing internal (in the ministry) and external environment/context. The longer-term commitment builds goodwill and trust with the partner even though within a very complex political context as in Timor-Leste, a post-conflict state still going through turbulence during Program implementation. **The flexibility provides for the possibility of an evolving activity adaptation responsive to the changing demands.**
- b. The development hypothesis (that food security starts with seed security) was underpinned by a set of design features which provided (i) SoL with a clear framework for action and (ii) MAF and other stakeholders with clarity on the focus of the Program and confined expectations or the temptation to try to influence SoL to widen activities. The design features for the Program included: (i) filling a critical niche; (ii) avoiding complexity and focusing on a clear and focused issue; (iii) building from within the system and developing capacity; (iv) embedding collaboration from the start and optimizing global knowledge and expertise.
- c. The capacity building focus on the civil service and the provision of the software and the hardware relevant to the sector provided for opportunities for stakeholders on different levels to gain knowledge and experiences that changed the way they carry out their specific responsibilities and contributed to behavior change within government-farmer interaction while slowly contributing to field-level impact and benefits.
- d. Consistency in walking the talk and show-casing a collaborative attitude through pro-actively searching to link with other stakeholders in the sector leverages program investment. To ensure continuously effective collaboration there is a need for supporting program policies and for leadership to encourage this behavior. Careful selection of and investment in staff with the appropriate skill-set offers the possibility to be contributing to different fields hence making them even more interesting for others to link with.

Related to this, and for further investigation by Australian Aid, would be the attitude of managing contractors versus the attitude of ACIAR or universities. SoL exemplified an open data sharing policy as opposed to contracted TA of managing contractors that often prefer not to share data so as to maintain a competitive advantage for future contracts.

- e. Targeted collaboration provides for an opportunity for development stakeholders to contribute to more effective development (rather than only to more effective aid). The specific knowledge of SoL provided for access to technical issues absent in most of the other ministry development partners and the position and goodwill of SoL in MAF broke down the barriers of 'Project competition' and enhanced the notion that success of external projects will only be measured in what they leave behind in the long run especially related to the institution they have been supporting for a long period of time.

There are still multiple opportunities for collaboration with different stakeholders in the remaining one year of the Program but the sustainability of SoL's efforts will be dependent on MAF's vision for the future. The mid-June 2015 DPs meeting and the briefing with the Minister are encouraging but

there is a need to ensure DPs collectively keep interacting with the ministry at the highest level to get clarification on a clear direction which can help the new upcoming DP programs ensure that they do not compete with each other or replicate efforts of the past but, in line with the development effectiveness agenda, ensure convergence in support of MAF and its future development, particularly on the municipal level to build MAF capacity to effectively service rural communities.

Another decisive element is further strengthening of MAF and the system actors responsible to implement the seed system up to municipal level. Given policy efforts towards decentralization and the opportunity to work on municipal seed production, distribution and management, it is worth to broaden the discussion and ensure that all DPs with their constituencies of NGOs or farmer groups get involved in these activities and together with MAF start building a municipality-wide approach for agricultural development, starting with the seed system, building on the assets of people, methodologies, pilots, etc. that are already in place. A lot of work has been done over the last 15 years but it is time to value these efforts, learn from their implementation and expand the successes on a much wider scale.

1. Introduction

The Seeds of Life (SoL) Program¹ is a program within the Timor-Leste Ministry of Agriculture and Fisheries (MAF) with the goal of “Improved food security through increased productivity of major food crops”. The program is funded collaboratively by the Government of Timor-Leste (GoTL) and the Government of Australia (GoA) and has been implemented in Timor-Leste since 2000. Australian funding is through the Australian Department of Foreign Affairs and Trade (DFAT) plus the Australian Centre for International Agricultural Research (ACIAR) and is managed by ACIAR. The Centre for Plant Genetics and Breeding within the University of Western Australia (UWA) coordinates the Australian funded activities. The Program was implemented in three phases² with subsequent phases utilizing the results and building on the previous ones. The third phase of the Program (SoL3) will end on 30 June 2016.

As part of documenting the learning emerging from this 15 year experience, SoL management decided to ensure it is captured through a number of assessments over the remaining time of the Program. These include, but probably not limited to: (i) Collaboration Impact Assessment on Partnering with other Development Stakeholders; (ii) Environmental Impact Assessment; (iii) Gender Impact Assessment and (iv) Capacity Building Impact Assessment.

This document provides an assessment of the collaboration between SoL and agencies that were instrumental to SoL’s success as the Program collaborated intensively with these partner organizations during successive phases. The Program interacted with international and Timor-Leste non-governmental organizations (NGOs), international research institutes, universities and other civil society organizations as well as bi-lateral aid organizations and multilateral agencies in support of the main counterpart and owner of the Program, MAF.

As information on the early stages of the Program was scattered and the attention of the program has considerably shifted over the three phases, the approach adopted involved looking at the main ‘End-of-Program Achievements’, tracking their development history over time and identifying collaborative action (considerably) contributing to the achievement.

The following chapters provide more detail about the Background of the Program (Chapter 2), the Objectives and Methodology and theoretical frame on collaborative efforts (Chapter 3), the Timor-Leste country context especially related to Agricultural Development (Chapter 4), the expanding focus of the Program (Chapter 5). Chapter 6 provides a description of the Collaborative Efforts with a focus on seven main achievements:

- (i) Ministry of Agriculture and Fisheries (MAF) - Institutional Development Support;
- (ii) Improved Food Crop Varieties;
- (iii) Timor-Leste National Seed Policy (NSP);
- (iv) Timor-Leste National Seed System (for Released Varieties) (NSS(RV));
- (v) Community Seed Production Groups (CSPGs), Commercial Seed Producers (CSPs) and Linkages;
- (vi) Food Crop and Seed Storage; and
- (vii) Optimizing Information for Collaborative Use.

Chapter 7 provides an analysis of the collaborative efforts whereas Chapter 8 presents some of the Key Lessons Learned from SoL and its collaborative efforts.

¹ Further in the document we will intermittently use and refer to ‘SoL’, ‘the Project’ (often related to SoL1) or ‘the Program’ and where explicitly relevant, the specific phase will be mentioned.

² Refer to Chapter 4 for a description and focus of the three phases.

2. Objectives and Methodology

2.1 Objectives

The objective of the assignment was to assess collaboration between SoL and other stakeholders including non-governmental organizations (NGOs), bilateral and multilateral donor projects related to the activities and outputs of the Program's research, seed multiplication, extension and seed system development components, and the inclusion of collaborating organizations in SoL-sponsored training programs.

A secondary objective was to gather information on the scope of activities of the NGOs, bilateral aid organizations and multilateral agencies working in the agriculture sector, to assess actual and potential collaboration with SoL, especially as it relates to increases in food crop production and improvement in food security.

And further:

- Review the extent SoL activities were enhanced/impeded through collaboration with these agencies.
- Review the extent that SoL strengthened the capacity of these organizations to achieve their own goals.
- Review the constraints to successful collaboration with these agencies.
- Review the extent to which SoL's research, seed multiplication and seed distribution agenda was influenced by these organizations

2.2 Methodology

The methodology employed for the assessment was a series of semi-structured interview designed to elicit data (mostly qualitative and some quantitative) related to the above focus topics. In accordance with the ToR, the SoL collaboration impact consultant undertook the following (*See Annex 2 for detailed assignment schedule*) activities:

- A study of background documents related to Timor-Leste context and the rural and agricultural related sectors, SoL documents covering the three phases of SoL.
- Meetings with donors including through the (MAF) Development Partners Working Group and Australian Aid/DFAT, EU, FAO on cooperation and funding of rural development in Timor-Leste.
- Meetings with different programs funded by bilateral and multilateral agencies including the Rural Development Program (RDP) IV implemented by GiZ and Camões; the International Fund for Agricultural Development (IFAD) Timor-Leste Maize Storage Project;
- Discussions with International NGOs involved in agricultural development in Timor-Leste including Mercy Corps (MC), World Vision Timor-Leste (WVTL), Catholic Relief Services (CRS), Hivos, etc.
- Meetings with National University of Timor Lorosa'e (UNTL) Faculty of Agriculture representative, Timor-Leste NGOs including La'õ Hamutuk, HASATIL (Timor-Leste Sustainable Agricultural Network), RAEBIA (previously USC Canada), Timor Aid and such private sector institutions as *Cooperativa Café Timor* (CCT) supported by United States Department of Agriculture's National Cooperative Business Association (USDA/NCBA).
- Meetings and discussions with GoTL officials from MAF at national and municipal level to assess their perspectives on relevant agricultural development issues especially in relation to collaboration with SoL, the impact as well as the sustainability projection.

- Attending a number of workshops including the 'Collecting external perspective on National Diagnostic for Institutional Strengthening to MAF (SEFI - Secretary of State for Institutional Strengthening)' attended by GiZ, USAID, IFAD, FAO, KOICA, UNDP, JICA and EU-RD.
- Discussions with SoL3 management, advisors, senior staff and component coordinators and other relevant staff.

This enabled the collection of differing views from a wide range of stakeholders about SoL and its objectives, the contribution of SoL to agricultural development in the challenging environment of Timor-Leste and the influence of SoL on the respective organizations and vice versa.

As mentioned in the introduction, information about the early period of the 15-year Program was limited as many of the early stakeholders had already moved on. However tracing back earlier information was possible because of people currently still involved in the Program or in the development sector in Timor-Leste albeit in other positions and/or with other organizations.

3. Timor-Leste and Agricultural Development – Brief Country Context

Timor-Leste has benefitted from sizeable increases in its Gross Domestic Product (GDP) over the last few years. However, this growth has not been broad-based. Rather, it has been driven by petroleum revenues and the resulting Government contracts for major and minor infrastructure. The Government of Timor-Leste, in its national *Strategic Development Plan*, recognizes that broad-based economic growth is essential to ensure sustainable reductions to the current high rates of poverty.

Timor-Leste is among the world's youngest countries but also one of the poorest. The International Food Policy Research Institute (IFPRI) in its *'the 2014 Global Hunger Index: the Challenge of Hidden Hunger'* reported Timor-Leste as bottom of the region³ with the trend worsening since 1990. The Index describes the Timor-Leste situation as 'alarming'. The Index also shows that Timor-Leste is one of the four countries that have the highest prevalence of underweight children under-five with more than one in three under-five-year-old children underweight reflecting wasting, stunted growth, or both, and indicates lack of nutrition.

The country suffers from seasonal household food insecurity with the hungry season⁴ prior to maize and rice harvests. Farm households cope with food shortages through crop diversification with tubers playing a lead role as grain stocks dwindle. Foraging for wild food resources, selling animals and other assets, selling labour in agricultural or the construction sector and social networks are other key coping strategies. Three quarters of Timorese live in rural areas and depend on agriculture, forests and fishing for their livelihoods. And it is in these rural areas where poverty is most concentrated (with a rural poverty rate of 60% compared to the national rate of 41% according to the national poverty line). Of the remaining 40% of the rural population, most are clustered near the basic needs poverty line. This suggests that the vast majority of the rural population in Timor-Leste is either below the poverty line, or vulnerable to slipping back into poverty due to shocks, trends or seasonality.

Performance in the agriculture sector, where the majority of Timorese work, has remained flat for decades. The total production and productivity of the major crops are low and the country is a net food importer. The sector's poor performance suggests that economic opportunity for the majority of Timorese remains elusive. Yet, Timor-Leste is a largely agrarian society, in which the agriculture sector is the largest contributor to non-oil GDP, the foundation of the informal economy, and the basis of the nation's food security. It will be necessary to address underperformance in the agriculture sector and linked services, to provide greater economic opportunity and food security to the majority of Timorese people.

The Government puts as one of its key aims to boost food security of rural communities as most agricultural activity is subsistence-based and it is evident that food security can be considerably enhanced by improving rural infrastructure and modest gains in agricultural productivity through the use of improved farming practices, including widespread access to and use of good quality planting materials (seeds and cuttings) of more productive varieties.

It is in this context and to further support the Government in its "Improved Food Security through Increased Productivity of Major Food Crops" efforts that the 15-year collaboration between the Government of Timor-Leste and the Government of Australia through the Program known as 'Seeds of Life' has evolved.

³ The country is ranked 74 in a list of 76 developing countries and the only two countries below Timor-Leste are Burundi and Eritrea, both in Africa, south of the Sahara.

⁴ Seeds of Life surveys estimated the percentage of farming families experiencing one month or more of food shortage at 62% in 2013 and 81% in 2014. There is reason to believe that the 2014 figure is an overestimation (SoL 2013 and SoL 2014).

4. Seeds of Life Expanding Focus - From Research to Development Program

4.1 Background

SoL1 was established in 2000⁵ to help improve food security in Timor-Leste. Food security at that time was a particularly urgent issue after much of Timor-Leste's infrastructure was destroyed during the weeks of turmoil surrounding the former Indonesian province's vote for independence in 1999. During this period more than a third of the population was dislocated and much of farmers' seed was eaten or destroyed.

During project formulation in 2000 ACIAR identified the lack of improved germplasm of major food crops as a most serious constraint on food crop production. The project was rapidly formulated to identify more productive germplasm to take the place of lost traditional lines.

At the time SoL1 was formulated there was no East Timor government or government officials with whom to coordinate activities. The Project was designed in close consultation with the President of CNRT (National Council of Timorese Resistance) and the Division of Agricultural Affairs of ETTA/UNTAET (East Timor Transitional Administration/United Nations Transitional Administration in East Timor)⁶. As a consequence, the standard ACIAR/Developing Country Partner relationship did not exist at the commencement of the Project.

Once established, the limited size of the Ministry of Agriculture, Forestry and Fisheries (MAFF) precluded it from operating a large research and extension program without considerable assistance from other organisations and initial government support was limited because of a lack of resources both in terms of numbers⁷ of trained personnel (particularly in food crops) and the shortage of functioning research facilities.

In summary, SoL was established in response to an immediate and dire need under very difficult conditions both in terms of governance, research supervision, agro-ecological complexity⁸ and very limited infrastructure. Despite its difficult genesis, the SoL Program has persisted and developed over three 5-year phases, each with distinct features.

4.2 SoL1 (2000-2005)

SoL1 started in 2000 and was managed and funded by the Australian Centre for International Agricultural Research (ACIAR) with a budget of AU\$1.2 million. SoL1 was designed to improve farmers' access to a range of higher yielding crop varieties adapted to the varied environments in Timor Leste and to build capacity in the staff of the Ministry to evaluate, produce and distribute improved germplasm.

SoL1 conducted replicated trials under research station conditions on different food crops including maize, cassava, sweet potato, rice and peanut. These were implemented with participation of several NGOs including World Vision International (WVI) and Catholic Relief Services (CRS) providing assistance with establishing and managing trials and Australian Volunteers International (AVI) contributing volunteers. Five Crop Centers belonging to the Consultative Group of International

⁵ ACIAR Project Description "Seeds of Life – East Timor". November 2000.

⁶ Since Timor-Leste independence on 20 May 2002 known as the Ministry of Agriculture, Forestry and Fisheries (MAFF) and in September 2007 changed into Ministry of Agriculture and Fisheries (MAF).

⁷ In October, 2003, MAFF was staffed by only 183 people with 28 persons working in non-horticultural and industrial crops, 13 of whom were located in the municipalities (one per municipality).

⁸ East Timor agricultural ecosystems are very complex with five major land/soil formations and six major agro-climatic zones represented in its small land mass (1.4 million hectares).

Agricultural Research (CGIAR) collaborated with ACIAR to provide expertise and breeding material, and contributed assistance with crop evaluations. By late 2000, contributions were being made by the International Rice Research Institute (IRRI) with assistance in evaluating rice varieties, the International Maize and Wheat Improvement Centre (CIMMYT) with maize, the International Centre for Tropical Agriculture (CIAT) with cassava and beans, the International Potato Centre (CIP) with sweet potato and the International Centre for Research in the Semi-Arid Tropics (ICRISAT) with peanuts.

With the assistance of NGOs trials were conducted at five sites in the east, west and in the central highlands during the 2000-2001 wet season. With the formation of the first Government elections of 2002 MAF personnel became increasingly involved with Project activities and benefited from the training and mentoring provided by CGIAR representatives.

4.3 SoL2 (2005-2010⁹)

SoL2 was jointly financed by AusAID and ACIAR with a budget of AU\$10.4 million and 'The Centre for Legumes in Mediterranean Agriculture'¹⁰ within UWA was commissioned to coordinate the Australian-funded activities.

The SoL2 goal remained unchanged but the purpose focused on the "use of improved crop varieties and associated technologies which result in increased food production". SoL2 had a comprehensive approach to improving the capacity of MAF to develop and release improved technologies. The Program included on-station and on-farm research, on-station and on-farm seed production, research station infrastructure improvement and training and assistance with policy development. SoL2 was focused on identification of more productive food crop varieties and using on-farm demonstrations and trials (OFDTs) to confirm varietal suitability under farmers' conditions and preferences in all agro-ecological zones. The Program concentrated on implementing research and demonstration trials on-farm with a reduced emphasis on research station trials.

Germplasm continued to be sourced from CGIAR centers, much of it from regional centers. For example most sweet potato varieties were sourced from programs in Indonesia, and cassava varieties from Thailand and Indonesia. Potential varieties were also sourced from the University of the Philippines breeding group (maize), programs in Australia (mungbean, wheat and barley) and from local organizations operating in other parts of the world (e.g. World Vision provided climbing bean material originally sourced from Rwanda).

SoL2 scope was subsequently expanded in late 2008 to initiate the production of "formal seed" of released varieties for distribution to farmers. This process involved a larger percentage of the farmer population and international NGOs, private enterprise and international agencies in Timor Leste. Two Directorates in MAF were also involved: The National Directorate for Research and Special Services and the National Directorate for Agriculture and Horticulture.

⁹ Funding approval from ACIAR and AusAID was received on 28 September 2005 but in the meantime the on-station research program was supported by ACIAR as extension to SoL1. Towards the end of SoL2 and due to the late design of SoL3, SoL2 was also extended until January 2011.

¹⁰ The Centre was renamed 'Centre for Plant Genetics and Breeding' in 2013.

4.4 SoL3 (2011-2016)

SoL3 built on the knowledge, relationships and experiences of the previous 10 years of SoL program implementation. It is jointly funded by AusAID, ACIAR and MAF with a budget of around \$28 million¹¹.

SoL3's vision is for Timor-Leste to have the foundations of a national seed system established and operational by the end of the Program. Its ultimate purpose is for at least 50% (est. 65,000) of the nation's crop producing households having access to and routinely using improved seed and planting materials of the major staple food crops: maize, rice, peanut, cassava and sweet potato. A small amount of work was also conducted on some minor crops (wheat, barley, potato) and increasingly on various bean crops¹². SoL's End-of-Program Achievements¹³ focused on increasing the capacity of MAF to ensure sustainability of the system put in place.

So SoL3 maintained SoL2's focus on increasing the yields of staple food crops by selecting and distributing improved varieties of superior genetic quality. This focus is strongly justified by the substantial and rapid gains that are still on offer in this area and can be achieved largely independent of other factors that potentially contribute to improved food security (e.g. improved agronomic practices, reduced storage losses, improved input supply systems, and improved financial services, although the Program had a secondary focus in some of these areas.

Since the end of SoL2, SoL developed a secondary focus on analysing and developing strategies to overcome climate variability and change, and in SoL3 this further expanded into: improving agronomic practices to reduce weed burdens and increase soil fertility; integrated watershed management; reducing post-harvest storage losses; the establishment of databanks for the future use of MAF and development partners and improving input supply arrangements for seed. SoL has also given more prominence to nutrition issues than was proposed in the original design.

During its three phases the Program contributed to the Government's strategic direction and policies and stays fully in line with the current Government's program based on the Timor-Leste Strategic Development Plan 2011-2030 to strengthen the agricultural sector to reduce poverty, provide food security and promote economic growth and jobs in rural areas.

¹¹ PDD Seeds of Life Phase III, pg x." Total SoL3 cost (Australian plus GoTL funding) is estimated at AU\$28 million over the 5-year implementation period. The Program will be jointly financed by AusAID, ACIAR, and GoTL. On the basis of the draft transition plan funding consisted of AusAID AU\$22 million, ACIAR AU\$3 million and GoTL AU\$ 2.8 million (or 10% of the total budget)."

¹² The purpose has been adapted over the life of the Program and was agreed between partners to capture the changing focus.

¹³ Refer to Chapter 6.1.2 for description of the End-Of-Program achievements.

5. Collaborative Efforts and Collective Impact – Some Thoughts

The literature presents a wide range of definitions of collaboration but most talk about processes or relationships that are mutually beneficial between a number of parties who work toward common goals by sharing responsibility, authority and accountability for achieving agreed results.

Key principles of effective collaboration¹⁴ include:

- Clear desire and intention of stakeholders to attain certain fundamental changes in the situation they are trying to address. Such intentions are translated into concrete operations that make these changes possible and attainable.
- Shared definition of problems and issues that directly or indirectly affect the situation they are trying to address. Stakeholders have a common analysis and appreciation of the context or the environment that revolves around the problems.
- Articulated shared purpose and direction. The articulation is formal and known to everyone. Purpose and direction include a common vision of the desired state or the future scenario, an agreed upon set of strategies to arrive at their vision and goals, an over-arching framework that defines development constructs.
- Interdependence of stakeholders. Each collaborating organization carries with it its own strengths and competencies that it brings into the partnership thus complementing each other and allowing the relationship to further enhance capacities and capabilities of each other .
- Participation and democratic processes provide for enabling environment that ensures broad participation of all stakeholders, especially in direction setting and decision-making. They do not allow for too many complicated hierarchies that block active and effective flow of information.
- Leadership commitment to the collaboration is crucial not only in forging unity between and among collaborating organizations but also in ensuring that shared visions and strategies are attained effectively. Leadership in this relationship will also have to be shared and members have the opportunity toward leadership roles in various levels of the collaboration

Collaboration is seen as prerequisite to achieve **Collective Impact**¹⁵ and as such sits at a part of the Collaboration Spectrum¹⁶ where individuals and organizations, begin to more intentionally work together in cooperative, collaborative or integrative ways. This intentional action requires the building of more trusting relationships as one of the main drivers.

Organizations that successfully work together have typically achieved three things: high levels of trust, serious time commitment from partners, and a diminished need to protect their turf. As partners develop greater trust in each other, commit more time to the effort, and are more concerned about enhancing the capacity of their partnership than about protecting their organization's turf, they are able to collaborate in more substantive and productive ways. The more intense the level of collaboration, the greater the potential outcomes.

¹⁴ Ateneo de Manila School of Government for the National Anti-Poverty Commission (NAPC). 2003. The Collaboration Study.

¹⁵ Kania J. and Kramer M. 2011. Collective Impact. Stanford Social Innovation Review Winter 2011.

¹⁶ Weaver L. 2015. Turf, Trust and the Collaboration Spectrum. The Collaboration Spectrum shows different interpretations about collaboration by different actors with following gradations: Compete, Co-exist, Communicate, Cooperate, Coordinate, Collaborate and Integrate.

Himmelman¹⁷ describes partnering with others as a continuum, not necessarily as discrete stages but more as points moving along a continuum with **Networking** being mainly the exchange information; **Coordinating** being an info exchange and altering activities; **Cooperating** being info exchange, plus altering activities and the sharing of resources while **Collaborating** shows info exchange, altering activities, sharing resources and enhancing capacity of the other organization. Partnerships may begin with the simple exchange of information and build up to a point at which partners harmonize their activities, share their resources, and work together to improve each other's capacity.

The above models are challenged against the reality faced by implementers of programs to perform and to achieve targets. The urge for programs to get right down into the action, without checking in with others, without talking about expectations and constraints and where basically everything done tends to be counter-intuitive to trust building. Spending time building relationships, building common ground, building trust may take longer at the beginning of collective efforts, but ultimately might get us to our results quicker.

