



AGRICULTURE ASSESSMENT OXFAM IN TIMOR-LESTE

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INTRODUCTION

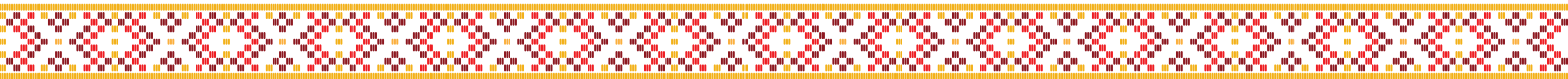
OVERVIEW

Assisting farmers improve their livelihoods is essential for poverty reduction in Timor-Leste. Analysis of the 2015 Census shows that approximately 64% of working adults reported themselves as farmers, and 80% of people rely on the agricultural sector for their livelihoods (RDTL 2015). The majority of farmers cultivate only small landholdings, with 66% of farming households having less than one hectare of cultivated land, and 98% less than five hectares. Most use traditional methods of farming, with low productivity levels (Oxfam 2019, 2.)

Census and GDP figures tell us that while the majority of people are employed in the agricultural sector, economic growth in this sector has been very limited. Instead, the economic growth taking place in the country has generally benefited Dili-based, upper to middle class income-earners, rather than rural, farming families. The current unequal impact of economic growth in Timor-Leste is even more concerning when we consider the situation of marginalised people in rural communities. Just as farmers tend to be poorer than their Dili counterparts, women and people with disabilities tend to be poorer than their male neighbours without disabilities. A recent study showed that women Timorese farmers produce 15% less than their male counterparts, because of various social and other obstacles limiting their productivity—making them even poorer amongst an already-poor population (UN Women & World Bank 2018).

Developing the agriculture sector in an inclusive manner is a key element to reducing poverty in the country. By improving the ability of farmers to produce and sell more of what they grow, this can lead to more inclusive growth and have a direct impact on poverty reduction in the country (see for example Oxfam 2019; Inder et al 2018). In addition, depending on how the sector is developed, a better-performing agriculture sector can also lead to better food security and nutrition standards in the country—a critically important issue for Timor-Leste, where 24.9% of the population are undernourished, 48.6% of children under five are stunted, and 14.4% of children under five are wasted (von Grebner et. al. 2019: 53).

There are some very good studies which have already been conducted into improving agricultural outcomes in Timor-Leste. These include studies into improving production through using better inputs such as seeds or basic machinery, and by improving soil quality (see for example Seeds of Life 2013; TOMAK 2016a). Viability studies have been conducted into the market context and obstacles for developing a market-based agricultural sector for a range of different crops (see for example USAID 2015). Value chain assessments of some crops and livestock have been conducted, identifying specific crops and produce which may be commercially viable for local or export markets, but there is more work to be done in this area (see for example TOMAK 2016b; TOMAK 2018b; ZEESM 2018).



Research respondents from all three case study sites, Ermera, Viqueque and Oecusse noted untapped agricultural potential, including abandoned land which farmers could be using to increase their production, lack of crop diversity meaning that many farmers grow and flood the markets with the same produce during harvest time, and situations where farmers are not effectively meeting consumer demand. In order to realise this untapped potential, there are various challenges that need to be addressed. These include the challenges of commercialising a sector which is still dominated by subsistence farming, limited uptake of new knowledge and technology, limited access to irrigation, lack of good warehousing leading to post-harvest waste, unclear land tenure, lack of credit facilities, and generally low engagement by the private sector to add value to agricultural produce and increase the overall market share. In addition, there are human resource issues which need to be addressed: low levels of commercial farming knowledge and limited vocational training, a general attitude that farming is the least desirable form of employment resulting in many young people leaving the family farm to find better jobs, and limited incentives for people to work on the farm when they receive government subsidies.

This study is linked to a broader study conducted on the opportunities and challenges for economic diversification in Timor-Leste (Oxfam 2019). Recognising the centrality of agriculture for inclusive economic development in the country, the purpose of this study is to consider the sector in more detail, considering the enabling and constraining factors that shape the economic situation of farmers, and identifying opportunities for improving agricultural outcomes in the country. In order to support policy influencing work at national and municipal levels, wherever possible key actors and sectors are identified, and practical recommendations provided.

RESEARCH APPROACH & METHODOLOGY

This assessment was conducted by Bridging Peoples for Oxfam in Timor-Leste, from August to October 2019.

The research was wholly qualitative, taking a case study approach in order to gather a variety of experiences across different geographic, climatic, agricultural production and market access conditions. Three municipalities were selected for fieldwork. These were Viqueque located in the south-east, Ermera in the centre of the country, and the enclave of Oecusse in the west. As well as reflecting different experiences from the east, centre and west of the country, these three municipalities were chosen to reflect a diversity of farmers' experiences working with different crops (with Ermera primarily producing coffee & horticulture, and Viqueque and Oecusse both strong rice-producing areas), and different conditions for market access, with Ermera closer to Dili, Viqueque a long distance from any major markets, and the enclave of Oecusse located much closer to Indonesian markets than to Dili.

Fieldwork was deliberately sequenced to hear first from farmers and put their experience at the centre of analysis. In line with this approach, a half-day participatory focus group discussion (FGDs) was first conducted with farmers in each of the three case study sites, with the team facilitating farmers to identify the major issues to be addressed, which were grouped and prioritised by the farmers. FGDs were conducted in *Suku* located some distance from the municipal centre, to capture farmers' experiences from more hard-to-reach areas: *Posto* Railaco in Ermera, *Suku* Viqueque in Viqueque¹, and *Posto* Pante Makassar in Oecusse.

Following the FGDs, semi-structured interviews were conducted with key stakeholders at *Suku*, *Posto*, municipal and national level, to gain their insights on how the issues farmers raised might be addressed so farmers can improve their livelihoods. Respondents were identified using a combination of purposive and snowball sampling, and included community-based actors/civil society, *Konsellu Suku* and other local leaders, relevant *Posto*, municipal and national government officials, relevant line ministries, and private sector representatives (including farmers and connected industries). Municipal fieldwork was then followed by semi-structured interviews with key stakeholders at national level, including government, civil society and private sector representatives, to compare municipal experiences against national policy and practice, and identify opportunities to improve the agricultural sector.

1 Despite the name, this *Suku* is located a long distance from Viqueque Vila, with very bad roads.

A breakdown of respondents for this assessment is presented in the table below:

Activity	No.	Female	Male
ERMERA			
Interviews (government)	5		5
Interviews (private sector)	2		2
Interviews (civil society)	4		4
Interviews (local leaders)	4	2	2
Participatory focus group discussion (FGD)	9	5	4
VIQUEQUE			
Interviews (government)	7		7
Interviews (civil society)	2	1	1
Interviews (local leaders)	4	2	2
Participatory focus group discussion (FGD)	13	6	7
OECUSSE			
Interviews (government)	5		5
Interviews (private sector)	1		1
Interviews (civil society)	7	2	5
Interviews (local leaders)	6	4	2
Participatory focus group discussion (FGD)	10	8	2
DILI			
Interviews (government)	2		2
Interviews (private sector)	2	1	1
Interviews (civil society)	5	1	4

CASE STUDY SITES

ERMERA (*POSTO RAILAKO*)

Ermera has been a major coffee producing region since Portuguese colonisation. In addition to coffee, other important agricultural activities include horticulture, livestock (animal raising) and forestry.² Crops that were identified by Ermera stakeholders with good agricultural and market potential include konjac, vanilla, taro, cassava, and some fruits.³

There are a few different businesses buying produce direct from farmers in Ermera. Cooperativa Café Timor (CCT) and Timor Global buy coffee from farmers, and PeaceWinds Japan and Timor Corp also assist coffee farmers with growing and processing coffee for export.⁴ CCT and Timor Global were both criticised for the unjust price determination for unprocessed coffee beans, compared to coffee's export prices.⁵ In addition to coffee, Timor Global buys maize which is then sold to the Ministry of Health as corn starch, as a nutritional supplement for pregnant women and children. Because maize farmers are unable to meet Ministry of Health demand, Timor Global combines local produce with imported corn starch. Gracia Farms also operates in the region, farming chickens for egg production.⁶

Over the past few years, Ermera farmers have expanded into semi-commercial horticulture, with supermarkets buying farmers' organic produce, but farmers not yet grading or packaging their produce. Supermarket cool trucks visit at least once a week to do quality control and to pick up the produce. This initiative was first supported by USAID-funded program Avansa Agrikultura, which worked with horticulture groups to increase their production and linked them with DiliMart. Since then, other groups have also established and there are now four other supermarkets buying from horticulture groups including Leader supermarket, W4, MayMart and Jaco supermarkets. There is also middleman business FarmPro, which works with and buys from farmers to sell to supermarkets such as Kmanek. Not all farmers benefit from this trade, however. Cool trucks only visit as far as the *Posto* centre, so farmers who live in more remote areas must transport and retail their produce for themselves at local markets, and others operate as subsistence farmers.

2 Coordinator of Extension Workers, *Posto Railako*, Ermera Municipality, 20 August 2019

3 Extension Worker, *Posto Atsabe*, Ermera Municipality, 24 August 2019

4 Extension Worker, *Posto Atsabe*, Ermera Municipality, 24 August 2019

5 Project Manager, *Institutu Matadalan Integradu*, Ermera Municipality, 24 August 2019

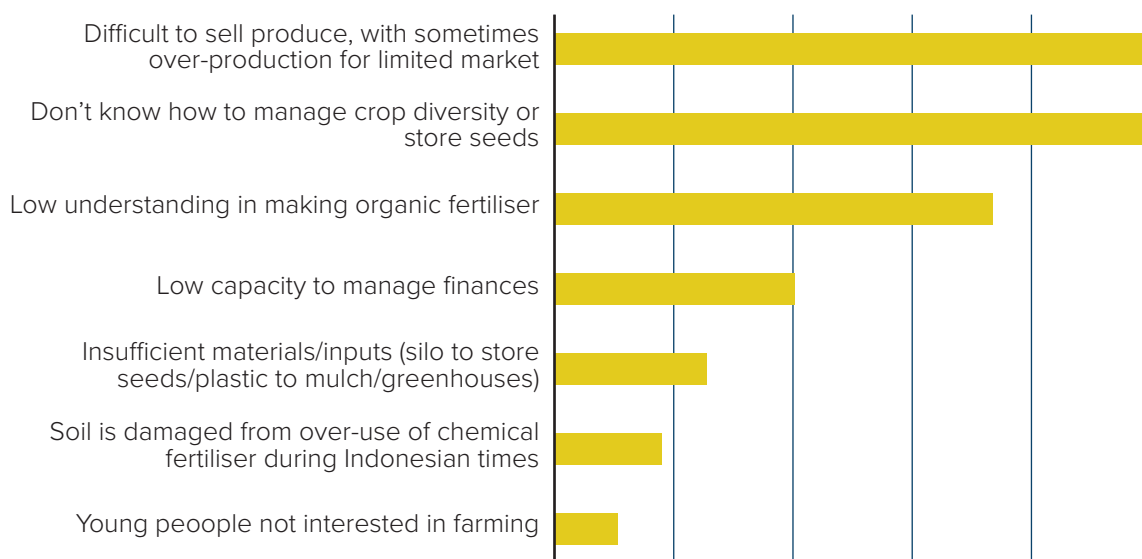
6 Xefe *Suku*, *Suku Lihu*, Ermera Municipality, 22 August 2019

