

**ZERO
HUNGER
CHALLENGE**



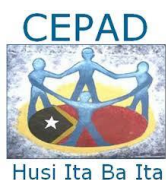
TIMOR LESTE STRATEGIC REVIEW: PROGRESS AND SUCCESS IN ACHIEVING THE SUSTAINABLE DEVELOPMENT GOAL 2

“Tau matan ba ita-nia futuru”



Centre of Studies for Peace and Development (CEPAD) Timor-Leste

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and Claire Davis



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Cover photo: A couple in Oecusse. Photo: WFP Camila Urbina -Escobar

| | |
|---|-----------|
| EXECUTIVE SUMMARY | 6 |
| SUMMARY | 6 |
| RECOMMENDATIONS | 12 |
| SDG2.1: ENDING HUNGER | 12 |
| SDG2.2: ENDING ALL FORMS OF MALNUTRITION | 13 |
| SDG2.3: IMPROVING AGRICULTURE PRODUCTIVITY | 13 |
| SDG2.4: SUSTAINABLE FOOD SYSTEMS AND CLIMATE RESILIENCY | 14 |
| SDG2.5: CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY | 14 |
| POLITICAL ECONOMY | 14 |
| INTRODUCTION | 15 |
| PURPOSE AND METHODOLOGY OF THE STRATEGIC REVIEW | 18 |
| PURPOSE | 18 |
| METHODOLOGY | 19 |
| THE FOOD SECURITY AND NUTRITION SITUATION OF TIMOR-LESTE | 21 |
| SDG 2.1 | 21 |
| SDG 2.2 | 22 |
| SDG 2.3 | 24 |
| SDG 2.4 | 25 |
| SDG 2.5 | 25 |
| FOOD SECURITY AND NUTRITION PROGRAM AND POLICY ANALYSIS | 26 |
| INTRODUCTION | 26 |
| NUTRITION AND AGRICULTURE POLICIES | 26 |
| NUTRITION PROGRAMS | 27 |
| AGRICULTURE PROGRAMS | 28 |
| ADDITIONAL PROGRAMS | 28 |
| CONCLUSION | 29 |

| | |
|---|-----------|
| <u>GAPS IN ACHIEVING FOOD SECURITY AND NUTRITION FOR TIMOR-LESTE</u> | 30 |
| INTRODUCTION | 30 |
| ENABLING ENVIRONMENT | 30 |
| SYSTEMIC, ORGANIZATIONAL, AND INDIVIDUAL CAPACITY | 32 |
| COORDINATION | 32 |
| ACCOUNTABILITY AND POWER OF VOICE | 33 |
| FUNDING AND BUDGETS | 33 |
| EFFECTIVE AND TIMELY USE OF DATA | 36 |
| TIMOR-LESTE’S PERFORMANCE ON THE MILLENNIUM DEVELOPMENT GOALS | 36 |
| CONCLUSION | 36 |
| <u>NATIONAL STAKEHOLDER VIEWPOINTS IN ACHIEVING SDG2 SUCCESS</u> | 37 |
| INTRODUCTION | 37 |
| NATIONAL STAKEHOLDER PERSPECTIVES ON ACHIEVING SDG2 | 37 |
| <u>COMMUNITY STAKEHOLDER VIEWPOINTS IN ACHIEVING SDG2</u> | 40 |
| INTRODUCTION | 40 |
| COMMUNITY PERSPECTIVES ON ACHIEVING SDG2 | 40 |
| LEADING ISSUES AND CONCERNS IN FOOD SECURITY | 40 |
| LEADING ISSUES AND CONCERNS IN NUTRITION | 41 |
| LEADING ISSUES AND CONCERNS IN AGRICULTURE | 41 |
| COMMUNITY THOUGHTS ON IMPROVING MALNUTRITION, FOOD INSECURITY, AND AGRICULTURE PRODUCTIVITY | 42 |
| <u>PATHS FORWARD AND RECOMMENDATIONS</u> | 44 |
| SDG2.1 -- ENDING HUNGER: RECOMMENDATION #1 | 47 |
| SDG2.1 -- ENDING HUNGER: RECOMMENDATION #2 | 50 |
| SDG2.2 -- ENDING ALL FORMS OF MALNUTRITION: RECOMMENDATION #3 | 53 |
| SDG2.2 -- ENDING ALL FORMS OF MALNUTRITION: RECOMMENDATION #4 | 58 |
| SDG2.2 -- ENDING ALL FORMS OF MALNUTRITION: RECOMMENDATION #5 | 60 |

| | |
|---|------------|
| SDG2.3 -- IMPROVING AGRICULTURE PRODUCTIVITY: RECOMMENDATION #6 | 62 |
| SDG2.3 -- IMPROVING AGRICULTURE PRODUCTIVITY: RECOMMENDATION #7 | 64 |
| SDG2.3 -- IMPROVING AGRICULTURE PRODUCTIVITY: RECOMMENDATION #8 | 66 |
| SDG2.4 -- SUSTAINABLE FOOD SYSTEMS AND CLIMATE RESILIENCY: RECOMMENDATION #9 | 68 |
| SDG2.4 -- SUSTAINABLE FOOD SYSTEMS AND CLIMATE RESILIENCY: RECOMMENDATION #10 | 72 |
| SDG2.5 -- CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY: RECOMMENDATION #11 | 74 |
| SDG2.5 -- CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY: RECOMMENDATION #12 | 76 |
| SDG2 -- THE POLITICAL ECONOMY: RECOMMENDATION #13 | 78 |
| SDG2 -- THE POLITICAL ECONOMY: RECOMMENDATION #14 | 81 |
| SDG2 -- THE POLITICAL ECONOMY: RECOMMENDATION #15 | 84 |
| CONCLUSION | 87 |
| REFERENCES | 88 |
| APPENDIX 1: SDG2 TARGETS AND INDICATORS | 97 |
| APPENDIX 2: BACKGROUND ON TIMOR-LESTE | 99 |
| APPENDIX 3: METHODOLOGY AND DESIGN | 101 |
| APPENDIX 4: DETAILED FOOD SECURITY AND NUTRITION SITUATION ANALYSIS | 111 |
| APPENDIX 5: POLICY AND PROGRAM ANALYSIS | 129 |
| APPENDIX 6: PARTICIPANTS IN NATIONAL CONSULTATIONS | 136 |
| APPENDIX 7: LOCAL NGO AND CSO SURVEY RESULTS | 139 |
| APPENDIX 8: PARTICIPANTS AND FINDINGS OF VALIDATION WORKSHOP | 143 |
| APPENDIX 9: COORDINATION MECHANISMS | 150 |

EXECUTIVE SUMMARY

SUMMARY



Figure 1: Mother and young child in Oecusse. Photo: WFP Camila Urbina-Escobar

This is Timor-Leste's time -- the time to move towards sustainable development and peace after a long history of conflict. The country has overcome foreign takeovers to gain independence and become a stable democracy. However, the remnants of these challenges remain and can be seen in the country's food security and nutrition outcomes. There is a critical need to build on the commitments that Timor-Leste has made for its future and create a new vision to transform the country's rural landscape and there are tangible steps that the country can take to make progress on all the 17 Sustainable Development Goals (SDGs).

While the petroleum reserve and the investment of donors in the country's development has bought some time, now more than ever there needs to be a re-focus. Timor-Leste has demonstrated its clear commitment to country-led and –owned development but more needs to be done to invest in the natural, human, and social capital of the country. Geography helps. Timor-Leste is not isolated or landlocked – with its abundant coastline, rich biodiversity, and ASEAN neighbours – there is great opportunity.

Timor-Leste faces large challenges in food and nutrition; however, the citizens of the country have a long history of overcoming challenges and fighting for their country. The country has an opportunity to focus on food security,

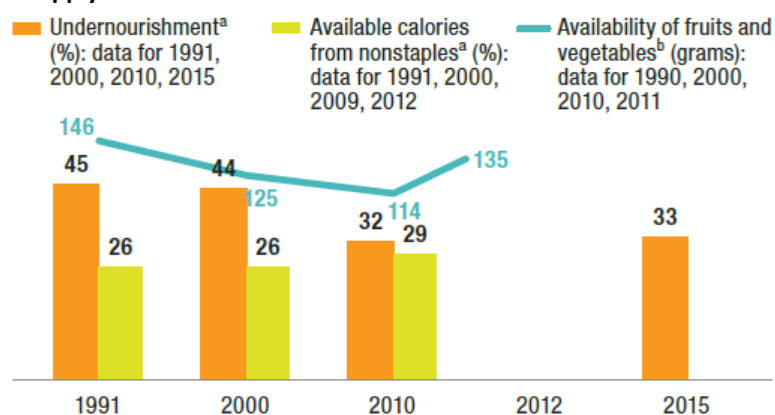
agriculture, and nutrition to improve nutrition outcomes and build a diverse knowledge based economy. If Timor-Leste chooses to accelerate their development through agriculture-led growth and rural transformation, investments in agriculture need to be substantive and diverse and perhaps move beyond just rice sovereignty. If Timor-Leste instead chooses to grow through tourism, services, and manufacturing industries, more investment in people and institutions will be required to build a knowledge based economy. That means driving down stunting numbers, investing in youth, particularly girls, and addressing vulnerable rural populations dependent on agriculture for their livelihoods.

Under the stewardship of former President Ramos-Horta and the Bishop of Dili, this Strategic Review was undertaken to determine what needs to be done to achieve Sustainable Development Goal 2 (SDG2) in Timor-Leste, which is to “end hunger, achieve food security and improved nutrition, and promote sustainable agriculture.” This Strategic Review serves both as a research exercise designed to give a consolidated picture of hunger and nutrition challenges in Timor-Leste and as a mechanism for supporting government to set priorities and find gaps in the actions and policies currently implemented in Timor-Leste to achieve SDG2. In turn, this Strategic Review will allow all stakeholders to anchor their programs for ending hunger, achieving food security, and improving nutrition in support of a clear set of government recommendations.

To undertake this strategic review and determine the recommendations, several data sources were collected. First, an extensive desk review was conducted to review the most recent information and data about Timor-Leste’s nutrition, agriculture, and food system situation. The country’s policies and programs in nutrition and agriculture were also reviewed and analysed. Second, national consultations that consisted of initial meetings followed by more formal interviews were conducted with many of the country’s stakeholders including members of the Government of Timor-Leste, international organizations, nongovernmental organizations, and civil society organizations. Finally, community consultations were carried out with people throughout the country. The data gathered was summarized, analysed, and then used to make our recommendations for how Timor-Leste can make progress towards meeting the ambitious goals of SDG2.

SDG 2.1 is to end hunger and ensure food access by all people. Between 2013 and 2015, 26.9 percent of the country’s population experienced hunger, with even more people chronically undernourished during the annual hunger seasons (FAOSTAT 2015; Belo, Snowball, and Grieve 2015).

Figure 1: The Food Supply and Undernourishment in Timor-Leste

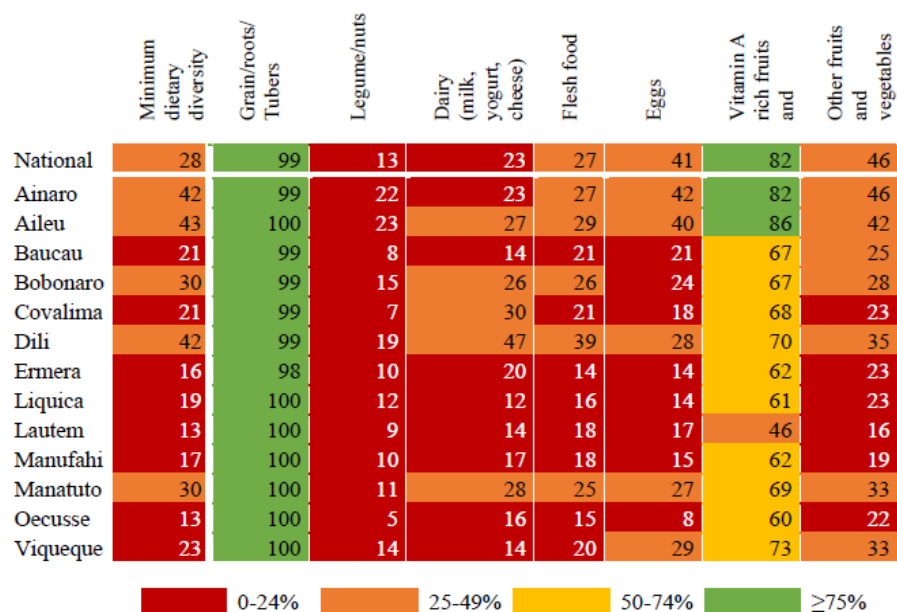


Source: ^aFAOSTAT 2015; ^bFAOSTAT 2014.