¹⁷ Himmelman A.T. 2002

6. Collaborative Highlights

6.1 MAF Strengthening – Institutional Development Support

6.1.1 Background

At the time SoL1 started there was no Timor-Leste Government in place and activities were established and coordinated with the Division of Agriculture of ETTA/UNTAET. Upon establishment of MAFF¹⁸, and given the very limited number of staff and their capacity, one of the objectives of SoL1 was to build staff capacity to evaluate, produce and distribute improved germplasm. This was expanded in SoL2 to the objective of improving the capacity of MAF to develop and release improved technologies. Where SoL2 was about releasing varieties and putting systems in place to produce seeds it was because of the emergence of the new approaches to ensure nation-wide distribution of improved seeds that SoL3 was conceptualized. SoL3 focused on ensuring that seeds would reach the farmers taking into account the difficult conditions that make a central system to distribute quality seeds in time and in sufficient amounts almost impossible. SoL3 focused on improving the management capacity of MAF to manage research and formal and informal seed production and distribution on appropriate scale and manage the overall seed system.

At the time of writing this report in mid-2015, the country is still struggling to develop a more coherent system. The current situation is that apart from the adaptive research undertaken by SoL on MAF's research stations and farmers' fields (the latter in the form of on-farm demonstration trials [OFDTs]) there is little evidence of adaptive research on any of Timor-Leste's major crops. This deficiency is recognized in the Timor-Leste Strategic Development Plan 2011-2030 (TLSDP)¹⁹, which includes a recommendation that a Timor-Leste Agriculture Research and Development Institute (TLARDI)²⁰ be established and operate within MAF²¹.

6.1.2 Objectives

As mentioned in a previous section SoL's End of Program Achievements are very much related to MAF capacity to ensure that investments made are sustainable. Achievements targeted include: (i) MAF is competently managing an adaptive research program that is regularly identifying and releasing improved varieties; (ii) MAF is competently managing source (formal) seed production and processing activities at an appropriate scale; (iii) community and commercial seed production and distribution is stimulated nation-wide through the establishment of CSPGs; and (iv) MAF is actively and effectively managing overall development of the national seed system. More recently the establishment of databanks for the future use of MAF and DPs has been added to this list.

6.1.3 Description

SoL3 contributed to the objective of MAF being capable to manage the systems put in place through the different Program Components which link to different National Directorates within MAF. These include:

¹⁸ MAFF later became MAF.

¹⁹ The TLSDP refers to the Timor-Leste (Agricultural) Research and Development Institute (TLARDI) *“which will be responsible for guiding and planning additional investment into research, development and extension for all major agriculture sectors”*.

²⁰ Note that MAF's 2013 GAFSP application did include a request for funding to cover the launch and operation of TLAAC (and TLARDI - the Timor-Leste Agriculture Research and Development Institute).

²¹ Countries which make good progress in terms of developing their agriculture sectors allocate about 10% of their sector budgets (which should be 10% of the national budget) to adaptive research and development (R&D).

- a. **Component 1 ‘Crop Identification and Development’** is centred in the MAF National Directorate for Research and Special Services (NDRSS)²² and aims to conduct research on research stations and on farmers’ fields as well as strengthen the NDRSS.
- b. **Component 2 ‘Source Seed and Quality Control’** is linked to the MAF National Directorate for Agriculture and Horticulture. It evolved over SoL3 from providing high quality seed directly to farmers - virtually all of which was distributed for free mostly via MAF and NGO - into a system for catering for the amount of source seed (foundation and certified seed) required to drive the NSSRV, with a little extra as buffer stock and for sale to NGOs and other organizations.
- c. **Component 3 ‘Community and Commercial Seed Development’** is linked to the MAF National Directorate of Agricultural Community Development²³. It deals with the community seed production groups (CSPGs) and commercial seed producers (CSPs), and developed a system to ensure vulnerable groups had access to good quality seed and other planting material of improved varieties.
- d. **Component 4 ‘Seed System Management’** is supporting the development of the NSP, National Seed Council (NSC) and Guidelines governing the operations of the NSSRV. It deals with the socialization of the substance of the NSSRV and more recently decentralisation of the NSS to each of the 13 Municipal Seed Systems (MSSs) including building the capacity of each MAF Municipal Office to design the production, distribution and management components of its MSS for seed security, maintain a municipal seed system database and monitor and report.

This document will not provide for an extensive description of each of the achievements²⁴ of SoL related to MAF’s institutional strengthening as this will be the subject of the Program’s overall impact evaluation or the program completion report. Program achievements are also documented in the annual reports as well as in the detailed annual research reports prepared by the Program team which can be found on the Program website²⁵.

There is an increased level of institutionalisation taking place within MAF²⁶ and its directorates, and MAF is taking an increasing degree of managerial and financial responsibility for the national seed system, a promising indicator related to the sustainability of SoL achievements. The financial commitment is visible in the MAF budget allocation as follows:

- 2014: MAF provided funds for the operations of Component 1 (US\$200,000)
- 2015: MAF allocated funds for the operations of Component 1 (US\$300,000); Component 2 (US\$300,000) and Component 3 (US\$30,000)
- 2016: MAF will cover most of the costs involved in managing the National Seed System (NSS) including each Municipal Seed System (MSS) and will be assisted by the National Seed Council (NSC) to manage and sustain the NSS in accordance with the NSP.

²² The National Directorates listed here are the ones in existence in early July 2015, the time of writing this report. A new reorganization of MAF is expected to take place in the near future, which will change some of this. The impact of the reorganization may be the most noticeable for the research component.

²³ Sometimes referred to as the National Directorate of Agricultural Extension.

²⁴ As part of Chapter 6 we describe a number of the success stories of SoL including the improved varieties, the NSP, the NSSRV, food crop and seed storage, CSPs and CSPGs and linkages, and provide info on some promising activities initiated towards the middle of SoL3.

²⁵ www.seedsoflifetime.org

²⁶ Unfortunately the frequent re-organizations and replacement of staff within MAF hampers some of the progress made. Hopefully the new wind blowing through MAF with the new minister taking charge might support future change.

For the research component (component 1) the procedures for planning up to implementing research are in place, quality equipment has been provided by SoL and other DPs, and the investment in capacity building of Timorese human resources ensures that research, maintenance and use of equipment and other related activities can continue in the future, provided some key positions in the system continue to be staffed by the people who have been trained for it. For 2015 MAF is providing the budget for research implementation, but late budget release is a concern given that late release will interfere with research planning and implementation which is also seasonal dependent). Expatriate advisors are slowly phasing out by reducing their inputs and are supporting the Timorese staff with mainly strategic advice.

Component 2 activities are similarly Timorese-led and MAF funded and ensure that quality certified seeds are available as the basis for ongoing OFDTs, CSPGs and CSPs to produce community and commercial seeds.

Component 3 runs on a demand-supply base. Community seeds are first and foremost being produced to meet the seed needs of CSPG members, with extra seed being available for other users in the *sucos* where it can be used in the *sucos* exchanged against other seeds or crops, handed out to family or used in other distribution or mostly through bartering. Commercial seed production is heavily dependent on the demand from MAF itself, as well as from other agricultural development stakeholders, but the system is in place. Recently, the MAF Minister agreed to contract ANAPROFIKO²⁷ to purchase as much as possible of its 2015 seed requirements from local CSP, including utilising existing budget lines for imported seed to purchase local commercial seed if supplies are available. The fact that MAF can also save money by locally purchasing quality commercial seed that builds local markets and strengthens a national association of CSP opens opportunities for further commercialisation of agricultural production.

Related to Component 4, SoL has been increasingly handing-over to MAF the responsibility for funding and managing all operations of the National Seed System, including helping to establish each Municipal Seed System. The challenge for 2015-2016²⁸ will be to ensure that each MAF Municipal Office has the capacity to plan, budget, implement, monitor and report activities and results of managing its MSS.

The MSS responds to an opportunity emerging from the changing context²⁹ within Timor-Leste which has recently embarked on a program of decentralization, which over time will enhance the roles and responsibilities of the municipalities, including the agriculture support services that are based in the municipalities. Support for the development of tools and approaches that allow MAF municipal offices to interact constructively with *suco* communities in the formulation of their local agricultural development, especially in regard to increasing access of subsistence farmers to improved seed and planting material, is certainly worthwhile.

²⁷ ANAPROFIKO (*Asosiasaun Nasional PROdutor Fini KOMersial*) is the National Association of Commercial Seed Producers, established in 2015.

²⁸ Building on 2014 experience where MAF-SoL facilitated a series of municipal workshops in collaboration with each MAF Municipal Office at which all MAF municipal staff including SEOs, the Municipal Administrator, *suco* chiefs, leaders of commercial seed producers groups and agricultural NGOs were oriented on the NSSRV and MSS and then MAF staff were shown how to undertake municipal seed system planning.

²⁹ The government, through the Ministries of Finance and State Administration, has embarked on a program to de-concentrate public services under the authority of municipal governments. Whilst progress is likely to be cautious, this move would create a basis for weakening national government's grip on seed procurement and allow a more municipal-level approach. This would allow the MAF/SoL assets (quality control centers, trained staff, storage facilities) located in municipalities to be used most appropriately.

6.1.4 Process and Actors

Figure 1 Seed Classes and Main Actors below shows the parts of the national seed production system and points to the actors and institutions responsible for implementation. SoL was instrumental in initiating and developing the system and building MAF capacity through theoretical and on-the-job, training, on-going supervision and regular mentoring etc.). While this capacity-building was initially focused on research it continued and expanded through each of the programs three phases to establish a capacity to manage the national seed system.

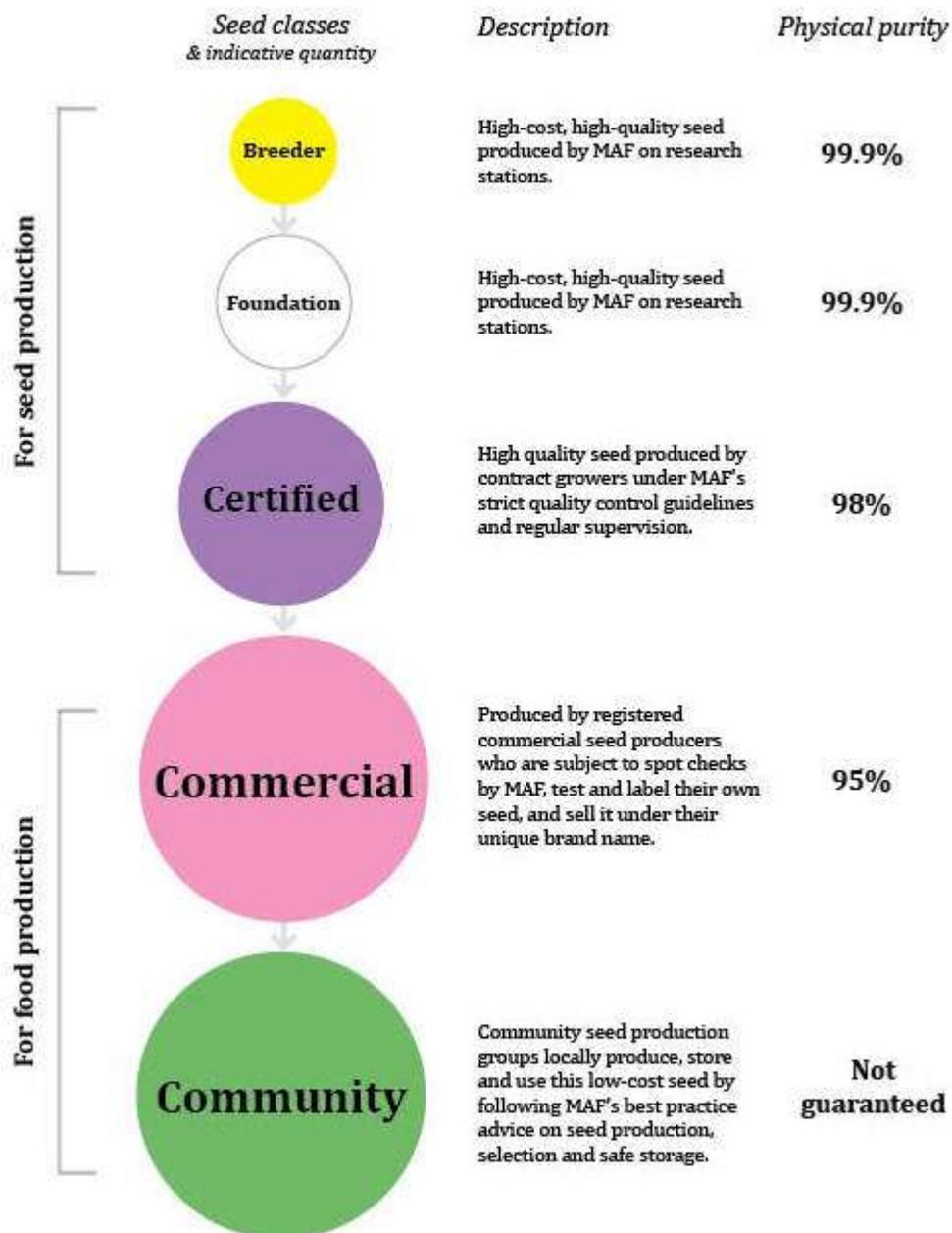


Figure 1: Seed Classes and Main Actors

There is recognition within MAF that SoL was influential in ensuring that research stations can implement research, can deliver and support the data and information for releasing varieties and can produce high quality breeder and foundation seed. SoL's support to the MAF Research and Seed

Department for the rehabilitation/renovation of the six research stations and research centers, the physical set-up of the Seed Department in MAF, the three seed laboratories and the six seed warehouses is well appreciated.

Besides this, and as important, is the capacity building SoL (and third parties) provided which have resulted in increased human resources capacity within MAF also contributing to the effective use of the infrastructure provided. The capacity building covered a wide field including monitoring and evaluation, socio-economic surveys, variety evaluation and development, seed testing and quality control, weather stations management and weather data gathering as well as soil testing, increasingly enabling MAF to sustain most seed system activities. Between 2006 and 2015 SoL provided opportunities for capacity building (excluding scholarships) through a total of almost 26,000 training days with the majority³⁰ to MAF staff (including the staff allocated to the Program). Further appreciation from MAF refers to the opportunity for short- or longer-term study supported by SoL including the six ACIAR funded 'John Allwright fellowship scholarships'³¹ at University of Western Australia and the four completed Masters studies in *Institut Pertanian Bogor* (Bogor Agricultural University) funded by the Program.

SoL was involved in a number of efforts to provide more streamlined support to MAF but the frequent re-organizations³² and staff switches keep influencing dynamics in the ministry and lean heavily on performance and direction in the sector.

DPs have recognized that concerted efforts are needed but support for the main concerning issues i.e. (i) overall direction of the sector; (ii) the availability of reliable data to guide essential planning processes; and (iii) MAF's limited institutional capacity to plan, manage and monitor sector development initiatives is too little and hampered by the internal and external politicized environment in MAF. There were some noteworthy efforts such as GIZ's support to MAF for 'core function analysis', DP support for various strategic plans and strategies developed prior to the change of government that were subsequently ignored by the incoming MAF management and SoL's and the World Bank's support to MAF for the development of MAF's Strategic Plan (in 2012-2013) but given the institution's lack of strategic direction more is needed.

The unclear MAF direction is not helped by the fact that DPs themselves do not act in agreement on approach to support MAF or even on operational issues collaborating with MAF. Some DPs are relatively good integrated either working completely through the system e.g. IFAD or, like SoL, working from within and providing support for issues that MAF should be doing anyway. Other DPs work in parallel while (ad hoc) interacting with MAF staff on municipal level. All these non-streamlined approaches to collaboration send more confusing messages to MAF.

In 2014 efforts started including the World Bank-funded "MAF Institutional Reform and Transformation Project" (MIRT) which was designed to assist MAF to begin to address institutional constraints and which is intended to be a precursor to a new MAF support program to be funded through the Global Agriculture Food Security Program (GAFSP) starting in 2016. Other support comes from the EU which provided an advisor to analyse current constraints and opportunities. Besides this the Timor-Leste Government, through the Secretary of State for Institutional Strengthening, is implementing the 'National Diagnostic for Institutional Strengthening' program covering all ministries including MAF.

³⁰ In a number of trainings some seats were allocated for participants from NGOs amounting to close to 400 days.

³¹ Three still on-going.

³² End of 2014 re-organization is not yet fully implemented whereas; following the approval of the new Organic Law for MAF in May 2015, another re-organization will be happening expected to be formalized in the first week of August.

6.1.5 Collaboration

SoL, being long-term embedded in MAF and possessing extensive resources (compared to MAF itself as well as compared to other DPs) was very directive, influential and played a significant role in establishing all the components within the national seed system. By slowly moving from research, to seed production and seed distribution on national scale, SoL laid the foundations for a sustainable NSSRV and its on-going implementation.

Using Himmelman's classification³³ SoL was in a very critical partnership with MAF being considered as indispensable in accomplishing the goals as described above, while on the other hand MAF provided the opportunity for SoL to be able to be instrumental. The collaborative efforts was a long-term strategic arrangement and focused on slowly increasing goals going from specific research to policy and seed system development and management.

6.1.6 Sustainability and Future

The MAF Director General for Agriculture and Livestock acknowledged that SoL has put the system in place and that it is now the responsibility of the Government to ensure its sustainability. He acknowledged the tremendous efforts implemented by SoL to establish the national system and the current efforts to decentralize to a municipal seed system as part of the overall decentralization efforts being initiated by the Government. He sees future collaboration with SoL and other Australian Aid Programs more through provision of some long-term qualified technical people in the national directorates who can support and mentor the Timorese who return from master's and doctoral studies abroad³⁴ to ensure that Timorese lead the development within MAF.

The National Director of Research and Special Services acknowledged that the program flow of SoL over the years, from research to seed multiplication to seed production and working up to farmer level, has been proven an ideal one. He acknowledged that without SoL there probably wouldn't have been a lot of field activities, so the challenge for MAF consists in making optimal use of the human resources especially the SEOs, the senior extension staff and extension coordinators in place to put and implement the appropriate decentralization measures to implement the system.

Some issues that can be addressed during the coming year in order to support sustainability (as suggested by MAF) are:

- Collectively, with other DPs, keep interacting with MAF at the highest level to get clarification on the long-term vision for agricultural development as basis for effective DP investments. There are encouraging signs over the last couple of months that the new minister will be much more effectively interacting with the DPs and might be able to address a number of issues mentioned above, especially related to the strategic direction and the contribution of the DPs, once the latest reorganization is formalized.
- Further strengthening of the private sector including through collaboration with MDF already talking to SoL and other stakeholders to support the national association of *loja agrikultura* and supporting CSPs and ANAPROFIKO in terms of entrepreneurship and business skills while in the meantime ensuring the quality and availability of seeds.

³³ Himmelman's partnership classification as quoted in Ateneo de Manila School of Government. 2003.

³⁴ A recurrent problem seems to be that people returning from studies abroad cannot necessarily enter the Government (if they were no civil servants when they left and even though some promises were made at the time of taking up the scholarships). Even for the returning civil servants, their return is hampered by the fact that there is no procedure in place to ensure that their newly acquired skills get applied to the benefit of MAF.

- Prepare for transition including for ensuring implementation and technical aspects of the system and within MAF lobby and advocate that MAF Research and Extension Directorates, NDAH Seed Department and each MAF Municipal Office take up their role in sustaining components of the NSSRV.
- Continue support to diversify activities of CSPs as farmer organizations that are active beyond seed production³⁵.
- Strengthen and support MAF Municipal Offices to ensure they possess the capacity to plan, budget, implement, monitor and report activities and results of managing its MSS as these are being included in their Annual Plans.

6.2 Improved Crop Varieties

6.2.1. Relevance of Improved Crop Varieties

With a focus of SoL on contributing to the food security in Timor-Leste, during project identification ACIAR identified the lack of germplasm (both in terms of quality and quantity) of the major staple food crops (i.e. maize, rice, sweet potato, cassava and peanuts) as being a serious constraint to crop production in Timor-Leste. The Program was therefore designed to overcome the shortage by identifying more productive material to replace lost traditional lines especially through critical collaboration of ACIAR with five CGIAR crop centers with specific knowledge and focus i.e. IRRI, CIMMYT, CIAT, CIP and ICRISAT, and building on the germplasm available in these centers.

From 2001 onwards identification of more productive varieties of staple food crops was centred in what is currently known as the MAF National Directorate for Research and Special Services (NDRSS) which conducted research on stations and on farmer's fields with support from two INGOs. MAF, through NDRSS, has been researching improved varieties of these same five staple crops for the past 15 years, the first of which were officially released in 2007³⁶. To date twelve more productive varieties have been released including an industrial cassava variety³⁷. The varieties released to date have 24-131% higher yields than commonly used local varieties.

A number of different varieties have gone through OFDTs and are in the final stages of evaluation to identify those suitable for future release, These include a local red rice, a very popular purple sweet potato, cassava, mungbean, climbing beans, velvet beans, winged beans and peanuts.

6.2.2. Objective of Improved Crop Varieties

Although virtually all varieties of staple food crops have been introduced to Timor-Leste in the historical past, SoL1 recognized that only a limited diversity of germplasm of the major staple food crops had been brought to the country over centuries. The aims are to search for improved crop varieties of already familiar crops and for varieties of still somewhat unfamiliar or not yet locally-grown crops with good nutritional and/or commercial potential so that there is a range of higher

³⁵ At the time of finalizing the report (end of July 2015) SoL collaborated with UNDP to arrange a 30 ton shipment of aflatoxin- tested maize grain from two CSPs to the company Timor Global at 0.50US\$/kg.

³⁶ There was already some unofficial release before 2007, mostly in the areas surrounding the research stations and centers, and through sharing by OFDT farmers.

³⁷ Although originally MAF insisted on focusing on edible cassava, a number of stakeholders were able to convince MAF to trial industrial cassava as the economic prospects are very promising. Cooperativa Café Timor (CCT) is currently promoting this variety as a second cash crop for coffee farmers and is planning to establish a processing unit as demand is high.

yielding crop varieties adapted to the varied local environments in Timor-Leste can increase biodiversity in Timor-Leste.

By increasing access to quality assured (tested) seeds of these improved varieties at the *suco*-level, farming families benefit and avoid having to use seed varieties (often imported³⁸) not well suited to growing conditions in Timor-Leste. So farmers have a greater seed choice as they can access high quality seeds that are locally produced, productive, open-pollinated, reproducible and well-adapted to Timor-Leste's conditions.

6.2.3. Description

Crop variety identification, assessment and development – From the start of the Program the decision was made to focus the research on varieties that had a high productivity and that thrived in circumstances similar to Timor-Leste, ensuring research focused on productivity and adaptability. Comparing the researched varieties with local checks was standard procedure and it was very encouraging, from a research and food security point of view, that some introduced varieties/lines of irrigated rice, maize, cassava, beans and sweet potato produced yields which were much higher than local varieties.

Crop varieties assessment is needed for recognition and ultimately release of improved varieties. The crops need to have been assessed against a number of criteria and identified as superior in some way, be it higher-yielding, more nutritious, tasty or more resistant to wind, drought or disease. All crops are rigorously tested by MAF on its six research stations and farmers' fields for at least five cropping seasons to ensure they are adapted to local conditions and traditional farming practices; are productive in and of themselves – no extra inputs are required such as fertilisers and expensive equipment to get good results; are pure line or open-pollinated varieties. None of the introduced or released varieties are hybrid or genetically modified to ensure farmers can save seeds and replant the next season. All released varieties belong to the public domain so farmers will never have to pay for using them.

Seed Production and Distribution – MAF-contracted farmers are responsible for the production of certified seed but for the benefits of improved varieties to reach farmers, enough seed must be produced. SoL2 expanded its scope to ensure that larger volumes of tested certified seed of adapted varieties would be available at farm level at the right time. However, it became quickly clear that, in order to reach the majority of East Timorese farmers with sufficient seed at a reasonable cost, other seed multiplication approaches would be needed.