Inputs and support for farmers are provided via a mixture of government programs, NGO programs, and private sector. The Ministry for Agriculture (MAF) provides seeds and other materials, and gives technical support to farmers via their agriculture extension services. Avansa Agrikultura supports farmers groups through hand tractors, water tanks, and other inputs. They have also assisted by supporting credit and savings groups, and have established the Horticulture Association in Ermera.⁷ FAO, Mercy Corps and KUPA give a small amount of support to agricultural groups and families. Institutu Matadalan Integradu provides basic tools & seeds for horticulture, and technical support on promoting soil fertility. Private businesses that buy from farmers in the area also provide inputs as part of their business strategy for improving the quantity, quality and consistency of farmers' produce. Dili Mart provides equipment such as hoes, shovels, water cans, seeds and organic fertiliser.⁸ CCT supports farmers with coffee seedling nurseries, and also provides some local employment such as gardening for men, and cleaning for women.⁹ By contrast with other businesses, Timor Global and Gracia Farms were criticised for not providing much support or training to farmers in the area.¹⁰

KEY ISSUES

During a half-day participatory FGD in Railaco, men and women farmers identified seven key issues that need to be addressed for improving the agriculture sector in their region, which they grouped and prioritised as follows (1 indicates least important, and 10 indicates most important):

Priorities Identified by Railaco Farmers



⁷ President of UNAER, *Suku Fatuquero*, Ermera Municipality, 21 August 2019

⁸ Coordinator of Extension Workers, *Posto Railako*, Ermera Municipality, 20 August 2019

⁹ *Konsellu Suku* delegada, *Suku Lihu*, Ermera Municipality, *Posto Railako*, 23 August 2019

¹⁰ *Konsellu Suku* delegada, *Suku Lihu*, Ermera Municipality, *Posto Railako*, 23 August 2019

VIQUEQUE (*POSTO VIQUEQUE*)

The biggest crop in Viqueque is rice.¹¹ Beyond that, major crops with good potential in the region include maize, cassava, coconut, candlenut, horticulture, fruticulture, livestock and other similar produce.¹²

Unlike Ermera, there are very few external businesses or organisations buying from farmers in Viqueque. ACELDA buys candlenuts from farmers in *Posto Ossu* for processing in Vemasse.¹³ In the past, there were efforts to sell local red rice to Leader Supermarket, but this was discontinued because they were only able to sell a small amount—mainly due to problems transporting the goods.¹⁴ Municipal stakeholders also spoke of CCT working with MAF in 2014 to provide tools to farmers, but this has not yet resulted in commercial production.¹⁵ There are also some cooperative groups focusing on producing virgin coconut oil and juice production, but production is limited for local consumption only.¹⁶ There is hope that with the Tasi Mane project in Beaco, there will be greater market demand for agricultural and value-add products in the future.¹⁷

Because of limited external demand for Viqueque produce, most farmers are subsistence farmers (growing small, diverse crops for household consumption). Some operate as farmer-vendors, retailing their produce direct to consumers at the local market or in Venilale or Baucau markets (see also TOMAK 2018a).¹⁸ Livestock such as pigs, chickens, goats and cows are generally sold locally in the community.¹⁹ In *Suku Uaimori* where the FGD was conducted, there is no electricity and it is difficult to access during the rainy season. Priests who visit from Fatumaca buy rice, and sometimes farmers walk or use horses to carry their produce for sale in Venilale market. With the many difficulties in selling produce, most farmers tend to keep their crops small, and there is a lot of abandoned or under-used farming land.²⁰

In terms of farming inputs, ACELDA supplies farmers with seeds and other inputs for rice.²¹ There is a very small agriculture shop in Viqueque Vila, selling a limited supply of seeds and chemical pesticides. There are also local seed savings groups that are supported by MAF, which buys and distributes the seeds to farmers who need them. In addition to seed distribution, MAF provides materials, technical assistance and tractors for farmers to use.²²

Various NGOs and donors have also worked to support farmers. TOMAK provides capacity building and business support to farmers producing mung beans, red rice and onions.²³ GIZ works with MAF to provide technical support to farmers.²⁴ CRS and CVTL support farmers in producing corn, black beans and livestock (pigs and chickens), giving training on organic fertilizer and other local resources, and supporting savings and loans groups to promote better money management.²⁵ ADRA has an agreement with farmers to produce specialty crops such as konjac, ginger, and candlenut, which they plan to buy

11 Program Manager, Cruz Vermelha Timor-Leste (CVTL), Viqueque Municipality, 2 September 2019

12 MAF Director, Viqueque Municipality, 2 September 2019

13 MAF Director, Viqueque Municipality, 2 September 2019

14 MAF Director, Viqueque Municipality, 2 September 2019

15 MAF Director, Viqueque Municipality, 2 September 2019

16 Chief of Department (agriculture, horticulture & extension work), MAF, Viqueque Municipality, 3 September 2019

17 Extension Worker, *Suku Uma Kiik*, Viqueque Municipality, 1 September 2019

18 Xefe *Suku*, *Suku Uaimori*, Viqueque Municipality, 4 September 2019

19 Program Manager, Cruz Vermelha Timor-Leste (CVTL), Viqueque Municipality, 2 September 2019

20 Chief of Department (agriculture, horticulture & extension work), MAF, Viqueque Municipality, 3 September 2019

21 Municipal Administrator, Viqueque Municipality, 3 September 2019

22 Municipal Administrator, Viqueque Municipality, 3 September 2019

23 Coordinator of Extension Workers, Viqueque Municipality, 3 September 2019

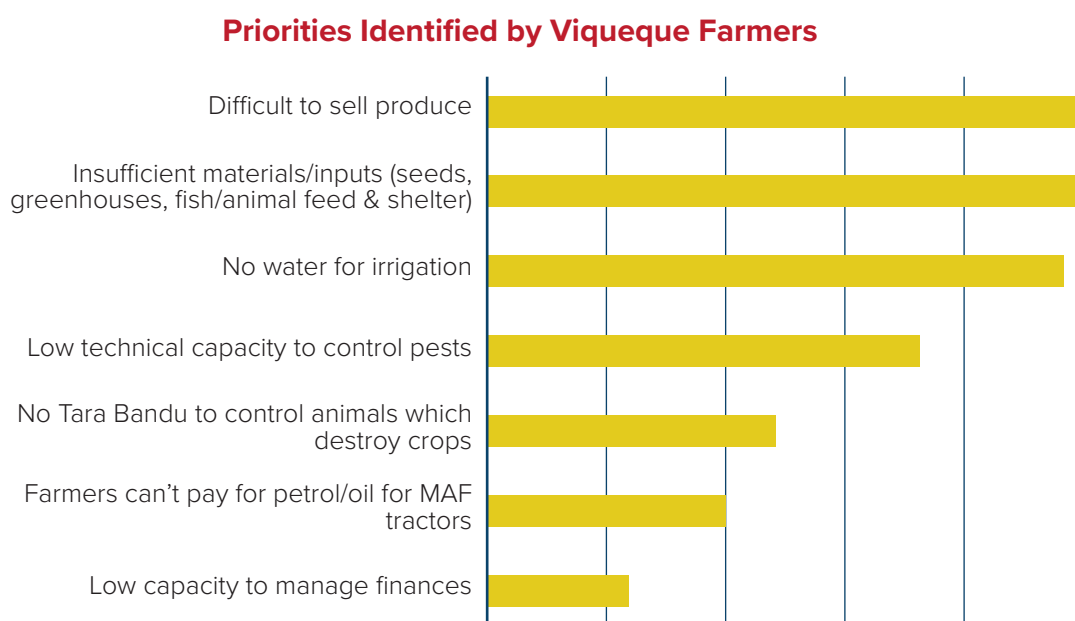
24 Coordinator of Extension Workers, Viqueque Municipality, 3 September 2019

25 Extension Worker, *Suku Uma Kiik*, Viqueque Municipality, 2 September 2019

directly from farmers. MOKATIL has visited some *Sukus* to conduct a survey of farmers growing sorghum, but they are still deciding whether this project should go ahead.²⁶ In the past, ILO and FAO provided seeds for various fruits in recent years, but this support has been discontinued. Government stakeholders in Viqueque complained about some NGOs not coordinating properly with MAF or the Municipal Authority.²⁷

KEY ISSUES

During a half-day participatory FGD in *Suku Uaimori* in *Posto Viqueque*, men and women farmers identified seven key issues that need to be addressed for improving the agriculture sector in their region, which they grouped and prioritised as follows (1 indicates least important, and 10 indicates most important):



OECUSSE (POSTO PANTE MAKASSAR)

Rice (Membramo variety) is an important crop in Oecusse, and there are many rice fields. Other agricultural activities include growing maize, watermelon and other fruits, vegetables including onions, cabbages and beans, livestock and aquaculture. In the mountains, in aldeia Laku Fuan, they also grow coffee.²⁸ Key stakeholders in Oecusse noted that there is good market potential for rice, organic horticulture, and that coffee could be a specialist crop.²⁹

There are very few businesses trading with local farmers in Oecusse, with most businesses buying their produce from Dili or Indonesia. An exception is supermarket '21 Julu' in Oecusse Vila, which buys onions and garlic from local farmers, and in 2020 is planning to expand to retail other local organic produce, and also sell farming inputs such as seeds, fertiliser and pesticides. Local NGO Asosiasaun Futuru Foinsae Sustentavel (AFFOS), partnered with Oxfam and Caritas, help farming groups to sell produce such as rice and fish in Dili and Kefa-Kupang, however farmers need to transport their produce to Oecusse Vila to participate in this program. AFFOS plan on expanding their program to work with Dili-based W4 and

²⁶ MAF Director, Viqueque Municipality, 2 September 2019

²⁷ Municipal Administrator, Viqueque Municipality, 3 September 2019; MAF Director, Viqueque Municipality, 2 September 2019

²⁸ Managing Administrator, Nitibe Subregion, RAE OA, 17 September 2019; Chief of Department (Extension and Agriculture), RAE OA, 17 September 2019; AFFOS Director Asosiasaun Futuru Foinsae ba Sustentavel, RAE OA, 16 September 2019; Xefe *Suku*, *Suku* Cunha, RAE OA, 16 September 2019

²⁹ AFFOS Director Asosiasaun Futuru Foinsae ba Sustentavel, RAE OA, 16 September 2019; Xefe *Suku*, *Suku* Cunha, RAE OA, 16 September 2019.