Source: *Global Nutrition Report 2015*

Many more people have nutritionally inadequate diets, especially infants and young children with 82 percent not consuming a minimum acceptable diet and 72 percent not meeting the minimum recommended dietary diversity (Belo, Snowball, and Grieve 2015).

Figure 2: Dietary Diversity Among Timorese Infants and Young Children Ages 6 to 23 Months in 2013



Source: TLFNS 2013. *Minimum dietary diversity* is the proportion of children 6-23 months of age who receive foods from 4 or more food groups (out of 7 food groups) during the previous day.

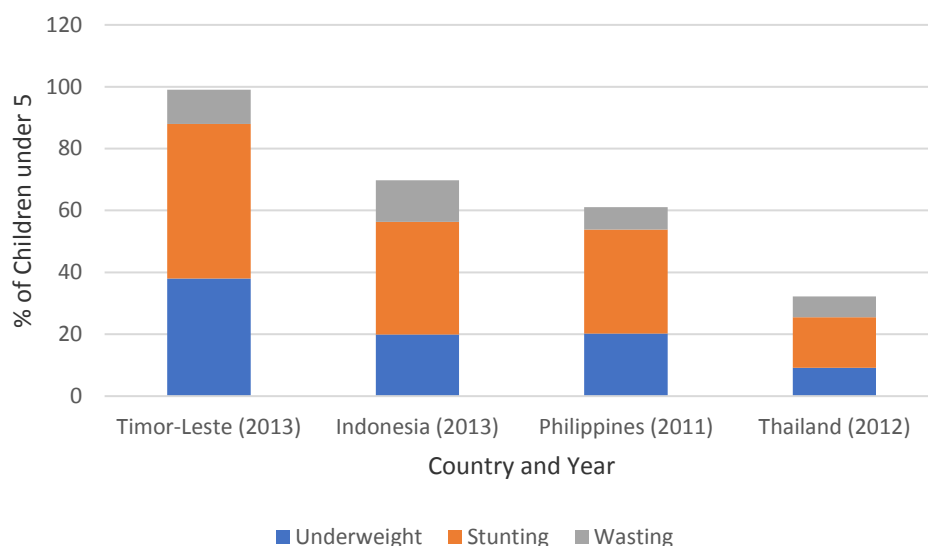
Source: Provo et al. 2016

Many adults do not have enough diversity in their diets either, with most mainly consuming rice and only 30 to 54 percent consuming animal protein daily (Belo, Snowball, and Grieve 2015).

- To make progress on SDG2.1, Timor-Leste should improve their social protection programs as these are a leading policy option to address poverty and vulnerability. The inclusion criteria for these programs should be optimized to ensure that they are benefiting the most vulnerable. Bolsa da Mãe and other social assistance programs should be increased to cover more households and to provide them with more money every month. This would address community concerns about these programs not reaching those most in need. The food transfer programs should be improved to be more nutrition-sensitive through providing protein rich foods such as legumes as well as fortified foods such as rice and cooking oil. These programs should also be evaluated annually and changed to increase their effectiveness.
- Improvements to the School Meals Program are within reach by using local food from nearby farms and diversifying the meals to make them more nutrition-sensitive by focusing on protein-rich foods such as legumes and eggs. This is important to provide children with the protein and micronutrients that they need. The country should also develop clear goals in hunger and nutrition for the program and its success should be monitored and evaluated annually. Communities feel very strongly about the importance of schools in food security and nutrition and have recommended that the lunch program be improved with a focus on nutritious local foods to support children as well as local farmers.

SDG 2.2 is to end all forms of malnutrition. Children and women are the most at risk of malnutrition due to a lack of nutrition knowledge, leading households not to utilize all their food resources, especially for animal source foods, and cultural norms that prioritize men in food allocation. In 2013, 38 percent of children under five years old were underweight, 11 percent were wasted, and 50 percent were stunted. In the same year, 24.8 percent of women of reproductive age between 15 and 49 years old were underweight and 40 percent were anaemic. Many children and women also have zinc and Vitamin A deficiencies. While overweight and obesity are low, they are increasing with 1.5 percent of children and 1.7 to 18 percent of women overweight and three percent of women obese (NSD 2015).

Figure 3: Comparison of Undernutrition between Timor-Leste and Other Countries



Source: Created by authors, based on UNICEF 2016

- To make progress on SDG2.2, Timor-Leste should focus on increasing production of and access to nutritious, diverse, local foods and increasing nutrition education. One important way to increase food production and access is to increase biodiversity and focus on more nutritious crops including legumes, orange-fleshed sweet potatoes, vegetables, and fruits. Communities stressed the importance of providing nutrition education to everyone, such as in rural areas and for entire households including the men and extended family members. This education should focus on providing information about the importance of nutrition in pregnancy and for infants and young children and how these groups can meet their nutrient needs as well as the importance of prioritizing resources for nutrition instead of for traditional ceremonies. The country should focus on strengthening access to primary health care and provide preventative services with a focus on detecting diseases and micronutrient deficiencies for women of reproductive age and children. Timor-Leste should also focus on improving water, sanitation, and hygiene especially by using community-led total sanitation programs to allow community members to determine and implement the best solutions for improving their sanitation. The country should also focus on increasing female education through social protection programs.
- Timor-Leste should also scale up their Community-Based Management of Acute Malnutrition Program to decrease wasting. The country should first focus on increasing healthcare staff training, materials, and infrastructure to be able to find and treat all cases of acute malnutrition at baseline and then strengthen this to meet the needs during hunger seasons and emergencies. There needs to be more work in the community to help people identify acute malnutrition on their own since many mentioned only going to healthcare centres as a last resort.
- While it seems far away, it is important to focus on preventing an additional increase in overweight and obesity now through nutrition education that focuses on which foods are healthy and which foods should be eaten in moderation or avoided. This should be targeted to women and children. People in the community also requested information about how to prepare nutritious food through cooking demonstrations.

SDG 2.3 is to double agricultural productivity and incomes for everyone with a focus on indigenous people and women. Timor-Leste's agriculture system does not produce enough food to feed the population and faces several challenges in doing so, including low motivation for farmers due to low profits, variable rainfall, land ownership issues, poor soil fertility, and unsustainable methods (Molyneux et al. 2012).

- To make progress on SDG2.3, Timor-Leste should promote agroforestry to decrease poverty by strengthening the economy through job creation and cash crops. High-value trees such as sandalwood,

mahogany, and teak as well as non-timber products such as coffee, cocoa, coconut, and spices can be incorporated into these systems. Agroforestry also provides a way to restore natural resources and ecosystem services and increase climate change resilience. The country should provide training in agroforestry with a focus on development and maintenance by scaling up existing Ministry of Agriculture and GIZ programs. The country should also explore public-private partnerships in these areas. Community members are interested in these programs in agroforestry as a way to increase incomes.

- Coffee and spice production can become more viable by improving the quality of these crops and establishing place of origin value. There is a large demand for high-quality coffee and spices with a traceable origin. There are specific characteristics linked with the places where these commodities are produced and other countries have been able to distinguish themselves and create demand for their coffee. Timor-Leste grows a unique and high-quality coffee, the Timor Hybrid (Government of Timor-Leste 2010). Coffee is currently Timor-Leste's leading non-oil export and accounts for one percent of their non-oil GDP (NSD and UNFPA 2011). The country needs to focus on increasing productivity, quality, and consistency as well as marketing. The community also stressed the need for a regional approach to tailor cash crop production to each area.
- The country should also invest in women farmers. Women supply a large proportion of the agricultural labour but they lack the resources to maximize the productivity of their labour. Women farmers need more access to land, technology, and entrepreneurial management training. Women often face challenges in owning land or other property and have to negotiate for these with their families (CEPAD 2014). The country should ensure that extension services reach women and should provide women with technology that will decrease their workloads, such as water storage and seed shellers and screens. Timor-Leste's culture is strongly patriarchal and; therefore, broader women's empowerment is also required and should focus on improving female education and addressing violence against women.

SDG 2.4 is to create sustainable food systems that use resilient agriculture practices to increase food production and climate change adaptation. Timor-Leste is already experiencing the effects of climate change including higher temperatures and longer dry seasons and these are expected to increase and pose great challenges for food security and nutrition. The El Niño cycle also contributes to these challenges and has already had disastrous effects on hunger and undernutrition (CFE-DM 2016). Farmers need to be able to adapt to these changes.

- To make progress on SDG2.4, Timor-Leste should include climate change in their national nutrition and agriculture policies. While the country has a climate change policy and already includes climate change in some of their other national policies, it is important for it to be a foundational component of all the country's policies. The country should also increase household food security and nutrition resilience in the face of climate change by promoting biodiversity through home gardens and small animal rearing. Community members supported increasing home gardens and requested guidance and assistance in small animal rearing. They believed these were valuable tools in protecting food security during hunger seasons and short-term hardships. The country has a coastline, which allows them to take advantage of ocean fisheries for food and nutrition security but this needs to be done sustainably by enforcing the FAO's Code of Conduct for Responsible Fisheries for everyone in the country. Timor-Leste should also provide training in sustainable practices such as no-till farming, companion planting, and crop rotation as well as equipment, technology, and weather insurance for farmers. The country can scale up existing programs, as well as developing and implementing new ones. Community members were interested in more training in sustainable farming methods and demonstration plots. The country should also improve food drying and storage, especially for rice and maize, to decrease aflatoxin contamination and ensure a safe local food supply.
- By improving early warning systems and increasing farmer access to water, Timorese farmers will greatly benefit and be more resilient in the face of increasing droughts, floods, and storms that climate change and variability will surely bring. Both warning systems and water are important in increasing productivity and early warning systems also prevent the loss of food through damaged crops and stored food. These early warning systems need to reach the most remote farmers and irrigation access needs to be focused on areas with the scarcest and least reliable rainfall. Community members stressed the need for early warning systems but also said they needed information about how to react to these predictions.

SDG 2.5 is to protect the genetic diversity of both cultivated and wild seeds, plants, and animals. While the country does not have a national seed bank, the Ministry of Agriculture outlined plans to establish one in its Draft National Seed Policy and, in 2016, the country was able to use all local seeds without the need to import any (Williams and Browne 2017).

- To make progress on SDG2.5, Timor-Leste should build a national seed bank, as well as regional ones, and start community seed fairs to distribute seeds and share information and training. They country should focus on their indigenous crops and varieties as well as on the ones that are the most heat and drought resistant to increase food system resilience in the face of climate change. Community members discussed the importance of indigenous and climate resilient seeds but also stressed the need for information about these seeds and how to grow them.
- The country should also increase large-scale biodiversity through mixed farming systems and agroforestry. While the country has focused on rice production with the desire to achieve self-sufficiency, they were only 24 percent self-sufficient in 2016. While some stakeholders still supported this goal in the national consultations, most did not and instead stressed the importance of nutrition-sensitive biodiversity with a focus on legumes, vegetables, and fruit. Biodiversity is important for climate change resilience as different crops and varieties are more heat and drought resistant and have better protection against pests and diseases as well as for dietary diversity and nutrition. Both mixed farming systems and agroforestry increase biodiversity as well as offering other benefits.

To achieve all of this, Timor-Leste must also focus on its political economy by improving coordination and accountability, building human capacity, and increasing national investment to a minimum of five percent of the GDP. The country should improve coordination by strengthening KONSSANTIL. In the national consultations, most of the stakeholders discussed the limitations of KONSSANTIL and stressed the importance of improving it. Human capacity should be strengthened through training and education. The country needs to focus on human capital as well as social and natural capital. The country needs to make long-term commitments but also needs to continually evaluate their priorities and change their policies and programs accordingly.