Where SoL2 mainly focused on the production of quality assured seeds, it was during SoL3 that more expanded production of community and commercial seeds and distribution was taken up. A key tenet of the system is the involvement of private-sector actors— commercial seed producers to grow commercial seed, and subsequently traders and agricultural shops to sell the seed³⁹. These commercial stakeholders also complement the more than 1,200 community seed groups producing low-cost community seed for planting by their 15,000+ members and sharing or bartering in their communities⁴⁰.

³⁸ Past government efforts at distributing imported seed were often ineffective due to inappropriate varieties (incorrect genetics), variable seed quality (too old and with low germination) and late delivery (distributed past the optimum planting date).

³⁹ For more detail we refer to Chapter 6.6 'CSPs and CSPGs and linkages'.

⁴⁰ To improve equal access of farmers to released improved varieties, the Program additionally embarked on strategies to reach vulnerable farmers through free seed for vulnerable households, and supported the sale of seed in small packets.

6.2.4. Process and Actors

SoL1 was borne out of, and based on, a collaborative effort between ACIAR and a number of international centers experienced in specific fields who took the lead in **identifying food crop varieties** with the potential of high productivity and adaptability in Timor-Leste. The initiative received support from two INGOs, World Vision Indonesia and Catholic Relief Services, and two IVA volunteers. SoL1 focused on testing varieties on research stations lead and backed-up by CGIAR centre research personnel. An important instrument for the coordination of efforts, were the six-monthly meetings that brought the researchers together with MAF decision-makers and MAF researchers and decided on further action. Most of the released varieties to date are varieties that were researched under SoL1.

The collaboration with the international institutes provided access to a wide range of varieties with the potential of adaptation in Timor-Leste. Further collaboration in obtaining varieties included work with institutions and programs from the Indonesia, Philippines, Thailand and Australia who showed a commitment to contributing to the search for more adapted and higher yielding varieties.

To share the knowledge of its work, already in 2002, ACIAR collaborated with UNTL, MAF and ANU in the workshop "Agriculture: New Directions for a New Nation East Timor (Timor-Leste)", to ensure that initial research was communicated to a wide range of stakeholders involved⁴¹. The workshop addressed a broad context analysis in all fields related with broader agricultural development, focused specifically on the five crops SoL had been researching and provided some international perspectives.

Given the encouraging results of a number of the varieties of the different crops being tested in SoL1, the initial efforts were expanded during SoL2 including further research on research stations and sites, but also expanding into farmer field trials. At mid-term this was expanded to include the **production of quality-assured seeds** for distribution at national level to ensure that the identified varieties resulting from research would become available at farmer level.

Building on the enthusiasm and goodwill created in MAF during SoL2, **SoL3** expanded its scope focusing on the **mechanisms to increase production and distribution of quality seeds** by introducing a 'community seed production' component. In the 2011-2012 cropping season a total of 320⁴² community seed production groups were supported by MAF-SoL with seed production training of MAF and NGO extension staff. Each of the 112 maize growing groups received 5kg of certified *Sele* seed per group, sufficient to plant a 2,000 m² seed plot. The 56 rice growing groups received 5 kg of certified *Nakroma* seed each; the 55 peanut groups received 10 kg of certified *Utamua* seed each; the 23 cassava groups received 100 cuttings each of *Ai-Luka*, and the 41 sweet potato groups received 2,000 cuttings each of *Hohrae*. In the initial year of implementation these groups produced 13.3 t of maize, 2.7 t of paddy and 1.8 t of peanut.

SoL3 expanded the system to include commercial seed producers emerging from associations of CSPGs or from those selected 'contract seed growers' previously contracted by the MAF seed department to produce certified seed from foundation seed under strict supervision⁴³.

The successful production of quality seeds required the program to start looking at and ensure **distribution of the seeds** of the improved varieties through a number of channels including: (i) MAF itself which acquired seeds through the program for free distribution to the farmers reaching up to the *sucos* coordinated by the SEOs; (2) bilateral and multilateral as well as INGO and local NGOs implementing agricultural or food security programs and which were previously often struggling to

⁴¹ The ACIAR publication 'Agriculture: New Directions for a New Nation East Timor (Timor-Leste) - Proceedings of a Workshop 1–3 October 2002, Dili, East Timor' presents the main papers of that workshop".

⁴² 280 groups supported by SoL and 40 groups supported by collaborating NGOs.

⁴³ For more detail we refer to Chapter 6.6 'CSPs and CSPGs and linkages'

obtain quality seeds on-time and in sufficient volume (often imported from abroad); (3) seed distribution by CSPGs.

SoL provided seeds through a number of means e.g. collaboration with the IFAD TLMSF project that provided drums for maize storage whereas SoL contributed 1.3kg of seeds to farmers buying a drum⁴⁴. SoL also played the role of connector linking different MAF DP projects as well as INGO projects to the seed producers where they could obtain seeds against payment. Through these alternatives, SoL expanded its scope by linking up with these organizations and making sure that farmers on a wider scale received information as well as seeds of the new varieties to test on their fields expanding SoL's reach and scope considerably. As SoL worked within MAF their main channel to reach the farmers was through the SEOs while not having any specific own delivery mechanisms for expanding the reach hence the strategy of ensuring links with other DPs active in the agricultural sector.

The planting season 2014-2015 already showed the success of the previous season's maize seed production. SoL3 supported MAF in ensuring that farmer groups got access to improved seeds, and almost 45 tons of locally produced commercial maize seeds were distributed in the municipalities. These included: (i) more than 27 ton distributed to 1,382⁴⁵ farmer groups; (ii) almost 15 ton was distributed through collaborating efforts with bilateral, multinational or INGO programs including IFAD, RDP4, World Vision, FAO, Hivos and (iii) a bit over two tons, in 750 g and 1 kg packs, to the agricultural kiosks as an incentive and starting package.

Acceptability of the Improved Crop Varieties - Three adoption surveys have been done and show an increase in adoption of the improved varieties. The 2011 Baseline Survey found an adoption rate of 17.9%, the 2013 mid-term survey found that the adoption rate of MAF released varieties was 24.6%. Assuming that there were 123,552 households engaged in crop production in mid-2013, the estimated number of adopters would thus have been around 31,000 at that time. The 2014 adoption survey, involving 700 households in the 13 municipalities, found that about 41,000 families (33% of Timor-Leste food crop households) are already growing one or more of these varieties while still planting a number of the traditional varieties on other blocks of land to cater to local preferences often related to taste and other but also as part of the traditional system of spreading risk.

The search for improved varieties is still on-going and new varieties of cassava, mungbeans, red beans, rice, sweet potato, velvet beans and winged beans were evaluated on farmers' fields to prepare them for release. Besides this, and to support nutrition sensitive agriculture approach, the research stations conducted further research on varieties of pro vitamin A enriched maize germplasm from the International Institute of Tropical Agriculture (IITA) in Nigeria of which SoL obtained 19 new maize populations. Other activities occupying researchers' time included agronomic research on plant spacing fertilizer rates and the use of green manures to improve crop productivity. So research is on-going and is taken up and gradually totally financed by MAF.

Sharing experiences in national and international fora and collaborating with and/or supporting international trials were also part of SoL's agenda.

- In 2011, 2013 and 2015, MAF researchers and SoL advisors presented 21 papers at the Timor-Leste Studies Association Conferences on agriculture and climate change related topics.
- In 2012 SoL presented "Timor-Leste's efforts to achieve maize seed security using 'community seed production'"⁴⁶ in the International Maize Conference in Gorontalo, Indonesia.

⁴⁴ For more detail we refer to Chapter 6.5 'Food Crop and Seed Storage'

⁴⁵ This is the total number of MAF Farmer Groups (not all of them seed producing groups).

⁴⁶ Kunwar B. et al. 2012.

- In 2013, the MAF DG granted a donation of 14kg of 'Sele' maize seed responding to a request from the INGO VECO-Indonesia⁴⁷ who supported the People's Coalition for Food Sovereignty in Indonesia. The trials⁴⁸ also involved researchers from Udayana University in Bali and the *Balai Pengkajian Teknologi Pertanian* in Kupang. Results were presented in a seminar in East-Sumba as part of the celebration of World Food Day, in October 2013.

Raising Awareness on Improved Varieties – SoL used a variety of media to spread information on the improved varieties including articles in national and international printed media as well as in CARE's widely distributed local *Lafaek* magazine⁴⁹. Other means of spreading information include SoL farmer interviews and message-laden radio dramas that are played on one national station in Dili and 14 community radio stations in the municipalities. Collaboration included radio plays on maize and sweet potato and arranging for five talkshows⁵⁰ each focusing on a different crop species. A 20-minute NSSRV film was shown on national television during MAF's hour-long agriculture segment. And SoL collaborated with the local *Cinema Lorosa'e* film shows in sucos to screen SoL's short films including the NSSRV film or maize animation before the main film in the theatre.

ACIAR and the Australian Broadcasting Corporation collaborated for the production of the "Food Bowl", a series of television programs about how agriculture, science and farming come together to lift lives out of poverty ensuring a safe food future. The series on Timor Leste covered particular both SoL and the ACIAR Beef Cattle Project.

6.2.5. Collaborative Effort – Research to Distribution

SoL establishment and the search for adapted varieties: a planned collaborative effort – The design of SoL1 in search of new varieties was exemplary for a collaborative effort with ACIAR commissioning the five CGIAR centers (and) to take the lead and put systems and mechanisms in place to coordinate the efforts. In doing so, optimal use could be made of the knowledge and experience of each centre involved, contributing their main added-value to the achievement of the ultimate goal of improving Timor-Leste's food security. Further collaboration with universities from the Philippines and Thailand as well as with research programs in Australia expanded the collaborative effort to provide for a wide range of germplasm to be researched and tested in Timor-Leste.

The **production of seeds of improved varieties** and the involvement of community seed production groups as well as commercial seed producers will be further explored in Chapter 6.6.

Distributing seeds of improved varieties – other MAF DPs as well as other stakeholders involved in the agricultural sector acknowledged the role SoL has played in bringing the seeds closer to their efforts. All stakeholders, be it multi-lateral (IFAD, FAO, EU-RDP), bilateral (GiZ, Australian Aid), INGOs (Mercy Corps, World Vision, CARE, CRS, etc.) and a number of local NGOs explained that SoL was instrumental in providing them varieties that were proven to be adapted to local circumstances and ensuring the seeds were available at the right time and in sufficient quantity.

⁴⁷ www.veco-ngo.org

⁴⁸ The maize and sorghum trials were conducted in seven villages in seven *kabupaten*/districts: to see how the tested varieties would grow under the weather conditions encountered in NTT; to increase the knowledge of farmers on agriculture adaptation strategies to deal with climate change; to strengthen the extension function of extension workers through information sharing in Farmer Field Schools.

⁴⁹ 80,000 copies of the quarterly *Lafaek* magazine are distributed to all schools, widely used in the curriculum and taken home by students

⁵⁰ Talkshows provide the opportunity for farmers to call in and have their questions answered by MAF or SoL representatives such as *suco* extension officers

Explanation for this success includes the fact that all agencies (both foreign and MAF) were previously struggling to have good quality seeds available on-time. The trust that was established over the years in the efforts MAF and SoL were doing opened up goodwill to collaborate and for other stakeholders to jump on the opportunity that local quality seeds were available.

The openness of SoL to share and cooperate also included sharing information on agricultural practices to optimize crop production as well as the sharing of weather information and soil data which will be explored in Chapter 6.7.

The above mentioned examples and the acceptability data clearly show that SoL responded to a need at farmer level, that farmers appreciate the efforts and further trial the new varieties while also spreading risk and ensuring diversity by planting other varieties as well. This practice is encouraged by SoL as part of ensuring genetic variety is maintained catering for differences in planting conditions but also differences in taste as much of the crop is still for consumption.

Collaborative Challenges

- 1. Access to germplasm: International Centers vs Bi-lateral Efforts** - Given the progress made with seeds from the international centers and looking at the proximity of Timor-Leste to Indonesia, efforts were undertaken to expand the germplasm basis with new varieties from Indonesia. To establish relations the Source Seed and Quality Control Advisor, Dr. Asep Setiawan, mid-2014 visited the Indonesian Legume and Tuber Crops Research Institute (ILETRI, or *Balitkabi* by its Indonesian acronym), to investigate potential collaboration between MAF and this centre. A follow-up visit of four ILETRI scientists to Timor-Leste, a couple of months later discussed collaboration for the evaluation of ILETRI soybean, peanut, sweet potato and mungbean germplasm in Timor-Leste. But unfortunately up to mid-2015 no official linkage has been developed due to increased activities in ILETRI responding to Indonesian Government demands. This is disappointing as collaboration between Indonesia and Timor-Leste could be an important part of the sustainability efforts and be of mutual beneficial as the immense research that has been done in Timor-Leste could certainly benefit some of Indonesian eastern provinces which have conditions very similar to Timor-Leste.
- 2. Civil Society Debate**⁵¹ – The initial trials and research for improved varieties in SoL1 went on while civil society (worldwide) was also debating the risks of imported varieties, the risks of farmer dependency and cost of hybrid seeds, the genetically modified (GM) crops and the potential destruction/degradation of local germplasm linked to the previous issues. Many organizations operating in the sphere of agricultural development put forward their own views on seeds. For some, including some government agencies, the view is that seeds are an essential emergency need for poor farmers, without which family food production cannot be increased hence the need to ensure farmers get seeds distributed to incentivize their agricultural production⁵². Other agencies focus on seed as a source of power for farmers, and as the agencies wish to ‘empower’ farmers, they help farmers to claim their own seed, share it with other farmers, and to be recognized as determining their own future without need of external seed.

The notion that SoL was rejecting GM varieties, did only work with open-pollinated varieties and not with hybrids, and waning to ensure a diverse genetic base for the food crops in Timor-Leste

⁵¹ Please also refer to the Civil Society stance on the NSP – Chapter 6.3.

⁵² An often practiced policy is that it is felt that seeds need to be given to farmers by government and NGOs for free as without it farmers would not be able to afford seeds that are on sale, or that farmers live in areas where seeds are not on sale. When national supply is less than demand, the government imports seeds to fill the gap but with a risk that these seeds are not adapted, deplete hard cash of the country and arrive late for the planting season.

was not always understood nor easily acknowledged by all stakeholders involved. So the release of the twelve 'improved adapted varieties', all originally sourced from the different locations, lead to some concerns being raised by civil society that local varieties were not sufficiently included in the trials and research and were purposely not being selected for official release and inclusion in the national seed system.

Part of the problem is the lack of understanding in civil society circles on the process as well as the scope of testing the varieties given MAF has implemented more than 4,000 on-farm demonstration plots, all of them involving local varieties (local checks). It is encouraging, and might serve as a convincing element for further interaction between CSOs and MAF, that it is expected that by end 2015 at least one local rice variety and one local sweet potato variety will be released, whereas one local peanut variety is also being tested and might be accepted for release in 2016.⁵³

Concluding, there are some political difficulties for some NGOs to align too closely with some research institutes due to (perceived as in the case of SoL/MAF research) different views on issues as seeds. Successful collaboration will require developing long-term relationships and trust in each other's commitment and willingness to participate.

3. **University Involvement** – Solid institutional collaboration between UNTL, especially the Agricultural Faculty (FAGRI), and SoL as a DP of MAF were largely dependent on the institutional arrangements in place. Up to 2006 UNTL and MAF had a MoU in place that governed organizational cooperation but with neither of the institutions taking the initiative for an extension the MoU finished there.

It was envisioned, similar to the Australian system, that MAF would manage the variety evaluations through its Division of Research whereas UNTL could be involved in agronomic research as well as social research. To support the agronomic research SoL kept providing opportunities for students to be involved and provided, during SoL3, about 35 small grants of US\$500 for UNTL student research. On the other hand it was found that involving UNTL in social research was hampered by the high daily cost (US\$60) which made their involvement too expensive.

So although early on in SoL there was regular collaboration and coordination between the parties⁵⁴ this was not sustained and thus partly a missed opportunity. A more intense institutional involvement of FAGRI lecturers could have helped to provide independent observations and research in the process of testing and ultimately releasing the varieties, which could have influenced some public views and build a broader network of support amongst decision-makers.

⁵³ Refer to Chapter 6.4 'National Seed System for Released Varieties' for an explanation of the roadmap for the inclusion of local varieties in the NSSRV

⁵⁴ Rob Williams, took part (independently from the SoL assignment) in an OXFAM/UNTL collaboration resulting in the publication 'Maize Production and Storage in Timor-Leste' written by A. Guterres and R. Williams. (2006)

6.2.6. Sustainability and Future

The foundations for sustainability of the 'Crop Identification and Development' part of the Program have been laid since the start of division of research within MAF as the Program was very much focused on strengthening the capacity of MAF and its personnel to acquire knowledge and skills based on international good practice. The sustained capacity building efforts have ensured that MAF has the human resources in place to continue research and adaptation trials with whatever crops it decides to work with as the broad skill-set available will allow them to adapt current practice. This is supported by the availability of quality equipment provided by SoL (and other DPs) but currently solely run by Timor-Leste human resources⁵⁵.

From a budgetary point of view it is encouraging that in 2014 MAF provided operational funds for the research operations (Component 1)⁵⁶ to the amount of US\$200,000 and in 2015 allocated US\$300,000⁵⁷.

SoL's sustainability strategy is to scale back inputs, including from advisors, and encouraging MAF to take the lead. There is already an increasing degree of managerial and financial responsibility taken on by MAF and, given the systems for research are in place, there is a strong base for sustainability.

A number of challenges towards the future include:

- Timely budget release – GoTL financial management processes result in delays of budget release in all ministries including MAF. In the case of MAF, SoL was able to up-front operational funds to ensure continuation of the activities early in the year but this is not guaranteed in the future. To be able to keep its relevance, MAF needs to ensure it will have the funds that guarantee research and trials are not hampered by late budget release and cash-flow problems.
- Effective involvement of the skilled human resources - currently a number of staff are part of the Program but not yet embedded in the MAF structure. A number of the returning master graduates are not MAF staff and, since they have not been appointed as civil servants, there is a risk they will move out of MAF once the Program finishes given the opportunities to occupy relevant positions within MAF are limited (and financial remuneration might be much more attractive outside of the government system).
- At the municipal level there is no position that relates to seeds e.g. seed section hence there is a risk that seeds issues including planning, production and distribution post SoL might be in danger. As for the human resources at municipal level including the Community and Commercial Seed Production Coordinator looking after community and commercial seed production process and the Municipal Seed Officer carrying out inspection and quality control to the contract growers and CSPs also do not have certainty as currently they are paid by SoL.
- The new MAF structure approved in May 2015 no longer has research as a separate national directorate; it is included in the National Directorate for Research, Statistics and GIS. It is uncertain to what extent research will be able to maintain its importance and relevance to respond to emerging local challenges.

⁵⁵ Expat advisors are slowly diminishing their inputs for example for the research component the advisor is only part-time involved and focuses on higher level reports and research documents.

⁵⁶ The same happened with MAF allocations for Component 2: US\$160,000 in 2014 (an allocation which did not materialize) and US\$300,000 in 2015. And also for Component 3, where in 2015 MAF allocated, on its own initiative, US\$30,000 for operations in this component, even though the PDD had not asked for this.

⁵⁷ But the positive effect of this is largely lost by the less than equally supportive GoTL financial management procedures. As of the end of June 2015, none of the \$300,000 MAF budget in support of research activities had been disbursed yet.

- Defining the specific role of each of the research stations and ensuring they effectively contribute to a more decentralized municipal approach of agricultural development based on the long-term strategic planning in a decentralized setting.
- Enhancing the involvement of NGOs as they themselves could actually play a more active role as a partner of formal sector research systems to get the issues of small farmers onto the research agenda. This could for the NGOs also provide an answer to the challenges they are up to as although NGOs are gaining an important role in agricultural development, their effectiveness is often being challenged especially related to the efforts of moving from small-scale success to show larger-scale impact on the livelihoods of resource-poor farmers.
- Budget limitations at the national level (and hence at the municipal level) will limit the demand for seeds that can be absorbed by Government. When CSPs increase seed production in the coming years this might pose marketing problems.
- Developing a healthy seed market through the private sector including the agricultural shops at the municipal level will need more efforts as the main seed sales are currently still on national level rather than decentralized level. Given that MAF has distributed big amounts of free seeds to the groups and individual farmers, there is limited demand in the agricultural shops.

6.3 National Seed Policy⁵⁸ (NSP)

6.3.1. Relevance of the NSP

The Government of Timor-Leste struggles with a net food deficit and imports food worth of US\$25 million annually hence its objective on ensuring food security by increasing agricultural productivity amongst others through the use of good quality seeds.

The seed sector itself was highly dependent on seed imports especially for rice and corn with annually imports from Indonesia reaching 200 tons each. These imports put a heavy burden on the national budget and foreign currency⁵⁹ demand; they open the possibility for mal-practices in procurement, are often hampered by delays in off-loading and delivery, often over-exposing the seeds to extensive heat causing low germination and are often delivered too late to farmers missing the planting season.

Besides the imports, about 80% of seed was contributed by informal seed systems through use and exchange of farm-saved seeds within a largely non-monetized seed exchange and consisting of seeds of local plant varieties. Private sector involvement was absent and the country lacked organized or formal seed production and seed marketing.

A draft seed (and chemicals) law had been prepared by MAF around 2008 but little progress had been made getting the draft ready for discussion by parliament hence no policy instrument or regulatory framework was in place regulating seed promotion, production or distribution.

Given MAF's interest, SoL's focus on the sector and the fact that already a number of improved and adapted varieties were released it was felt very relevant to put efforts into supporting MAF developing the regulatory framework for the domestic seed sector with national seed sovereignty as the overarching guiding principal.

⁵⁸ Draft National Seed Policy 2012- Second Draft. Democratic Republic of Timor-Leste, Ministry of Agriculture and Fisheries.

⁵⁹ In 2013 MAF was offering \$4.5/kg for imported seeds compared to \$1.5 for local seeds.

6.3.2. Objectives of the NSP

The main objective of the NSP, guided by the seed sovereignty framework, emphasizes the production and distribution of the kinds and varieties of seeds adapted to the socio-cultural, economic and environmental conditions of the farmers and farming communities, and to achieve seed self-sufficiency while ensuring good access to and timely supply of quality seeds of plant varieties in desired quantity and quality required by the farmers in order to increase and secure their food production and income.

The underlying objective of the seed policy is to contribute to enhancing national seed security substituting for seed import, due to an increased production of the seed in the country and as such saving foreign currency and increasing income of the farmers and others involved in the domestic seed sector. Strengthening the domestic seed sector could also open up the potential to become competitive in the international seed market and could lead the way for seed exports and increased foreign currency earnings for the country in the long run.

6.3.3. Description of the NSP ⁶⁰

The NSP is a core element of the MAF activities to achieve food security and food sovereignty in Timor-Leste as MAF believes that *food security begins with seed security*. The NSP (i) represents a decision, made by the relevant publicly elected or designated body, which serves the interest of all involved in seed sector; (ii) provides a policy framework, guideline, directives for healthy, stable and strong seed systems in the country; (iii) provides guidelines for the formulation of a national seed law; and (iv) sets limits to or favours public and private actions related to seed production and use.

The NSP provisions include: (i) Conservation and Use of Plant Genetic Resources; (ii) Variety development; (iii) Registration and Protection of New Plant Varieties; (iv) Seed Production; (v) Seed Standards and Quality Regulation; (vi) Seed Distribution and Marketing; (vii) Strengthening Domestic Seed Sector; (viii) Import and Export of Quality Seed and (ix) Implementation, Coordination & Monitoring of Seed Policy.

The Policy, as perceived by MAF, is a living document that can be updated and improved by a representative National Seed Council (NSC) as experience accumulates and situations change. It is worth emphasizing that the current NSP is a predominantly farmer-centered policy still leaving the government with some regulatory and control roles⁶¹.