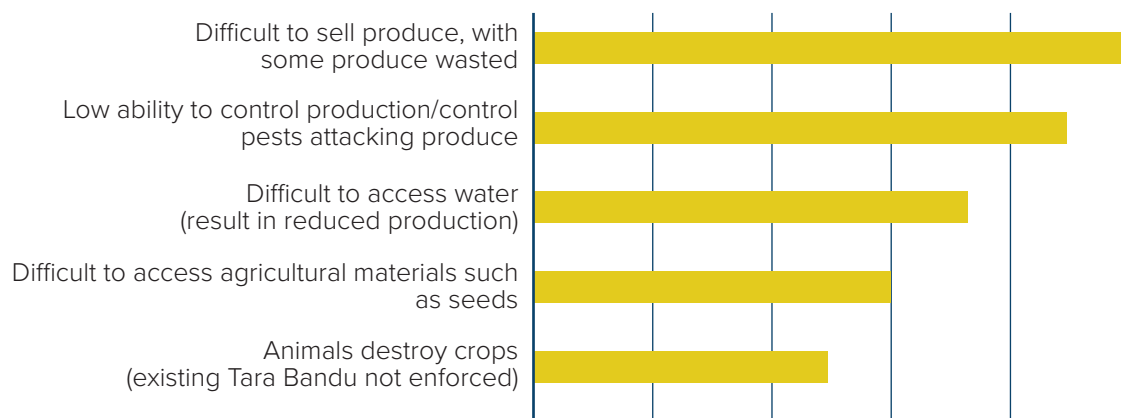
Gajah Mada supermarkets.³⁰ Other Oxfam partners advertise local produce such as watermelon to local buyers via their Facebook page. While rice is a major local product, Oecusse locals believe local rice has too much cholesterol, so many prefer to buy imported rice that is brought in from Dili. As a result, most Oecusse rice is sent to Dili for retail.³¹

Similar to other parts of the country, MAF provides technical support to farmers, as well as basic inputs such as seeds, tools and tractors. Local NGOs MANEO and BIFANO (partners with Oxfam) provide horticulture and maize seeds, and dome plastic for red beans, and also support savings and loans groups for better money management.³² UNDP support farmers with various inputs such as fertiliser and pesticides.³³ These and other local NGOs AFFOS, BIFANO (Oxfam local partners), CCO and Funleko (Caritas local partners) also provide technical support and training for farmers.³⁴

KEY ISSUES

During a half-day participatory FGD in Pante Makassar, men and women farmers identified five key issues that need to be addressed for improving the agriculture sector in their region, which they grouped and prioritised as follows (1 indicates least important, and 10 indicates most important):

Priorities Identified by Pante Makassar Farmers



30 AFFOS Director Asosiasaun Futuru Foinsae ba Sustentavel, RAE OA, 16 September 2019; Program Manager, Caritas Australia, RAE OA, 16 September 2019

31 Director 21 Jullu, RAE OA, 17 September 2019

32 Xefe Suku, Suku Cunha, RAE OA, 16 September 2019

33 Director 21 Jullu, RAE OA, 17 September 2019

34 Program Manager, Caritas Australia, RAE OA, 16 September 2019

PERCEPTIONS OF FARMING

While some farming families have a good income, the perception of farming in Timor-Leste is generally that it is a 'poor person's profession'. Respondents across all three case study sites explained that farming is carried out primarily by the older generation, by people who have not had access to good education and can't get another job, and who do the work in order to survive.

Respondents explained that young people tend to have very little interest in farming, and that their parents actively encourage them to find better work, because farming is 'too dirty' and 'hard work'. The setup of family farms can also act as a disincentive: unlike those who find salaried work, it is difficult for young farmers to become independent from their parents, because the land and the farm is family-owned.

Rather than farming, respondents explained that most young people prefer to go to school and then university if they can, or go to Dili to try and find a government job, or work in construction. Many respondents were critical of young unemployed or under-employed people being dependent on their parents, calling them 'lazy' or 'unmotivated' because they do not work with their parents on the farm:

*Young people should work in farming, like producing rice and maize or growing horticulture so that we can stop the imported foods... If not, the young people will just hang around in Dili and not want to return to their municipality, because there is nothing to do at municipality level for young people.*³⁵

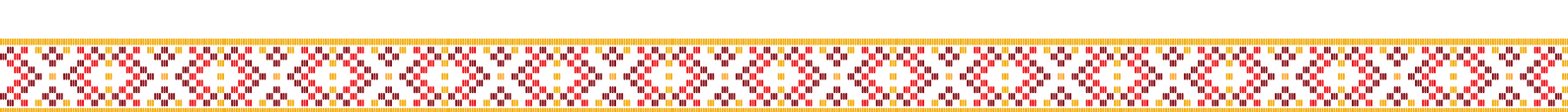
Other respondents noted that government efforts to encourage youth employment have been misdirected. While the government has provided scholarships and agricultural study tours, these respondents explained that on their return participants want 'good jobs' and don't want to work as farmers.³⁶ Some also explained that the choice of study tour locations, including Australia and Israel, was not appropriate for practical learning, because the farming technology in these countries is much higher than what is available to Timorese farmers.

Low motivation levels for farming is not limited to young people, however. Respondents explained that many people receiving government subsidies such as the veteran's pension also only farm a small amount, or stop altogether. Together with youth under-employment, this leaves a lot of under-used, or abandoned farming land. As one extension officer explained, "the government provides subsidies to many people in Timor, so they have money to just buy the food... we can see that so much agricultural land is abandoned."³⁷

³⁵ Municipal Administrator, Viqueque Municipality, 3 September 2019

³⁶ Program Manager, Catholic Relief Services, Dili Municipality, 12 August 2019

³⁷ Crop Technical Officer MAF, Viqueque Municipality, 21 August 2019



It is clear that the perception of farming as a poor person's profession, together with disincentives such as government subsidies, are having an impact on reducing people's interest in farming. Interestingly however, while respondents in each of the three case study sites overwhelmingly described low motivation for farming amongst young people, program documents show that there are many young farmers participating in the Avansa Agrikultura project.³⁸ Similarly, there are many young farmers and farming groups engaging with MAF-supported store 'Loja Agrikultura'. The manager of Loja Agrikultura attributed this greater level of success in engaging young farmers to the fact that they can give them a regular income: a horticulture group in Manleuana earns approximately \$3000 per month, and papaya groups earn \$900 per month.³⁹

This situation is exacerbated by the availability of cheap imported food that is dumped on the Timor-Leste market, which means that many people no longer appreciate the value of nutritious, locally-grown food. As one *Xefe Suku* described,

*In the old generation, farming was really important for people because their lives depended in agriculture. But now, we have so much cheap, imported food. Even rice is cheap. So the community including young people do not want to work anymore in agriculture. In fact, we have so much abandoned land, including coffee plantations.*⁴⁰

These and similar sentiments were echoed by respondents in all three case study sites, with many people noting the risk for food security if Timor-Leste continues to be dependent on imported foods, and also the risk for individuals in depending on government subsidies in case payments cease in the future. Other studies have also noted the serious issue of food insecurity and the need for better nutrition in the country (see for example IPC 2019; Lopes & Nesbitt 2012; FAO 2011). While the focus of this assessment is on agricultural market systems, in line with the broader focus on economic diversification, high levels of food insecurity pose major risks for Timor-Leste. Whether to sell or eat their valuable produce is a difficult decision for a poor family to make; it is important that any initiatives that aim to promote economic growth of the agricultural sector do not do so at the expense of reducing household nutrition levels. Subsistence and non-subsistence farming families need to be supported in making wise decisions over whether to eat, or to sell, their produce. This means there should be a strong focus on improving women's economic decision-making power in the household, as they are primarily responsible for providing family meals (see section below.)

The experience of Avansa Agrikultura and Loja Agrikultura supports the general findings of this research, that the obstacles limiting farmers' engagement are not so much about perceptions of social class (that farming is only appropriate for poor people, with limited education), but rather reflect many young people's recognition that despite their best efforts, most farmers are unable to make a good income. If there are opportunities to make a reliable income from farming, young people's interest also increases.

A key finding of this research is that the most important obstacle stopping farmers from fully using the available farming land is that they are unable to sell the produce—resulting in wasted produce. In addition to this limiting factor, there are many other obstacles faced by farmers, many of which are outside farmers' control, including lack of water for irrigation, bad or non-existent roads connecting farms to markets, limited private sector support, problems with accessing essential materials and other inputs to improve farming outcomes, and various other challenges. There is a strong role for government, the private sector and civil society to support small-scale farmers in growing their farming businesses, improving their productivity and livelihoods, and ultimately strengthening the agricultural sector.

38 Senior Advisor Governance for Development, Dili Municipality, 12 August 2019

39 Manager Loja Agrikultura, Dili Municipality, 23 October 2019

40 Xefe Suku, Suku Lihu, Ermera Municipality, 22 August 2019

INCLUSIVE GROWTH

Even among poor rural communities, there are some people who are wealthier than other people. To be inclusive, development of the agricultural sector must consider the distinct needs of various sectors of the community who are traditionally marginalised, such as women, people with disabilities, and others.⁴¹

WOMEN AS FARMERS

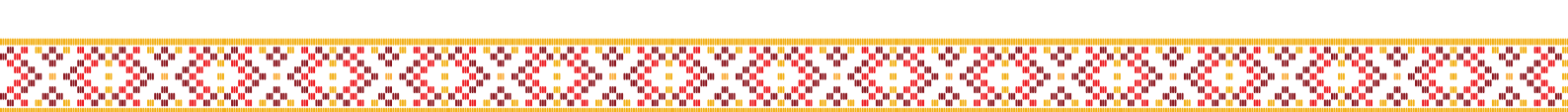
Fieldwork results across all three case study sites show a high number of women working as farmers. Respondents explained that similar to men farmers, women farmers are mainly from poorer families, and include all marital statuses: married, divorced, widowed and single women. There are some agricultural groups that are formed specifically for women, mainly established via donor-led programs. Many more mixed-sex agricultural and horticultural groups, which include women as members. The high participation of women as farmers are also supported by other studies (TOMAK 2018c; Belun 2018). It is primarily women who take produce to the market for sale (TOMAK 2018a).

While there is a high level of participation of women as farmers, research conducted by UN Women and the World Bank also indicates a large gender gap in the agricultural sector, with women farmers producing approximately 31% less than men farmers per hectare (UN Women & World Bank 2018: 6). According to this study, this gap can be explained by the sex-differentiated access to resources and farming inputs of men compared to women, particularly greater access to hired labour, agricultural tools including shovels, hoes and axes, participation in agricultural groups/networks, and the ability to produce cash crops (UN Women & World Bank 2018: 8).

In addition to the reduced resources and inputs available to women compared to men farmers, there are other issues that constrain women farmers. This includes the double burden that women carry, being responsible for household and childcare duties in addition to their farming work. Women farmer-vendors face major risks in transporting and selling their produce at the market, often walking long distances over difficult terrain, and subject to sexual and other abuse when sleeping overnight in the marketplace (TOMAK 2018a). And young women farmers are more vulnerable to sexual or other forms of violence or abuse, and are more likely to have their first child at a young age, trapping them in a cycle of poverty (see for example Belun 2018).

In addition, women have much lower decision-making power compared to men farmers over how to spend or invest their farming income (TOMAK 2018c). This is an important issue to consider in encouraging farming families in finding a balance between providing nutritious meals for the household (primarily

⁴¹ The research team specifically asked about the situation of women, people with disabilities and the LGBTI community. However, respondents were unable to give clear answers about the situation or possible stigmatisation of the LGBTI community, so only issues concerning women and people with disabilities are presented in this section.



the woman's responsibility) and selling more of what they grow. To encourage wise decision-making in finding the right balance between eating and selling their valuable produce, it is important that male and female heads of the household are engaged and educated on the importance of maintaining good nutrition for their family as they transition into selling their produce on the market.