RECOMMENDATIONS



Figure 2: Women lining up at a health clinic in Oecusse. Photo: WFP Camila Urbina-Escobar

This set of SDG2 recommendations are directed to the Government of Timor-Leste as the duty bearers. Once recommendations are agreed upon, the Government can formulate an action plan that is country-owned and -driven. The plan can delineate which partnerships with key development and research stakeholders are critical, the type and amount of funding that will be needed, and a monitoring and evaluation framework that includes a core set of indicators.

Political and Programmatic Commitments Across the Five SDG2 Targets

SDG2.1: ENDING HUNGER

The Ministries of Social Solidarity, Education, and Agriculture & Fisheries should:

1. Ensure the national social protection programmes including Bolsa da Mãe, Social Safety Nets and Relief, ad hoc, and disaster relief programmes are meeting the needs of the vulnerable and are more nutrition sensitive by:
 1. Improving the food transfer, which could include fortified rice, legumes or other protein sources such as tempeh or tofu, and vitamin A/D fortified cooking oil into the Food Security Program;
 2. Refining the universality and inclusion of the most vulnerable populations for these social protection programmes which would include women, elderly, orphans, disabled and ultra-poor marginalised communities; and
 3. Evaluating the impact of the social protection programmes on food security, as well as on hunger and poverty reduction.
2. Improve the operations and nutrition of the nationally owned School Meals Programme by:
 1. Enhancing monitoring and evaluation of the program on hunger and education goals;
 2. Procuring local produce/foods directly from family farms through designated School Meal Committees which lead on local food procurement; and

3. Diversifying the school meals to include protein and micronutrient rich sources of food including legumes and eggs. Eggs should be locally sourced when quantities allow and production and import should be scaled up to meet demand.

Actions also contribute to achieving SDG2.2 and 2.3 – MEDIUM TERM

SDG2.2: ENDING ALL FORMS OF MALNUTRITION

The Ministries of Health, Agriculture & Fisheries, Social Solidarity, and Education should:

3. Address wasting and stunting through a five-pronged approach: food based approaches, primary healthcare, water, sanitation, and hygiene (WASH), education and women's empowerment, and behaviour change to address social norms by:
 1. Increasing the availability, access, utilization, and promotion of nutritious, locally adapted, and resilient seeds and seasonal crops/trees/animals that contribute to a positive diversification of the diet (fruits, vegetables, pulses, nuts, orphan crops, seafood/fish, small animals), considering the interests of small-scale, female, and marginal farmers as well as natural resource management. This could be done by preserving globally important agriculture heritage systems that provide sustainable diets in local food systems, protecting indigenous and traditional cultures and crops, promoting biodiversity conservation and sustainable use, and promoting best infant and young child feeding practices;
 2. Increasing access to primary healthcare for women and children with a focus on preventative services including deworming and vitamin supplementation.
 3. Improving WASH and eliminating open defecation through Community-Led Total Sanitation (CLTS);
 4. Promoting women's health, nutrition and empowerment, and access to formal education for adolescent girls by providing social protection programs that involve a food safety net for families that also encourage girls to stay in school; and
 5. Identifying leverage points (i.e. through women's empowerment) for developing effective intervention strategies to promote food utilisation, and specifically address individual factors, behavioural settings, sectors of society, and social norms and values that may constrain or reinforce healthful eating.
4. Mitigate wasting by scaling up the Community-Based Management of Acute Malnutrition programme.
5. Address rising obesity in women and children through mass media campaigns that promote healthy food consumption in urban centres and incentivise the retail – food environment to promote healthy foods.

Actions also contribute to achieving SDG2.1, 2.3, and SDG2.4 – SHORT, MEDIUM AND LONG TERM

SDG2.3: IMPROVING AGRICULTURE PRODUCTIVITY

The Ministries of Agriculture & Fisheries and Public Works, Transports, & Communications should:

6. Promote agroforestry as a source of cash crops to export, natural resource restoration, and climate resilience.
7. Improve spices and coffee production, establish place of origin value, and improve product quality and production processes.
8. Invest in women farmers including access to land rights, technology for time and work savings, entrepreneurial management training, as well as legal representation for their rights and protection against violence to increase women's empowerment and agricultural productivity.

Actions also contribute to achieving SDG 2.1, 2.2 and 2.4 – MEDIUM AND LONG TERM

SDG2.4: SUSTAINABLE FOOD SYSTEMS AND CLIMATE RESILIENCY

The Ministries of Agriculture & Fisheries; Commerce, Industry, & Environment; and Public Works, Transports, & Communications should:

9. Prioritise climate-smart agriculture, environmental sustainability, and nutritious, diverse diets across food production systems by:
 1. Including the environment and nutrition as core objectives in national agriculture and food policies;
 2. Promoting small animal rearing and kitchen gardens for vulnerable households and among female smallholders and supporting food biodiversity, i.e. nutritious species and local varieties/cultivars as a resilience mechanism in preparation for and in response to shocks;
 3. Enforcing the Code of Conduct for Responsible Fisheries, particularly for indigenous communities;
 4. Providing technology, training on sustainable practices (e.g. no till), and weather insurance to increase farmers' climate change resilience; and
 5. Improve food drying and storage to decrease aflatoxin levels.
10. Protect against near-term seasonal variations, natural disasters, and El Niño like effects by:
 1. Improving early warning systems and surveillance linked to seasonal changes, natural disasters, and episodes of conflict/social unrest and
 2. Supporting small scale farmers to increase access to water and water infrastructure, particularly for more rural and remote communities that are more vulnerable.

Actions also contribute to achieving SDG 2.1, 2.2, 2.3 – SHORT, MEDIUM AND LONG TERM

SDG2.5: CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY

The Ministries of Agriculture & Fisheries should:

11. Build a national seed bank and promote seed savings.
12. Promote sustainable use of agro-biodiversity through local, traditional varieties and nutritious crops such as moringa etc. through in-situ on-farm conservation.

Actions also contribute to achieving SDG 2.2, 2.3 and 2.4 – MEDIUM AND LONG TERM

POLITICAL ECONOMY

The Government of Timor-Leste (especially the Prime Minister's Office, Ministry of Education, Ministry of Finance, Ministry of Health, and Ministry of Agriculture & Fisheries), its development partners, donors, academia, research institutes, and the private sector should:

13. Improve the coordination of food security and nutrition players throughout the country by strengthening the coordination mechanism, funding and accountability of the Timor-Leste National Council for Food Security and Nutrition (KONSSANTIL).
14. Build human capacity in the areas of food security and nutrition including informal and trade training programs and formal education programs in secondary schools and universities.
15. Increase national investments toward nutrition and agriculture programming to a minimum of five percent of the GDP, deliver on donor funded food security and nutrition projects, and consider alternative economic agriculture-led growth in a post-oil Timor-Leste.

INTRODUCTION



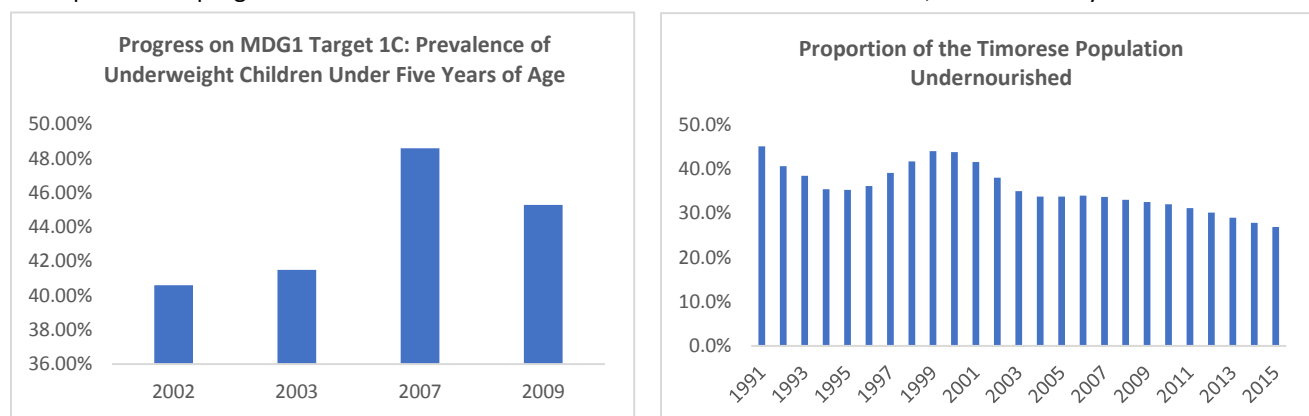
Figure 3: Traditional huts in Baucau. Photo: WFP Marianne Kearney

There are many reasons why Timor-Leste suffers from significant food insecurity and malnutrition. Timor-Leste, one of the world's youngest democracies, has suffered from conflict, violence, takeovers, and colonialists, but is still a country rich with culture and pride. The Portuguese arrived in the early 16th century and stayed for some 400 years before abandoning their colony in late 1975. Following a unilateral declaration of independence by the nationalist FRETILIN resistance, Indonesia invaded and declared Timor-Leste as its 27th province in 1976. Conflict dragged on for almost 24 years before Indonesia finally abandoned its annexation plans. A UN supervised referendum was achieved in 1999, followed by a UN transitional administration, which led to an internationally recognized independence of Timor-Leste in May 2002, after much bloodshed, horror, and wanton destruction. Relative calm and stability was restored with support by UN peacekeepers, who had to be reinstated in August 2006 after outbreaks of deadly fighting. After some 12 years of UN Missions on the ground, the last of the UN Peacekeepers left at the end of 2012. Timor-Leste, finally a place of peace, is left to stand on its own.

Much has been achieved in Timor-Leste since its hard-fought independence. Its economy has seen double-digit growth for the last five years, child mortality rates are down, and peaceful and competitive elections have been held. In 2010, Timor-Leste joined the g7+, a group of post conflict countries that work together to regain stability through their own self determined efforts at state building and development. The g7+ supports developing legitimate politics with peaceful conflict resolution, security, and justice for the people of Timor-Leste, strong economic foundations that provide adequate employment, and well managed revenues that provide capacity for equitable service delivery. Timor-Leste carried out its first g7+ Fragility Assessment in 2012.

Timor-Leste has faced many challenges in its past and continues to do so today, as it prepares for the future. One of the hangovers from the decades of upheaval and turmoil is one of the highest rates of chronic undernutrition in the world. Of the nation's 250,000 children under five years old, more than half are stunted in bodies and brains. Stunting implies an irreversible disability to learn and develop. Stunting is measured as height for age in children. Children short for their age are worse off. Not only are they not physically as tall, but their brains do not fully grow or function as that of a child with good nutrition. Poor nutrition, especially in the womb and during the first two years of life,

impedes a child's ability to learn and develop to their fullest potential. One can only imagine the impact on the development and progress of a nation when over half of the children born are stunted, and most likely will also have



children who are stunted. The cycle of malnutrition can have a vicious habit of perpetuating itself through generations.

Stunting is a complex measure but it is one that reflects the persistent poverty of a country, the disruptive wars it has undergone, the inflictions of infectious disease, the poor health care access, sanitation, hygiene, and child care, as well as the lack of access to and consumption of nutrient dense foods. It is no coincidence that countries with comparable levels of stunting include Afghanistan, Yemen, and Burundi. Stunting is a depiction of a country's history. For those children who have been affected, the damage is done, and the challenges ahead will be enormous.

But there is hope. Solutions exist. The cycle of stunting can be broken and food security can be achieved for all, and done so in a generation. We need to start now. Every stunted child represents a lost opportunity. Other countries such as Ethiopia, Nepal, and Brazil, have achieved great declines in childhood stunting. The question is *how* to do it.

Agriculture can make a difference. Three quarters of Timor-Leste's population depend directly on farming. They grow rice, maize, sweet potato, cassava, and coffee in the ecologically diverse countryside. Beyond just increasing food security and producing more food in a country, the food being produced can be more nutritious. New crops and new varieties of traditional crops are being introduced, and the biodiversity of foods grown and in the wild offer enormous potential to improve diet quality and diversity. Despite being a small country, Timor-Leste has many different landscapes within its borders, each with unique demographics, climate, agro-ecological characteristics, and economies. These differences are critical for understanding the situation and its challenges, especially as it relates to hunger, food and nutrition security, and sustainable agriculture.