The NSC is a body representing stakeholders in the national seed sector which advises the Minister on the implementation of the National Seed Policy. It was established in September 2014 by stakeholders including MAF representatives, academics represented by UNTL, NGOs represented by their network HASATIL, representatives from the commercial sector, CSPG and CSP representatives.

The NSC is also to oversee implementation of the seed policy and the seed system based on a comprehensive seed system development strategy and is charged with leading the development of appropriate Seed Regulations and a comprehensive National Seed Law.

The NSP provides the foundation for the development of a National Seed System (NSS) and features into the development of the NSS as schematically presented in Figure 2.

⁶⁰ Timor-Leste National Seed Policy, 2013. Democratic Republic of Timor-Leste, Ministry of Agriculture and Fisheries

⁶¹ Hamilton-Peach J. 2014. Policy brief on Timor-Leste Seed System. Market Development Facility.

Governance of NSSRV

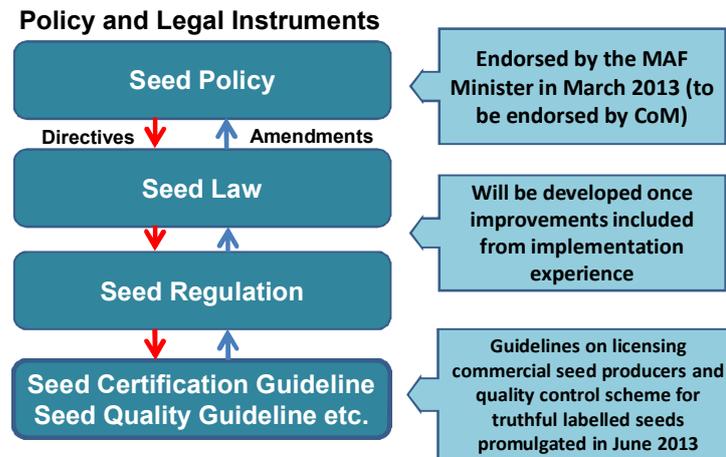


Figure 2: National Seed Policy as part of the Approach to National Seed System Development

6.3.4. Developing the NSP – Process and Actors

Even though MAF had drafted a National Seed (and Chemicals) Law a couple of years earlier, SoL3 in early 2012 proposed to follow a different, more participatory and consultative track to ensure broad ownership of the ‘seed system’ and its components through building a common vision of the NSP. It was hoped that the consultative process would result in consensus on the seed policy while ensuring acceptance and broader understanding by farmers, private sector, NGOs and government alike. Once such consensus on the policy and the elements and operations of a national system were generated from the experience of actual piloting and implementation, a National Seed Law could then be prepared more widely understood and more likely to be upheld by seed sector stakeholders.

A National Seed Policy Working Group (NSPWG) was formed to facilitate the drafting process under the leadership of National Director of Agriculture and Horticulture, Sr. Gil Rangel, in MAF with working group members including representatives from MAF, SoL, iNGOs like CARE, USC Canada, HASATIL and La’o Hamutuk (a critical analysis and policy think tank as Observer). The NSPWG was jointly accountable for drafting the seed policy and also responsible to facilitate adoption by the Government.

Given the limited experience available in drafting a seed policy and to assist the NSPWG to draft the NSP while taking into account the Timor-Leste context but also ensure benefitting from international experience, SoL3 contracted Dr. Pratap Shrestha, an international Seed Policy Consultant to support the process. After initial NSPWG meetings identifying policy issues and formulating policy provisions and a policy framework, a number of consultation meetings were held including with MAF and SoL staff, *Suco* Chiefs, CSPGs and with HASATIL members. Sharing of a first draft of the NSP to NSPWG members and observers resulted in feedback and a written submission by the NGO network. After this consultative process, a second draft of the national seed policy was prepared by August 2012, after which a series of consultations with NGOs and Timor-Leste’s academia were held and further submissions were received.

Between December 2012 and January 2013, municipal consultation workshops on the draft NSP were conducted in 12 municipalities under the leadership of MAF National Directors and attended by municipal level government, NGOs, private agencies, and farmers’ and other community organizations. This was then followed by a national consultation workshop, to review the inputs and comments of the municipal workshops, and further meetings with academic circles and other seed

stakeholders. The WG then prepared the final draft of the NSP, which was officially submitted to the Minister on 11 March, 2013 who endorsed the policy the same day.

Unfortunately, after two years there still isn't an endorsement of the NSP by the Council of Ministers⁶² and the NSP is still not a public document without parliamentary support which in the long run provides a risk of abolishment when a new government comes in place but which in the short run impacts on NSP enforcement and on budget allocation.

6.3.5. Collaboration and Partnership

The development of the NSP has gone through an extensive consultative process involving an impressive number of stakeholders interested in and convinced of the importance of establishing an NSP. Main unifying factors for the collaborative effort was the realization that expensive seed imports created a dependency⁶³ Timor-Leste can ill-afford, are not sustainable, let alone constitute a waste of hard currency which is in short supply and put an unnecessary burden on the country's budget.

SoL3 played an influential role in starting the process and ensuring that MAF was provided with the opportunity and means, through the project, of working on developing the NSP. MAF-SoL organized a study visit for MAF-SoL staff to understand national seed systems in Nepal. The participants in the visit included one national director, seven municipal MAF Directors, one seed department chief, three national coordinators and three advisors (including SoL Team Leader). The team visited seed labs established and run by government and NGOs; visited seed processing facilities run by public, NGO, cooperative and private companies; and interacted with senior officials of the Ministry of Agriculture Development, Agriculture Inputs Corporations in Nepal. The team learned the lessons from Nepal where the Seed Law was introduced first and it realized the difficulty of implementing the law due to a shortage of staff and facilities to enforce it. Learning from this reality and after more than a decade, Nepal developed a National Seed Policy. One of the major learnings from the Nepal-visit was that when law enforcement mechanisms (staff, resources and facilities) are weak, it is not wise to introduce a Seed Law but better to start with a Seed Policy. Based on the learning from the visit to Nepal the team convinced MAF to develop a National Seed Policy as a first step toward establishing a national seed system.

Collaboration in organizing and implementing the learning visit to Nepal in 2012 helped build the linkages with the stakeholders in a country having experience developing national seed regulatory framework. For Timor-Leste, the learning visit from MAF officials and SoL coordinators to Nepal provided for, and resulted in, a core group of people that possessed a common vision on the potential of regulating the seed sector, establishing community involvement in seed production and working on seed sovereignty as contribution to the nation's food security objective.

Key-stakeholders in the sector, including MAF, SoL3, INGOs and local NGOs, acknowledged the need for more international expertise and SoL filled this gap with expertise⁶⁴ that did not only have the technical knowledge in the sector, but encouraged a consultative nature of the process to develop the NSP creating broad ownership while ensuring that local adaptation to the Timor-Leste context was ensured.

⁶² While waiting for approval by the Council of Ministers as short-cut was taken to avoid losing one planting season, and guidelines were created for licensing commercial seed producers and a quality assurance scheme for commercial or truthfully labeled seed. These guidelines were promulgated by the Vice Minister in June 2013 and directed the registration of the commercial seed producers for the 2013-2014 cropping season.

⁶³ Dependency in terms of varieties and adaptation, timeliness of imports, availability of the seeds, etc.

⁶⁴ SoL3 decided to contract the Nepalese Seed Policy Advisor who was influential in the visit to Nepal and tasked him to take the lead in the process.

The NSPWG, through its membership already mobilizing a wide range of stakeholders, often in a coordinative nature, supported by the advisor and Sol3, and with endorsement of MAF who was a member, ensured the process of consultation up to *suco* and farmers level generated feedback to finalize the draft for endorsement by the Minister.

All-in-all there is wide acknowledgement of how this collaborative effort was put in place and reached its goal of establishing the NSP and mobilizing interested stakeholders. Even though it started more as a consultative partnership⁶⁵ with info-sharing and exchange of ideas, it was able to move through a process and establish a common vision for action ensuring the collaborative action and a longer-term commitment to achieve the goal.

Although there is this wide acknowledgment for the achievement of preparing a NSP and ensuring the endorsement in a relatively short period of time there are a number of stakeholders who provided some food for thought⁶⁶ reflecting on the process as well as on the content.

The ex-Dean of the Faculty of Agriculture of UNTL, who has a long-term working relationship with the Program, nevertheless expressed that the Program could have optimized the role of the University both in terms of research as well as in policy development but especially in policy advocacy if a more institutional collaborative approach had been used.

On the one hand it should be said that there was active involvement of UNTL representative in the NSP development and that UNTL has a permanent seat on the NSC. On the other hand more involvement of lecturers, especially in research, would have provided a network of champions from within the university, with links to decision-makers in the executive as well as legislative arm of the government, who might have been influential in ensuring political support for policy development, implementation and policy enforcement or in lobbying parliament for budget allocation. Unfortunately the MoU between MAF and UNTL had expired in 2006 and no efforts were put in place by either party to ensure renewal hence hampering institutional collaboration.

Constructively linking with HASATIL, the Timor-Leste Sustainable Agriculture Development network, and a member of the NSPWG, and especially with some of its more vocal member NGOs has always been a tricky one given the ideological differences in views dealing and persisting with relation to the subject matter as well as the misinformation that seems to be going around. Even though approaches and interactions have been initiated, even though some of the members collaborate closely with Sol3, suspicion remains that the Program has a hidden agenda of privatization of the seed business, purposely support gradual erosion⁶⁷ of the diversity of food crops, extracting genetic material from Timor-Leste, purposely overemphasizing new recently imported varieties at the expense of the currently available varieties and disregarding the position of the farmers in the discussion. Concerns were also raised about the decision to ask a foreign advisor to lead the drafting of the policy (albeit based on extensive consultation with a broad range of local stakeholders) and the (according to the network) limited inclusion of issues brought forward by the network in the submissions to the draft NSP.

Development and endorsement of the NSP was achieved through Sol3's allocation of resources in terms of time, expertise as well as financial commitment not previously foreseen. Sol3 initiated the process, supported the NSPWG, provided some necessary strategic cohesion and acted as a backbone for support when needed, both related to approaching and lobbying MAF on critical issues as well as keeping the process and the dynamics in the WG effective to achieve its goal.

⁶⁵ Himmelman's partnership classification as quoted in Ateneo de Manila School of Government. 2003.

⁶⁶ This input is also valuable to ensure follow-up action in the future.

⁶⁷ From the point of view of Sol3 and MAF it is called "gradual addition to available the genetic pool of food crops which were all introduced during Portuguese occupation anyway".

6.3.6. Sustainability - What needs to be in place to ensure the NSP maintains its relevance?

The consultative process in developing the NSP, responsible for the awareness and understanding it created on the level of a broad range of stakeholders, and the content embracing both improved varieties as well as locally available varieties, even though contested by some NGOs, are strong assets to build on the NSP as a framework shaping the NSS and its implementation strategy, and providing the basis for the National Seed Law and seed regulations.

Moving on to implementation will need to ensure that all stakeholders feel included, that criticism is addressed and effectively dealt with and that there is multi-stakeholder commitment to the ultimate goal of having a framework in place that is beneficial to the country and to Timor-Leste's farmer households protecting their rights and providing the means to lead a dignified existence based on their rights as a citizen.

A number of tasks⁶⁸ that will need truly collaborative efforts that can still be endeavoured by SoL3 could include:

- In collaboration with other stakeholders (including local NGOs that might be around in the long run) strengthen ANAPROFIKO institutionally ensuring it becomes a truly independent farmers' organization that is recognized as a competitive partner for upcoming (locally produced) seed tenders but can also play a role in the on-going debate of seed and food crop imports as well as hand-outs affecting the agricultural sector.
- Initiate focused efforts to get a constructive dialogue going regarding the seed sector and its regulatory framework and ensure all stakeholders are involved and information is widely spread amongst concerned parties.
- Initiate a broad-based network of interested, committed and competent (lobbying and advocacy) parties that can support and continuously mentor the NSC as it will be instrumental in furthering the work including ensuring backstopping to update (if decided and felt needed) the NSP and ensure it reaches the Council of Ministers.
- Mentor the NSC to ensure it plays a role in linking the Commercial Seed Producers (CSPs) to the broader private sector starting with the agricultural kiosks but also ensuring contacts established with larger private sector actors including PT Global Timor, CCT, etc.
- Build on the above mentioned broad-based network to prepare for the deliberation of the Seed Regulations and development of the Seed Law which will be on-going issues long after SoL has finished.

6.4 From a National Seed System for Released Varieties towards a National Seed System⁶⁹

Early work on the national seed system resulted in the National Seed System for Released Varieties (NSSRV) and focused on *released* varieties and as such it was not an all-encompassing seed system that regulates all seed transactions in the country. Although the NSSRV acknowledges that the majority of seeds that farmers currently use are delivered by the *traditional seed system* involving local varieties, customary sharing and barter practices and traditional methods of food and seed storage, recent work relates to expanding the scope of the National Seed System (NSS) so that farmers' traditional seed systems can be strengthened, and the farmers' seed gets incorporated into the formal seed system.

This chapter will therefore focus on the collaborative effort to establish the NSSRV and will towards the end describe efforts to expand towards the NSS.

⁶⁸ Other issues related to the NSS will be addressed in the next chapter.

⁶⁹ Based on SoL Annual Reports and other relevant material

6.4.1. Relevance of the NSSRV

Quality seed is one of the factors that is needed to ensure Timor-Leste's farming families will have enough to eat and go beyond their subsistence farming. For years Timor-Leste was highly dependent on imported seeds especially of rice and maize (about 200 tons annually). To enable import substitution, by encouraging and regulating an increased production of the seed in the country, Timor-Leste could save foreign currency and increase income of the farmers and others involved in the domestic seed sector.

Addressing the selection, production and distribution of quality seed of improved and tested varieties to increase the yields of staple food crops is seen as addressing one factor in which gains could be achieved largely independent of the other factors that potentially contribute to improved food security, such as improved agronomic practices, reduced storage losses, improved input supply systems, and improved rural financial services.

6.4.2. Objective of the NSSRV

The MAF established the NSSRV to ensure that sufficient quantities of high quality seed are produced locally and made available in every *suco*, ensuring farmers have reliable access to good seed at planting time. The vision is for enough seed of improved adapted varieties to be produced locally to meet up to one-third⁷⁰ of total national seed demand, thus helping Timor-Leste to achieve seed security and seed sovereignty and help farmers grow more food.

The primary objectives of the NSSRV are:

1. Ensuring sufficient quantities of quality planting material (seed and cuttings) of proven varieties of food crops (including reserves for re-planting) is available to farming families in every *aldeia* of every *suco* at planting time, regardless of when opening rains fall.
2. Enabling the Government to make big savings by not having to buy, import, store and distribute imported seed as the long-term opportunity cost of importing maize is estimated to be US\$32/kg⁷¹.
3. Farming families to avoid the large opportunity cost resulting from having to use seed of varieties not necessarily well-suited to growing conditions in Timor-Leste and often arriving late in the planting season. Because the MAF released varieties are only released after extensive research and trial growing, both on research stations and on farms, farmers can trust that these varieties are well adapted to local conditions.

6.4.3. Description of the NSSRV

The NSSRV is founded and operates according to the NSP endorsed by MAF in 2013. The NSSRV has been collaboratively developed between MAF with support from SoL3 and collaboration with other MAF Development Partners (DPs) including international and local NGOs.

Ensuring sufficient quantities of high quality seed and servicing farmers with secure access to good seed of improved varieties results from all components of the national seed system working together i.e.:

⁷⁰ This 'one-third rule' is the standard rule to maintain seed replacement rate (SRR) with the improved varieties. Seed replacement rate is a proportion of area covered by commercial seed each year. The MAF at national level or at the district level can decide to increase the SRR based on availability of financial resources. Normally, one third (around 33%) SRR is maintained at the early stage of promotion of commercial seed.

⁷¹ Young Ph. 2013. Effects of Importing Maize and Rice Seed on Agricultural Production in Timor-Leste. SoL commissioned study.

1. Seed system management – Annually MAF determines research priorities based on farmer feedback and monitors seed demand and supply to set production targets for the coming year.
2. Crop identification and development - MAF identifies, selects and develops superior food crop varieties for official release after extensive testing on research stations and with farmers.
3. Seed production and quality control - MAF, contract growers, commercial seed producers and community seed production groups locally produce various classes of seed according to strict quality control guidelines.

6.4.4. Developing and Implementing the NSSRV: Process and Actors

As mentioned, the development of the NSSRV is founded on, and follows the endorsement of the NSP by the Minister of Agriculture and Fisheries after considerable efforts from the NSPWG. In order to ensure that the 2013-2014 cropping season could benefit from the newly endorsed NSP, efforts were put in place to speed up the process of operationalizing the seed system. Within three months Timor- Leste’s first National Seed Laboratory was inaugurated, 19 seed officers were appointed, guidelines for registration of CSPs and for commercial seed production endorsed by MAF Vice-Minister and the first three farmers associations registered as CSPs. Subsequently workshops were held in all 12 municipalities and one Special Region (i.e. Oecussi) to socialize the registration guidelines for CSP recognition followed by the registration of the additional CSPs.

The basis for the NSSRV is “Crop variety identification and development”. The crops and varieties that are identified as being suitable for local cultivation are sanctioned for release, and MAF engages in producing sufficient amounts of source seed – breeder seed and foundation seed – to enable the cultivation of certified seed to meet the in-country seed demand. Where such seed is grown by contract growers⁷², MAF exercises strict control on the quality of the produced seed.

The certified seed is subsequently made available to both CSPs and CSPGs. The CSPs receive new certified seed each year; the CSPGs receive new certified seed or commercial seed every three years. The commercial seed grown by the CSPs is quality tested for moisture content, physical purity and germination rate by MAF Seed Department. For the community seed no such strict criteria apply, but during cultivation, the CSPGs are visited by the SEOs and offered advice on how to maintain high quality of the seed.

Implementation of the NSSRV involves different actors, with roles and responsibilities according to their main activity in the system:

1. Research and development - MAF identifies, selects and develops the superior varieties for official release, and produces breeder and foundation seed under highly controlled conditions.
2. Certified seed production - Contract growers multiply foundation seed of released varieties under close MAF supervision to produce high quality certified seed.
3. Commercial seed production - Registered seed producers multiply certified seed according to the ministry’s quality assurance guidelines to produce large quantities of branded and truthfully labelled commercial seed that interested farmers and others can purchase with confidence.
4. Community seed production - Farmer groups use commercial seed to locally produce unlabelled community seed, which is properly stored and available for farming families to use next season for their food production.

⁷² Some certified seed is also grown by MAF itself on research stations.

Figure 3 NSSRV and Seed Classes – Production and Quality Control provides a schematic overview for the 12 released varieties up to mid-2015 of the seed classification for maize, rice and peanuts; the producers involved; a qualitative estimation of the production cost; the purpose; the quality assurance process and responsible entity; and the quality of the seed in terms of physical purity.

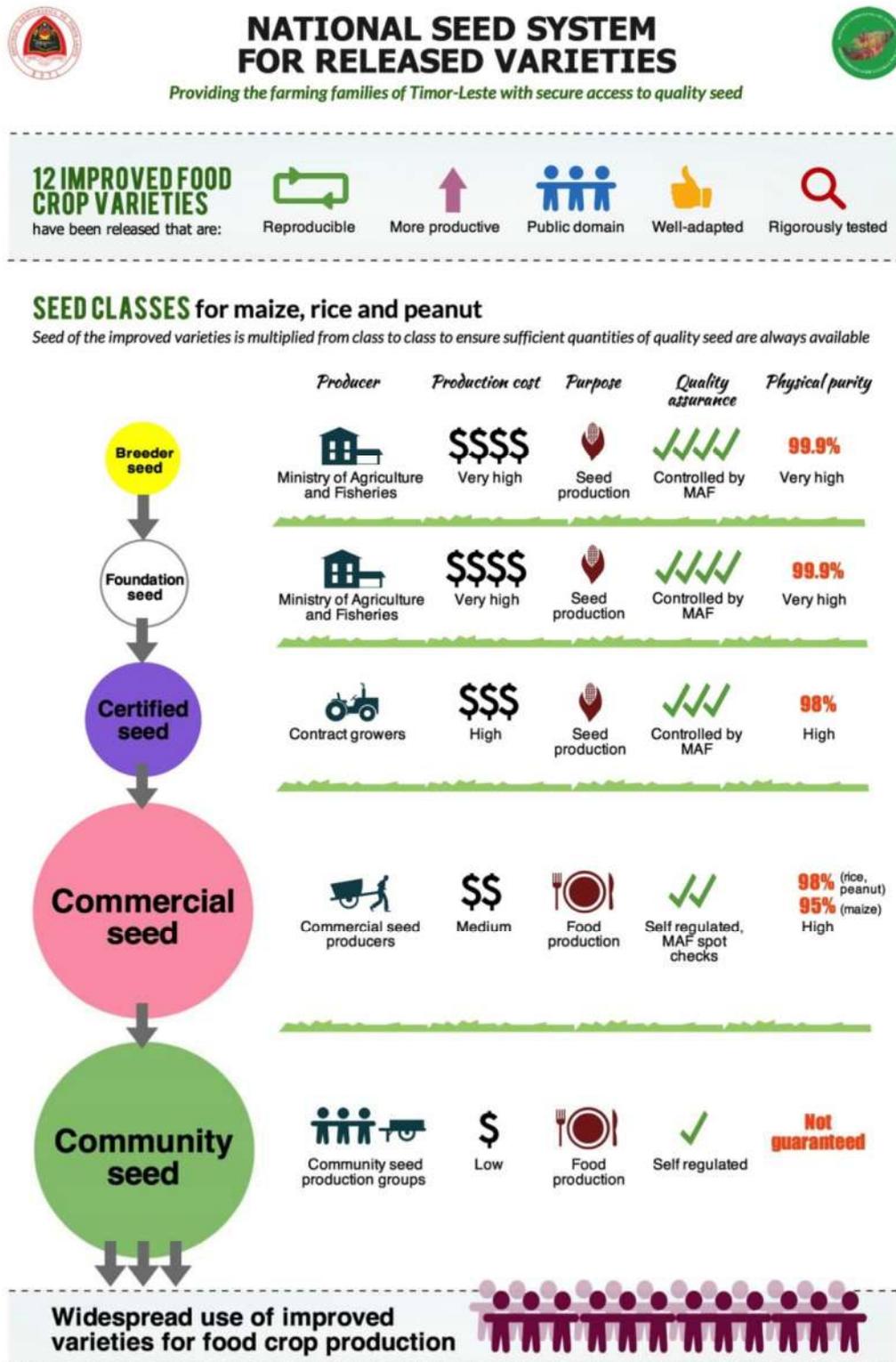


Figure 3: NSSRV and Seed Classes – Production and Quality Control

Considerable efforts were put in place to strongly socialize the NSSRV during 2014. This included the initiation of the municipal seed system workshops, the purchase of seed from commercial seed producers and redistribution to vulnerable farmers ensuring they have access. For SoL3, where originally focus was on providing high quality seed directly to farmers, over the years this has now evolved into focusing on a system specifically suited to cater for the amount of certified seed required to drive the NSSRV, with a little extra for sale to NGOs and other organizations⁷³.

As per SoL3 Program Design Document, since 2014 SoL has been increasingly handing-over to MAF the responsibility for funding and managing operational activities of the National Seed System, including helping to establish each Municipal Seed System⁷⁴. It is the responsibility of the NSC to assist and support MAF to manage and sustain the NSSRV and put necessary guidelines and the National Seed Law in place. The Market Development Facility⁷⁵ provided support to draft a 'National Seed System Development Strategy'⁷⁶ in 2014.

A remaining contested issue is the inclusion of the traditional seed system into the national seed system. There is recognition that there are local varieties of food crops that are adapted to local conditions, popular and widely grown by various local communities and although these (local) varieties are often less productive than recently introduced varieties, they may be superior in other parameters such as consumer demand and market price (e.g. due to more favoured colour, taste, days to maturity)⁷⁷.