Examination of these and other factors indicate that the most important needs for women are for better recognition and support for their work, rather than promoting their inclusion or participation as farmers. This has important implications for programs seeking to support women in agriculture. Current programming for women farmers appears to be mainly provided via agricultural groups (some women-only, and others mixed-sex), providing training, various agricultural inputs and support in accessing markets, sometimes integrated into other programs such as membership of savings and loans groups to improve their financial management. Provision of these and other inputs for women farmers is important, but women's inclusion and participation in agricultural groups should not be considered an end in itself. There is an opportunity for NGOs and government agencies to expand their focus to also address the contextual factors that limit women's ability to thrive as farmers—including addressing safety and other issues for farmer-vendors, working to improve women's decision-making power over investing farming income, and improving their access to farm labour and other inputs. Such measures may or may not be provided via agricultural groups.

PEOPLE WITH DISABILITIES AS FARMERS

The ability to work and earn an income is important for people, giving them a social outlet outside their immediate family, improving people's sense of self-esteem and independence, and allowing people to achieve other things in life like buying a house or forming a family. Fieldwork indicates that there is a need to provide a better enabling environment for people with disabilities to engage in farming.

While accessibility is often spoken of in terms of physical accessibility, a primary obstacle for people with disabilities working as farmers appear to be social and cultural attitudes. There were important local differences for the experience of people with disabilities between the three case study sites, formed primarily by differences in perceptions around what people with disabilities can and can't do. In Ermera, no respondent could identify a person with a disability actively involved in farming. Respondents in Ermera explained that people with disabilities are simply not able to farm, that farming is 'too heavy', and that their families 'protect them' by keeping them at home. As one *Xefe Suku* described,

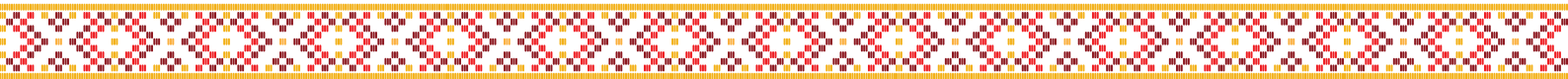
*People with disabilities are not involved in farming activities because the family protects them. Timorese culture will never let any family member with disability do hard work such as farming. This is normal for Timor.*⁴²

This approach of protecting people with disabilities also extends to parents keeping children with disabilities at home, rather than sending them to school.⁴³ An extension coordinator for MAF explained that they have tried to promote people with disabilities' involvement in farming groups, but with no success. As he explained, in addition to local attitudes that people with disabilities must be protected, subsidies from the government can also act as a disincentive: "we advocate to parents and to the *Suku* council to list [people with disabilities] according to their abilities, but people don't want to... the government pays monthly subsidies and their parents say it's enough."⁴⁴

42 Xefe Suku, Suku Lihu, Ermera Municipality, 22 August 2019

43 Coordinator of Extension Workers, Posto Railako, Ermera Municipality, 20 August 2019

44 Coordinator of Extension Workers, Posto Railako, Ermera Municipality, 20 August 2019



By contrast, in Viqueque, there were more people with disabilities involved in farming groups, and a more open attitude towards people with disabilities doing agricultural work. While respondents noted that sometimes parents don't allow their children with disabilities to do physical work, this depends on the type of disability and also on the type of work.⁴⁵ There appeared to be a better understanding among respondents of the different types of disabilities, and the potential impact on working life, with people describing how those with more severe disabilities might not be able to do the heavier farming work, but sometimes help in selling the produce at the market.

Community members in Oecusse appeared to be most open in their attitudes towards people with disabilities working in agriculture, and there was a larger number of people with disabilities actively involved in farming groups. While respondents noted that there are certain things that people with disabilities are physically unable to do, they could identify many people with disabilities working in agriculture:

Farmers groups also involve people with disabilities, such as people missing a hand or a foot, or being blind or deaf. People with disabilities can do farming, but their relatives or their partner might need to help them take their production to market. [But] we still need to improve their skills and confidence to produce and increase their income, and improve their confidence to working with people without disabilities.⁴⁶

NGOs advocating for people with disabilities have made steady progress in educating community members on the need to improve accessibility for people with disabilities, via the provision of wheel-chair ramps, or other such measures. However, there is more work to be done. There is an opportunity for NGOs and government to work with community members and parents to help shift social attitudes, to refocus the contributions that people with disabilities can make, in order to boost accessibility of agricultural work for people with disabilities.

45 MAF Director, Viqueque Municipality, 2 September 2019; Municipal Administrator, Viqueque Municipality, 3 September 2019

46 Director BIFANO, RAE OA, 16 September 2019

BASIC INFRASTRUCTURE: ROADS AND WATER

The two most urgent infrastructural needs that respondents across all three case study sites described were the need for roads connecting farms with *Posto* centres and markets, and the need for water supply for irrigation.

ROADS

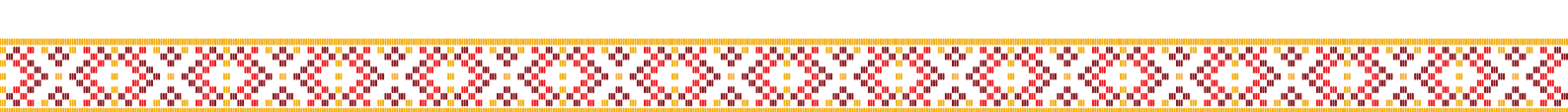
Roads connecting farms to *Posto* centres and markets were identified as a key priority to be addressed by nearly all stakeholders interviewed for this research. The need for improved roads to grow the agricultural sector has also been noted by other studies (see for example USAID 2015, 18.)

Respondents explained that in their region, the rural roads connecting farms with *Posto* centres and markets are in very poor condition and sometimes impassable during the wet season—and in some cases don't exist. According to a recent World Bank Group study, the location of land owned by poor households is located on average 3km away from road access, and the location of land owned by non-poor households is located on average 2km away from road access (World Bank Group 2018a, 22). Bad (or non-existent) roads affects all aspects of the farming business. It is difficult and expensive to transport necessary farming materials and inputs to farms. It is difficult and expensive to transport produce for sale. And it is difficult and expensive for extension workers and businesses to visit farming groups to provide necessary training and other support. As the Municipal Administrator of Viqueque explained,

The key obstacle in Viqueque is bad roads. Although the farmers could produce high quantities of agricultural produce, how can they make money if they cannot get to the market? So the circulation of money just remains in Dili.⁴⁷

The added difficulty and expense caused by poor or non-existent roads are key reasons for many farmers choosing to limit their production levels and farm for subsistence, rather than selling their produce at the market. Respondents in Viqueque and Oecusse explained that the combination of bad roads, and limited and expensive public transport, means that many farmers choose to eat their produce in the household, or to sell in the local community only. The situation was slightly different in Ermera because of greater involvement with businesses who pick up farmers' produce with their cool trucks for sale, which in turn is influenced by Ermera's closer proximity to Dili. However, it should be noted that this is just transferring the cost of transport over bad roads from farmers to a still very-small private sector, which also needs support to grow. In addition, this is only a solution for those who live close to the *Posto* centre where the trucks visit: farmers who live further away must also contend with the same issues of bad roads and limited and expensive public transport, often choosing to continue as subsistence farmers, or carrying a small amount of produce to the market for sale.

⁴⁷ Municipal Administrator, Viqueque Municipality, 3 September 2019



Current lack of investment in roads connecting farms with *Posto* centres and markets is an important missed opportunity for building a functioning agricultural sector in Timor-Leste. While budget analysis shows that the Timor-Leste Government has made significant investments into roads and bridges, this has mainly been for major arterial roads between different economic centres, or as part of the large infrastructural investments in Suai or Oecusse (see for example Oxfam 2019). While there has been some investment in rural roads, mainly via donor-funded programs such as the Roads for Development program or the Road Climate Resilience Project, this has been minimal compared to the annual budget allocations for major roads and bridges. Greater investment in improving these smaller roads are essential to supporting farmers' livelihoods, and to nurturing growth in the agriculture sector.

WATER

The other important infrastructural issue that was identified in all three case study sites was lack of access to water for irrigation. This was raised as an important issue by interview respondents in all three case study sites, and was ranked as the third most important issue to be addressed by FGD participants in Viqueque and Oecusse.

There is a clear need to improve water supply for farmers, with various studies noting water insecurity for many parts of the country (see for example Lopes & Nesbitt 2012; IPC 2019). While Timor-Leste met the Millennium Development Goals for improved water supply in urban areas, it did not achieve its goals for rural water supply (WHO 2015). Because of problems with water supply, many farmers must walk a long distance with plastic containers to the river to collect water for irrigation.⁴⁸ In mountainous areas such as Ermera, where many communities are located towards the top of the mountain, this often means farmers must walk up and down the mountain fetching water from rivers at the foot of the mountain.⁴⁹ Those who are closer to rivers face a different challenge: while they don't have to walk long distances to fetch water, they must deal with annual flooding where the river may swell and destroy nearby crops.⁵⁰

The lack of water supply for irrigation means that many farmers must limit their production. For example, the sub-regional administrator in Nitibe (Oecusse) explained that while there is potential for farmers to plant and harvest rice twice a year, they currently limit their harvest to only once a year due to lack of irrigation.⁵¹ Many other respondents also explained that farmers could easily increase their production levels if they had better access to water.

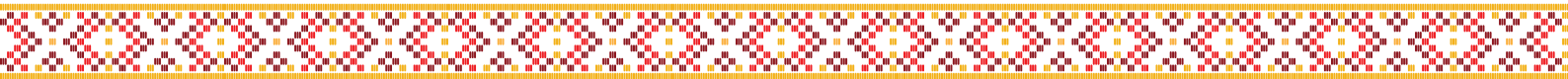
While not as fertile as other parts of Southeast Asia, Timor-Leste nonetheless has sufficient groundwater to fill its needs (World Bank Group 2018b). The problem is with accessing and managing the supply, which currently is primarily rain-fed surface water, leaving much of the country dry during the dry season (FAO 2011). Irrigation systems have been in place for many decades, starting during Portuguese colonisation and continuing during Indonesian occupation. As of 2018, there was approximately 220,000 hectares of cultivated land in Timor-Leste, 34,650 hectares of which is equipped with irrigation, much of which is provided via small-scale communal irrigation schemes (World Bank Group 2018, 28). Rather than a lack of water, the main issue is lack of appropriate management of the water supply, to allow for easy, year-long access by farmers and rural communities that need it. While there are various local water management systems, including water management groups and traditional systems of water management, there is a need for wider solutions. There are regular problems with operations and

48 Director BIFANO, RAEAO, 16 September 2019

49 Coordinator of Extension Workers, Posto Railako, Ermera Municipality, 20 August 2019

50 MAF Director, Viqueque Municipality, 2 September 2019

51 Managing Administrator, Nitibe Subregion, RAEAO, 17 September 2019



maintenance, with infrastructure such as pipes and catchment areas degraded or damaged. In addition, current irrigation systems are heavily reliant on surface water, with 98% of water used for irrigation sourced from springs, rivers and catchment areas, and about 2% sourced from underground reservoirs. This reliance on surface water can be an issue during the dry season as most rivers are dry for months at a time (Lundhal & Sjöholm, 2012, 13-15).