Figure 4: Progress on MDG1 Underweight and Undernourishment of the Timorese Population

Source: DHS TL 2010; FAO Stat 2017

The health sector has an obvious role to play. Infectious diseases (often preventable through good water and sanitation systems) will inhibit individuals' ability to absorb key nutrients, no matter how much food is available. Education can also play an important role, not just in the dissemination of information but also in addressing gender inequality, which is a key underlying determinant of malnutrition.

Good governance and high-level political commitment to tackling the issue is an often underplayed but essential ingredient to success. So, whilst the stunting figures for Timor-Leste are alarmingly high, there is and should be a great deal of optimism. As the country enters a new era of post-conflict development, the government recognizes the urgency of tackling the food insecurity and nutrition issues and the political will is evident. With a population of just over one million (smaller than many districts in India), a national petroleum fund worth over \$16 billion, and a new era of peace and stability, Timor-Leste has a great opportunity to now join the likes of Brazil, Nepal, and Ethiopia as a nutritional success story. To echo the comments of the former President José Ramos-Horta, Timor-Leste is a very different country today than it was ten, or even five, years ago.

Big transitions are underway in Timor-Leste. First, the population of Timor-Leste is increasing and undergoing large transitions. The population was 1.2 million in 2016 (UNDP 2016), but is expected to increase to as high as three million by 2050 (Molyneux 2012). The country has one of the youngest populations in the world with almost 70 percent of its population under 25 years old (UNDP 2016). The country is also rapidly urbanizing. While most of the population lives in rural areas, people, especially the youth, are increasingly moving to Dili and other urban centres.

Second, the country is already feeling the impacts of climate change and these are expected to intensify with higher temperatures, increased precipitation leading to flooding but separated by dry periods and droughts, and rising sea levels. The temperature is expected to increase by 1.5 C and precipitation by ten percent by 2050 (Molyneux 2012). These will present challenges to ensuring that everyone in the country has sufficient, safe, and nutritious food.

Third, the country is also almost entirely dependent on fossil fuels and their oil resources are declining. Oil made up 93 percent of the country's revenues in 2014. These revenues go into the Petroleum Fund, which the government uses heavily to fund its budget. In 2014, 89 percent of the budget was from the Petroleum Fund and other oil money. At current rates of use, the oil fields could run out as soon as 2020 (La'o Hamutuk 2014). Future revenues, and thus the strength of the Petroleum Fund, depend on the settlement of a legal dispute with Australia over the maritime Greater Sunrise oil and gas field.

There has never been a better time to take on the issue. Nutrition and hunger will be featured prominently on the international stage over the next decade. With the approval of the Sustainable Development Goals (SDGs) at the UN General Assembly in New York in September of 2015, we said goodbye to the Millennium Development Goals (MDGs), assessed our past achievements, and worked towards a broader, bolder set of targets that will steer our world onto a new path of sustainable development. Timor-Leste's progress on the MDG1 hunger targets have not been adequate as shown below and the MDG goal to cut hunger and undernutrition in half has not yet happened for the country.

SDG2 directly relates to food security and nutrition; however, many of the other 15 goals indirectly relate to nutrition and diet, by touching on areas such as climate change and natural resources, education, and women's empowerment. SDG2 consists of five targets: to end hunger and ensure everyone has access to a healthy and safe diet, to end all forms of malnutrition (both undernutrition and overweight and obesity among children), to double agriculture productivity and incomes of farmers, to ensure sustainable production systems and resilient agriculture practices, and to maintain genetic diversity of seeds, plants, and animals through seed and plant banks.

The continued inclusion of food security and nutrition in the SDG agenda is of critical importance to bridge the progress made during the MDG epoch. While much was achieved in the past, the MDGs fell short of achieving their objective of eradicating hunger and malnutrition, ensuring agriculture is supported, and contributing to economic growth while treading lightly on the environment. It is time to act and finish off where the MDGs started for the world and for Timor-Leste.

PURPOSE AND METHODOLOGY OF THE STRATEGIC REVIEW



Figure 4: Consultation with women community members. Photo: CEPAD Lamberto Quintas

PURPOSE

Under the stewardship of former President Ramos-Horta and the Bishop of Dili, a Zero Hunger Strategic Review (Strategic Review) was undertaken to determine what needs to be done to achieve Sustainable Development Goal 2 (SDG2) in Timor-Leste: “End hunger, achieve food security and improved nutrition, and promote sustainable agriculture” (See **Appendix 1** for all targets and indicators of SDG2). The Strategic Review serves both as a research exercise designed to give a consolidated picture of the hunger and nutrition challenges in Timor-Leste and as a mechanism for supporting the government to set priorities and find gaps in actions and policies currently implemented in Timor-Leste to achieve SDG2. In turn, the Strategic Review will allow all stakeholders to anchor their programs for achieving zero hunger in support of a clear set of government priorities based on communities’ needs.

President Ramos-Horta and the Bishop of Dili (Strategic Review Conveners) have been asked to convene relevant stakeholders in a multi-sectoral process to inform national and international programming in line with the national vision for achieving SDG2. The Conveners will shape the process with support from an Advisory Board composed by key stakeholders such as Government, the United Nations (UN), Civil Society Organizations (CSOs), IFIs, bilateral donors, and others.

To serve all stakeholders equally, The Strategic Review is an independent, analytical, and consultative exercise that aims to provide a comprehensive and detailed understanding of the context of food and nutrition security in the country; identifies key challenges in achieving zero hunger, including gaps in the response and funding arrangements; and proposes actionable areas for the government, development partners, private sector actors, and others to best support the country in making progress towards zero hunger.

The purpose of the Strategic Review is to:

- Enable the government to accelerate progress towards eliminating food insecurity and malnutrition in line with SDG2.

- Inform national development planning processes and contribute to all actors involved in food and nutrition security in Timor-Leste.

METHODOLOGY

The Strategic Review consists of three components: a desk review, national stakeholder interviews, and community consultations at the municipal level that will inform the overall strategic review report (see **Appendix 3** for more details on the study design). The tasks for collecting and analysing data and writing the report will be done by Johns Hopkins University and CEPAD.

The **desk review** consists of a review of three components. The first component is a desk analysis of the current food and nutrition situation in Timor-Leste (**Appendix 2 and 4** for a more detailed situation analysis of Timor-Leste) using the most recent reports and data produced in the country. Peer reviewed scientific literature was also reviewed on key subject matters. The second component consists of a policy and program analysis of how the country is working towards food security and nutrition improvements along, and in tandem with, the SDG2 targets. The third component is a political economy and gap analysis to examine the financial, structural, governance, and capacity aspects to support SDG2 presently and into the next decade. The political economy and gap analysis was informed by the national interviews and community consultations and political science articles and documents. Lessons from other Asian countries were also taken into consideration. For this component, an “Applied Political Economy Analysis” was utilized, which asks questions about the development context, including the factors that impact growth and governance such as politics, rules and norms, social and cultural practices, beliefs and values, and historical and geographical determinants on nutrition and food security. Using Gillespie et al.’s (2013) framework on the enabling environment; commitment, accountability, data, capacity, and finances were all examined. Horizontal and vertical coordination structures within the country were also reviewed (Acosta and Fanzo 2012).

The **national stakeholder interviews** took place in Dili with representatives of relevant line ministries, donors, civil society, and UN Agencies at the national level with a focus on existing priorities in nutrition and food security and the Government’s plan to address these issues to meet SDG2 (**Appendix 6** for a list of interviewed stakeholders). In addition, a survey monkey was sent to local NGOs through the NGO forum. Questions from interviews and the survey can be found in **Appendix 3** and findings in **Appendix 7**.

The **community consultations** were done using District Focus Group Discussions (DFGD) -- a space that brings together selected members of the communities and relevant stakeholders, including formal authorities and traditional structures, women, and boys and girls at the local level -- to discuss priorities of food and nutrition security and identify solutions to resolve these. Interactive dialogue-based research encourages participants to reflect upon and share their own experiences in a way that demonstrates a critical understanding of food and nutrition security at the household and community levels. This participatory action research approach also encourages and allows participants to take their own experiences and use them as a reference for identifying and exploring priorities and gaps in the government’s response at the national policy level so that any actions are rightly identified and effectively implemented. In rural communities, CEPAD’s Interactive Dialogues have proven an effective adult learning approach appropriate to low-literacy groups that fosters their empowerment and participation while providing CEPAD with real-life experiences that are more convincing than simple statistics and graphs and that can be fed into broader processes at the local and national levels.

Dialogues took place at six selected municipalities using community based Peace Houses established in 2009 to 2015 that have proven to be sustainable and safe centres for dialogue and local conflict resolution. The one-day focus group discussions were designed to accommodate both youth and women’s participation and schedules and responsibilities.

Once the results were analysed, a draft review report was presented at a national validation workshop (See **Appendix 8**) in Dili as a conclusion of the desk review, national interviews, and community consultations. This National Validation Workshop was attended by 150 key stakeholders (relevant line ministries, civil society, donors, UN Agencies, the private sector, universities, women and youth, church, marginalized groups, and veterans) based on inclusiveness and representativeness with a certain command of legitimacy and respect for the work they do as

individuals and organizations with the women and youth groups at the district and national levels (see **Appendix 8** for a list of participants as well as overall findings). The purpose of the workshop was to capture a range of views and experiences to strengthen the findings and arguments for validation and formulation of better solutions to the challenges.

THE FOOD SECURITY AND NUTRITION SITUATION OF TIMOR-LESTE



Figure 5: Food in the local markets. Photo: CEPAD Gianna Bonis-Profumo

A more detailed analysis of the food security and nutrition situation of Timor-Leste, across all five SDG2 targets can be found in **Appendix 4**.

SDG 2.1

SDG 2.1 aims to end hunger by 2030 and ensure that all people have access to safe, nutritious, and sufficient food throughout the entire year. Populations most vulnerable to hunger issues in Timor-Leste include children, women, and poor households (Belo, Snowball, and Grieve 2015). Since 2001, the three-year average for the number of people experiencing undernourishment in Timor-Leste has held constant at 300,000 (FAOSTAT 2015). Timor-Leste also experiences annual hunger seasons that vary depending on region and time of year. The limited food access experienced during hunger seasons may be exacerbated by El Niño weather patterns and natural disasters (Belo, Snowball, and Grieve 2015).

Food availability, access, and stability are all integral components of food security. For the 2013 to 2015 period, the average dietary energy supply adequacy rate, a measure of the adequacy of the national food supply in terms of calories, was 106 percent (FAOSTAT 2015). However, a large share of this dietary energy is derived from calorie-dense staple foods that do not provide significant amounts of bioavailable proteins or micronutrients (Provo et al. 2016). The average protein supply was 55 grams per capita per day for 2009 to 2011 and the average supply of protein of animal origin was 17 grams per capita per day for the same period (FAOSTAT 2015). Access depends on both physical and economic ability. For the 2013 to 2015 period, the prevalence of undernourishment declined to 26.9 percent (FAOSTAT 2015). The connection between transportation and food access is clear, as the time during which roads are inaccessible correlates with the availability of rice. The country's cereal import dependency ratio has been reported differently according to various sources, although most agree that the country relies on imports to satisfy 30 to 40 percent of its cereal needs (Molyneux et al. 2012, National Food and Nutrition Security Policy 2016). For the 2011 to 2013 period, the value of food imports over total merchandise exports was 343 percent. As

of 2013, the per capita food production variability was \$10.1 (constant international dollar) per person. Stability is also affected by seasonal changes in weather. As mentioned earlier, Timorese households experience at least one hunger season.

Dietary diversity is an issue for households in Timor-Leste. It is notably poor among infants and young children, a population that is especially vulnerable to malnutrition. The 2013 TLFNS indicates that only 28 percent of infants and children meet the minimum recommended dietary diversity. Additionally, only 18 percent of children aged 6 to 23 months consumed a minimum acceptable diet (MAD), a metric that evaluates both minimum meal frequency and minimum dietary diversity (Belo, Snowball, and Grieve 2015). For adults, rice is the main staple crop consumed nationwide (except in Aileu) and daily consumption of animal protein is relatively low, with surveys showing that only 30 to 54 percent eat it daily (Belo, Snowball, and Grieve 2015).