Based on these considerations Dr. Pratap Shrestha, who has previously provided inputs as Seed Policy Consultant, provided guidance to the Program and its stakeholders in relation to how locally-selected food crop varieties can be incorporated into the NSSRV in conformity with the NSP of Timor-Leste. To counter the risk of gradual erosion of the diversity of local food crops it is also important that adequate attention be given to the operation of traditional seed systems and community seed banks⁷⁸ to foster the ongoing use and conservation of local varieties.

⁷³ Draft Annual Report 2014 – “During the wet season of 2013-2014 and early dry season, sufficient certified seed was multiplied including 168.5t of maize and 16.8t of peanut for 2015. Sufficient sweet potato and cassava cuttings were also grown for further multiplication on farmer fields during the 2014-2015 cropping season.”

⁷⁴ It is envisioned that in 2016 MAF will cover most of the costs involved in managing the National Seed System (NSS) including each Municipal Seed System (MSS).

⁷⁵ <http://www.marketdevelopmentfacility.org/>

⁷⁶ Hamilton-Peach J. 2014. Timor-Leste: Draft National Seed System Development Strategy. Market Development Facility.

⁷⁷ This is also in line with the FAO “The Second Report on the State of the World’s Plant Genetic Resources for Food and Agriculture”, 2010, available at <http://www.fao.org/docrep/013/i1500e/i1500e.pdf> which points out that one of the most important reason for the loss of seeds, and thereby the loss of genetic diversity, is the replacement of genetically diverse farmers’ varieties (traditional varieties) with modern varieties (improved varieties), products of formal plant breeding systems.

⁷⁸ Community seed banking is a system of conservation, production, storage and exchange of seeds by the community members. It covers both seeds in storage and seeds in the field, and information on their status. A Community Seed Bank centralizes locally seed collection, and helps to support seeds management and exchange

6.4.5. Collaboration and Partnership

The NSSRV builds on the NSP hence a number of the active stakeholders, as described in the previous chapter, played an important role in further establishment as the policy discussions already touched on development of the system and implementation mechanisms and strategy.

The work of the SoL3 National Seed Policy Consultant was influential in terms of setting the direction for the development of the system. With a focus on ensuring the production of seeds up to farmer level the expansion of the CSPG network and the move towards commercial seed production, it was SoL who kept the dynamics going within MAF while ensuring other stakeholders were kept aware and partly involved⁷⁹.

During the early development other initiatives provided for additional analysis and information. The USAID Office for Foreign Disaster Assistance (OFDA) facilitated and funded Seed System Security Assessment (SSSA) in 2013 carried out in Timor-Leste through a collaborative effort of CRS, Mercy Corps, MAF/Seeds of Life, CARE, CIAT and the University of East Anglia's School of International Development provided for a number of recommendations dealing with issues closely linked to the NSSRV including on: decentralized seed production, seed delivery systems, seed storage improvements, information systems to help farmers make informed choices, seed aid impacting on local dynamics as well as seed security issues linked to nutrition and resilience to deal with abundant and repeated nature of climatic stresses in the country.

6.4.6. Future and Sustainability – what needs to be done

As mentioned in the previous chapter, and given the NSS(RV) is a continuation of the efforts related to the NSP, it is very important that SoL in its last year helps finalizing a number of issues still pending as well as contributes to the capacity-building of the institutions that need to be in place to further the efforts so far.

In terms of pending issues, in previous chapters, we already mentioned ensuring the NSP is brought up to the Council of Ministers, support is provided to the NSC in developing the relevant and necessary seed regulations and working toward a National Seed Law. Related to the NSC it is necessary that all stakeholders involved help develop a strategy to strengthen the NSC to be able to fulfil its task. SoL could be influential in getting the NSC and interested stakeholder together, and help develop a longer-term capacity building strategy.

More specifically in terms of the NSS(RV) SoL, while still supporting the current issues, could provide specific attention to two issues: (i) ensuring the inclusion of the traditional seed system into a broader NSS, and (ii) the decentralization of the seed system up to municipal level continuing the efforts done in the first half of 2015.

In order to achieve the inclusion of the traditional seed system into a broader NSS, a two-pronged approach is suggested by SoLs' advisor i.e.:

- a. Strengthening farmers' seed systems through: (i) Documentation and assessment of local crop varieties; (ii) Improving farmers' seed storage practices and (iii) Supporting community seed banking.
- b. Incorporating farmers' seed into the formal national seed system by either: (i) Enhancing local crop varieties through Selection breeding⁸⁰ or Cross-breeding⁸¹ – focusing on crops or

⁷⁹ Refer to Chapter 6.5 CSPs and CSPGs and Linkages.

⁸⁰ Selection breeding best suited when adequate variability exists and the interest is to safeguard certain quality traits (the work done by the program with the "local Baucau" purple sweet potato variety falls into this category).

varieties that have desirable characteristics to enhance key crops, or threatened crops that face the risk of extinction; or (ii) Registration of local crop varieties to incorporate them in the national inventory, and to support commercial seed production⁸².

The issue of decentralization of the seed system implementation and increasing the involvement of the municipalities will be addressed in Chapter 6.6.

Another issue, which SoL could probably initiate the discussion on and work on together with other DPs, is discussing the 'Seed System Development Strategy' including how to strengthen domestic seed sector to become competitive in the international market which could lead the way for an export seed market for the country given the extensive efforts that have been invested over the last 15 years.

6.5 Food Crop and Seed Storage

6.5.1. Relevance⁸³

a) Food Crop Losses

Post-harvest losses of major food crops in Timor-Leste are significant. Leaving harvested crops exposed to the elements and on the ground increases risk for insect, microbial, and rodent attack. It is estimated that maize grain losses may average as high as 30 % especially due to weevil and rat infestations using conventional storage techniques. Weevils, rats, and moulds (due to final moisture content that is not low enough for effective storage) also destroy other stored grains, tuber and root crops⁸⁴.

When food crops are stored in the houses, it is usually near wood burning fires. The smoke generated from the stove flows onto the maize stored above, which is used to combat pests. Generally smoking creates a fire hazard for the family, causes a health hazard from smoke and low quality air, and may add carcinogens to the food supply via soot deposited on food grain kernels.

b) Seed Storage

Farmers in Timor-Leste practice seed management based on long-standing traditions and methods passed from ancestors that have served them with some degree of success. However, according to Elliott-Lichfield, J.B. in the summary of 'Effective Seed Storage in Timor-Leste'⁸⁵, they do not seem to fully understand the guiding principles of seed preservation nor do they have the resources and tools for enhanced postharvest seed drying and storage that will reduce losses and maintain seed viability.

Based on observations and studies, it was found that existing traditional seed storage practices are partly ineffective in comparison with international best practices, which might endanger the future supply of seed stock. There are many issues with drying: farmers tend to dry seed in a manner that leaves seed exposed to the elements and at increased risk for insect, microbial and rodent attacks; or they use heating/smoking methods that may kill the embryo of some kernels. Furthermore, in

⁸¹ Cross-breeding consists of crossing a local variety with another local or improved variety but which has some desirable traits. The maize variety Nai is an example, and is a cross of Arjuna and Suwan5

⁸² Crop varieties that are popular and well established local varieties can be registered as "farmers' varieties", and enhanced local varieties as "new varieties" but which would need some adaptation especially related to the uniformity criteria.

⁸³ Different sources including: (i) Drums on Farms. 2011. <http://www.drumsonfarms.org/>; (ii) Da Costa, M.D.J., *et al.* 2013. and (iii) Faculty of Agriculture (FAGRI), National University of Timor Lorosa'e (UNTL). 2014. Postharvest Losses of Maize due to Traditional Storage Methods in Timor-Leste.

⁸⁴ In 2015, FAO, IFAD and UNTL are carrying out a study on losses in rice following the previous one on maize.

⁸⁵ Elliot-Lichfield, J.B. 2012. Effective Seed Storage in Timor-Leste.

Timor-Leste maize seed tends to be dried too slowly and to a final moisture content that is not low enough to maintain seed quality. There are also many issues with the storage: farmers do not keep seed in an oxygen free, hermetic (airtight) environment, which are the standard requirements for effective seed storage especially to reduce weevil damage in maize.

Exploration of grain and seed storage confirmed that there are opportunities to enhance storage, many at low cost and with significant enhancement of seed quality and preservation time. And a more efficient post-harvest storage system could enhance resilience and food security.

6.5.2. Objective

Timor-Leste suffers from seasonal food insecurity, with 62% of farming families experiencing one month or more of food shortage⁸⁶ partly due to post-harvest losses due to the fact that effective storage for food crops or seed is not available for the majority of farmers in rural Timor-Leste. As storage losses for maize can be reduced to less than 5% if properly dried grain⁸⁷ is stored in an air-tight environment, efforts to reduce losses of maize stored on-farm through increased availability of proper storage facilities and improved post-harvest practices is seen as an important contribution to the Government's objective of food self-sufficiency and improved food security at the household level. Achievement of the above objective will ultimately also contribute to broader poverty reduction objectives by: (i) reducing the need to import food (mainly rice) to cover national food deficits; (ii) reducing the need to import staple food crop seed (mainly maize and rice) to cover national demand and (iii) in the longer-term result in improved upland food self-sufficiency, reduced expenditure on food; and increased market sales of surplus produce.

6.5.3. Description

Food crop and seed storage has been an issue of attention for a long time, and containers of different sizes, shapes and materials (often recycled bottles, food containers or fuel drums) have been in use. The desired attributes include: oxygen free –hermetic (airtight) environment, rat and fire resistant, and durable in a humid tropical climate condition. Their benefit has been researched in several studies and *Tefera et al.* concludes "Air-tight containers such as silos, drums and plastic bags have been proven to reduce weevil and eliminate rat damage but metal containers which are not airtight⁸⁸ were of no value for storing maize. They can, however, be used very successfully to store rice and peanuts because these crops are not prone to weevil damage."

Using airtight drums for maize storage provides a low-risk and well-proven intervention which has the potential to generate high and immediate impacts through reducing loss of harvested grain. The technology is culturally acceptable as there is already considerable experience with the use of 200L used fuel drums to store maize (and other foods) in Timor-Leste and there is a 'drum culture' of farmers in Timor where the use of used oil drums is common and embraced as influenced by the Portuguese during the colonial era. These drums are able to store 180 kg of maize grain with an estimated decrease in food losses providing farmers with an extra 20 days⁸⁹ of food per drum. On the other hand rice storage has not been done in drums up to now so further socializing is needed to use it for that purpose.

⁸⁶ SoL. Mid-Term Survey. 2013.

⁸⁷ Storage of damp grain can lead to heavy infestation of aflatoxins with serious consequences for human health.

⁸⁸ Being airtight is a basic requirement to limit weevil damage and is a main criterion for any successful maize storage method.

⁸⁹ Average consumption for a Timor-Leste family is 2kg per day.

The technology is relatively simple and drums do not require maintenance. Therefore there is no real need for extensive learning in terms of the promotion of this technology to poor and often illiterate farmers, although efforts are needed to ensure that farmers understand and stick to the basic principles of crop storage and, for instance, take out the maize in a proper way.

There are variations to the containers as well as to the storage principle, with some organizations applying the 'first in, first out' principle (filling – specifically adapted but more expensive - containers from the top and extracting from the bottom hole) where others prioritize a cheap and available technology as used fuel or imported or locally produced drums using one inlet hole at the top for filling and extracting ('first in, last out').

A major constraint is limited supply of drums as it is estimated that Timor-Leste might require 600,000 drums to store all harvested maize⁹⁰ which is a challenge in itself. This also offers opportunities for private sector involvement to manufacture drums locally if local industries can develop drum manufacturing skills and start competing with importers⁹¹. On the other hand, increased availability of maize and other food crops opens the door for local agri-business industries which could absorb part of the crop production, allowing farmers a quicker sale and less storage needs at farmer level, reducing the demand for drums.

6.5.4. Process and Actors

There is early learning from an initiative coming from a local NGO, Drums-on-Farms⁹², supported by TROCAIRE, an Irish agency. One of their aims was advocacy among stakeholders of the value of airtight drums as practice at the time was that development agencies were distributing “silos” which were not airtight and resulted in huge losses to farmers. Drums-on-Farms, free of charge, obtained second-hand fuel drums (approximate costs of drums is 44US\$) from the Mission Aviation Fellowship which were cleaned and delivered at a 10US\$ charge up to farmer level covering the cost of cleaning, delivering and administration of the NGO. Learning on the technology also from CARE International’s experience (2007-2010) with the importation of 6,000 200L used and cleaned petroleum drums to support maize food-grain storage.

As a result other organizations started distributing air tight drums for maize storage. In 2010, IFAD developed a Timor-Leste Maize Storage Project based on the good practices established on maize grain storage using 200 litre drums by Drums on Farms and CARE.

Mercy Corps, with support from USAID/OFDA researched the ‘Seed Storage in Timor-Leste’ in 2012 as part of the preparation of its program to improve ‘Effective Seed Storage in Timor-Leste’⁹³, through a market driven approach. The results of the research were used to introduce appropriate and effective post-harvest storage systems for sustainable post-harvest protection of seeds and grain stocks to improve crop production and livelihoods. Mercy Corps targeted the families through a voucher system for seed storage containers at individual member level in the seed production

⁹⁰ Da Costa, M.D.J. *et al.* 2013

⁹¹ Mercy Corps, in its project ‘Effective Seed Storage’ already works with local manufacturers producing drums and containers for different storage needs of seeds.

⁹² An NGO focusing on improved on-farm grain storage initiatives founded by Rob Williams, ex-Sol Team Leader and currently SoL3 advisor for Component 1.

⁹³ This program was complementary to a European Commission (EC) funded Program called SECURE, which was working to increase food security and incomes for vulnerable communities by improving agricultural production and storage, and developing market linkages for food insecure communities.

groups with a subsidy of US\$20⁹⁴ for all the containers regardless of their difference in sizes (37, 55 and 75 kg). The individual contribution as well as providing vouchers which encouraged direct 'transactional interaction' between the producers and buyers combined enhanced farmers' sense of ownership. After piloting to design and develop sustainable and scalable farmer seed storage models in Timor-Leste, Mercy Corps, along with CRS, Hivos and five local NGOs, expanded the program nationwide, targeting 10 municipalities and working with 17 local manufacturers.

MAF partners with the International Fund for Agricultural Development (IFAD) to implement the Timor-Leste Maize Storage Project (TLMSP), which provides farmers, willing to pay a contribution of \$10⁹⁵, a 200 litres, steel food-storage drum. IFAD is providing a US\$5.6 million grant to the Government for distributing 42,000 drums in five municipalities over a three year period (2012 to 2015) to improve food security for 23,000 poor maize growing households initially targeting the economically active poor (i.e. households producing a minimum of 150 kg of maize per year). Preparation is done through facilitators and distribution via NGO networks and piloting of distribution via commercial agents with support from the MAF, municipal governments and local community networks – the latter being used as the drum distribution network.

6.5.5. Collaboration and Leveraging

Partnering between TLMSP and SoL3 meant that every household buying a food-storage drum also received a 1.5l plastic water bottle (i.e. 1.3kg) or a 1kg pack of *Sele* or *Noi Mutin maize* seed, together with some guidance on good agriculture practices for maize growing and storage. As an example of the scale this collaboration amounted to distribution of 22.5t of maize seed (4t *Noi Mutin*, 18.5t *Sele*) in the 2013-2014 season.

The "buy a drum, get a bottle of improved seed" initiative multiplied benefits for the approximately 23,000 targeted cropping households that received one or more of the 42,000 drums being distributed between 2013 and 2015. Firstly, benefits came from the 25-50% yield increase by using the improved maize seeds and secondly from the 20-30% reduction in post-harvest losses due to the improved storage. For the average participating Timor-Leste rural household, it meant being able to use an additional 180-200kg of maize, which results in additional food for 90-100 days⁹⁶. The 23,000 clearly identified and traceable beneficiaries substantially contribute to the SoL end-of-program target of 65,000 crop producing household using one or more improved varieties.

The collaboration provided leveraging for more effective aid, providing an opportunity for SoL to reach an expanded target group and raise awareness, distribute information on good agricultural practices through leaflets, brochures, booklets and posters as well as distribute seeds of (and seed pamphlets about) the improved released varieties as it benefited from the extensive TLMSP network as well as the government infrastructure⁹⁷ that was being mobilized to reach the target groups. On the other hand it made the TLMSP offer to the farmers even more attractive as farmers, besides the subsidy for the drums, also received free maize seeds of an adapted variety.

⁹⁴ Cost of containers varied and was respectively US\$24 for the 37kg, US\$30 for the 55kg and US\$35 for the 75kg containers. The price difference between the actual cost and the voucher (subsidy) was borne by the farmer upon collecting the container at the manufacturer.

⁹⁵ Cost of the IFAD drums is 50\$ plus freight

⁹⁶ A typical Timor-Leste rural household consumes 2kg of maize a day

⁹⁷ Even though TLMSP opted for their own facilitators, it collaborated with the MAF infrastructure and *Suco* Extension Officers, avoiding to put too much burden on their shoulders given the already extensive duties these SEOs have on average reaching out to more than one *Suco*, while also being mobilized for GoTL as well as other Development Partner programs being implemented in their respective *Sucos*, and only being supported by very limited operational budgets.

The collaboration between the two parties also added to the knowledge bank related to post-harvest losses with the 2013-2014 research project 'Postharvest Losses of Maize due to Traditional Storage Methods in Timor-Leste' by the FAGRI UNTL⁹⁸ and funded by TLMSP⁹⁹. This study explored traditional farm storage methods and the losses caused by weevil, rodent, mould, chicken and studied the degradation over a 12-month research period. SoL contributed its extensive research knowledge over the past decade, and one of the SoL advisors supported the research team.

Besides this, the collaborative effort also translated in intensive exchange of information and ideas. An example is introducing maize shellers to reduce the labour which takes up between 20-30% of total labour production time. A number of possible shellers were tested with the final choice being a simple hand held tool that a farmer could copy, and a more advanced hand cranked sheller for bigger amounts. This technology has been applied by TLMSP which is now offering the US\$20 shellers for a subsidized price of US\$5 to farmers or farmer groups acquiring four drums or more. SoL has facilitated the import of over 5,000 shellers and the technology has been transferred to a local input supplier.

Collaboration of SoL3 with Mercy Corps focused originally on sharing technical aspects on maize, rice and peanuts, and some capacity building provided by SoL3 for Mercy Corps field staff. SoL3, being embedded in MAF, also provided access to channels for free improved seed distribution. The Mercy Corps program learned substantially from aspects of drying and selection of seeds, and benefited from capacity-building efforts from SoL3, supporting Mercy Corps' on-going work (study and trials) for storage of maize seeds. In February 2012, Mercy Corps facilitated a study to design effective seed storage solutions that was commissioned by Dr. Bruce Litchfield from the Illinois University, and in 2013 another study, 'Seed System Security Assessment Timor-Leste', a collaboration between CARE, CIAT, CRS, FAO, Mercy Corps, SoL3 and University of East Anglia/School of International Development funded by USAID/OFDA added to the knowledge surrounding food security starting with seed security.

The trust and understanding developed during the previous efforts also led to further collaboration, mutually strengthening each other's work. Mercy Corps provided insight in the establishment of the agricultural kiosks and SoL3/MAF provided 'starter kit seed packets' for the agricultural kiosks being set-up by Mercy Corps to stimulate the involvement of the private sector in seed distribution and agricultural input supply. SoL3 learned from the example and set up 16 agricultural kiosks in the 10 other municipalities whereas it also proved another outlet to ensure that the improved seed varieties were spread through a wider network. Connecting the CSPs with the kiosks is a small effort but guarantees sustainable supply of seeds to the kiosks making these seeds accessible to all farmers.

The partnership of SoL3 with both Mercy Corps and TLMSP are exemplary ones in terms of 'complementary partnership' as classified by Himmelman¹⁰⁰, as the organizations implemented separate and distinct activities, while sharing a common development or program framework. It shows also collaborative partnership based on common direction and vision and delivery mechanisms institutionalized to facilitate the delivery of the goods of both programs.

The partnerships resulted in a more effective and efficient contribution to the broader objective of MAF, the owner of both programs, and the Government's objective of food self-sufficiency and improved food security at the household level especially, in the case of the improved storage, by decreasing food losses.

⁹⁸ Implemented by UNTL in collaboration with MAF and supported by Rob Williams, advisor SoL3 and working closely with 150 farmer groups spread over five municipalities

⁹⁹ This research study also inspired the 2015 on-going FAO, IFAD and UNTL work related to losses in rice.

¹⁰⁰ Himmelman A.T. 2002

6.5.6. Sustainability and Future

SoL3 ends in June 2016, and given the role of SoL3 as a broker of knowledge embedded in MAF. it could play an influential role in the following either SoL itself, or ensuring other DPs including the new Australian Aid TOMAK program take up some of the issues:

- Compiling information from the results of the different initiatives related to seed, grain and other food crop storage, establishing good practice and packaging it so it becomes accessible to a wide range of stakeholders including the farmer households.
- Encouraging all DPs to work with MAF to expand the learning regarding food and seed storage on a wider scale (adapted to the different agro-ecological areas and specific produce/crop availability) and ensuring the technology becomes available to a wider range of stakeholders.
- Pro-actively searching to distribute the learning on food crop and seed storage to ensure inclusion in design of other programs dealing with food security and food sovereignty. This would also increase demand and sustainability of the private sector involvement in locally manufacturing adapted storage equipment.
- Working with private sector to break through the existing business model of the providers of containers, silos and drums which is very donor-dependent as demand is still limited outside of the project sphere. The issue with sustainability of technology is ensuring the technology needs to reach a “tipping point” where a critical mass of people will want to buy the technology, increasing the demand for the product and stimulating private sector to get involved in manufacturing or distribution of it.
- Higher production and better quality storage would ensure that private sector gets interested in providing added value to the sector. For instance PT Timor Global is already using locally produced maize to produce infant food but had some problems with aflatoxines due to bad storage of the grain. SoL3 is already helping PT Timor Global to procure locally grown maize that meets the aflatoxin limits.
- Looking for the potential and expanding the development of a local commercial food sector for both people and animals as it will reward farmers’ investment, and help slowly move food production from subsistence to commercial orientation. The increased capacity to make processed food will translate to a larger and more sustainable demand for different food crops, and in turn for good seeds. This could include investment to make feed for the small-scale production of chickens and pigs to increase efficiency and raise poor people’s incomes (especially women).

6.6 Community Seed Production Groups, Commercial Seed Producers and Linkages

6.6.1. Relevance

Maize is the main staple crop grown by 88% of farming households in Timor-Leste¹⁰¹. Moreover, this crop is grown by the poor majority living on marginal lands, rain-fed uplands, hills and mountains. Although various factors contribute to low agriculture production insufficient availability of quality seeds is considered a critical factor.

To service its approximately 75,000 ha of maize cultivation Timor-Leste's annual maize seed requirement is between 250-750¹⁰² ton of quality seed per year (assuming 33% seed replacement rate). Quality seed supply from MAF at only 32 tons in 2011¹⁰³, left a large gap between annual seed requirement and supply which was largely met through the use of (often) low quality seeds saved by farmers from the previous year's harvest and partly from seed imports. Over the years seed imports have proven a number of defaults including: (i) varieties not suited to the Timor-Leste's diverse agro-ecological conditions; (ii) late delivery to farmers due to late arrival in country or diminishing access to the rural areas just before or early on in the rainy season; (iii) price of imported seeds at an average of US\$3.50/kg often beyond reach of marginal farmers (if they are available at all for sale).

Based on this analysis, the Program started looking at alternatives for decentralized quality seed production with the aim to increase the amount of quality seeds produced at community level (through CSPGs)¹⁰⁴ and laying the foundation for commercial seed production (through the CSPs) and encourage private sector involvement in the distribution of seeds.