Numerous studies have been conducted into how Timor-Leste's rural water supply might be developed, to improve farming outcomes (see for example World Bank Group 2018; BESIK 2012; ADB 2004). The government's irrigation policy, detailed in the MAP Strategic Plan 2014-2020, focuses heavily on rehabilitation of existing systems. However, there have been problems with implementation, with a number of the dams planned under the MAP Strategic Plan 2014-2020 not yet constructed as at the end of 2019. The dams still under construction are: Buluto and Gulata dams in Baucau, Dardau dam in Viqueque, Larisula dam in Lautem, Beikala and Raibere dams in Ainaro, Oebaba dam in Covalima, and Tono dam in Oecusse (World Bank Group 2018: 30). There are also technical and strategic issues to consider. An important question for the government, and for NGOs advocating for improved investment in agricultural infrastructure, is whether to continue rehabilitating existing irrigation systems, with its heavy reliance on surface water, or to invest in alternative approaches such as increasing groundwater exploration and production.

INPUTS & TECHNICAL SUPPORT

While many parts of Southeast Asia are among the most fertile in the world, Timor-Leste unfortunately is not one of these places. There are irregular rain patterns, steep and rocky slopes with a tendency towards erosion, and low land fertility, due partly to over-use of chemical fertilisers in the past. Because of these and other factors, farmers in Timor-Leste have very low productivity levels (USAID 2015.)

As has been noted by various studies, developing the agricultural sector does not mean forcing a complete change from subsistence farming to large-scale commercial farming (see for example Lundhahl & Sjöholm 2012, Inder et al 2018). Rather, working with farmers' existing productivity levels and resources, an important question is how to support farming households in producing more than their consumption needs, and selling the surplus. Such an incremental approach requires helping farmers to increase their productivity (increase the amount that they produce using the same amount of time and effort), and improving market linkages for farmers.

Participants in all three FGDs noted both the low availability of farming inputs, and limited knowledge of how to produce inputs such as organic fertiliser themselves, as key obstacles restricting their ability to improve their livelihoods. The soil in Timor-Leste is highly acidic, so farmers need to work on soil rehabilitation. Pests and diseases need to be controlled, higher-quality seeds used, and cropping cycles better planned and managed to ensure consistent, high-quality production. Better storage for produce is also needed, to reduce high levels of post-harvest waste.⁵²

As the coordinator for FarmPro explained, this means there are many technical skills that farmers need to employ:

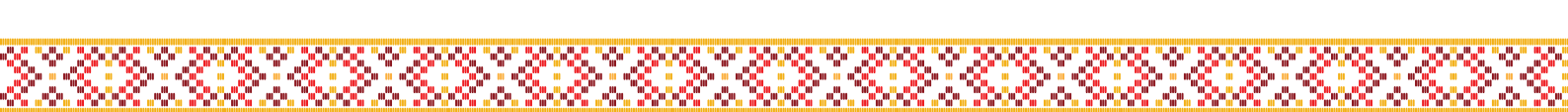
It requires... improving soil condition, preventing erosion, increasing composting, increasing planting of variety crops including legumes, management of soils and treatment and planning management for coffee, corn, cassava, legumes as well as vegetables and good quality seeds.⁵³

While some skills are already known to farmers, others are new—so farmers need support in learning these skills. It also requires investment in tools and supplies, which many poor farmers are unable to pay for.

Currently, this support is provided by MAF through their agricultural extension services, giving training and support, and also distributing inputs such as seeds, fertilizer, pesticides, plastic for greenhouses

⁵² Xefe Suku, Suni Ufe, RAE OA, 16 September 2019

⁵³ Managing Director, FarmPro Fresh, Ermera Municipality, 23 August 2019



and mulching, various types of tools, and lending MAF-owned tractors to farmers who need them. Some NGOs and a small number of businesses also provide inputs and training to the farmers they support—sometimes working together with MAF, other times working independently of government.

MAF extension officers operate in all 452 *Suku*, with extension staff based in the municipal and *Posto* offices. Their job is to organise and work with a set number of farmers groups to provide technical support and inputs. The capacity of many extension service providers is quite low, and their efforts spread out across a large area (USAID 2015). As a result, MAF extension services have been described as “fledgling but large” (World Bank 2011, 77). While extension services are spread across the country, extension officers often struggle to regularly visit all of the farmers groups, particularly those located in more remote areas, connected by bad roads which are difficult to use during the rainy season.⁵⁴ They also struggle under a limited operational budget. For example, in 2019 the budget for MAF Viqueque was so tight, they were unable to provide fuel for the tractors that they lent out to farmers.⁵⁵

While there are many poor farmers who are unable to buy these items, this is not the only problem limiting farmers’ access to necessary inputs. The physical availability of these goods in some areas is also an issue. Even if farmers want to buy these items, sometimes they are not able to. The vast majority of inputs is currently supplied by MAF or by donor-funded programs. However, as various stakeholders noted, this can create dependency as farmers come to expect a continuing free supply of farming inputs. NGOs operate according to project timelines, and ongoing support is not guaranteed. Ongoing MAF support is also not guaranteed, as extension services are over-extended.

In addition, while the agricultural input industry has grown and spread beyond Dili, the private sector is still tiny. As has been noted in other studies, there is a need to support agribusiness growth, as part of providing a supportive infrastructure and necessary farming inputs for farmers to do their work (see for example USAID 2015, 6–7). In Viqueque, there is one very small shop (similar in size to a kiosk), selling a very limited supply of seeds, pesticides and fertilisers. And in Oecusse, there is one supermarket ‘21 Jullu’, which plans to sell pesticides, fertilisers, seeds, and other farming inputs beginning 2020, as well as buying produce direct from farmers for retail. Businesses such as supermarkets and coffee producers also provide some inputs to the farmer they buy from, as part of their business model, but they also do not wish to encourage dependency from farmers. As the horticulture manager for DiliMart explained, “we are reducing our support especially on inputs, because we do not want to create dependent farmers to vendors. Farmers need to be independent to sustain their work.”⁵⁶

Given that NGOs and MAF currently provide inputs to farmers, but may wish to scale this back in the future, there is an opportunity to support agribusiness growth by buying from local providers. There are some good examples of supporting local business activity—for example, MAF in Viqueque buy their seeds from local seed production groups. However, there are also missed opportunities. A key complaint from the owner of 21 Jullu is that NGOs based in Oecusse currently buy their inputs from Indonesia rather than local businesses:

*NGOs should partner with the local private sectors to provide agricultural inputs to farmers; currently they purchase it from Indonesia. We are really disappointed with this... NGOs and the private sector should consider each other as partners so the money can circulate locally.*⁵⁷

54 Coordinator of Extension Workers, Posto Railako, Ermera Municipality, 20 August 2019

55 MAF Director, Viqueque Municipality, 2 September 2019

56 DiliMart Horticulture Manager, Dili Municipality, 22 October 2019

57 Director 21 Jullu, RAEQA, 17 September 2019

MARKET ENGAGEMENT

TYPES OF MARKET ENGAGEMENT

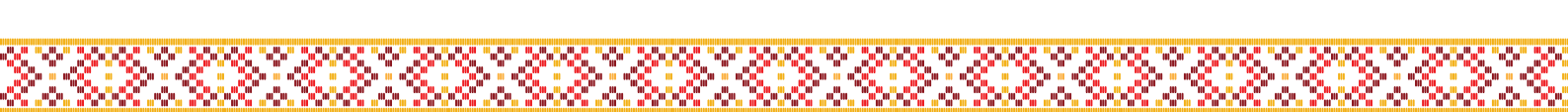
Farmers' engagement can be divided into three main categories, describing the different ways in which they engage with the market: (i) subsistence farmers, (ii) farmer-vendors, and (iii) wholesale farmers. Subsistence farmers eat what they grow, and possibly sell or barter the excess produce locally. Farmer-vendors retail their produce themselves, transporting their produce to local, regional or Dili markets to sell direct to consumers. Wholesale farmers sell to third parties such as exporters or supermarkets, farmer cooperatives, or NGOs, who then transport and sell the produce on their behalf. In practice, there is often significant overlap between the subsistence and farmer-vendor model, as people eat what they grow and also transport their produce to the market. However, it is worth distinguishing between the two, as there are important lessons to be learned by separating out the farmer-vendor experience.

In Viqueque and Oecusse, the vast majority of farmers are subsistence or farmer-vendors, with only a very few wholesale farmers. By contrast, in Ermera, where there is a more active private sector with exporters, agribusiness and supermarkets buying direct from farmers, there is a higher number of wholesale farmers, who have much greater success in selling their produce. The very different market conditions in Ermera can be explained by a few inter-related factors, including the long-term market linkages work carried out by NGOs in the municipality, supermarkets' greater engagement with Ermera agricultural groups, and Ermera's comparative proximity to Dili. While these factors are all important, comparing the experiences of farmers in Viqueque and Oecusse to farmers (and particularly horticulture groups) in Ermera indicates that a key reason for lack of growth in the agricultural sector is the lack of private businesses buying produce direct from farmers.

This was supported by analysis and commentary from respondents in Viqueque and Oecusse, who explained that they consider it 'easy' for farmers to increase their production, noting abandoned agricultural land and wasted agricultural potential. As they explained, the major constraining factor is farmers' inability to sell what they produce. This is a source of frustration for MAF officials who are mandated to help farmers improve their productivity:

Farmers have production and if there is a market demand of course they will have more initiative to improve with higher quality and quantity. But in reality we do not have a market here, so how can we ask farmers to improve their production? They can only bring it to the local market... How can we approach young people to get involved if they cannot make money through agriculture because there is no market?⁵⁸

58 Chief of Department (agriculture, horticulture & extension work), MAF, Viqueque Municipality, 3 September 2019



Only a small number of farmers in Timor-Leste operate as wholesale providers, for the simple reason that the private sector is still very small. For most farmers, there is no assistance to help them sell their produce, meaning they must transport and sell their produce themselves. Some pay for public transport, or hire a motorbike or car, which reduces their profit margin. Sometimes the cost of transport is more than the profit that they make.⁵⁹ Some of these farmers are very poor, unable to buy basic items such as buckets to transport produce, instead using sacks which can result in damaged produce. Because of the bad roads and difficulties in accessing public transport, many farmer-vendors must walk and physically carry their produce to sell in the local market. As noted previously, market vendors are primarily women, some of whom must also bring their children with them to the market, walking many hours, sometimes crossing rivers or navigating difficult terrain to carry their produce to the market. There are various security risks that women vendors must navigate during travel to and from the marketplace, and/or when staying overnight if they have to sleep in the marketplace (TOMAK 2018a).

In addition to these practical problems, there are strategic limitations for farmer-vendors, compared to wholesale farmers. Small farmers are not able to take advantage of economies of scale. They don't know where to sell their produce, except at local markets, and they don't know who will buy it. By contrast, private businesses have much greater market reach potential, with possibilities for selling across the country or, if they have the reach, entering the export market to sell abroad. While current realities mean that both farmer-vendor and wholesale farmers should be supported in their market linkages, here is potential for growth under the wholesale farmer model which is simply not possible under the farmer-vendor model.

RISK MANAGEMENT

A key advantage that wholesale farmers have over farmer-vendors is that they can share the risk with private businesses. Risk management is a major factor for all farmers, but particularly for farmer-vendors, who carry 100% of the risk across the entire value chain. Like subsistence and wholesale farmers, farmer-vendors must manage the risks associated with growing their produce (changing weather, pests/disease/animals destroying crops, problems with soil quality, problems with storage of seeds/produce). But they must also manage risks related to possible damage or loss during transport, transport costs which are often prohibitive, resulting in loss of profit or sometimes even in overall loss, and the risk that consumers won't buy the produce in the end.