SDG 2.2



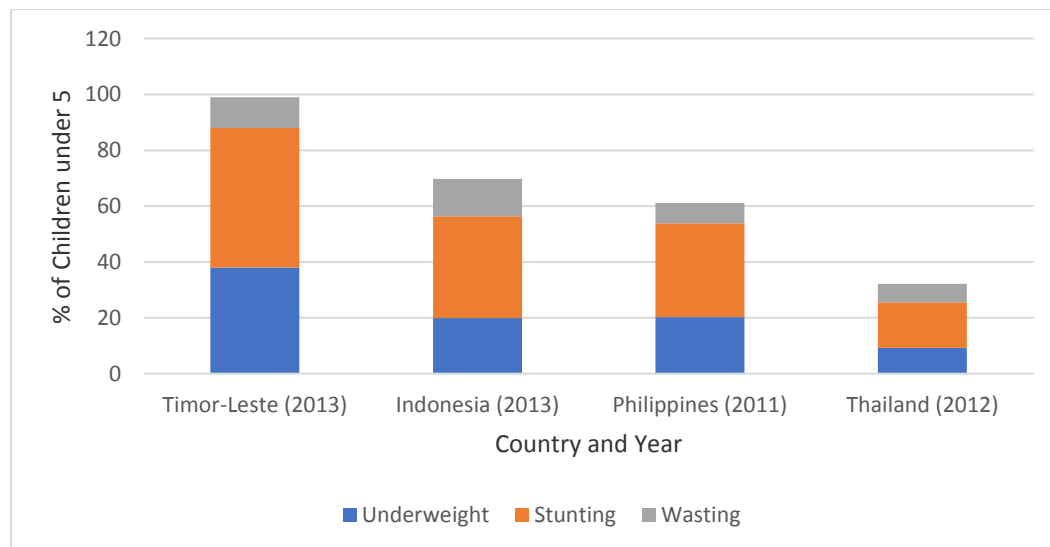
Figure 6: Women at a mobile clinic, Oecusse. Photo: WFP Camila Urbina-Escobar

SDG 2.2 commits to ending all forms of malnutrition by 2030. Drivers of malnutrition in Timor-Leste include immediate causes, such as nutrient intake and disease, and underlying causes, such as food insecurity and inadequate dietary diversity (Provo et al. 2016; Belo, Snowball, and Grieve 2015). There is also a need for behaviour change at the household level to increase consumption of nutritious foods (Belo, Snowball, and Grieve 2015). Another important component is utilization of food, both the way that households acquire food and the way they allocate food among members. Households in Timor-Leste do not necessarily utilize all available food resources; while surveys show that many own poultry, the consumption of ASF is markedly low (Belo, Snowball, and Grieve 2015). A lack of demand for ASF and other foods (fresh foods and vegetable protein sources) contributes to the slow

pace of rural market development and helps explain low ASF consumption, especially in rural areas. Consumers are also driven by convenience and marketing (Provo et al. 2016).

In Timor-Leste, children and women are most at-risk of being malnourished. Among children under five, 38 percent were underweight, 11 percent were affected by wasting, and 50 percent were stunted in 2013 (NSD 2015). The burden is incredibly high in comparison to some of its Asian neighbours.

Figure 5: Comparison of Undernutrition between Timor-Leste and Indonesia, Philippines, and Thailand



Source: Created by authors, based on UNICEF 2016

Among women of reproductive age (15 to 49 years of age), 24.8 percent were underweight in 2013. Anaemia is the most widespread micronutrient deficiency, with 63 percent of children aged 6 to 59 months and 40 percent of women of reproductive age experiencing anaemia in 2013 (NSD 2015). Deficiencies in Vitamin A, zinc, and iodine are also of concern for these groups, although iodine deficiency is not a reported issue for children (Stevens et al. 2015, cited in Global Nutrition Report 2015; Provo et al. 2016). Child overweight is low at 1.5 percent, although this prevalence has doubled since 2009 to 2010. For women of reproductive age, 16.7 to 18 percent were overweight (BMI ≥ 25) and three percent were obese (BMI ≥ 30). For men, 8.2 to 11 percent were overweight and one percent were obese (NSD 2015). For Timor-Leste, the most salient health burden associated with diet is diarrhoea, which affects nutrient uptake and is associated with sub-optimal hygiene practices (Global Nutrition Report 2015; Belo, Snowball, and Grieve 2015).



Figure 7: Markets in Manatuto. Photo: CEPAD Gianna Bonis-Profumo

SDG 2.3 considers agricultural productivity and incomes, as well as resources and opportunities for small scale producers. Timor-Leste's agricultural sector consistently produces less food than is needed to feed the population (Molyneux et al. 2012). This deficit is the result of traditional farming practices that are largely unsustainable, poor soils, high weed burdens, steep slopes, highly variable rainfall, and poor-yielding local crop varieties (Molyneux et al. 2012). Although the country is an agrarian society with over 70 percent of the population living in rural areas, only 30 percent of arable land is used for crops and grazing (Provo et al. 2016). In addition, 70 percent of the population relies on rain-fed subsistence agriculture (Barritt 2016). Agriculture in Timor-Leste is primarily subsistence rather than market-oriented (CFE-DM 2016).

The major staple crops in Timor-Leste are rice, maize, sweet potato, and cassava. The country imports approximately one-third of its cereal requirements. Yields of rice and maize are low, with averages around 1.5 t/ha for rice and 1.1 t/ha for maize in 2008 (Molyneux et al. 2012). In 2009 and 2010, maize yields averaged 2.0 t/ha. The four major staple crops provide 87 percent of the daily caloric intake needed but only 53 percent of the daily protein requirements and 22 percent of daily fat requirements (FAOSTAT 2010, cited in Molyneux et al. 2012). These calculations assume that all crops are eaten, whereas some estimate that up to one-third of all production is lost in the post-harvest stage (Molyneux et al. 2012).

SDG 2.4

SDG 2.4 focuses on strengthening capacity for adaptation to climate change, extreme weather, drought, flooding, and other disasters. Climate change poses serious threats to food security in Timor-Leste, some of which are already occurring and others of which are projected to intensify. Existing historical records show that sea levels have risen by nine mm per year since 1993 and regional sea surface temperatures have increased by 0.15 to 0.2 C per decade, which is likely reflected by a similar increase in air temperatures (CFE-DM 2016). The effects of climate will likely increase over time. Between 2030 and 2050, it is projected that temperatures will increase by 0.4 to 1.5C (CFE-DM 2016, Molyneux et al. 2012). Rainfall during the dry season is likely to decrease, while wet season rainfall will increase. Sea level is expected to rise six to 15 centimetres by 2030. The impacts of storm surges and coastal flooding are likely to be more noticeable because of sea level rise. The effects of climate change on food supplies are projected to be detrimental in the future (CFE-DM 2016).

Natural disasters and the El Niño cycle also contribute to agricultural challenges, food shortages, and food insecurity. A lack of coping and adaptive strategies make the country the seventh most disaster-prone country in the world (CFE DM 2016). The most frequently occurring natural hazards are floods and landslides, though Timor-Leste is also prone to severe and recurrent drought (CFE-DM 2016). The El Niño weather pattern leads to reduced annual rainfall for the country and affects the timing of the rainy season, resulting in a wet period that starts late and finishes early. El Niño is especially impactful for municipalities in the eastern and southern parts of the country, where annual rainfall may be reduced by as much as 34 percent (Belo, Snowball, and Grieve 2015; Barritt2016).

The production, storage, processing, and transportation stages are important nexus points for protecting nutrition. As climate change affects the phenological process of crops, farmers will have to adapt and change their practices to continue farming in the same areas. Current varieties of crops may not continue to thrive and the type and extent of crop damage will also change because of climate change (Molyneux et al. 2012). Post-harvest storage losses of major food crops from pest damage and contamination are significant in Timor-Leste (da Costa et al. 2013, Molyneux et al. 2012). Periods of extreme weather that limit transportation can lead to high transportation costs and food waste, which in turn drives up food costs (Belo, Snowball, and Grieve 2015).

SDG 2.5

The aims of SDG 2.5 can be addressed by maintaining genetic diversity of seeds and incorporating traditional knowledge into food and agriculture. In the 2014 Draft National Seed Policy, the MAF outlined its plan to facilitate the establishment of a national gene bank (Martins 2016). In 2016, the MAF did not import seeds for the first time (Williams and Browne 2017). There are existing food crops that are endemic and/or well-suited to Timor-Leste that support nutrition. These crops include cultivated and wild-harvested varieties such as moringa, sago palm, and bitter beans. These foods provide an important safety net during annual hunger seasons, though it is notable that harvests are not necessarily reliable, especially for wild foods. Preparation of some of these foods is also very labour-intensive, especially for women. For cultivated crops, beneficial traditional practices include indigenous soil conservation methods that involve using felled weeds to prevent erosion, intercropping cereals with legumes, and using stones along contoured land (da Costa et al. 2013).

INTRODUCTION



Figure 8: A variety of beans, rice and corn in local markets. Photo: CEPAD Gianna Bonis-Profumo

Timor-Leste has had policies and programs addressing hunger and malnutrition, food and nutrition security, and sustainable food production since its independence in 2002 and currently still has a large number in place. A longer discussion of these policies and programs is provided in **Appendix 5**.

NUTRITION AND AGRICULTURE POLICIES

Early policies included **Timor-Leste Our Nation Our Future 2020**, a report based on extensive community consultations that focused on the people’s priorities for the country (Government of Timor-Leste 2001) and was used to shape the 2002 **National Development Plan**, which placed health and agriculture at the top of the country’s priorities, after only education. Within agriculture, the elimination of hunger and food self-sufficiency were prioritized and the plan suggested increasing biodiversity, agroforestry, livestock, and aquaculture (Government of Timor-Leste 2002). Additionally, the 2010 **Comoro Declaration** and the 2014 **Zero Hunger Challenge National Action Plan** also committed to ending hunger and malnutrition. The Zero Hunger Challenge National Action Plan has 5 pillars: (1) equitable access to food year-round for everyone, (2) reducing stunting to zero, (3) creating sustainable and climate resilient food systems, (4) increasing smallholder productivity and income, and (5) zero food waste (KONSSANTIL 2014).

The largest and most comprehensive policy is the **Strategic Development Plan 2011 to 2030**, which was updated from the 2002 National Development Plan and the 2010 Strategic Development Plan from Conflict to Prosperity. The plan identifies nutrition as fundamental for development and aims to improve nutrition by training healthcare workers; increasing biodiversity with a focus on nutritious and high-yield crops and livestock; increasing irrigation and fertilizer use; and improving food transportation, storage, and processing infrastructure. The plan aims to reach food security by 2020, self-sufficiency for food staples by 2020, and self-sufficiency for all foods by 2030. It also calls for increasing coffee, coconut, and other potential cash crops such as cocoa, cashews, hazelnuts, and spices (Government of Timor-Leste 2011). A 2017 update to the Strategic Development Plan 2011 to 2030 titled **The Roadmap for Nutrition** focuses on SDG2 and sets the priority actions for 2017 in nutrition: (1) increasing nutrition resources, (2) reducing chronic undernutrition and stunting, (3) reducing anaemia, and (4) reducing acute undernutrition and wasting through increasing political commitment and investment, healthcare capacity, and community nutrition education (Government of Timor-Leste 2017).