6.6.2. Objectives of CSPGs and CSPs

CSPGs and CSPs are part of the key-players implementing the NSS(RV) and given their community-driven nature highlight the fact that the Timor-Leste Government has opted for a community-based approach to its NSP and the NSS(RV).

Community Seed Production is defined as a production, storage and marketing of seeds by organized group of farmers, the CSPGs, that after initial technical training and mentoring (by extension staff of MAF and/or NGOs) continue seed production activities following basic seed production procedures. The seed produced is categorized as quality seed for use by the group members and can be locally sold or bartered when there is a surplus. Community seed production is a community owned, community controlled and community self-managed seed production approach¹⁰⁵ that is decentralized and that with sound planning and implementation helps to move to

¹⁰¹ NSD and UNFPA. 2011. Population and Housing Census of Timor-Leste, 2010, Volume 4: Suco Report page xvii, National Statistics Directorate, Dili, Timor-Leste.

¹⁰² Estimating demand for improved e.g. maize seed requires a blend of estimates and assumptions. In Timor-Leste it is estimated by multiplying the area of maize planted by the assumed seed rate (20kg/ha), and multiplying by 0.33 (seed replacement rate) which provides for estimate of 500 MT/yr. Nevertheless these figures are influenced by the estimate of seed needed with varying estimates between 20kg and 40kg/ha; the area to be planted with improved varieties (farmers also plant other varieties to mitigate the risk of low yield due to rainfall variation, preferred taste and colour, ease of storage, and wind resistance) as well as the actual area to be planted (pretty unknown as there are only national estimates).

¹⁰³ Kunwar et al. 2012. Timor Leste's efforts to achieve maize seed security using 'community seed production'. IMC Paper

¹⁰⁴ To enable and empower community groups to locally produce, store and market quality seeds the Project introduced 'community seed production' in the 2011-2012 cropping season.

¹⁰⁵ Kunwar B. and Guterres T. 2010. Community-based seed production and storage of improved maize: CARE's experience. In Food Security Timor-Leste, July Volume 1, Issue 1, Ministry of Agriculture and Fisheries, Dili. www.foodsecuritytl.org

a situation where each municipality in Timor-Leste achieves local seed security, thereby contributing to local food security.

Another key element of the NSS(RV) is the **production of commercial seed** by registered CSPs to respond to the big national demand for commercial seed. The CSPs operate on a commercial base and produce 'commercial' seed which is seed that is produced by the CSPs subject to spot checks by MAF, tested and labelled and sold as 'Fini ba Moris / Seeds of Life' seed, thereby positioning it as a recognized brand name. This is seed produced at decentralized level but which is sold on the open market and as such accessible to farmers, NGOs or Government in need of commercial seed as part of their food security or food production projects. The majority of the CSPs are farmers associations evolving from CSPGs, but they also include contract growers¹⁰⁶ that applied and registered as CSPs.

Having the CSPGs and CSPs in place with skilled and experienced Timorese farmers locally producing sufficient quantities of improved-variety seeds is helping Timor-Leste achieve its goal of seed security and sovereignty. The government stores reserve stocks of this seed, enabling the country to better withstand natural disasters and pest or disease outbreaks. The government also saves money by not having to buy, transport and store imported seed. Local purchases of seed by MAF and commercial traders returns much-needed cash to rural Timorese farmers and provide new business opportunities for the emerging commercial agriculture sector.

6.6.3. CSPGs and CSPs – An Expanding Network

The Community Seed Production network has expanded rapidly and in mid-2015 there are 1,208 **CSPGs** involved with a total membership of 16,054 persons, of whom 31 % are women¹⁰⁷. There are CSPGs in all 13 municipalities and they are active in 62 out of the 65 sub-districts and in 382 of the 442 *sucos* (of which 397 are rural).

The number of MAF Seed Department **registered CSPs** is 57 CSPs consisting of 45 Farmers Associations of CSPGs and 12 previous contract growers. They are multiplying and selling released varieties of rice, maize and peanut. Currently they still mainly grow to meet government or NGO contracts even though their experience in how to approach seed production as a business, and how to market the seed they produce is still limited, they are increasingly selling to the open market.

To encourage regular meetings as well as encourage economic activities supported within the groups, since 2013, SoL started supporting '**savings-and-loans**' activities as additional activities of the CSPs¹⁰⁸. By having these activities, group dynamics are encouraged and exchange of experiences on economic opportunities discussed. SEOs are also accepted as member in the savings-and-loans groups providing them with an opportunity to meet regularly with farmers out of the normal context.

To expand the commercial network, SoL replicated the example of Mercy Corps which has established 10 **agriculture shops** (*Loja Agrikultura*) in their two focus municipalities. SoL established 16 agricultural shops in the other 11 municipalities and provided them with a starting kit (valued at US\$250/kiosk) consisting of released seed, some basic equipment as well as some inventory for the

¹⁰⁶ Contract growers are contracted by MAF to produce certified seeds under strict supervision and quality control.

¹⁰⁷ Th 1,208 CSPGs does not include the CSPGs that associated and became CSPs.

¹⁰⁸ Up to end of June 2015 there were 34 CSPs (15 CSPs facilitated since 2014 and 19 CSPs facilitated in 2015) with 617 members (371 male and 246 female) having US\$31,011 in savings and US\$54,554 had been revolving amongst 342 members.

shop. The agricultural shops act as outlets for the released variety seeds and trials have been done with providing smaller packets of seeds to be offered for sale¹⁰⁹.

The **establishment of ANAPROFIKO**, the umbrella cooperative, consisting of the CSPs and management elected from the CSP boards, is another step forward in ensuring a sustainable link between seed producer and seed markets. ANAPROFIKO provides support to CSPs for production, quality control and marketing of seeds. ANAPROFIKO intends to expand the voice of the seed producers within the national seed business offering an alternative to the private companies currently tendering for government contracts. ANAPROFIKO is in the process of being recognized by the MAF National Directorate of Agriculture and Horticulture as an eligible entity to take part in future tenders for seed supply which would ensure that the CSPs get a fairer price¹¹⁰ for their efforts. The existence of ANAPROFIKO will also be beneficial to enhance the debate on seed (as well as food) imports currently distorting the local market.

6.6.4. Developing CSPGs and CSPs: Process, Benefits and Sustainability

As explained above to meet seed demand, MAF wanted to work with Timorese farmers to **build capacity** to produce seeds locally. MAF, through its SEOs, had contacts with a relative large (but mostly project based and organizationally weak) farmer groups. Besides this the on-farm trials during the early years of SoL had already established links with a number of interested farmers in a number of key-locations for wider expansion. The recognition of CSPGs as part of the local seed production system in the NSSRV was encouraging for the farmers and was ensuring that it had potential for additional income opportunities supporting CSPGs for different crops. The NSSRV also provided for the regulatory framework to establish additional CSPGs, strengthen their organizations, ensure wider linkages with the sector and expand its network over the country.

The rapid expansion in the **number of CSPGs** since 2013 up to more than 1,000 groups in mid-2015 shows the enthusiasm of the farmers to develop local seed production hence the attention the Program paid to help these groups especially with the technical aspects of working with the new varieties and producing community seeds.

On the other hand, the quick expansion, also alerts us that a number of these groups are still in very early phase of their development¹¹¹ and do not always have all the elements (leadership, vision, operational mechanisms, linkages, governance principles) in place that will ensure sustainability. Given that the focus for MAF, and originally also SoL, was on expanding a network that would benefit from research and produce seeds for the farmers and consequently for the local market, attention for institutional development of the groups was limited.

In terms of the **organizational development of the CSPGs**, 2014 analysis shows that 15% of the groups are classified as advanced, 64% classified as moderate and the remaining 22% still very dependent on MAF SEO or other external support. Specific attention needs to be given to the second group to ensure they can become well-established groups that can continue without too much support from MAF or other external actors. As for the third group, which have shown that they are not too responsive to the opportunities it might be wise to give them some opportunity but if not

¹⁰⁹ In 2014, the program provided about 1,750 packets with 750 gram and 1 kg maize and paddy seed to the shops in the 13 municipalities to test whether the customers were interested in purchasing small packs of seeds. By mid December 2014, 75% of maize seed packets were sold to farmers at \$1.50 per kg.

¹¹⁰ Consumption maize sells on average for US\$0.50/kg whereas locally produced open pollinated variety seeds sell for US\$1.50/kg. The Government buys seeds through tenders with prices often reaching US\$2.50/kg for locally purchased and US\$3.50 for imported seed.

¹¹¹ Neither MAF nor SoL have institutional development of farmer groups as a main activity which requires different skills than the skill set available so far.

responding positively not further invest efforts as they probably do not possess the interest to continue anyway.

CSPs, the next step on the ladder towards a national system, were developed out of CSPGs, and provided for an opportunity for the stronger farmer leaders to take charge and organize a number of smaller groups into farmers associations with a clear goal of becoming part of the commercial seed system. The economic aspects was certainly a driver to get people organized and the quick expansion in the number of CSPs provided for further thinking of necessary support to keep the group dynamics going.

SoL3 provided **continuing support** to the establishment of the network CSPs support in different ways to strengthen the CSPs including by: (i) Strengthening all the technical aspects of (commercial) seed production from soil preparation up to harvesting and postharvest techniques; (ii) Providing some support for groups institutional strengthening often in collaboration with INGOs and local NGOs who possess better skills in this and have links to a number of these groups which were previously difficult to reach by MAF; (iii) Contracting an advisor¹¹² to help strengthen CSP capacities in planning for and prioritizing diversification activities, medium-term financial planning, basics of marketing and how to remain competitive as the number of new CSPs increases; (iv) collaborating with the governmental Institute for Business Development Support (*Instituto de Apoio ao Desenvolvimento Empresarial*) supported by ILO (for developing training packages for small business development) and providing multi-day training and (v) organizing cross visits for CSP representatives and extension officers from each municipality to visit other well performing CSPs in neighbouring municipalities.

More recently and giving the development of the CSPs, SoL is supporting the construction of Community Seed Houses, for the CSPs that were formed from associations of CSPGs, which are used as warehouses to store seed, as places for processing seeds, as offices for the CSPs, and as meeting venues for the members. The CSPs contributed labour, food and locally available materials such as timber. SoL contributed materials such as cement, iron rod, corrugated iron sheets, cement brick block, nails etc. The average proportion of contribution from SoL and the community amounted to 60% and 40%, respectively.

Besides direct support to the CSPs the Program is continuing its huge task in lobbying MAF to implement its NSP and also facilitate the purchase by MAF of seed produced by the CSPs to prove that the national system is capable to provide for the demand. The **collaboration with MAF and upstream lobbying**, has resulted in the parliament allocating almost half of its seed acquirement budget for locally produced seeds¹¹³. MAF is also signing forward contracts with 57 registered CSPs to produce 200 t (100 t of maize and 100t of rice) of quality commercial seed in 2015.

It is especially encouraging to see that, although still in its early development, the network of CSPs provide a more effective mechanism for getting improved seed into farmers' hands as they have a commercial incentive to have seed ready before the planting season which was problematic in the past.

¹¹² Joe Freach, knowledgeable about the program and the CSPs being a former Regional Advisor.

¹¹³ For 2014, the parliament approved budget for MAF seed procurement for local and imported rice and maize seed is: (i) For purchase of local rice seed (Nakroma)-80 ton=\$200,000; (ii) For purchase of local maize seed (Sele, Noi Mutin)-50 ton=\$225,000 or a total for local commercial seed=\$425,000. For imported seeds this amounted to (i) For purchase of imported rice seed-86 ton = \$300,000 and (ii) For purchase of imported maize seed 50 ton=\$175,000 or totally amounting to \$475,000 for the purchase of imported seed. As of the end of August 2014, the amount of local commercial seed confirmed and tested that is available from the CSPs is 46t of Sele and Noi Mutin and 46t of Nakroma.

Recognizing the challenge to keep the dynamics going in the CSPs if only focusing on seasonal seed production, SoL analysed the need and potential of **encouraging economic activities** through mobilizing farmer finances in savings-and-loans groups. The 2013 trial with two CSPs was replicated and expanded in 2014 and involves 13 CSPs, then expanded with 19 new CSPs in 2015, so that by the end of June 2015, there are 34 CSPs in total who are integrated savings and loan in their activities. It is envisaged that the savings-and-loans groups will assist the CSPs improve their seed production and provide a productive outlet for saving the money earned from commercial seed sales.

To expand its coverage and ensure building on best practice, SoL contracted Jacinto Mala, through the local NGO BIFANO (*Binibu Faef Nome*), based in Oecussi and with long-term experience in savings-and-loans groups, to provide technical assistance including organize cross-visits to successful groups, provide information on savings-and-loans activities to CSPs, to conduct an interest and feasibility assessment for such activities with these groups and provide mentoring to the 34 CSPs on managing savings-and-loans activities.

Another effort of trying to build on existing experience leveraging the experience gained by other organizations was in the **Raumoco watershed** pilot where SoL contracted Hivos as well as local NGOs to work with the *suco* council to establish an approach for successful watershed management.

Building social capital, as a basis for future rural development programs, was probably one of the least expected outcomes of the Program. CSPs, and to a lesser extent CSPGs, are helping to strengthen the relationship not only between group members, but also within their wider community as they share information and improved seeds with other community members and vulnerable households. All this provides for encouraging examples to other farmer groups or community associations who witness the economic and social benefits emerging for the involvement of the farmers in such groups.

Collaboration with the Columbia University through summer placements has been on-going and added to the knowledge base to continuously develop the system especially related to the CSPs, CSPGs and their linkages. This resulted in following studies:

- 2012 - Maize value chain analysis
- 2013 - Case study on Savings & Loans associations in Oecussi
- 2014 - Commercial Seed Producers, Farmer Preferences and Input Suppliers: Identifying Linkages for a Commercial Seed Market
- 2015 - Collaboration between CSPGs and CSPs, and CSP savings-and-loans

6.6.5. Collaborating and Leveraging

The Program has been **influential** in supporting the research on new varieties, the development of the NSP and in putting the NSSRV in place. The conceptualization, the establishment, the development and the further strengthening of the CSPGs and CSPs, as key features of the NSSRV, benefitted broadly from the fact that SoL operates from within MAF. It provided the institutional framework for the Program to work with MAF at different levels, ensured support on national but also put the linkages in place on municipal level through the SoL municipal coordinators and the linkages of the Program through MAF with the SEOs.

In all these aspects SoL played a key role as the **driver of change** encouraging MAF to take the extra step and providing evidence that the system worked. Given the integration in the system and goodwill build over the years MAF provided for a thankful recipient of support of SoL as partner.

The **establishment of the CSPGs and consequently the CSPs** required a lot of efforts from the Program as well as MAF staff and SEOs in the municipalities. Originally community seed production moving towards commercial seed production in the hands of the farmers was an alien concept given the specialist field seed selection and seed multiplication was enshrined in. The concept was not well understood and the place of the CSPGs and CSPs had to be socialized numerous times. But with

support in the municipalities the CSPGs starting expanding in numbers and CSPs emerged as associations of the CSPGs.

Collaboration with INGOs and local NGOs in terms of building the network of farmer groups and strengthening them was relatively limited as most of these agencies have their own target (farmer) groups not always linked to the existing MAF groups or the newly established groups with support from the Program.

In hindsight it can be questioned if more closely working with these agencies would have produced stronger groups for instance by building on their groups? The initial notion on the possibility and necessity of involving farmer groups in national seed production was re-enforced during the visit to Nepal and the further discussion with the NSP consultant and the Community and Commercial Seed Advisor in relation to the national system hence the increased attention to the potential of farmer group involvement. So in hindsight this is an easy question, but given the focus of the Program over the previous 10 years was in research, the relationships build over that period with close to two thousand farmers involved in OFDTs, who tested varieties on their farms and the fact it operated from within MAF (who already had a network of project groups) it is probably a bit unfair as the Program's main focus was on ensuring adapted varieties and seed production for the nation and less on building social capital on *suco* level.

Once there was clarity on the potential role of the community seed producers and subsequently commercial seed producers in the system SoL collaborated and tried to put collaboration in place with many stakeholders as mentioned above.

The most valued **complementary partnership** was the fact that all stakeholders, multilateral and bilateral agencies as well as INGOs and local NGOs were able to source seeds of adapted varieties, in sufficient amounts, on time and against a reasonable price, if not for free. The interaction between these agencies and the CSPs greatly simplified the efforts to ensure that farmer groups supported by each of these agencies obtained seeds.

Collaboration with **BIFANO**, and building on the 2013 trials in 2 CSPs, provided for leveraging their knowledge on savings-and-loans onto the extensive network of CSPs already established by 2014. Further leveraging was done by SoL becoming engaged in the **Savings Group Technical Working Group** which provides a platform for technical and advocacy support for organizations working in the savings group sector strengthening the financial services available to vulnerable populations in Timor-Leste.

Recent collaboration **with CCT** in the men's Health Program also uses the extensive network of the CSPGs and CSPs to ensure these groups grow beyond seed production only but develop as farmers' organizations with broader views.

Institutionally the recognition by MAF, the inclusion in the NSSRV, the allocation of funds in the budget for acquiring local seeds and the capability of the CSPs and CSPGs to respond to demands for seeds (be it commercial or community, sold or bartered) are all strong asset to ensure future development of the network.

6.6.6. Sustainability and Future

The **sustainability of the system** will depend heavily on the benefits experienced and the opportunities encountered and taken up by the CSPGs and CSPs. A number of these include:

- CSPs possess a guaranteed market for their seeds as MAF has an annual budget allocation to acquire seeds and to distribute all over the country. The establishment of the shops, the cooperative, other agricultural projects, INGOs and some emerging private sector initiative provide for additional market opportunities.

- Involvement of CSPs and their member CSPGs in the seed business provides for increased income as the seeds sell for a considerable higher price than the food grain for consumption on the open market. Members receive a portion of their group's profits, helping to support their families, renovate their homes and pay for their children's school fees.
- Increased food availability for consumption as CSPs reserve undersized seed for their members to store and eat throughout the coming year. Members are also likely to buy more food, as research shows that an extra dollar of income from selling food crops translates to 87 cents more spent on food consumption.
- Business success and increased income builds confidence of members who start reinvesting in other small business activities including selling Timorese fabrics or raising livestock.
- Expanding CSP business as CSP members reinvest in improvement of their farming and houses, invest in local business or by buying individual assets such as motorbikes or seed silos.

A number of issues need to be put in place to ensure sustainability especially of the regulatory framework¹¹⁴ and the organizational capacity of the organizations (CSPGs, CSPs, ANAPROFIKO). Currently, and although established in very close collaboration with MAF, a number of the organizations and parts of the system are still very much dependent on the Program and its people on different levels. Providing change comes slowly in MAF there might not be intensive attention once the Program has closed so urgently establishing the links is needed during this remaining year.

Most importantly it is needed to put a support system in place of competent and relevant actors that can provide the necessary backstopping to strengthen the CSPGs, the CSPs as well as ANAPROFIKO and to ensure their linkages with the sector stakeholders probably within the municipal planning efforts underway supporting the current drive towards decentralization. A municipal agricultural development vision supported by the DPs working in each municipality building on specific experiences would optimize the investments made.

Besides the CSPGs and CSPs there are a big number of other farmer groups either established or supported by bilateral or multilateral agencies as well as INGOs and NGOs. It was proven that not all of these groups are linked to, what is generally seen as a successful, institutional set-up ensuring provision of seeds. There is a need to pro-actively search for ways to distribute more information to all these stakeholders to ensure that an environment of mutual beneficial exchange of information becomes established informing stakeholders on national but even more on municipal level.

Given the relative strength of civil society in terms of building local organizations there is a need to look how they can be involved in organizational strengthening of the CSPGs and CSPs and see how they can contribute more comprehensively to rural development. Long term capacity building support is required for all farmers' associations be it the ones already enlisted as ANAPROFIKO or CSPs but also others.

Further advocacy from the Program to MAF and to the municipalities to ensure that all achievements related to the organizations within the system as described above are more embedded in the thinking and acting for MAF decision-making and implementers ensuring that the farmer associations are not seen as a target for government hand-outs but as partners in a collaborative effort for broad based development.

¹¹⁴ Further work on the NSP and NSSRV have been described under Chapter 6.2 and 6.3 and constitute follow-up to ensure regulatory framework in place protecting the position and role of the CSPs and the CSPGs.

6.7 Optimizing Information on Climate Change and Soils

6.7.1 Relevance

Timor-Leste's **agricultural ecosystems** are very complex with the small land mass possessing about five major land/soil formations and six major agro-climatic zones. Food security or food sovereignty within such a context, is not only dependent on technical aspects as providing seeds of improved varieties or introducing better agricultural practices but there is urgency in ensuring that plans and adjustments of agricultural practices is based on information of main crop productivity influencing factors including climate and weather, soil, and others. Putting all this information together and making it available through maps is particularly relevant in a diverse range of zones and landscapes.

Timor-Leste has three government institutions collecting **climate data**: National Directorate of Meteorology and Geophysics and the National Directorate of Water Quality and Control, both in the Ministry of Public Works, Transport and Communications, and the Department of Agriculture, Land Use, Geographic Information Systems and Agro-meteorology (ALGIS-Agromet) in MAF. Up to three years ago the three institutions were largely unknown to each other and by the wider stakeholder community requiring climate data. Given the limited coordination no real data were available resulting in decision-making and project design being done without incorporation of these real data.

Soil data, soil analysis and understanding soils are fundamental for agricultural development, but although foundational there has been an absence in coordinated efforts to collect data, bring information together and package it so it becomes accessible to government, DPs as well as farmers. As for understanding soils and the impact on crop production, most stakeholders in agriculture are lacking in-depth knowledge or are largely unaware of the underlying chemical make-up of soils, possess very little understanding of basic concepts like pH and the requirement for macro-nutrients such as Nitrogen, Phosphorus and Potassium and little efforts have been done to link soil requirements and soil treatment. Government and NGOs are mostly unaware of soil issues except for some understanding of the benefits of composting and mulching or the use of organic agriculture practices.

6.7.2. Objectives

Given the importance of **climate data** for agriculture in general and for agricultural research, land-use planning and risk management more specifically, SoL endeavoured to make weather data, climate products, climate research and historical weather data available. This included information based on historical records and information collected over time including from the weather data at research stations and selected on-farm demonstration trial sites.

Advocate and support a more rigorous approach to **soil issues** and make **soil data** available to a wide range of stakeholders by improving access to soil information providing for improved technical understanding and supporting decision-making based on data. As part of this effort and together with other stakeholders support the establishment of a functional soils lab.

Making information available in easily accessible forms including through **maps and information sheets** and support initiatives as websites to ensure that stakeholders can access all sources as they were gathered only through big investments in the past.

6.7.3. Description

There is an increased importance and attention to **the impact of climate change** especially related to the agricultural sector. The importance of **climate data** became very clear and the emergence of the climate change issue provided an opportunity for SoL to expand its activities given the limited understanding that was available on the level of all stakeholders involved. By employing a Cropping System Advisor, by building on historical information and by networking with different stakeholders

addressing climate change related issues in Timor-Leste, SoL was able to put an amount of information together that is appreciated by interested parties.

As a result of the efforts, SoL has made available through its website downloadable weather data, climate products, climate research and historical weather data that it has collected over time. This is routinely and extensively accessed by external partners from a range of sectors.

To be able to learn from weather patterns and make decisions based on **weather data** there is a need for the collection, processing, storage and timely dissemination of weather data throughout a range of different locations spread over the country. Given the topography and the difficult terrain such a task is difficult to implement. Ensuring proper functioning of the available **weather stations** and expanding them in different locations will ensure data can contribute to the data-sets of information, can be analysed and provide input for decision-making processes

Availability of soil information in Timor-Leste was limited and digital and hardcopy **maps** of Timor-Leste soils were found to have extensive errors and the underlying data was not accessible. To add to the information on soils the Program supported the MAF **soil lab**, digitized a large amount of soil tests to make them available to a wider public. Ensuring maps are updated and readily available is another part of the information needed to be able to use data to make decision.