With all of the risk falling on poor farmers, and no market certainty provided by a functioning private sector, it is little surprise that many farmers choose to keep their production levels low. However, the vast majority of farmers interviewed for this research explained that this is not an active choice: while they want to increase their production to improve their income, they are unwilling to do so because the risk that they won't be able to sell is too high. As a farmer in *Suku* Uaimori in Viqueque explained,

*We grow a lot but it's too hard to get money from our produce; we do not have access to market because of bad roads and no public transport in this Suku. Even in this Suku we do not have any market or local market. We are far from Viqueque. So our vegetables are just for consuming in the household, some we eat and some for pigs food.*⁶⁰

⁵⁹ Chief of Department (Extension and Agriculture), RAEQA, 17 September 2019

⁶⁰ Woman Group Leader Livestock Group, *Suku* Uaimori, Viqueque Municipality, 4 September 2019

Similarly, the leader of a horticulture group in Oecusse explained,

*When we harvest it, we just sell around to the community... We are so sad because we produced the organic vegetables but no buyer. We want someone to link us with those buyers, but it has never happened. If there is possibility, CSOs could help to link us with the buyer, we do not know the way to link our products with the buyer.*⁶¹

By contrast, the experience of wholesale farmers is instructive. Across all three case study sites, the farmers who appeared to be doing the best were members of horticulture groups in Ermera that have agreements to sell organic produce to supermarkets.

Not all farmers can benefit from these contracts: those who live further away from the *Posto* centre where the cool trucks don't visit are in the same situation as other farmers, limited to working as subsistence farmers, and/or trying to make an income as farmer-vendors.⁶² However, members of horticulture groups that have contracts with supermarkets have been able to increase their income. Various local stakeholders commented on the obvious improvements to these farmers' economic situation, as members have used the money they earn to send their children to school, fix their houses, buy a motorbike or make other investments to improve their lives.

Since the initiative began through the Avansa Agrikultura project, these groups have growth in strength, negotiating agreements with other supermarkets, to suit their production levels. As the head of one horticulture group described,

*Avansa Agrikultura linked us with Dili Mart. But for other 4 supermarkets we negotiated it directly with them in Dili. These supermarkets are now also our buyers, so we have 5 supermarkets to buy our products. I organised this with group members because we were producing more, and we did not want to waste this produce so we agreed to go to Dili to negotiate with other supermarkets.*⁶³

This model works because it relieves farmers of the need to transport their produce, as supermarkets buy straight from the farmer. They provide farming inputs and support as part of their business model, to help farmers produce according to the required quantity and quality. And very importantly: they provide market certainty. Unlike the farmer-vendor who must take 100% of the risk across the entire value chain, supermarkets take on some of that risk by buying and transporting set quantities from farmers on a regular basis.

However, it is also worth noting that not all wholesale farmers have met this level of success. Businesses such as CCT and Timor Global have been criticised for paying farmers only a small amount for their harvested coffee beans, compared to the price they receive for coffee on the global market. In addition, coffee does not provide the same regular income as horticulture: while horticulture groups sell to supermarkets once or twice a week, coffee farmers harvest and sell their crops only once a year—making it harder for farmers to manage their income.⁶⁴

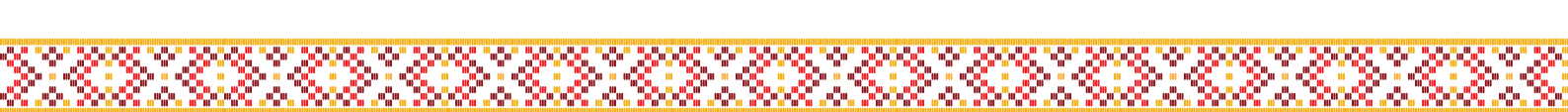
It is also important to note that there is no reason that this role be limited to the private sector. In principle, cooperatives could also do this work of retailing on behalf of farmers. MAF-supported store, Loja Agrikultura, which retails produce on behalf of members from all over Timor-Leste, is a good example

61 Woman Group Leader Horticulture, Suku Uma Ki'ik, Viqueque Municipality, 3 September 2019

62 Coordinator of Extension Workers, Posto Railako, Ermera Municipality, 20 August 2019

63 Horticulture Group Leader, Suku Maudiu, Ermera Municipality, 22 August 2019

64 Crop Technical Officer MAF, Viqueque Municipality, 21 August 2019



of this. Loja Agrikultura is a store situated in Timor Plaza dedicated to retailing local produce on behalf of registered members (individual farmers, farming groups, or cooperatives/associations.) In order to sell through this store, members must bring their produce into Dili to be sold.⁶⁵ As of October 2019, Loja Agrikultura successfully retailed produce from all over the country, including 80 farmers groups, as well as individual farmers, some local cooperatives and associations, and Timorese businesses such as ACELDA. What is important is that there is a supportive service infrastructure surrounding farmers, allowing them to focus on production and sell wholesale, if they so desire. However, the current reality is that there are very few cooperatives in Timor-Leste that are functioning effectively (Wallace 2019).

WORKING WITH FARMERS

There are clear benefits to supporting fair, non-exploitative relationships between farmers and the private sector. There are also important skills that farmers need to learn and improve on. A major challenge is helping farmers to understand the need for consistency, so that the quality and variety of produce suits consumer demand. As various private sector representatives and retailers explained, sometimes the quantity of supply is much less than agreed in the contract, other times much more than agreed.⁶⁶ It is common that farmers do not fully understand their contractual rights and obligations. And in situations where the farmers or groups must transport the produce to the retailer themselves – as is the case when selling through the MAF-supported store ‘Loja Agrikultura’ – it is common for farmers to send their produce late, or not at all.⁶⁷

The quality of produce can vary significantly. While it is normal for vendors selling at the local market to mix poor quality and higher-quality produce together, supermarkets operate by different standards. There is an adjustment in expectations that farmers must make in order to meet supermarket needs. As the horticulture manager for DiliMart explained, it is often difficult for them to do quality control, as farmers expect that they will buy all of their produce, regardless of the mixed quality:

most of time, they try to force the vendor to buy all of their produce, even though some is of less quality...You need patience to work with farmers, and to provide capacity building for them. As Timorese, we try to understand their situation and to do a briefing quarterly to hear their challenges... [But] as a businessman, we also need profit.⁶⁸

Another significant challenge raised by farmers and stakeholders across all three case study sites relates to matching crop cycles to market demand. As respondents explained, farmers tend to operate on the same planting cycles, planting and harvesting the same produce at the same time. This cycle of farming means that local markets are flooded with the same produce at certain times of the year, driving down prices and causing significant wastage.

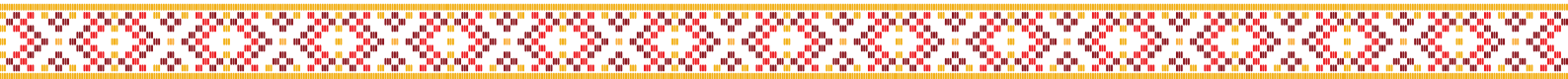
Members of horticulture groups explained that their biggest problem with supermarkets is that they will only buy a set amount of produce at these times, leaving the rest with the farmers to offload as they can. For subsistence and farmer-vendors, this flooding of the market is a key reason they decide to keep their production levels low. Because they know they will be unable to sell larger amounts of produce, as they will be competing against their neighbours who are producing the same goods at the same time, they minimise risks by planting only a small amount.

⁶⁵ Manager Loja Agrikultura, Dili Municipality, 23 October 2019

⁶⁶ DiliMart Horticulture Manager, Dili Municipality, 22 October 2019

⁶⁷ Manager Loja Agrikultura, Dili Municipality, 23 October 2019

⁶⁸ DiliMart Horticulture Manager, Dili Municipality, 22 October 2019



There is a clear need for farmers to better understand and engage with farming as a business, to meet consumer demand. They need support in consistently producing to the quantity and quality required, and within the timeframe agreed with retailers. They need accompaniment and encouragement to shift their expectation that Dili-based retailers will accept all of their produce, and instead be supported in seeking alternative local buyers for lower-grade produce. And they need help in managing their planting cycles and spreading out the harvest season. As the manager for Loja Agrikultura commented, initiatives such as Avansa Agrikultura appear to have made a positive impact in shifting farmers' mindset, as many Avansa beneficiaries display a better understanding of what they need to do, compared to other farmers.⁶⁹

There is an opportunity for government or civil society to provide better technical support in varying their planting cycles—planting different crops to what their neighbours are producing, or planting at different times, or both. MAF technical staff currently use a national planting calendar, setting out ideal times for planting and harvesting of different crops. This calendar is useful, but fails to reflect the varying climactic and soil conditions of different parts of the country. Region-specific calendars indicating optimal conditions for planting and harvesting of different crops would be a useful resource for extension workers and others who support farming groups—potentially helping them to spread out the harvest season of different crops, and diversifying what they grow. In addition, greenhouses may be put to good effect—allowing farmers to plant and harvest year-round. Better storage options for produce that does not need to be consumed immediately (such as rice) is also necessary.

To be successful, such interventions would need to ensure minimal risk and expense is borne by poor farmers, and providing close accompaniment of farmers who are interested in adjusting their practices. Successful approaches in the past have been to identify young farmers with an already strong entrepreneurial mindset, and working closely with them so they can model new approaches to others in the community.

⁶⁹ Manager Loja Agrikultura, Dili Municipality, 23 October 2019

CONCLUSION: BUILDING AN ENABLING ENVIRONMENT

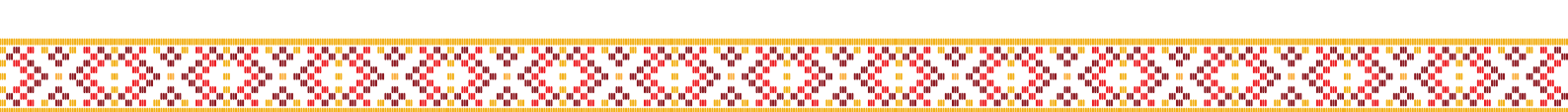
In developing a strategy for economic development, a major question for government policy-making is whether it should take a “top down” or “bottom up” approach to the economy (Oxfam 2019; Inder et al 2018). The top down approach is built on the assumption that if you create the necessary large-scale infrastructure for a particular industry, then there is a great deal of what is referred to as ‘latent economic activity’ at the community level which is waiting to burst into existence. In the case of the agricultural sector, the top-down assumption is that farmers are ready and able to make the transition from subsistence to market-based farming, that they are sufficiently educated on modern farming techniques, and that they have the necessary resources and entrepreneurial mindset to identify gaps in the market, take risks, and develop a good market-based strategy for their farming business.

The alternative, bottom-up view, in contrast to the top down approach, is that large-scale investments are not enough to create sustained, broad-based inclusive growth. Rather, what is needed is ‘getting our hands dirty’ with the grassroots creation of firms and businesses, improving agricultural productivity, and providing the right enabling environment for entrepreneurship to flourish.

While the Government has taken a largely top-down approach to developing the economy, fieldwork results clearly demonstrate that this ‘latent economic activity’ does not yet exist among most farmers and connected agribusinesses. There are strong roles for both MAF and the private sector to play in creating a better enabling environment for farmers to grow their farming business. Research results indicate various factors constraining their work which need to be addressed, before they are able to play this role.