While the Strategic Development Plan 2011 to 2030 is all encompassing, the **National Health Sector Strategic Plan 2011 to 2030**, which was updated from the Health Sector Strategic Plan 2008 to 2012, is focused on health and aims to improve primary healthcare through improving healthcare worker training, services, and facility access. While nutrition is included in this, it is not a primary focus (Ministry of Health 2011). The **National Nutritional Strategy 2014 to 2019**, updated from the 2012 National Nutrition Strategy and the 2004 National Nutrition Strategy, is even more focused on nutrition. It aims to create multi-sectoral nutrition-specific actions carried out by KONSSANTIL and health, agriculture, education, and social solidarity nutrition-sensitive actions with the following priorities: (1) increase nutrient intake in mothers, adolescent girls, and children, (2) improve healthcare for mothers and children, (3) improve household, community, and national food security, (4) improve WASH access and practices, (5) promote optimal nutrition practices, and (6) improve capacity for nutrition action (Ministry of Health 2014). The 2016 **National Food and Nutrition Security Policy**, updated from the 2005 Food Security Policy, is also focused on nutrition and aims to eliminate hunger and malnutrition, while also considering sustainability and income generation. It has eight goals: (1) increase nutritious local food production and link producers to consumers, (2) increase sustainable food production and climate change resilience by 2030, (3) make safe, nutritious, high-quality food consistently available throughout the country, (4) increase rural incomes, (5) improve nutritious food access for the most vulnerable, (6) improve women's and children's health status, (7) improve food and nutrition education, and (8) create effective food and nutrition information systems (Government of Timor-Leste 2016). **The Ministry of Agriculture and Fisheries Strategic Plan 2014 to 2020** outlines the country's agricultural goals including: (1) increase rural incomes and reduce poverty, (2) increase household food and nutrition security, (3) support the transition from subsistence to commercial farming, (4) promote environmental sustainability and conservation of natural resources, (5) sustainably increase food production through improved crop varieties, forestry, livestock species, and fisheries, (6) improve market access and market value addition, (7) improve the enabling environment including legislation, policies, institutions, and infrastructure, (8) strengthen the MAF, and (9) conserve, manage, and utilize natural resources (Ministry of Agriculture and Fisheries 2014). **The National Aquaculture Development Strategy 2012 to 2030** focuses even more specifically on fisheries (Ministry of Agriculture and Fisheries 2013).

NUTRITION PROGRAMS

The government runs the **Community Healthcare Clinic Program** that aims to increase nutrition education; surveillance including child height, weight, and mid-upper arm circumference measurements; and treatment including vitamin A supplementation, treating diarrhoea with zinc, and deworming (WHO 2009). The government also runs the **School Feeding Program** and the **School Garden Permaculture Project** to provide food for the School Feeding Program with the aims of improving nutrition directly and through nutrition education (Chaparro et al. 2014). UNICEF and WFP run the **Integrated Nutrition Project** in partnership with the Ministry of Health and Alola Foundation to decrease underweight children under five years old by five percent by the end of 2017. It trains healthcare workers, improves facilities, and supports the MoH in promoting infant and young child feeding practices, treating moderate and severe malnutrition, increasing high impact nutrition packages for women and children, supporting integrated nutrition programs, and working on nutrition education (Chaparro et al. 2014). CRS runs the **Community Driven Nutrition Improvement Project** in partnership with the World Bank to improve nutrition for children under two years old through nutrition education for entire households that focuses on traditional knowledge and practices (World Bank 2014). Other nutrition programs include USAID's **Timor-Leste Integrated**

Maternal and Child Health Care Project, WFP’s **Mother and Child Health and Nutrition Program**, CARE’s **Maternidade Seguro Program**, UNICEF’s **Severe Acute Malnutrition Treatment Program**, WFP’s **Food Assistance Program**, and HIAM’s **Moringa Project**.

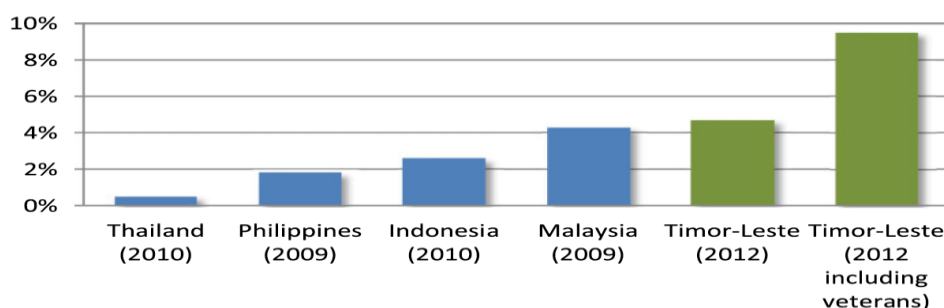
AGRICULTURE PROGRAMS

The government runs the **National Agricultural Extension System Program** that aims to increase farmer training and access to technology to increase food production. They deliver information and services to farmers, form agriculture interest groups, collect agriculture data, and implement rural development actions. The government also runs secondary schools to train people in agriculture (Ministry of Agriculture and Fisheries 2008). JICA, in partnership with the MAF, runs the **Irrigation Scheme Program**, which provides water for 780 hectares of rice paddies, and the **Project for Increasing Farmer Households’ Income Through Strengthening Domestic Rice**, to increase rice productivity and connect farmers to markets (Ykai 2017). USAID runs the **Advancing Agriculture Program** to increase food and nutrition security through a horticulture value chain approach that focuses on increasing biodiversity; promoting legumes, vegetables, and fruit; and connecting farmers to markets (USAID 2015). DFAT runs **TOMAK** in partnership with KONSSANTIL, the MOH, MAF, Mercy Corps, and others. TOMAK aims to increase food and nutrition security by promoting livestock, aquaculture, nuts, legumes, vegetables, and fruit as well as improving food storage and providing nutrition education. TOMAK also aims to increase profitable agricultural markets by creating partnerships between farmers and markets (DFAT 2015). The World Bank runs the **Sustainable Agriculture Productivity Improvement Program** in partnership with the MAF to increase productivity and market access for smallholder farmers by creating farmer’s groups, watershed management councils, and watershed development plans; improving food storage and processing; and increased project management, monitoring, and evaluation (World Bank 2016). Other agricultural programs include CARE’s **Improving Farming and Food Security**; CARE, CRS, Mercy Corps, and World Vision’s **Smallholder Support Program**; Mercy Corps’ **Nutrition Sensitive Agriculture Program**; Hivos, Mercy Corps, and World Fish’s **COMPAC-TL**; GIZ’s **Sufficiency, Economy, and Business Promotion in the Agricultural Sector Project**; and OXFAM’s **Improving Marketing and Production through Agricultural Cooperatives in Timor-Leste or IMPACT Project**

ADDITIONAL PROGRAMS

Several programs aim to improve climate change resilience and adaptation including Hivos’ **Integrated Action for Resilience and Adaptation to Climate Change Program**, OXFAM’s **Haforsa Vida Moris Komunitade Program**, Mercy Corps’ **Climate Resilience Program**, and CARE’s **Improving Climate Resilience Program**. Several programs are working to empower women and youth including CARE’s **Haforsa Program**, GIZ’s **Peace Building Through Improved Employability and Income Generating Opportunities for Marginalized People Program**, and GIZ’s **Peace Development, Youth Promotion, and Fight Against Corruption Peace Fund Program**. Several programs also provide social support including the MSS’s **Veteran’s Pension** that provides unconditional cash for those who served in the resistance against Indonesian occupation and **Bolsa da Mãe** that provides conditional cash for impoverished families and single mothers with school aged children and orphans.

Figure 6: Investment of Social Protection Programmes across Asia including Timor-Leste



Source: Dale et al 2014

CONCLUSION

The policies and programs discussed above show a political interest and commitment to nutrition and food security. However, they have had variable success. There has been some progress in nutrition with decreases in stunting but the country still struggles with food and nutrition security. SDG2 provides an opportunity to effectively address these issues and coordinate all of the different policies and programs as well as to increase funding and capacity in these areas.



Figure 9: Farmer examining a failed corn crop in Lautem. Photo: WFP Cesaltino Ximenes

INTRODUCTION

As we begin to think about a path forward, we are left with significant challenges that Timor-Leste currently faces and will continue to face unless investments are made across the political economy and enabling environment as well as capacity for policymaking, program design and implementation, and monitoring of progress. This section will delve into some of the current gaps that exist and that could debilitate progress towards SDG2.

ENABLING ENVIRONMENT

A strong government commitment to improving food security and nutrition outcomes is a crucial first step and Timor-Leste has demonstrated this commitment to some degree. However, better capacity and understanding of the enabling environment would benefit the country. Efficient systems, institutional capacity, incentives for multi-sectoral collaboration and dialogue, and monitoring and evaluation systems are the mechanisms through which these commitments can be realized. What would an enabling environment across food security and nutrition look like for Timor-Leste?

Figure 7: Components of the Enabling Environment



Source: Gillespie et al 2013

Framing, generating, and communicating knowledge and evidence would include building narratives around the challenges, using evidence to inform policy, garnering knowledge on what works and what does not, and building advocacy and generating demand for evidence. *Politics and governance* involve understanding who the influential actors are in the country, incentivizing horizontal and vertical cohesion and coordination, engaging civil society to galvanize commitment, and identifying positive contributions of the private sector to the food system. Finally, *capacity and financial resources* includes building leadership and champions across individual and organizational capacities, constructing systemic capacity to sustain commitments, and understanding financing and how to better mobilize additional resources.

Challenges related to fostering an enabling environment are among the most pervasive barriers to achieving positive food security and nutrition outcomes for Timor-Leste. Nutrition is often considered an institutional orphan that does not fit neatly into the defined scope of work of any one ministry. Many of the policies and programs analysed address pieces of the nutrition challenge, but the policymaking structure has been traditionally isolated within distinct ministries under the assumption that their goals are sector-specific with the main ministries being the MOH and MAF. There is a tendency to prioritize more explicit sector priorities among ministries at the expense of nutrition objectives. However, a concerted effort should be made to ensure that nutrition is a defined priority and responsibility of the agriculture sector, and ultimately the health and education sectors as well.

The nutrition policies analysed incorporate some food-based and agricultural objectives, but this was not generally reciprocated. Most of the agricultural policies focus primarily on economic productivity (through increased production of cash crops) and poverty alleviation (through sale of agricultural products) and lack explicit, nutrition-focused objectives. The government is looking to improve food security through two main mechanisms: (1) to support seasonal food imports which help to ensure there is adequate food during lean times and that it is affordable and (2) to invest in programs to increase national agricultural productivity (da Costa et al. 2013). Most of the efforts concentrate on increasing production of cash crops and economic growth. These priorities do not naturally coexist with those of nutrition-sensitive agriculture, such as increasing production of food, improving food processing and storage to retain nutritional value, and targeting populations that are vulnerable to malnutrition.

For Timor-Leste, there needs to be a supportive political environment, not just prescribing interventions and having technical fixes. The government needs to demonstrate capacity, accountability, and responsiveness to effectively reduce the burden of all forms of malnutrition. First, they need to be *capable of coordinating policy interventions* to deal with the multiple causes of hunger and all forms of malnutrition such as poor diets and infant feeding practices, low and monotonous agriculture productivity, unclean water, insufficient sanitation, illness and poor parental care, and unhealthy food environments. Government coordination is an elusive goal, as it requires articulating diverse approaches and interests across different government sectors, ministries, and non-governmental actors. Second, governments must be *accountable to the needs of the most vulnerable*. Undernutrition for example, is often invisible until external shocks and stresses such as El Niño, conflict, or climate change exacerbate food insecurity to such an extent that acute malnutrition increases. The implication is that organized civil society, the media, and the private sector need to generate public awareness and demand government officials to act and the government needs to hold food system actors accountable and penalize organizations that promote unhealthy or poor business or development practices. Finally, the government needs to provide *rapid and effective responses* to prevent irreversible damage from hunger, food insecurity, and malnutrition – both undernutrition and overweight and obesity.

SYSTEMIC, ORGANIZATIONAL, AND INDIVIDUAL CAPACITY

For implementation to work effectively, there is a need for increased capacity from the bottom to the top. Systemic, organizational, and human capacity in Timor-Leste need serious investment – from the suco to the level of line ministerial posts. There are three levels of capacity development:

1. *Individual*: the attitudes, knowledge, tools, and skills necessary to perform nutrition-related work;
2. *Institutional/Organizational*: the staff, infrastructure, access to information, and support necessary to manage the delivery of nutrition services; and
3. *Systemic*: the structure, frameworks, sector policies, and roles within which nutrition services are delivered.