6.7.4. Process and Actors

Climate Data—Given the limited coordination between three government institutions collecting weather data, SoL collaborated with some key organizations such as FAO, RDP4 – GiZ and Camoes and the Australian Bureau of Meteorology (BoM) to bring together the three government institutions: DNMG, DNCQA, ALGIS. An open data sharing discussion was facilitated along with an introduction to the secure meteorological database operated by the National Archives and agreement¹¹⁵ reached. A previous Australian funded effort to put in place a plan to digitize historical weather data from the National Archives did not yet result in these data being accessible to people in Timor-Leste.

Implementation of the agreement met with a number of bottlenecks as none of the institutions was familiar on how to operate the database for inputting current weather data and exporting relevant meteorological products such as graphs and summary data. SoL provided extensive mentoring to help the government staff¹¹⁶ to work with the large volumes of weather data associated with this field of work for automatic processing and preparation for input into the secure database.

SoL then highlighted the fact that 2014 was the 100th anniversary of weather data in Timor-Leste (unknown to others) and suggested that a special “launch” of this agreement be made at the upcoming Climate Change Conference to draw attention to the meteorological services of Timor-Leste.

Middle 2015, SoL is still undertaking a mentoring process to improve collation and input of data in order to leave a firm legacy in the meteorological sector which will serve the nation into the future.

In June 2015, the Climate Change Centre website¹¹⁷ was launched with the intention it becomes a resource for people doing research in the field of climate change. The centre has an office in UNTL and is set up as part of the **University of South Pacific (USP)** - European Union Global Climate

¹¹⁵ The agreement essentially approved for all contributed data to the database to be held under the authority of DNMG but accessible to any of the three institutions. On the other hand external sharing would require endorsement from the original custodian of the specific data.

¹¹⁶ This highlighted the issue of government capacity and resources where only a few people had skills to handle the task without creating extensive errors.

¹¹⁷ www.centre-climatechange-biodiversity-tl.org

Change Alliance Project. Contribution from SoL included provision of data and some basic training access and use of data related to climate and crop issues for UNTL lecturers and government officials. SoL's Cropping System Advisor will provide some more mentoring to around 3-4 key people in UNTL, DNMG and others over the next few months to promote access and research to real data on climate, soil and crops.

Weather Data – MAF possessed a number of weather stations which were either not functioning or from which no data were relayed up to a national level. SoL recognized the need for an improved system “from the ground up” for collecting weather data in difficult terrain, processing, storage and timely dissemination. SoL began trialing automated systems which logged the data using state-of-the-art technology and transferring this data via telecommunication networks directly to the internet.

SoL had identified a model of weather station: Hobo GSM units as being sufficient for Timor-Leste conditions and collaborated with the Japanese project “Master Plan for Agriculture” and PEC, the private company contracted by JICA, to install the same equipment in other locations across the country. SoL has provided technical advice to PEC during 18 months of operation which has in turn built skills to operate the total system and puts them in a good position to deliver future technical services to MAF¹¹⁸. By building capacity in the private sector it is hoped that the system does not turn into a “white elephant” once donors do not support anymore.

Soil Lab – MAF did not possess a soil lab and so through the efforts of the Australian Society of Soil Science¹¹⁹ and SoL, the lab was constructed and has been supplied with sufficient equipment of good quality and the required reagents for the completion of basic soil analysis. The Chinese Rice Project has provided an abundance of other equipment; some for use in soils analysis and some for use in rice and other plant analysis. They also provided training in soils analysis and rice monitoring, as well as provided lab management assistance. Training in China as well as linking with Indonesian trainers has been put in place. The FAO has made some efforts by trouble shooting issues preventing the labs operation and training staff to measure bulk density, organic carbon, pH and EC.

Although provided with a considerable amount of resources, issues of human resources and staffing, facility sustainability and maintenance as well as desirability of MAF housing the soil lab have come to the forefront and will need to be clarified. Short term demand for soil analysis mainly comes from MAF DPs and NGOs which require soil data but these requests are not sufficient to provide the continuity of use required to sustain a fully functional, continually used, soil lab.

Given the recent restructuring of MAF and the new minister in place it might be worth to gauge the long-term interest of MAF and based on that decided in collaborative efforts between DPs to help build MAF capacity to properly manage the lab and implement a greatly expanded soil testing program.

Soil Data - SoL collaborated with a land use expert from WA Department of Primary Industries to assess the accuracy of the maps and further contracted a Timorese mapping firm to make extensive repairs to the data. SoL also arranged for over 700 soil tests to be digitised. In collaboration with AidData and students and staff from the College of William and Mary, USA, both the mapping and soil data was collated into a Google Earth format to make the data easily accessible and this along with other information was delivered on a SoL info CD at the Climate Change Conference in Dili in 2014.

Another example is collaboration with the USAID DAC project emerging from the fact that many NGOs and DPs are unskilled in collecting soil data and so SoL promotes a more technical

¹¹⁸ Unfortunately they are the only company in the country which poses a risk for the future although up to now service has been excellent and pricing reasonable.

¹¹⁹ Dave Lyons who provided quality training to MAF staff.

understanding of soil issues. For example, staff from the USAID project was encouraged to begin by measuring soil pH. SoL provided their agriculture advisor with a pH test kit and advised on geo-locating the tests. The advisor then trained local staff to test soils and returned the pH tests with latitude longitude data to SoL. This was then mapped against existing soil map data, a selection of maps were returned to DAC and the soil pH data was added to the soil dataset that SoL continues to collate.

Mapping – Efforts to improve GIS in Timor-Leste have been going on for quite some time supported by DPs but the reality shows that it was difficult to access GIS data and that the government did not have a procedure for updating data. Given SoL's embedding in MAF it decided to support capacity building of the MAF GIS unit ALGIS and improve the access to maps. By doing so it build on its over 14 years work as SoL was collating and storing sets of GIS data as they became available since the early days. In 2013, SoL helped ALGIS to consolidate GIS data sets from different sources which has now become one of the basic data sets for GIS work. The efforts of increasing government capacity on GIS are on-going and include improving knowledge of working with survey data, repairing incorrect data, measuring areas of fields with map data and producing suitable maps of surveys. In 2014, SoL in collaboration with ALGIS uploaded in its website more than 15 GB of high resolution maps of Timor-Leste showing basic thematic information from National down to the *suco* level scale. For the first time, these informative maps were made available for public use.

SoL continues to collaborate with the GiZ-Camos Global Climate Change Funding project which supports ALGIS with GIS and agro-meteorology. SoL is contributing to training substance and direction to improve delivery to meet the needs of ALGIS.

SoL continuously looks for opportunities to acquire more GIS datasets through its extensive connections with government and NGOs and SoL sets the standard for GIS data collection often providing mentoring and capacity building to improve GIS standards. In return, projects share data with SoL in recognition of the impact of SoL's work. For example, the Ministry of Education required assistance to map the location of schools as part of a survey of school status. SoL provided some technical assistance including demonstrating standard procedures for preparing GIS data. The data was supplied to SoL, maps were given in return and the data were stored and can be shared with other government departments such as Ministry of Public Works wanting to know the location of schools in relation to roads and water supply.

Multiple maps and info sheets with simple guides at *suco* level were also prepared and made accessible on the website and are used frequently by various organizations.

Publications - SoL endeavours to conduct research on the data that it has collected in order to strengthen the legacy/sustainability of this information. Formal publications in scientific journals, conference proceedings and reports will allow the information to be accessible into the future for the global community.

6.7.5. Collaboration and Partnerships

SoL has been at the forefront of opening its doors for other agencies, be they government, non-government, international or local to ensure that available data and information are accessible to people who need them. The previous chapter describes some deliberate efforts from the Program to deal with issues that emerged and provided for quick wins in terms of benefiting from the available information and ensuring it is packaged in such a way that it can benefit different stakeholders.

A number of the items described build on the information and data-set packages available sometimes compiled over decades. By ensuring they become available to the broader stakeholder and updating them with more recent information ensures that the knowledge base about Timor-Leste is expanded and can be put to use for further development.

SoL and its staff, especially the Cropping System Advisor, were instrumental in making sure that other organizations understood the open-information-policy from the Program and were proactively looking at opportunities of how to share.

The majority of the work described above is often of a consultative (for information exchange and sharing of ideas and experiences) or complementary nature in that each of the organizations brings something in that is useful to the other.

The fact that the work on weather data and mapping sometimes goes back decades, and without the Program would probably be lost as so far no one did efforts to dig in these historical records, is admirable given it provided the necessary long-term trends that made analysis more worthwhile. The Climate Change Conference provided for a good venue to showcase the importance of the data. The appreciation of all DPs (multi-lateral, bilateral, INGOs and NGOs), we spoke with, highlights the success of the work done on gathering weather and soil data and the mapping efforts to inform a wider public.

6.7.6. Sustainability and Future

The work done to make information on climate and soils available has been successful so far and drawn appreciation from many organizations including for the production of easily available info sheets that can be used by others.

One of the main challenges for the future will still be the hand-over of these activities and ensuring that there is a group of interested people (formally within the ministry or informally based on interest) that can progress building on the results so far. Given the direction of the country towards more decentralization mapping will be a very strong instrument to work with municipalities and ensure that planning is based on data and information and supports long-term development rather than quick non-sustainable results.

A couple of issues that came up during the visit and that might still be do-able during the last year of SoL include (but are not limited to):

- SoL is currently endeavoring to arrange collaboration between the New Zealand government's department of meteorology, NIWA, with the Government to make the final link by installing a system that will automatically transfer the meteorological data from the automated systems to the Government database and then export the data as user-friendly products available on the internet. It is hoped that this will lift the profile of the meteorological services in Timor-Leste to provide much needed support for their valuable work.
- Given the challenges of the sustainability of the Soil Lab and given the short-term demand for soil testing it might be necessary in the short-run to work with the staff available, but in the long-run to encourage some Timorese students to study soils in Australia, gain experience in Australian soils lab and conduct research in Timor-Leste using the soil lab available which would provide for opportunities to mentor the staff in Dili and improve management while on-the-job.
- The extensive work already done into soil testing, aggregating data, and mapping will be very useful as a contribution to the Soil Conference in July, 2015 (this is the International Year of Soils) which was initiated by FAO and will be supported by different DPs collaborating with MAF. SoL and MAF are planning to release the "Soil Map of Timor-Leste" and present further information for use of participants. The presentation will draw attention to the work done so far and maybe stimulate interest from other parties.

7. Seeds of Life – Collaborative Efforts and Impact

7.1 Seeds of Life collaboration with Research Institutions and Universities

The Program was borne out of a collaborative effort between ACIAR and CGIAR centers which took the lead in identifying and researching food crop varieties with the potential of high productivity and adaptability in Timor-Leste. The collaboration provided SoL with access to a wide range of varieties, to the specific scientific knowledge of the centers as well as to the network of scientists involved. For the CGIAR centers it provided for an expanded reach for their research and supported their collaborative efforts with stakeholders supporting the advancement of sustainable agriculture¹²⁰.

The further expansion from research station to farmer field trials and onto the farms provided the opportunity for the research centers to build on the knowledge base to respond to general critique and recognition that much on-farm experimentation could be done a lot better from a scientific point of view, and also be done a lot better from a practical farmers' point of view. So the collaboration provided for an opportunity to explore novel ways of doing research, contributing to the knowledge base and linking to the challenges farmers are dealing with.

Less formal collaboration in obtaining varieties occurred with institutions and programs from Indonesia, Australia, the Philippines and Thailand which showed a commitment to the process of sharing in search of more adapted and higher yielding varieties in Timor-Leste. Collaboration with institutes of higher education including *Institut Pertanian Bogor* (Bogor Agricultural University) from Indonesia but also with Columbia University, New York, proved beneficial. The first was influential in providing expertise and building on their experiences, while the latter proved supportive in regularly researching emerging issues by using Master students. Efforts to formally collaborate with the Indonesian ILETRI are still hampered by a slow response from the Indonesian authorities to release germplasm from Indonesia.

The impact of the collaboration between SoL (hence MAF) and the research institutes has provided for 11 out of the 12 released varieties so far, contributed to the skills of the research staff and the expanded network and provides for future opportunities.

SoL's interaction with these institutes can be categorized as collaboration according to Himmelman's model with following description "Collaboration: exchanging information, altering activities, sharing resources and enhancing the capacity of partner organizations for mutual benefit and toward attaining shared goals. Members are willing to share risks, responsibilities, rewards and resources."

Given the on-going search in Timor-Leste to ensure seed security focusing on a variety of crops there are possibilities to further the collaboration between MAF and research institutes, both international and bilateral. Additional efforts to link with Indonesian institutes might be beneficial for the future given proximity, the language as well as the similarities in agro-climatic and soil conditions in some Indonesian provinces. There might also be benefit in exploring the potential of a new MoU between UNTL and MAF to enhance research in the future.

¹²⁰ CGIAR sees collaborative partnerships between international agricultural research institutes and NGOs and farmers' organizations as a key strategy for advancing sustainable agriculture in the developing world. Briefing Paper for the CGIAR System Review prepared by the CGIAR NGO Committee. 1997.

7.2 Seeds of Life and the Ministry of Agriculture and Fisheries

SoL was present in Timor-Leste before MAF existed and its 15 years presence in-country coincided with some turbulent times. It is within this context, as a new country emerging out of conflict and searching for stability, that the government is establishing itself and its systems, including dealing with its rather poorly performing planning and budgeting systems and the (relative) absence of good governance and accountability in the use of public funds.

MAF, with a current budget allocation of only about 2.3%¹²¹ of the national budget, remains an under-resourced ministry and its budget, since early days, is so small that investment in R&D, which is needed to support MAF's extension efforts, is virtually non-existent and no adaptive research on major crops with the exception of the work undertaken by SoL has been implemented.

SoL, through a careful crafted and hands-on approach dealt with the limitations of the MAF system and was influential in establishing the research infrastructure and capacity engaging (the often changing) MAF leadership and working within an organization that was prone to re-organizations¹²². MAF is highly appreciative of the collaboration over the years, enjoys the achievements leading to the NSP and the functioning of the NSSRV and is thankful for the support to the decentralization efforts being initiated.

For SoL, collaboration with an institute in its early development stages, and given the considerable resources, provided for an environment where quick technical gains could be achieved. SoL engaged with the relevant people in the ministry while helping to put in place the necessary infrastructure and developing the capacity on different levels in the ministry through different means including short trainings, short courses and even up to scholarships. On the other hand, and given SoL operated from within MAF, it was also prone to the civil servant attitude and sometimes the dynamics in the Ministry. As an example, collaboration with the AgInfo unit, approached to collaboratively produce materials or even set-up a full-fledged website (contrary to a SoL website), was not successful.

The collaboration between MAF and SoL can be called a critical one, in which both parties consider each other as indispensable in accomplishing targets and goals and working together on more long-term strategic arrangements. MAF provided the institutional framework and umbrella which provided the opportunity for SoL to operate, while SoL was influential in providing the direction and technical substance in a specific subject, the seed sector, in coordination and collaboration with MAF.

MAF realizes the enormous challenges it is facing in terms of institutionalization of Program successes and ensuring the sustainability. The environment of budgetary constraints and solving the challenges faced to absorb the human resources and skill set invested in by SoL will be instrumental given the limitations of the civil servant system. MAF hopes SoL can still provide support in three areas in the coming year. Given that the NSP and the NSS(RV) are in place, as well as with the NSC established, main issues relate to: (i) ensuring the NSP is submitted to the Council of Ministers to strengthen legal acknowledgement; (ii) supporting the MSS and its implementation mechanisms; and (iii) strengthening of actors involved in the NSS(RV) including also the umbrella organization which ensures the link between MAF seed production and seed acquirement within the national regulations.

¹²¹ This is MAF budget while some other agricultural related investments e.g. irrigation are funded through other ministries

¹²² Staff placement is often not in accordance to skill set, is seldom performance-based and political nominations prioritized.

7.3 Seeds of Life and Multinational and Bilateral MAF Development Partners¹²³

The number of DPs working from within MAF is considerable and they include both multilateral agencies (IFAD, FAO, EU) as well as bilateral programs as SoL. Besides that, there are a number of INGOs working through or very close with MAF. It is estimated that the MAF annual budget is actually doubled by the amounts DPs spent which should provide the resources to respond to opportunities in terms of helping MAF achieve its objectives.

On the other hand it seems that MAF is in danger of being over-flooded by the big number of DPs whose coordination is neither always efficient nor effective and with individual DPs often attempting to establish their own “strategic niche” instead of prioritizing collective impact. This is aggravated by the fact that MAF, until now, seems to lack the overall vision and long-term plan to improve agricultural productivity and is hampered by contradictory policies. The combination of the lack of direction and the huge amount of support from DPs creates the risk for DP domination in MAF and MAF becoming an interested by-stander enjoying the results of the work of the DPs.

The challenges are immense but DPs, until recently, did not succeed in coming to a common agreement on how to make their impact collective. The MAF-DPWG¹²⁴ has not been instrumental in coordinating and collaborating neither in advocating/ lobbying MAF for clear direction on how to effectively allocate the DP resources in support of agricultural development in Timor-Leste. Additionally most DPs struggle with a project orientation and mentality with their own rules and regulations and as such will face difficulties with a ‘one MAF plan’ effort.

The position of SoL was slightly different to some of the DPs as SoL, being part of MAF and having amongst its staff a big number of MAF staff, clearly opted to be considered as MAF. Given SoL constituted the longest serving MAF partner and had considerable resources to allocate, it fulfilled the role of trying to bring some of the internal efforts of the ministry together.

Multi-lateral and bilateral development partners we spoke to acknowledged SoL’s integration in MAF and its role in trying to ensure the MAF-DPWG got on track. They applauded the way SoL pro-actively interacted with other stakeholders and contributed long-term knowledge on agricultural developments especially related to seeds and government policy to interested parties. Specific appreciation was given on the efforts to make seeds available for DP initiatives, to provide information on the new varieties, to contribute to efforts to produce extension materials on agricultural practices and bring MAF and DPs closer together including at municipal level as it was recognized that SoL was influential in initiating discussion on the decentralization agenda stating with the municipal seed system to ensure self-sufficiency in seed supply and distribution in the municipalities. Specific appreciation related to the work done to produce materials on climate, soil and diverse mapping efforts useful to many DPs.

Australian Aid, SoL’s main donor, appreciated the Program’s adaptability in making research results useful up to the farmer level and ensuring improved seeds benefiting the communities while (initiating efforts) on behaviour change on nutrition and gender roles. It recognized the efforts in leveraging with other DPs through its collaborative attitude but regretted that, because of the

¹²³ We purposely use the word Development Partner which is frequently used in Timor-Leste as it does not confine to collaboration with donors but also includes partners from the non-governmental and civil society sector as well.

¹²⁴ The MAF DPWG aims to: (i) Facilitate information sharing among partners on programs and studies; (ii) Joint analysis on rural development issues; (iii) Coordinate/harmonize approaches/policy views and speak with one voice to MAF; (iv) Focus on one plan, one budget, one M&E and (v) Support MAF Development Partners coordination processes.

success of SoL and long-term presence in MAF, Australian Aid itself had lost some of its punch with MAF.

SoL benefitted from the collaboration with the DPs especially through leveraging of efforts as the Program itself was limited in design, scope and reach and thus searched for cooperation opportunities. The collaboration with TLMSP (financed by IFAD and integrated in MAF) is a good example of leveraging and using the TLMSP system and mechanisms to spread the improved seeds. So is, although less visible, the support to reinvigorate the DPWG, to ensure development effectiveness, by trying to focus aid contributions towards a common goal. Other examples are SoL influencing of research being implemented by these actors or in the case of CIAT, which initiated the SSSA, SoL lobbied to ensure MAF and other stakeholders got involved to learn from the process as well as from the results.

Given the new minister, the vigour in the DPWG and a number of new DP programs (Australian Aid, EU, USAID, WB, etc.) being planned for 2016, SoL through its connections in MAF, long-term involvement in the sector and the recognition of its broad knowledge base can prove influential shaping these efforts.

7.4 Seeds of Life and NGOs – International and Local

Collaboration between SoL and (I)NGO programs started with on-farm field trials involving farmers supported by the INGOs or their local partners who reach farmers far beyond what MAF could offer. It was CARE, as part of the INGO Food Security network¹²⁵, which focused on farmer group empowerment through community seed production who worked collaboratively already in the middle of SoL2. The success¹²⁶ of the CARE facilitated groups, which had used SoL researched seeds, proved very contagious to other groups and spread beyond original imagination. This success was actually the start of the seed system with community groups becoming important actors in seed production. A number of the groups later developed into CSPGs and subsequently CSPs.

For SoL it was an opportunity to work with the (I)NGOs to reach a big group of farmers and build awareness about the new varieties, spread the knowledge and information on these varieties through contributing in training and distribute seeds to the wider public due to the extensive reach of NGOs to farmers spread over Timor-Leste.

The experiences collaborating with the INGOs were also the basis for adapting some of the targets and approaches diverting from the Project Design Document (PDD). Examples include interacting with CARE and better understanding the reality of seed production on community level – so where originally the PDD talks about six Farmer Seed Marketing Groups, but given that seed demand for different crops combined runs in the hundreds of tons¹²⁷, there is a need to expand the number of CSPs based on production capacity but also based on their location and suitability for certain crops. Another example adapting the PDD is in the approach to the whole NSS(RV) as the original thought

¹²⁵ Established as part of an EU Food Security Project (2007-2010) involving a number of INGOs including Concern, Child Fund, Oxfam, World Neighbors and CARE with the latter focusing on seed production. In the second Phase (2010-2013) all INGOs involved amongst others CARE, HIVOS, Mercy Corps and World Vision took up seed production activities.

¹²⁶ Participants claim they have more food and in some cases cash; increased sense of self-confidence and solidarity; increased skills related to seed production; and improved opportunity to exercise leadership skills and demonstrate these to society.

¹²⁷ In 2014 MAF required 80tons of local produced maize seed and 100tons of local produced rice seeds. In 2015 the demand from MAF for locally produced maize and rice seed increased to 150tons and 100tons respectively.

was still on a central system but which was adapted to an empowering approach through a decentralized system and supporting seed self-reliant communities or areas.

INGOs found SoL very approachable and very present in the sector and showing an attitude of letting others benefit from SoL initiatives and success including access to the variety information and research based information. SoL provided a key-role in linking (I)NGOs with MAF (and its network) as well as with other MAF DPs. The (I)NGOs highlighted they were benefitting from the accessibility to quality seeds through local networks including CSPs; opportunities for staff development in the specific sector; opportunities for collaboration with SoL staff in support of farmers development and SoL making available interesting and valuable climate and soil info gathered from different and historic sources and packaged for easy use and the encouragement for innovation.

SoL especially benefitted from the wide-reaching network of farmer groups the (I)NGOs worked with, which resulted in an expanded coverage for information on varieties, on the NSP and NSSRV as well as ensured seed provision to farmers all over the country. SoL also used expertise of a number of the INGOs through outsourcing work that INGOs are particularly good in including activities for potential of expansion e.g. the recent work for marketing seed where Mercy Corps provides training to the *loja agrikultura* in business modeling.

Towards the future both INGOs and local NGOs can benefit from the NSSRV infrastructure put in place. They will have access to quality seeds from the CSPs spread over the country, be able to influence the NSC and its activities, will benefit from the database on seed producers and availability of crops. The main contribution of the NGOs is on the one hand helping MAF to put the MSS in place given they are most active on municipal level and have an extensive network of farmer groups and secondly supporting the strengthening of the CSPGs and the CSPs will be instrumental as MAF does not have the skills, the reach, neither the means to ensure an empowering approach.

Local and international NGOs were also instrumental in SoL expanding its scope of work leveraging the knowledge and experience and initiating some activity support to NGO programs or sub-contracting them to provide services. Examples include the watershed management initiative in Raumoco, the savings-and-loans work supporting dynamics in the farmer groups and the increased health focus through replicating 'Men's Health'.