SUPPORT FROM GOVERNMENT

While the majority of Timorese work in the agricultural sector, analysis of the state budget shows government allocations to the Ministry of Agriculture have been very small over the past 10 years, and in real terms (adjusted for inflation) is actually shrinking. Resources are highly centralised, with the Ministry of Agriculture allocating more resources in Dili than in the rural areas, where support work with farmers



is carried out. While development partners have funded various projects focussing on improving the agricultural sector, funding that is available from donors is minimal compared to what the government could allocate via its budget. Low budget allocations are not the only challenge. Various stakeholders also noted low capacity within MAF to fully execute the budget that they are allocated,⁷⁰ with senior government officials explaining this is a key reason for the government keeping MAF allocations small.⁷¹

Advocating for increased budget to support farmers and connected businesses is a necessary first step to developing the agricultural sector. Without government signalling its commitment to properly funding this sector and creating a more supportive enabling environment for farmers and agribusiness investors, it is unlikely that there will be major improvements. This needs to be complemented with improving MAF capacity to execute its budgets and streamline its bureaucracy so it can more effectively provide necessary services and support to farmers.

The two biggest problems identified by municipal-level MAF officials in carrying out their work with farmers were limited operational budgets for their extension work, and problems coordinating with national government. As they explained, coordination with other ministries at municipal level was generally quite good, but coordination between municipal and national level was nearly always complicated and difficult. As the Director for MAF in Viqueque explained, “municipal structures are supportive... but high level politics are not clear, the policies are always changing and this impacts on work at municipal, *Posto*, *Suku* and *Aldeia* level.”⁷² Similar sentiments were repeated many times by stakeholders in all three case study sites.

Various municipal stakeholders spoke of the “complicated bureaucracy” that they must navigate with MAF in Dili. A senior government official in the Special Region of Oecusse explained this has a direct impact on the results they get with farmers: the steady improvements that they had observed in rice yields due to agricultural improvements from 2010 to 2018 dropped in 2019, mainly due to the budget for this year being very small, and arriving late.⁷³ In Viqueque also, the MAF Director explained that they were unable to operate the tractors that they provide to farmers because their operational budget does not cover tractor fuel costs.⁷⁴ These issues are exacerbated by the fact that some programs are implemented directly by the MAF national office rather than involving MAF municipal offices.⁷⁵ For example, while there is an Agriculture Commerce Department intended to link farmers with the market, they make little impact due to limited competency at municipal level.⁷⁶ If given the competency, there is an opportunity for MAF and MTCL to work more collaboratively at municipal level—for example, providing post-harvest storage options (food processing centres) for farmers in each municipality, to store food prior to transport to Dili or for export, and to help reduce post-harvest waste.

Difficulties in coordinating between municipal and national government is even more challenging when attempting to work across different ministries. For example, stakeholders in Oecusse and Viqueque explained that while they have local agreement, they have not been able to influence the Ministry for Education to switch from buying imported food to buying from local suppliers for their school feeding program.⁷⁷ For these reasons, many municipal stakeholders expressed their hope that decentralisation would improve the decision-making process and better facilitate their work with farmers. However, they

70 Policy Officer, Food and Agriculture Organisation (FAO), Dili Municipality, 16 August 2019

71 Helder Lopes, Principal Advisor to the Minister of Finance, Presentation to the Asia Foundation Policy Leaders Group Workshop, Timor Plaza, Dili Municipality, 14 June 2019

72 MAF Director, Viqueque Municipality, 2 September 2019

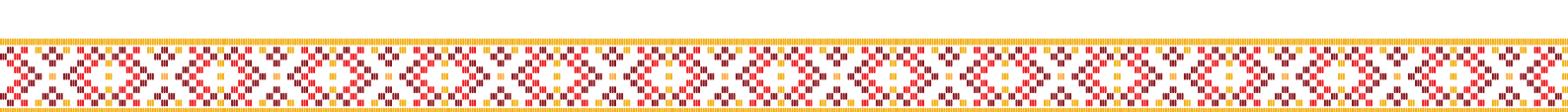
73 Interim President, RAEOA, 17 September 2019

74 MAF Director, Viqueque Municipality, 2 September 2019

75 Program Manager, Catholic Relief Services, Dili Municipality, 12 August 2019

76 Coordinator of Extension Workers, Viqueque Municipality, 3 September 2019; Coordinator of Extension Workers, Viqueque Municipality, 3 September 2019

77 MAF Director, Viqueque Municipality, 2 September 2019; Director BIFANO, RAEOA, 16 September 2019



also acknowledged that human resources would likely be a challenge to successfully implementing decentralisation.

DATA CHALLENGES

Good, evidence-based policy making requires good data. However, it is difficult for government decision-makers to identify and deal with the specific blockages in MAF service delivery, because of the poor monitoring & evaluation system currently employed within the ministry. As one respondent explained, the current M&E system relies primarily on reports from extension officers, with no clear benchmarks.⁷⁸ It is therefore important to improve the quality of M&E systems, to improve MAF service delivery and reduce blockages and excessive bureaucracy.

Other studies have also noted that there is a strong need for better, more detailed information on the agricultural sector (see for example USAID 2015). To date, some of the necessary data has been gathered as part of the Timor-Leste Population and Household Census. However, this information has been incomplete. In an effort to deal with this, the first Timor-Leste Agricultural Census (TLAC) is being implemented by the government, due for release in April 2020.⁷⁹ This will provide crucial quantitative information on the MAF Director, Viqueque Municipality, 2 September 2019 economic situation of farming households, land holdings, farming technology used, agricultural (horticulture/livestock/fisheries) outputs, how these outputs are sold and to whom, and other important information on different parts of the country.

There is an opportunity for MAF and other ministries to use this data and engage in good strategic planning from the *Suku* to national level, to improve the sector. There will also be a strong role for civil society organisations to monitor, advocate and follow up on better government decision-making in addressing the gaps and needs identified via the TLAC.

CIVIL SOCIETY ROLE

While some respondents noted the improvements that had been made via different NGO projects, and farmers groups generally expressed appreciation for support from anyone, regardless of the source, the vast majority of government and private sector respondents explained that civil society roles providing direct technical support to farmers should be limited. The most important role that they identified for NGOs was in influencing policies, educating farmers, and linking farmers with the private sector or government.

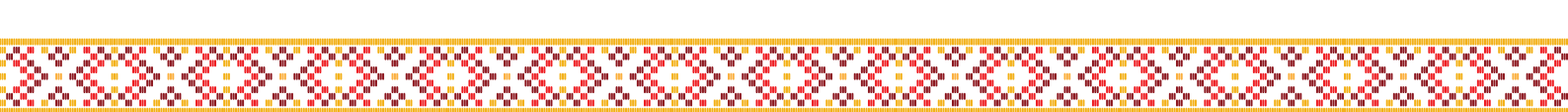
The main reason that was repeated by various stakeholders was that NGOs operate according to project requirements rather than farmer needs, and have limited timeframe so are not sustainable. Municipal-level government officials sometimes also complained of NGOs failing to coordinate with them, resulting in overlapping projects and sometimes undermining MAF efforts.

SUPPORT FOR THE PRIVATE SECTOR

Research results clearly indicate that if the agricultural sector is to grow, there must be much greater private sector involvement. As the Municipal Administrator of Viqueque noted, building farmers' productivity and improving their income requires private sector investment:

⁷⁸ Policy Officer, Food and Agriculture Organisation (FAO), Dili Municipality, 16 August 2019

⁷⁹ Policy Officer, Food and Agriculture Organisation (FAO), Dili Municipality, 16 August 2019



It is really hard to talk about the productivity and income if we have no industry. Mostly the private sector is also dependent on the state budget. How come we talk about improving farmers' productivity and income if we don't have private sector? Private sector especially Timorese private businesses should have their own income to invest in agriculture, not only depend to government money.⁸⁰

The current reality is that many farmers are 'stuck' in the subsistence or farmer-vendor model of farming, with no ability to reach beyond the local market. To manage the risks and spread income throughout the year, many grow diverse crops, raise livestock which they sell locally and/or use for cultural activities, and also supplement their farming income with other income sources if they can. Without support in reaching beyond the local market, they deliberately keep their production small in order to avoid post-harvest waste. This is resulting in significant unused land and lost agricultural potential.

The private sector is essential to helping farmers move out of this situation. However, the private sector only operates when the potential profit advantage outweighs the likely risks. Currently, agribusinesses face many obstacles. They must deal with the same obstacles faced by farmers: bad roads, low levels of agricultural productivity due to lack of essential services such as water for irrigation, as well as inconsistent supply and low levels of understanding among farmers about doing business and meeting market demand. There are also the many other factors that limit business more generally in Timor-Leste. These include excessive bureaucracy, a frequently-changing regulatory environment, poor banking and credit facilities, and potential interference from political decision-making. According to World Bank Data, the challenges for businesses are growing. In 2019, Timor-Leste was ranked 181 out of 190 countries (tenth from the bottom) on ease of doing business worldwide (World Bank Data 2019). This compares to a ranking of 178 in the previous year, and a ranking of 164 ten years prior.

There are many opportunities for the government to strengthen the private sector. As one businessman explained,

if the government wants to see a strong private sector, then they need to view the private sector as suppliers and clients. Currently, the private sector does not see any opportunity from government. If the government focuses on removing barriers to the private sector, this will have a positive impact for Timor-Leste. Government also should make it easy to run industry, import and exports.⁸¹

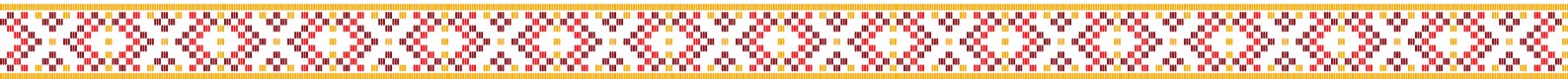
Greater infrastructural investment to serve farmers' and agribusinesses' needs is vital: in 2019, only 0.6% of government investment in infrastructure was for agriculture (Oxfam 2019, 18). International experiences show that improving infrastructure such as rural roads and irrigation water for farmers can have a major impact on the sector, and ultimately on poverty alleviation in the country. For example in Cambodia, poverty rates were halved in less than seven years, from 53% in 2004 to 21% in 2011. This occurred almost exclusively via improved agricultural productivity among small farmers, giving lots of support to improve access to markets with rural roads (World Bank, 2013). There is potential for similar results in Timor-Leste if the necessary infrastructural and other support is given to small farmers.

Other major obstacles relate to imports and export policies. Various stakeholders noted that export policies are unclear and difficult to navigate, stifling exporting businesses.⁸² In addition, many farmers and businesses struggle to compete against cheaper imported produce, such as rice and horticulture.

80 Municipal Administrator, Viqueque Municipality, 3 September 2019

81 Managing Director, FarmPro Fresh, Ermera Municipality, 23 August 2019

82 Managing Director, FarmPro Fresh, Ermera Municipality, 23 August 2019; Policy Officer, Food and Agriculture Organisation (FAO), Dili Municipality, 16 August 2019



While some consumers recognise the value of organic, locally-harvested produce, many others are guided by the lower price point of cheap imported produce.⁸³

There are various methods that might be taken to address such issues: streamlining export processes, considering quotas or taxes for importers, or providing special dispensations for local businesses. However it must also be recognised that some of these options contradict the government's policies in other areas, such as its ongoing application to join ASEAN and associated free trade agreements and WTO obligations.