The lack of food security and nutrition-related human resources is an obstacle for implementing interventions. This involves not only the sheer number of staff available to carry out functions, but also the knowledge and skill sets needed to design, implement, and monitor more complex multi-sectoral plans. The Government of Timor-Leste understands the dearth of capacity in the country and many within the donor community and amongst NGOs are working to help build the capacity that is necessary for the scale up of nutrition and agriculture activities. It will be important to incorporate comprehensive capacity objectives and activities into the country's overall food and nutrition policies.

For Timor-Leste, capacity continues to be a serious limiting factor to scaling up the coverage, adherence, impact, and sustainability of nutrition and agriculture programs. Despite some progress, efforts to alleviate food insecurity and malnutrition in all its forms are hampered by a shortage, not just in sheer numbers, but also in the skills and leadership capacity of the nutrition workforce. High-quality, appropriate training for front-line nutrition workers, program managers, and even policy makers is often lacking. Also missing is enough effective leadership and advocacy skills training to make development efforts more nutrition-sensitive and skilled to deliver nutrition interventions at scale.

“The capacity of the MAF expanded in staff numbers from 350 in 2002 to 809 in 2005, 1,823 in 2010 and 2,196 in 2015. Of the 2,196, 18% held bachelor degrees and 1% postgraduate degrees (Abdon unpublished data). Postgraduate scholarships and short-term studies are being offered by foreign governments, and the number of graduates will slowly raise the overall academic qualifications of the ministry over the coming years.” The MAF has developed a framework for agricultural extension (Ministry of Agriculture and Fisheries 2008). The number of extension personnel increased rapidly after 2008 to ensure one extension officer was posted to each suco. There are now 542 agricultural extension officers under the National Directorate of Agriculture, Horticulture and Extension (NDAHE). Of the total 2,196 MAF employees, only 20% have an educational level above diploma, with most (56%) being secondary school graduates” (ACIAR 2016).

Today's food security and nutrition professionals need a complex set of technical and leadership skills required to work in multi-sectoral teams and because food security and nutrition outcomes depend on multiple sectors, leadership development needs to happen within multi-sectoral district teams so that they have an aligned commitment when programs start and scale up. Nutrition professionals need to be fluent in discussing the concepts and constructs of other disciplines—such as agriculture, social protection, and sanitation—and can advocate for the recognition of the importance of and need for nutrition to be included in a wide range of interventions and investments. We must effectively engage with both decision makers and implementers in these other sectors and seize opportunities to influence a wide range of policies and programs. It is up to the nutrition community to lead this effort.

COORDINATION

Different levels of government must cooperate to tackle food insecurity, hunger, and malnutrition through agreed upon legal frameworks, technical capacities, and incentives to transfer resources and share information for accountability (Mejia Acosta and Fanzo 2012). The lack of expertise and coordination between ministries is a challenge to achieving a supportive environment. Achieving SDG2 requires expertise in food systems, agricultural production, enterprise, community engagement, and health. The objectives of nutrition, agriculture, and health are

intrinsically related and often mutually reinforcing. A clear understanding of those relationships among policymakers and a mutual language for engagement can break down many of the barriers to collaboration. The multi-sectoral nature of SDG2 provides an opportunity to be innovative in policy approaches and incentives. For example, given the importance of proper nutrition on the economic productivity of the population, there is a strong economic justification for using fiscal, trade, and regulatory instruments to support the production and consumption of nutritious foods.

The National Council on Food Security, Sovereignty, and Nutrition (KONSSANTIL) consists of representation from ministries and government agencies in the key areas related to food security and nutrition. Its primary purpose is to coordinate the activities across food security, sovereignty, and nutrition. It is meant to:

- Coordinate and consolidate the roles and functions that are fragmented in different government agencies;
- Align investment decisions by different ministries (in which each ministry establishes a budget line that is dedicated to the implementation of food and nutrition security policy);
- Seek support and mobilize resources from private sectors and development partners;
- Advocate for food and nutrition security in Timor-Leste;
- Promote local level decision making and actions; and
- Encourage participation of different groups of people, including those from the socially deprived groups, women and children, and smallholder and poor farmers, private sector, institutions with educational mandate, faith-based organizations, nongovernmental and civil society organizations, and bilateral and multilateral development partners.

KONSSANTIL's structure is made up of the Minister of Agriculture & Fisheries who is the president and the Minister of Health who is the vice president as well as the Ministers of Finance; Social Solidarity; Commerce, Industry, & Environment; Education; State Administration; Foreign Affairs and Cooperation; Public Works, Transport, & Communications and Secretaries of State for Water, Sanitation, and Urbanization; Vocational Training Policy and Employment; Gender Equality; Private Sector Support and Promotion; Office of the President of RDTL; Civil Society Hasatil; and Human Rights Ombudsman (The Government of Timor-Leste 2016). Their more detailed structure can be seen in **Appendix 9**. The relationships between KONSSANTIL and other groups as well as their coordination mechanisms are complex and it remains unclear how KONSSANTIL will report or coordinate with the Prime Minister's SDG Working Group.

ACCOUNTABILITY AND POWER OF VOICE

Another crucial aspect of governance is accountability. The principles that can contribute to an efficient accountability system are trust, inclusivity, transparency, and verification; government leadership and good governance; public deliberations; independent bodies recognizing compliance and performance achievements; remedial actions to improve accountability systems; and capacity to manage conflicts of interest and settle disputes.

FUNDING AND BUDGETS

It will also be important to determine how the Ministry of Finance will coordinate money flows and expenditures through the different funding streams. The Timorese government must create one financial mechanism for nutrition to protect and earmark nutrition funding and use it in a transparent way (Acosta and Fanzo 2012). While the Timor-Leste budget breaks down between different ministries including the MOH and MAF, it is difficult to determine the amount of funding for nutrition. The WFP determined the amounts allocated to nutrition in 2016 and 2017. The government increased funding for nutrition substantially, from US\$ 54,000 in 2016 to US\$ 422,000 in 2017 (Kearney 2016). While this is significant, it is not sufficient and more funding is needed.

In 2017, the Timor-Leste budget lists total expenditures at US\$ 1,386.8 million, which is a 30.6 percent decrease from the 2016 budget of US\$ 1,952.9 million. In 2017, the budget for the MOH was US\$ 43.7 million and the budget for the MAF was 16.2 million. The MOH budget decreased slightly from the 2016 budget of US\$ 43.9 million but the MAF budget decreased substantially by 27.4 percent from the 2016 budget of US\$ 22.3 million. The MOH only received 3.2 percent of the total budget in 2017 and the MAF only received 1.2 percent. The total budgets and those

for the MOH and MAF between when Timor-Leste gained independence in 2002 and 2017 are shown in **Table 1** and the nutrition budget in the MOH remains quite low as shown in **Table 2**.

Table 1: Timor-Leste Total Budgets, Ministry of Health Budgets, and Ministry of Agriculture & Fisheries Budgets 2002- to 2017

| Year | 2002 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------------|------|-------|-------|---------|---------|---------|---------|---------|---------|---------|
| Total Budget (US\$ millions) | 75.7 | 142.2 | 838.0 | 1,306.0 | 1,806.4 | 1,647.5 | 1,500.0 | 1,570.0 | 1,952.8 | 1,386.8 |
| MOH Budget (US\$ millions) | 7.9 | 16.9 | 37.5 | 42.0 | 54.1 | 64.3 | 67.0 | 67.5 | 43.9 | 43.7 |
| MOH Budget (percent of total) | 10.5 | 11.9 | 4.5 | 3.2 | 3.0 | 3.9 | 4.5 | 4.3 | 2.2 | 3.2 |
| MAF Budget (US\$ millions) | 1.6 | 5.0 | 19.5 | 14.8 | 17.2 | 25.2 | 27.6 | 27.3 | 22.3 | 16.2 |
| MAF Budget (percent of total) | 2.1 | 3.5 | 2.3 | 1.1 | 1.0 | 1.5 | 1.8 | 1.7 | 1.1 | 1.2 |

Source: Government of Timor-Leste. Accessed 2017. Budget Transparency Portal

Table 2: Timor-Leste Ministry of Health Budget (2016 and 2017)

| Program | 2016 | 2017 |
|--|------------------|------------------|
| Nutrition Services (US \$) | 251,800 | 422,000 |
| Family Health Program (door to door, main source of detection for malnutrition cases) (US\$) | 750,000 | 1,245,000 |
| Maternal Health and Family Planning (US \$) | 251,800 | 83,000 |
| Health Promotion and Education (US \$) | 215,800 | 497,000 |
| Reproductive Health (US \$) | 143,900 | 0 |
| TOTAL(US \$) | 1,610,000 | 2,247,000 |

Source: TL Ministry of Health 2017

While the government's budgets for health and agriculture are very low, Timor-Leste receives a large amount of official development assistance, receiving US\$ 258.4 million in 2017 (Government of Timor-Leste 2016). This assistance comes overwhelmingly from Australia, making up 34 percent of the total official development assistance. The rest primarily comes from nine other groups as shown in **Table 3**.

Table 3: Contributions of Donor Groups to Total Official Development Assistance in 2017

| Donor Group | Australia | EU | Japan | Portugal | New Zealand | USA | ADB | WB | Global Fund | Germany |
|-----------------------------|-----------|----|-------|----------|-------------|-----|-----|----|-------------|---------|
| Percent of Total ODA | 34 | 9 | 8 | 8 | 7 | 6 | 6 | 6 | 5 | 4 |

Source: TL Ministry of Finance. 2016. State Budget 2017 Book 5

Official development assistance is used in many different areas. The breakdown for the amount of assistance from grants used in health and agriculture from 2010 to 2017 is shown in **Table 4**. The amount used for health was higher in 2010 at 16 percent of the total. It fell significantly in 2011 and 2012 but has since increased back up to 16.6 percent of the total. The amount used for agriculture also decreased from 10 percent in 2010 down to 7.8 and 7.5 percent in 2011 and 2012 respectively and has also increased since 2010 to reach 13.5 percent of the total in 2017.

Table 4: Official Development Assistance from Grants in Health and Agriculture 2010 to 2017

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--|------|------|------|------|------|------|------|------|
| ODA Grants in Health (US\$ millions) | 40.0 | 16.9 | 16.8 | 28.8 | 32.2 | 24.9 | 21.9 | 26.0 |
| ODA Grants in Health (percent of total) | 16.0 | 8.7 | 8.9 | 12.5 | 11.5 | 15.0 | 15.3 | 16.6 |
| ODA Grants in Agriculture (US\$ millions) | 18.0 | 15.1 | 14.1 | 21.3 | 25.4 | 20.5 | 17.3 | 21.1 |
| ODA Grants in Agriculture (percent of total) | 10.0 | 7.8 | 7.5 | 9.2 | 9.1 | 12.4 | 12.1 | 13.5 |

Source: Ministry of Finance. 2009-2016. State Budgets 2010-2017 Book 5

EFFECTIVE AND TIMELY USE OF DATA

Effective monitoring and evaluation systems are essential for policymakers to achieve substantive gains in nutrition-sensitive agriculture. Accurate and timely vulnerability, hunger, and nutrition information is the cornerstone of a broad-based hunger, food security, and nutrition strategy. It is imperative that partnerships be developed to support nationally-led monitoring systems to measure, feedback, and appropriately hone and refine program activities. Building this capacity should be the central goal of both government and donor-funded national activities and should be done at the beginning of policy crafting and implementation. Regularly updated and well collected data and setting goals and targets are crucial for identifying coverage gaps and generating information on how and where to act. Data must be communicated in real time to demonstrate what is working at the community, municipality, and country levels. Utilizing simple, free, and open-source technologies such as SMS-based applications with mobile phones can revolutionize data collection systems in low resource settings.

For Timor-Leste, challenges remain. While there is a lot of data collected in the country, much of the data is not aligned to give a full picture of the situation including areas such as distribution and dynamics of food insecurity and malnutrition, coverage and uptake of solutions, and impacts of interventions (Webb 2013). Rigorous monitoring and evaluation systems and data coordination will equip policymakers to be targeted and data-driven in their response to nutrition challenges and facilitate a more productive dialogue among relevant stakeholders. In addition, the growing ubiquity of real-time data collection allows for rapid assessment of implementation needs, advancing the conversation about the challenges, successes, and lessons learned in implementation and impact of nutrition-sensitive agriculture interventions.