The quick expansion of the program scope leaves some questions on how to most effectively address new issues or respond to new opportunities. Although very attractive, the Program needs careful consideration and deliberation regarding other DPs good practice and claimed results and impact before replicating. SoL is known for building development on research results, so expanding the scope needs to adhere to that principle to ensure certainty for communities to benefit.

In terms of ensuring the long-term impact of the Program there is a need, during this final year, to work with the more critical NGOs which have expressed resistance to what are commonly known as the improved varieties. Given their attitude seems to emerge from not being well-informed, or not having access to all the information available to the Program, it can proof beneficial in the long run to more intensively interact or encourage other NGO members of different networks who have collaborated with SoL to interact with them so that concerns related to lack of attention to the use of local varieties, accusations about genetic material being taken out of country or seed privatization and monopoly suspicion can be dissolved. The fact that within the networks as well as in the NSC a representative of local NGOs is present opens up opportunities for deliberation.

7.5 Future Challenges and Opportunities

Summarizing we can say that in the year to come there are still a lot of opportunities for collaboration with different stakeholders but that sustainability of the SoL efforts so far will be very much dependent on MAF's vision for the future. The current interaction with the new responsive Minister is encouraging but there is a need to ensure DPs, collectively keep interacting with the ministry at the highest level to get clarification on a clear direction which can help the new upcoming DP programs to ensure that they do not compete with each other or replicate efforts of the past but, in line with the development effectiveness agenda, ensure convergence in support of MAF and its future development both on national as well as municipal level

Another decisive element is further strengthening of MAF and the system actors responsible to implement the system up to municipal level. Given policy efforts towards decentralization and the opportunity to work on municipal seed planning, it is worth to broaden the discussion and ensure that all DPs with their constituencies of NGOs or farmer groups get involved in these activities and together with MAF start building a municipality-wide approach for agricultural development, starting with the seed system, building on the assets of people, methodologies, pilots, etc. that are already in place. A lot of work has been done over the last 15 years but it is time to value these efforts, learn from their implementation and expand the successes on a much wider scale.

8. Lessons Learned

This chapter provides a number of lessons for a program interacting with a ministry in a newly developing country in general, and some focused on the collaborative and partnership efforts put in place more specifically.

- a. **Long-term sector support and donor commitment for impact** – In order to influence government systems and contribute to institutional development it is imperative that donors provide for a long-term commitment that is reasonably flexible to cater for the changing internal (in the ministry) and external environment/context. SoL has proven that a long-term commitment can build goodwill and trust with the partner even though within a very complex political context as in Timor-Leste, a post conflict state still going through turbulence during the Program. The trust developed, provided for the right environment for the ministry to engage, and enabled SoL to interact with the officials, lobby for their support and advocate policy development in relation to an issue of national interest. The partnership resulted in a more effective and efficient contribution to the broader objective of MAF, the owner of the Program, and the Government's objective of food self-sufficiency and improved food security at the household level by making improved seeds available, decreasing food crop losses, optimizing agricultural practices and stimulating the involvement of the private sector to ensure availability and accessibility of seeds at local level.
- b. **The development hypothesis** (that food security starts with seed security) was **underpinned by a set of design features** which provided SoL with a clear framework for action. This also provided clarity to MAF and other stakeholders on the focus of the Program and confined expectations or the temptation to influence SoL to widen activities. The design features included: (i) the concept provided for the Program to fill a niche, identified by both the Government and ACIAR, to contribute to food security which was critical at the time; (ii) the design avoided complexity by focusing on a clear narrowly limited issue in line with the specific skill-set of the implementing agency; (iii) the design opted for a strategy of building from within the system (at the time non-existent ministry) and developing skills and supporting development of specific related institutional set-up while on-the-job; (iv) the initial design ensured collaboration between ACIAR, the Program and the CGIAR global partnership that unites organizations engaged in research for a food secure future¹²⁸.
- c. **Focus on capacity building** of the civil service linked to ensuring slow field-level impact and benefits. The Program ensured that stakeholders on different levels gained knowledge, skills and experiences that changed the way they are carrying out their duties. For MAF people, on different levels, it provided opportunities to enhance academic qualifications, be involved in quality research, linked with international expertise but most of all it provided proof that a consistent effort to develop a (seed) system provides results; that not all development successes necessarily depend on external sources but can be developed from within; that a community-driven seed system has a future and that Timor-Leste can be self-sufficient¹²⁹ for the seed sector. On the level of interaction between government and farmers especially from municipality level downwards, it showed the value of interaction beyond the hand-out projects normally implemented by Government. It also showed that within municipality limitations of capacity and financial resources, they start to be influential in assessing local conditions related to seed demand and availability, and developing plans to produce seeds to serve their communities and people.

¹²⁸ Subsequent collaboration with the University of Western Australia maintained the focus on research and making research information beneficial to a wide range of stakeholders.

¹²⁹ In 2014, 50% of MAF demand for commercial seed was supplied but for 2015, ANAPROFIKO, through its member CSPs, has planned to supply 100% of commercial seed demand of MAF.

- d. Programs, including their implementers, be it managing contractors or research institutions need to show-case a **collaborative attitude**, pro-actively searching to link with other stakeholders in the agricultural sector to leverage the investment. SoL welcomed opportunities for collaboration, showed a responsive attitude to approaches for information, cooperation, collaboration and exchange. SoL policies encouraged sharing of information, data and program findings. Its leadership believed in research to underpin development efforts, wanted for others to benefit from the investment and ensured that turn-around on requests were short. Its staff, because of their broad skill spectrum¹³⁰ and the recognition of other stakeholders regarding their skill set, offered the possibility to be contributing to different fields hence making them even more interesting for others to link with.

Related to this, and for further investigation by Australian Aid, would be the attitude of managing contractors versus the attitude of ACIAR or universities. SoL exemplified an open data sharing policy as opposed to contracted technical assistance that often prefers not to share data to maintain a competitive advantage for future contracts.

- e. **Australian Aid providing flexibility, space and opportunity for an evolving activity adaptation responsive to the changing demands.** Australian Aid provided ACIAR with the opportunity to specifically address a research agenda but build into the second phase a stop-point to assess the value of the research on farmer level and assessing the opportunity to enter into a full seed production scheme. Once given the go-ahead it provided through SoL3 the opportunity to bring research results into the development framework including supporting policy and seed system development building on the (earlier) research and field trials and additional international experience.

The design as well as budget allocation provided **for the flexibility for Sol** to respond to emerging opportunities as well as deal with flaws in the institutional set-up of the country e.g. temporary filling in gaps into Government funding.

- f. **Effective Development** – SoL’s long-term involvement in the sector and the embedding in MAF was an encouraging factor for other DPs to partner with SoL supporting agricultural development. The fact that SoL was very much involved, was very present and was very approachable made collaborative efforts easier. The specific knowledge of SoL provided for access to technical issues absent in most of the other DPs and the position and goodwill of SoL in MAF broke down the barriers of ‘Project competition’ and enhanced the notion that success of external projects will only be measured in what they leave behind in the long run especially related to the institution they have been supporting often for a long period of time.

The main challenge to optimizing the investments in this sector made by the MAF DPs remains to ensure that knowledge, experience and good practice is multiplied reaching more farmers ensuring benefits to a broader part of the population. It needs still more efforts to spread successful technology, under the direction of MAF, involving INGOs as well as local NGOs and ensure the DPs collaboratively design programs that are truly convergent towards achieving the Government’s goals. It provides an opportunity for the DPs to contribute to more effective development (rather than effective aid)¹³¹.

¹³⁰ The skill spectrum of SoL has broadened over the years and where it initially was very much focused on research and applied research, SoL – because of the flexibility allowed by Australian Aid - was able to attract other skill-sets that responded to emerging opportunities that emerged because of the progressively involvement of SoL in broader issues linking research with development.

¹³¹ Busan Partnership for Effective Development Co-operation. This declaration for the first time establishes an agreed framework for development co-operation that embraces traditional donors, South-South co-operators, the BRICS, civil society organizations and private funders and focuses on development effectiveness rather than aid effectiveness.

- g. **Leveraging needs to be part of the strategic direction chosen** – SoL initiated a number of collaborative initiatives in search of alignment to accomplish jointly something that the program alone could not do. At the time its resources were limited and very much focused on the research and initial seed production it joined with organizations to ensure involvement of farmers in the on-field trials. Even more focused alignment was present in outreaching to ensure that improved seeds were accessible to a wide audience through involvement of organizations and projects including IFAD, EU-programs and INGOs as WVTL, CARE, Hivos, CRS, etc.). By building on the relationships and responding to a need of these organizations a win-win situation was created. By working with them and their field staff SoL succeeded in reaching a much bigger audience.

More recently SoL links with organizations as BIFANO, for capacity building and mentoring for the savings-and-loans activities; with CCT for expanding their Men’s Health Program to a wider number of local organizations and with Hivos and local partners to build on their watershed management experiences. By working with these organizations SoL provides access to specific knowledge on issues that will be useful to sustain the groups as CSPGs and CSPs. On the other hand these organizations obtain some resources to expand their success-stories and add-value to other programs. This **multi-stakeholder collaboration fosters an opportunity to build broader support for sustainability issues**. By working across diverse sectors SoL hopes to help sustainability highlighting the complementary benefits of its main efforts with other areas of concern, such as public health, local economic development and environmental development.

Bibliography/References

- ACIAR Proceedings No. 113. 2003. Agriculture: New Directions for a New Nation East Timor (Timor-Leste)
- ACIAR Project “Seeds of Life – East Timor” Description. 2000.
- Asman J., Whitehead S., Marcal J, DFAT. 2014. Timor-Leste Policy on Administrative Pre-Deconcentration (PDA): Status of Implementation and Opportunities for Australian Embassy Engagement.
- Ateneo de Manila School of Government for the *National Anti-Poverty Commission (NAPC)*. 2003. The Collaboration Study.
- Australian Centre for International Agricultural Research. 2003. Agriculture: New Directions for a New Nation East Timor (Timor-Leste) - Proceedings of a Workshop 1–3 October 2002, Dili, East Timor. Editors: da Costa H., Piggin C., da Cruz C.J. and Fox J.J.
- Connolly, M. 2015. Analysis of Progress of Implementation of the Agricultural Policy and Strategy in Timor-Leste by the Ministry of Agriculture and Other Relevant Stakeholders. Commissioned by RDP IV for GIZ, Timor-Leste.
- Cox P., Shams N., Jahn G., Ericksen P., and Hicks P. 2002. Building collaboration between NGOs and Agricultural Research Institutions. *Cambodian Journal of Agriculture: Volume 6, 2002.*
- CRS, Mercy Corps, MAF/Seeds of Life, CARE, CIAT and UEA/Dev. Seed System Security Assessment, Timor-Leste. 2013. Dili: Timor-Leste
- Da Costa, M.D.J., Lopes, M., Ximenes M., do Rosario Ferreira, A., Spyckerelle, L., Williams, R., Nesbitt, H. and Erskine, W. 2013. Household Food Insecurity in Timor-Leste. *Food Sec. 5:83-94.* Available at: <http://seedsoflifetimor.org/wp-content/uploads/2011/11/Household-food-insecurity-in-Timor-Leste.pdf>
- DFAT. 2014. TOMAK – To’os Ba Moris Diak - Farming for Prosperity: Investment Concept.
- Elliott-Litchfield, J. B. 2014. Effective Seed Storage in Timor-Leste. Commissioned by Mercy Corps Effective Seed Storage (ESS) in Timor-Leste Program financed by United States Agency for International Development (USAID), Office for Foreign Disaster Assistance (OFDA).
- Faculty of Agriculture (FAGRI), National University of Timor Lorosa’e (UNTL). 2014. Postharvest Losses of Maize due to Traditional Storage Methods in Timor-Leste. Funded by the Timor Leste Maize Storage Project/Ministry of Agriculture and Fisheries.
- Fargher J., Edmeades G. and Amaral F.E. with Huttner E. 2013. Timor-Leste Seeds of Life. Mid-term Review. AusAID and ACIAR.
- Hamilton-Peach J. 2014. Policy Brief on Timor-Leste Seed System. Market Development Facility.
- Himmelman A.T.. 2002. Collaboration for a Change - Definitions, Decision-making models, Roles, and Collaboration Process Guide.
- Hunt J. 2008. Local NGOs in National Development: The Case of East Timor. Thesis at School of Global Studies, Social Science and Planning, RMIT University, Melbourne, Australia.
- IFAD, Asia and the Pacific Division Programme Management Department. 2011. Timor-Leste Maize Storage Project Design Document.
- Kunwar B. and Guterres T. 2010. Community-based Seed Production and Storage of Improved Maize: CARE’s experience. In *Food Security Timor-Leste*, July Volume 1, Issue 1, Ministry of Agriculture and Fisheries, Dili. www.foodsecuritytl.org. pp. 5-6

Kunwar B., Marcal J., Gama F., Amaral R., Setiawan A. and Dalton J. 2012. Timor-Leste's Efforts to Achieve Maize Seed Security using 'Community Seed Production. IMC paper.

La'o Hamutuk. 2013. Second submission to the Ministry of Agriculture and Fisheries and "Seeds of Life" program regarding Timor-Leste Draft National Seed Policy.

Ministry of Agriculture and Fisheries (MAF). 2014. National Seed System for Released Varieties. Produced by Seeds of Life.

Ministry of Agriculture and Fisheries (MAF). Timor Leste National Seed Policy. 2013.

Ministry of Agriculture and Fisheries, Democratic Republic of Timor Leste. 2013. Timor Leste National Seed Policy.

Nesbitt H., Team Members SoL2. 2011. Seeds of Life 2. Final Report. Australian Government and ACIAR.

Oxfam and MAFF. 2004. Study on Lessons learned in Implementing Community Level Agriculture and Natural Resource Management Projects in Timor-Leste. Final Report.

SoL/Seeds of Life Phase III. 2010. Towards a Sustainable National Seed System for Timor-Leste. Program Design Document.

SoL/Seeds of Life. Annual Research Reports. Seeds of Life, Ministry of Agriculture and Fisheries, Comoro, Dili, Timor-Leste. *Several years*.

SoL/Seeds of Life. 2013. Food Security Begins with Seed Security - An assessment of Development of Timor-Leste National Seed System. Internal Document.

SoL/Seeds of Life. 2013. Mid-Term Survey 2013. Ministry of Agriculture and Fisheries - Seeds of Life, Dili, Timor-Leste. 75p.

SoL/Seeds of Life. 2014. Adoption Survey 2014. Ministry of Agriculture and Fisheries - Seeds of Life, Dili, Timor-Leste. 62p.

Tefera, T., Kanampiu, F., De Groot, H., Hellin, J., Mugo, S., Kimenju, S., Beyene, Y., Boddupalli, P. M., Shiferaw, B., & Banziger, M. (2011). The metal silo: an effective grain storage technology for reducing post-harvest insect and pathogen losses in maize while improving smallholder farmers' food security in developing countries. *Crop Protection*, 30, 240–245.

USAID/USOFDA. 2013. Seed System Security Assessment Timor Leste.

Website: <http://www.seedsoflifetimor.org/>

Young, Ph. 2013. Benefits of Targeted vs Non-Targeted Seed Distribution. Commissioned Study for the Seeds of Life Program. Ministry of Agriculture and Fisheries, Dili, Timor-Leste.

Young, Ph. 2014. Situational Analysis of the Agriculture Sector in Timor-Leste: Draft for Development Partners.

Zero Hunger Challenge National Action Plan for a Hunger and Malnutrition Free Timor-Leste. 2014.

Annex 1. Terms of Reference

Service Description:

TITLE OF POSITION: Consultant on collaboration between SoL and other organizations

BACKGROUND:

The Seeds of Life (SoL) program within the Timor-Leste Ministry of Agriculture and Fisheries (MAF) has a goal of “Improved food security through increased productivity of major food crops”. The program commenced in 2000, and during the early years of the program, relied heavily on NGOs to implement parts of its program. Through successive phases, SoL has continued to interact with Non Government Organizations (NGOs), both international (INGOs) and local (LNGOs), plus other parts of civil society, bi-lateral aid organizations and multilateral agencies. The program is terminating mid-2016 and undergoing a series of evaluations of its activities over a 15 year period. This study is an evaluation of the collaboration between SoL and these agencies.

DUTIES:

The SoL collaboration impact consultant (SCIC) will independently assess the effectiveness of the collaboration between SoL and bi-lateral aid organizations, multilateral agencies, and NGOs, and the impact of such collaboration for MAF. He/she will interview leaders in each of these organizations/agencies and prepare a report on the findings.

The consultant will:

1. Discuss with MAF and MAF/SoL personnel, SoL and other actors, collaboration as it related to the activities and outputs of the program’s research, seed multiplication, extension and seed system development components and the inclusion of collaborating organizations in SoL sponsored training programs.
2. Gather information on the scope of activities of the NGOs, bilateral aid organizations and multilateral agencies working in the agriculture sector, to assess actual and potential collaboration with SoL, especially as it relates to increases in foodcrop production and improvement in food security.
3. Interview 20-30 of the above agencies working in the agriculture sector.
4. Review the extent SoL activities were enhanced/impeded through collaboration with these agencies.
5. Review the extent that SoL strengthened the capacity of these organizations to achieve their own goals.
6. Review the constraints to successful collaboration with these agencies.
7. Review the extent of SoL’s research, seed multiplication and seed distribution agenda was influenced by these organizations.

Reporting Requirements:

The SCIC will prepare a report for the SoL Australian Program Coordinator in collaboration with the SoL Australian Team Leader, SoL M&E Advisor and MAF personnel

Annex 2. SoL Collaboration Impact Consultant: Detailed Assignment Schedule

Date	Activity	Day
20 May 2015	<ul style="list-style-type: none"> Literature study – PDD, MTR, ODE Strategic Review on RD, CIAP Report 	1
21 May 2015	<ul style="list-style-type: none"> Literature study: WN publication, 2012 Dev Partners Meeting notes, SoL M&E Framework; Collaboration NGOs-Agricultural Research Institutions (Cambodia) 	2
22 May 2015	<ul style="list-style-type: none"> SoL Key Questions for Interviews and Report Structure 	3
25 May 2015	<ul style="list-style-type: none"> Travel to Dili Introduction to SoL team 'Seed Distribution Monitoring 2014' presentation by Joe Freach, SoL consultant 	4
26 May 2015	<ul style="list-style-type: none"> Briefing on SoL and wider context by John Dalton, SoL Team Leader Workshop – 'Collecting external perspective on National Diagnostic for Institutional Strengthening to MAF (SEFI - Secretary of State for Institutional Strengthening)' attended by GiZ, USAID, IFAD, FAO, KOICA, UNDD, JICA and EU-RD Meeting with Alwin Schuchmann, GiZ implemented part of EU program 'Rural Development Project (RDP) IV' 	5
27 May 2015	<ul style="list-style-type: none"> Meeting with Filipe Duarte and Tatiana Diniz, Camões implemented part of EU program 'Rural Development Project (RDP IV)' Meeting with Kong Mu, Project Manager Timor Leste Maize Storage Project, IFAD Meeting with Joanna Walshe (Country Director) and Wahyu Nugroho (Agriculture and Food Security Program Director, Mercy Corps) 	6
28 May 2015	<ul style="list-style-type: none"> Meeting in Cooperativa Café Timor with David Boyce and staff Interview Buddhi Kunwar – SoL Coordinator Component 3 Meeting with Mirko Gamez Arias – Program Coordinator EU funded GiZ implemented Global Climate Change Alliance (GCCA). (Mirko - Previous CARE-TL) 	7
29 May 2015	<ul style="list-style-type: none"> Discussion on Raumoco pilot project with John Dalton and Petronilo Munez Jr. Meeting with Florentino Sarmiento – Timor Aid, Board of ETADEP - previously CRS Interview Samuel Bacon - Cropping Systems Advisor SoL SoL thoughts on the report – direction and structure 	8
31 May 2015	<ul style="list-style-type: none"> Data organization of the interview results Developing storyline for report 	9
1 June 2015	<ul style="list-style-type: none"> Developing storyline Meeting in CCT – signing collaboration agreement SoL-CCT Travel to Baucau Meet Hivos Representative, Raul de la Rosa, on Raumoco collaboration Discussion with Leonie Venroij (previous STA SoL and currently CRS) 	10
2 June 2015	<ul style="list-style-type: none"> Return from Baucau Discussion with John Dalton on collaboration and storyline Discussion with Luisa Gonçalo - Agricultural Researcher SoL 	11
3 June 2015	<ul style="list-style-type: none"> Attending "4th Network meeting on conservation agriculture" FAO Discussion with WayanTambun – Regional Coordinator West Discussion with Luc Spyckerelle – Social Science/Monitoring and Evaluation Advisor Meeting in DFAT/Australian Aid: Neryl Lewis, Erkulanu de Sousa and Gerard Cheong 	12

Date	Activity	Day
4 June 2014	<ul style="list-style-type: none"> • Compiling information of interviews so far • Preparing for SoL workshop 	13
5 June 2015	<ul style="list-style-type: none"> • Meeting with Paolo Toselli (EU Cooperation Attache - Rural Development) • Meeting with Acacio Guterres (National University of Timor Lorosa'e – UNTL, Faculty of Agriculture) • Workshop with SoL Advisors and Coordinators on presentation of Achievements 	14
6 June 2015	<ul style="list-style-type: none"> • Decide on Structure of the achievement presentation • Compiling achievements 	15
7 June 2015	<ul style="list-style-type: none"> • Further refining thoughts on structure and achievement presentation and initial writing 	16
8 June 2015	<ul style="list-style-type: none"> • Meeting Mateus Maia (Raebia/previous USC TL – Resilient Agriculture and Economy through Biodiversity Action) 	17
9 June 2015	<ul style="list-style-type: none"> • Meeting Stuart Mathews, Senior Advisor Corporate Management PND • Meeting Torrey Peace, Baucau Head of Office and Livelihoods Manager CRS (CRS also Chair of Savings Group Technical Working Group (SGTWG)) • Meeting Segenet Tessema, Agriculture and Climate Change Specialist WV TL • Meeting Rick Jacobsen, ex SoL Communications Advisor currently with Moris Rasik 	18
10 June 2015	<ul style="list-style-type: none"> • Analysing interview results 	19
11 June 2015	<ul style="list-style-type: none"> • Meeting Ruben Flamarique Urdin, Marrie-Ann Merza and Paula Lopes da Cruz, FAO • Meeting Adalfredo do Rosario Ferreira, Director of Research and Special Services MAF • Meeting Mariano Ferreira, Alexandra Arnassalon and others in <i>La'o Hamutuk</i> 	20
12 June 2015	<ul style="list-style-type: none"> • Attending Rural Development – Development Partners Working Group meeting • Data collection - different staff 	21
15 June 2015	<ul style="list-style-type: none"> • Meeting with Martin Browne – Regional Advisor East 	22
16 June 2015	<ul style="list-style-type: none"> • Meeting with Carlos Florido (Steering Committee) and Gil Horacio Boavida (Coordinator) <i>HASATIL</i>- Sustainable Agriculture NGO Network Timor Leste 	23
17 June 2015	<ul style="list-style-type: none"> • Field visit to Aileu: <ul style="list-style-type: none"> ○ Meeting District MAF- Antonio Ramos – Department Extension ○ Meeting CSP – '<i>Esperansa Moris Di'ak</i>' and '<i>Kokorek Manufoni</i>' 	24
18 June 2015	<ul style="list-style-type: none"> • Meeting with Gil Rangel da Cruz, Head Secretariat of Food Security and Sovereignty, Nutrition and Cooperation (previously National Director Agriculture and Horticulture) • Meeting with Januario Marcal de Araujo – Director General Livestock and Agriculture (previously National Director Extension and Agricultural Community Development) • Debriefing to SoL team in Dili 	25
19 June 2015	<ul style="list-style-type: none"> • Meeting with Rob Williams, Team Leader SoL2 and Crop Identification and Development Advisor in SoL3 • Return to home base 	26
	Report – Draft, Review and Final	30