Nonetheless, there are other opportunities for the government to support Timorese businesses for export and domestic consumption which would not impinge on its international obligations. This might include reconsidering government procurement policies to buy produce locally, wherever possible. Giving greater strategic support and broader promotional opportunities for businesses to sell niche, organic produce for domestic and export consumption is another possibility. And reducing the obstacles currently faced by Timorese businesses is essential.

83 Municipal Administrator, Viqueque Municipality, 3 September 2019; DiliMart Horticulture Manager, Dili Municipality, 22 October 2019; Policy Officer, Food and Agriculture Organisation (FAO), Dili Municipality, 16 August 2019

RECOMMENDATIONS

With 64% of working adults reporting themselves as farmers, and 80% of people relying on the agricultural sector for their livelihoods, there is an urgent need to support the agricultural sector in Timor-Leste. Alongside tourism, manufacturing, and the petroleum sector, the Timor-Leste government has identified agriculture as a key sector for growing the economy. However, budget allocations to support the sector have been limited, and there are many challenges for farmers and related agricultural businesses in carrying out this work. There is a clear need to build a better enabling environment, to help farmers move beyond subsistence farming and improve their income. There is also a strong need to promote consumption of more nutritious, local produce rather than cheaper, low-quality imported food which is being dumped on the Timor-Leste market.

There are many different factors that combine to create the current low levels of productivity and wasted agricultural potential in the country. As such, there is no single answer or simple set of initiatives to growing the sector. However, research clearly indicates some priority areas that need to be addressed to enable farmers and related businesses to become more economically active.

There is a clear desire among farmers to sell more of what they grow. What is required is to build an enabling environment that will encourage them to produce more, and to become more productive (ie. grow more produce using the same amount of time and labour).

This study indicates a number of priority actions that might be taken by different actors, to support farmers in achieving this.

INCLUSIVE AGRICULTURAL DEVELOPMENT

- Look beyond promoting women's inclusion in agricultural groups, to work on initiatives that promote recognition and visibility, and address contextual limitations for women farmers. Examples include interventions to improve women's decision-making power over investing farming income, improving women's ability to hire farm labour and access other inputs, and or addressing safety and other issues for women farmer-vendors.
- Promote inclusion and access to agricultural work for people with disabilities, by shifting social attitudes of wanting to 'protect' people with disabilities from agricultural work, to refocus the contributions that people with disabilities can make.
- Educate and empower poor households transitioning from subsistence to market-based agriculture to make wise decisions in providing good nutrition for their families (not sell all of the produce).



INFRASTRUCTURE

- Shift government investment focus from building major arterial roads to improving and/or building roads linking farms to markets; consider initiatives that will improve availability of public transport for farmer-vendors seeking to sell their produce at the market.
- Improve water supply for farm irrigation, in particular explore potential irrigation systems that are not dependent on surface water, but tap into underground reservoirs; improve operations & maintenance for existing irrigation systems.

SUPPORT FOR FARMERS

- Continue existing programs, and expand future programs to accompany farmers how to produce and use organic fertiliser, control pests, save and use higher quality seeds, and other interventions to improve productivity.
- Provide food processing centres (food storage) at municipal level, for farmers to store food prior to transporting to Dili or for export, to reduce post-harvest waste. This could be a joint initiative between MAF, MTCL and private sector.
- Expand support to farmers in selling produce on their behalf: ideally by transporting the produce from the farm gate or *Posto* centre to take advantage of economies of scale. This requires building a better enabling environment for private sector and/or agricultural cooperatives to flourish (see below).
- Work with farmers to shift their business mindset; identify young farmers with an already strong entrepreneurial mindset, and work closely with them so they can model new approaches to others in the community.
- Accompany farmers in learning to produce according to market & consumer demand: becoming more consistent in producing to the required quality and quantity, diversifying crops and varying planting cycles to avoid flooding markets, slowly introduce grading of produce and help farmers sell differently-graded produce to different buyers.
- Support nutrition-sensitive agriculture by preferential buying from local farmers, including for the Ministry of Education's school feeding program.
- Supplement the national agricultural calendar series with region-specific calendars, to assist extension workers and farmers to plant and harvest first and second crops according to the climatic and soil conditions of that area.

SUPPORT FOR PRIVATE SECTOR

- NGOs and government buying basic farming materials and supplies for distribution/support to farmers should support local agribusiness growth by buying from local providers, wherever possible.

- Create a better enabling environment for the private sector to work with farmers, including better roads & infrastructure, simpler and more consistent (not frequently changing) business regulations, better banking and credit facilities and other basic business necessities, simplify and clarify export regulations. This includes businesses selling necessary tools & supplies to farmers in rural areas and businesses buying produce wholesale from farmers.
- Recognising that some businesses are criticised for unfair prices that they offer to farmers, consider basic regulations and/or establishing farming unions to protect farmers' interests.
- Consider initiatives to support import substitution, possibly including quality control of imported food to discourage food dumping, public education campaigns promoting nutritious, locally-grown produce, quotas or taxes for importers, special dispensations for local businesses, and other such measures.
- Learning from successes such as by local export business ACELDA, improve strategic support and provide broader promotional opportunities for businesses to sell niche, organic produce for domestic and export consumption.

GOVERNMENT & CIVIL SOCIETY

- Increase annual budget provisions for MAF; improve MAF capacity to execute annual budget; ensure budget is delivered on time to municipal offices; improve budget provisions for MAF municipal offices to better cover operational costs and ensure extension officers can cover the required geographical areas.
- Streamline MAF bureaucracy, particularly between national and municipal level offices. Streamline government bureaucracy & coordination more generally between national and municipal levels (eg. between Municipal Administration & Ministry of Education.)
- Reduce centralization of some parts of MAF, including Agriculture Commerce Department, to increase competencies and activity at municipal level.
- Improve collection and use of agricultural service data, including improved M&E systems in MAF to identify blockages in service delivery.
- Focus role of civil society on agricultural advocacy, with greater technical support provided by government or private sector rather than NGOs.
- Recognising that many farmers and agribusinesses face the same or similar difficulties, consider organising unions or business lobby groups to advocate for more supportive agricultural policies directly with the national government. To be effective, this should start small, and focused on practical outcomes, following organizing principles of being member-led, and building informal leadership among union/lobby group members.

REFERENCES

- ADB (2004). "Integrated Water Resource Management 'Water for All - Water for Growth.'" Asian Development Bank TA: TIM 3986 Timor-Leste Integrated Water Resources Management, Technical Assistance. Dili, Timor-Leste.
- Belun (2018) *Leaving No Youth Behind. Policy Brief #1: Young Female Farmers*. Belun: Dili, Timor-Leste.
- BESIK (2010). *Midterm Independent Progress Review Report*. National Directorate for Water Control and Quality (DNCQA), Dili, Timor-Leste.
- FAO (2011) *Irrigation in Southern and Eastern Asia in Figures – AQUASTAT Survey Timor-Leste*. Food and Agriculture Organisation of the United Nations.
- General Statistics Directorate (2015) *Timor-Leste Population & Housing Census*. Dili: Timor-Leste.
- General Statistics Directorate [Timor-Leste] and Ministry of Agriculture & Fisheries [Timor-Leste], (2019) *Timor-Leste Agricultural Census: Instructions Manual for Field Staff*. Dili: Timor-Leste.
- Inder, B, Balachandran, R, Nan Qu & Benevides, C. (2018) *Putting the Economics into Timor-Leste's Economic Development Story*. Centre for Development Economics & Sustainability, Monash University. Research Paper Series on Timor-Leste RP-TL8. Melbourne: Australia.
- IPC (2019) *The First IPC Analysis Report of the Chronic Food Insecurity Situation in Timor-Leste*, Ministry of Agriculture & Fisheries, Government of Timor-Leste, Dili: Timor-Leste.
- Lopes, M & Nesbitt, H (2012) *Improving food security in Timor-Leste with higher yield crop varieties*. Conference paper presented at 56th AARES annual conference, Fremantle, Western Australia, February 7-10 2012.
- Lundhal & Sjöholm (2012) *Improving the Lot of the Farmer: Development Challenges in Timor-Leste during the Second Decade of Independence*. Working Paper 2012: 26, Lund University.
- National Statistics Directorate (NSD) [Timor-Leste], Ministry of Finance [Timor-Leste], and ICF Macro. (2010). *Timor-Leste Demographic and Health Survey 2009-10*. Dili, Timor-Leste.
- Oxfam (2019) *Towards Economic Diversification in Timor-Leste*. Dili: Timor-Leste
- Seeds of Life (2013) *Annual Research Report, 2013*. Seeds of Life, Ministry of Agriculture and Fisheries. Dili, Timor-Leste

- TOMAK (2018a) *Gendered Marketplace Assessment: Women Vendors' Voices and Aspirations for Change*. Adam Smith International: Dili, Timor-Leste
- TOMAK (2018b) *Analysis of the Spice Value Chain in Timor-Leste*. Adam Smith International: Dili, Timor-Leste
- TOMAK (2018c) *TOMAK Learning Paper Undertaking gender equality and social inclusion analysis (GESIA) in a market systems and nutrition sensitive agriculture program*. Adam Smith International: Dili, Timor-Leste
- TOMAK (2016a) *Market Analysis of Selected Agricultural Products (Technical Report 1)*. Adam Smith International: Dili, Timor-Leste
- TOMAK (2016b) *Potential for Improving On-farm Productivity of Selected Agricultural and Livestock Enterprises (Technical Report 2)*. Adam Smith International: Dili, Timor-Leste
- UN Women & World Bank (2018), *Women Farmers in Timor-Leste: Bridging the Productivity Gap*, UN Women & World Bank, Dili; Timor-Leste.
- USAID (2015) *Timor-Leste Agriculture Market Systems Analysis Consultancy Report*, AVANSA project, Dili, Timor-Leste.
- von Grebmer, K, J. Bernstein, R. Mukerji, F. Patterson, M. Wiemers, R. Ní Chéilleachair, C. Foley, S. Gitter, K. Ekstrom, and H. Fritschel. (2019) *2019 Global Hunger Index: The Challenge of Hunger and Climate Change*. Bonn: Welthungerhilfe; and Dublin: Concern Worldwide
- Wallace, Duncan (2019) 'East Timorese Farming Cooperatives and Credit Unions' *New Economy Journal*, vol 1:6, pp30-33.
- WHO (2015). WHO and UNICEF Progress on Sanitation and Drinking Water—"2015 Update and MDG Assessment." Joint Monitoring Programme (JMP) of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), Geneva.
- World Bank (2011) *Timor-Leste: Expanding Near-Term Agricultural Exports*. Diagnostic Trade Integration Study (DTIS) Volume I: Main Report. Report No. 61814-TP. June. Washington, DC.
- World Bank (2013), *Where Have all the Poor Gone? Cambodia Poverty Assessment 2013*, World Bank. Cambodia.
- World Bank Data (2019). Available at <https://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT?locations=TL>. Accessed 26 July 2019.
- World Bank Group (2018a) *Timor-Leste Systematic Country Diagnostic: Pathways for a New Economy and Sustainable Livelihoods*. World Bank, Dili, Timor-Leste.
- World Bank Group (2018b) *Timor-Leste Water Assessment and Road Map*, Washington DC.
- ZEESM (2018) *Agricultural Value Chains Analysis in Oe-Cusse, Timor-Leste*. Regional Secretariat of Agriculture and Rural Development in Oe-Cusse.