What is clear is that having reliable nutrition data and performance indicators can lead to better delivery. This often means that local ownership of outcome data on the nutrition programs can be important and should be encouraged. However, this ownership requires data collection at regular intervals and increased frequency of data observations to monitor progress to ensure that accurate and timely data can provide better response times to re-evaluate programs.

There are still many aspects of food security that are either not available in the country or are of poor quality. This is cause for concern in making sound policy decisions and understanding impacts at municipality and suco levels.

TIMOR-LESTE'S PERFORMANCE ON THE MILLENNIUM DEVELOPMENT GOALS

Timor-Leste pledged to support the Millennium Declaration after gaining independence in 2002 and committed to achieve the eight MDGs across all 29 indicators. While the country made progress on many of these indicators and met the goals for some of them, they still have a lot of work to do on others. MDG Goal 1 is the most relevant for SDG2 and was to reduce poverty and hunger. Poverty is one of the biggest challenge for Timor-Leste's development and it also heavily impacts food insecurity. Poverty increased after independence from 36.0 percent in 2002 to 49.9 percent in 2007, reflecting internal conflict, and then decreased to 41.0 percent in 2009. For underweight children under five years old, Timor-Leste has made progress, decreasing underweight children from 45.8 percent in 2001 to 37.7 percent in 2013, but did not meet the MDG goal of 31 percent. MDG Goal 7 is also relevant for SDG2 and was to ensure environmental sustainability. The amount of forest cover decreased from 51 percent in 2001 to 50 percent in 2009 and remained below the goal of 55 percent. However, this decrease was low considering wood is the primary source of fuel. The country also has plans to support reforestation through agroforestry and to create income sources from sandalwood, mahogany, and teak trees (Ministry of Finance 2016a).

CONCLUSION

Timor-Leste has recognized the problems of food security and nutrition in the country and has acknowledged their significance. However, they need to strengthen the country's ability to coordinate, implement, and monitor programs in these areas and there needs to be a financial commitment from the government to ensure that Timor-Leste makes more progress to achieving the SDGs than they did for the MDGs.



Figure 9: Mothers and babies in Ermera. Photo: WFP Cesaltino Ximenes.

INTRODUCTION

All of the information in this section is from oral interviews with national stakeholders that were conducted in person by João Boavida, Gianna Bonis-Profumo, and Jessica Fanzo in Dili, Timor-Leste between March 20 and March 24, 2017. The interviews were with the Prime Minister's Office, Ministry of Health, Ministry of Social Solidarity, Ramos Horta, WHO, FAO, WFP, World Bank, UN Resident Coordinator, UN Women, UNICEF, UNFPA, EU, TOMAK, ACIAR, DFAT, GIZ, JICA, CARITAS, CARE, PLAN, CRS, and WVI. More information on who was interviewed and local NGO and CSO views can be found in **Appendix 6 and 7**.

NATIONAL STAKEHOLDER PERSPECTIVES ON ACHIEVING SDG2

Timor-Leste has many existing policies and programs on nutrition and agriculture as discussed earlier. Some of these have made an impact; however, others have not. Several national stakeholders criticized these for being too broad and having too long a timeframe. Instead, they argued they need to be more focused and achievable in the short-term. They criticized the policies and programs for being largely symbolic and argued they need to be more action oriented. They also argued that Timor-Leste will not achieve SDG2 so instead they should create more realistic goals for the country and suggested the goal of decreasing stunting to 40 percent by 2025. Several stakeholders suggested that there needs to be more monitoring and evaluation of these policies and programs to ensure that they meet their goals.

One of the biggest challenges for Timor-Leste is coordinating all of these policies and programs within the government, especially between the MOH and MAF. There also needs to be more coordination between the

government, national NGOs and CSOs, and INGOs. This was stressed by many of the national stakeholders. This coordination needs to include knowledge transfer since right now most of this knowledge is lost between stakeholders. The government created KONSSANTIL to accomplish this; however, it is seen as ineffective. One stakeholder asserted that KONSSANTIL is squarely part of the MAF and others feel excluded and thus recommended that KONSSANTIL should be led by the President's or Prime Minister's Office and be co-run by the MOH and MAF. One stakeholder suggested that KONSSANTIL be more active in the municipalities. However, another suggested that KONSSANTIL needs to focus on coordination and not attempt to create any policies or implement any programs. Several stakeholders argued that KONSSANTIL should be eliminated entirely and that either the Prime Minister's Office or the MAF should take over this responsibility.

Another challenge is the need for increased financial commitment from the government. Several stakeholders argued that the government does not allocate enough funding for nutrition and agriculture. While international donors make up some of this shortcoming, it is important for the government to increase its spending to show that nutrition and agriculture are priorities and ensure the sustainability of these policies and programs. Most of the national stakeholders argued for increased government spending. One argued that the government should increase agriculture spending from two to four percent of GDP. Several also stressed the importance of increasing private sector funding.

Nutrition is one of the top priorities for most of the national stakeholders but there are different opinions on the best path forward for Timor-Leste's agriculture. The government has focused on rice production since this is the primary source of calories for the country. Some stakeholders argued that self-sufficiency is a key issue both for national security and food sovereignty and support increasing rice production. They suggested increasing the import tax to make local production more competitive. Others argued against this since it would increase the cost of rice and increase food insecurity. Other national stakeholders agreed and argued that it would cost almost twice as much to produce rice in Timor-Leste compared to importing it from Vietnam and Thailand. Most national stakeholders argued that Timor-Leste should instead move towards high value crops such as coffee and spices. This would increase farmer incomes and allow them to buy more nutritious food. Other stakeholders argued that Timor-Leste should move towards nutrition sensitive agriculture and suggested that farmers grow more nutritious foods including legumes such as peanuts and mung beans, orange and purple flesh sweet potatoes, vegetables, and fruits. One stakeholder also suggested that farmers grow local foods such as kumbili and Job's tears. They stressed the importance of biodiversity and suggested achieving this through agroforestry and growing trees such as sandalwood for profit and sago palm for food. Several stakeholders argued that there needs to be a focus on protein. Different stakeholders suggested focusing on different protein sources including soy, fish, eggs, chicken, and pigs. Soy was recommended in the form of tempeh and tofu; however, one stakeholder pointed out that the country could not grow enough soy and would have to import it. One stakeholder argued for increasing nutrition through fortification, especially of rice. Another agreed with fortification for specific micronutrients, citing the example of iron fish in Cambodia, but argued that a more comprehensive strategy focused on diverse diets and nutrient rich foods was more important.

Most of the farmers in Timor-Leste are subsistence farmers, growing only enough for their own consumption. Increasing production would allow these farmers to have more food for themselves and would also allow some to sell their products. Several stakeholders argued that farmers need to increase productivity and add processing capacity to add value and create more products to sell. They also suggested increasing market access for both domestic and export sales. They suggested increasing productivity through education and training for farmers as well as modernizing farming through technology. This would also require increasing access to credit, which one stakeholder pointed out needs to be focused on women. Most stakeholders acknowledged that it is difficult to motivate farmers to increase production because there is not enough profit in farming and the veteran's pensions decrease motivation. Another challenge in increasing production is the issue of land ownership. There are large areas of land that do not have clear ownership, some of which date back to Indonesian or even Portuguese rule. There are also specific difficulties for women who are very limited in land ownership. Several stakeholders also discussed the importance of improving the soil to increase production but mentioned that farmers are resistant to using fertilizer. However, they argued that productivity could be increased by 20 to 30 percent by using fertilizer.

Climate change is a challenge for food production and will be an even larger problem moving forward. Climate change was not a prominent topic in the national consultations but it was mentioned by several stakeholders. They argued that the government needs to increase resilience and prevention instead of only reacting to natural disasters by increasing biodiversity and focusing on heat, drought, and wind resistant crops as well as creating early warning systems to help farmers prepare.

While food production is important for Timor-Leste, behaviour change around food consumption is also critical. Any actions to improve nutrition through changes in food consumption need to be culturally appropriate. Several stakeholders suggested promoting nutritious foods through nutrition education but they recommended different approaches including focusing on school gardens and lunches, cooking demonstrations, and mother support groups. They discussed the difficulty in changing pregnant women's food consumption due to fear of complications in childbirth and the difficulty in changing infant and young child feeding practices due to strongly held beliefs about both breastfeeding and complementary feeding. They argued that there needs to be more community trust for nutrition education to be effective and recommended doing this through the Church.

While agriculture and food consumption are critical components in improving nutrition, health interventions are also key. There are now two staff trained in nutrition interventions at each health post. Several stakeholders discussed the importance of these staff and stressed the importance of improving nutrition surveillance to find and treat moderate and severe acute malnutrition earlier. They also discussed the importance of preventing infectious diseases including tuberculosis and diarrheal disease.

The national consultations focused on undernutrition but a few stakeholders also discussed overweight and obesity and described the problem as mainly one of increased consumption of convenient packaged foods such as instant noodles.

COMMUNITY STAKEHOLDER VIEWPOINTS IN ACHIEVING SDG2

INTRODUCTION



Figure 10: Men in Ermera discuss food security and nutrition. Photo: CEPAD Gianna Bonis-Profumo

This section highlights the results of community consultations undertaken by CEPAD through Focus Group Discussions, engaging 158 participants (39 percent women, 61 percent men) in six selected Municipalities, and the results of Key Informant Interviews with 36 selected individuals and stakeholders working in relevant programs at the national and municipal levels.

The aim of the consultations was to **provide a voice** to the selected individuals and community groups to articulate their perspectives, which prove indispensable for contextualizing the issues as evidence-based recommendations for targeted actions.

COMMUNITY PERSPECTIVES ON ACHIEVING SDG2

LEADING ISSUES AND CONCERNS IN FOOD SECURITY

Community members addressed several issues regarding food security. However, hunger was barely mentioned and people in rural communities said they had enough food to survive. They presumed that more vulnerable households who depend on purchasing their food, especially in urban centres, might be at a higher risk of hunger. People were concerned with not having access to purchase their desired amounts of diverse foods. They identified poor road infrastructure and poor market facilities in rural areas as the main barriers to a more diverse diet. They also discussed the difficulty of affording a nutritious and diverse diet, especially for those with lower incomes and larger families. Most people in both rural and urban communities discussed having difficulties affording a high-quality diet. There is a large variation in food prices between suco and municipality capitals and then again between these capitals and

Dili, which creates a double urban-rural divide and exacerbates the difficulty of affording nutritious foods for the most remote people.

People were more concerned with water insecurity and described the large challenges that farmers face with water shortages and how this impacts both food availability at the community level and income generation. A lack of water limits farmers' ability to cultivate and produce sufficient food year-round. There was also an awareness among the community that climate change would worsen these impacts. People were concerned with changes in rain patterns and increased rain variability. They discussed the importance of combating deforestation and soil degradation to increase water retention as well as the desire for more water harvesting systems. People were interested in adapting seeds to be more drought resistant and to maintain yields with climate change.

LEADING ISSUES AND CONCERNS IN NUTRITION

Community members did not have a good understanding of nutrition and which foods were healthy to consume. They were interested in learning and recommended more nutrition education especially about which foods to eat vs. which foods and ingredients to avoid. They also wanted to learn how to cook with these nutritious foods. There were discussions about new processed foods that are now easy to find and affordable. People said they were convenient both to store and prepare as well as tasty. People were also unsure about the impacts of nutrition on health and child development. People want more local food and were concerned about the quality and chemical additives in imported food. However, there was not any awareness about the potential for local food contamination with aflatoxin.

Women discussed restricting their own food intake during pregnancy to avoid delivering large babies, and mentioned avoiding specific foods during and after pregnancy as well for their children. Women also discussed facing barriers for accessing health care based on their gender, particularly around family planning. People also discussed observing cultural practices that impact on the amount and types of food eaten, particularly around protein-rich foods. Men had especially poor knowledge about nutrition and need to be included in education because they make decisions at the household level. People also did not know the signs of acute malnutrition for children.

Community members discussed their use of resources and the importance of allocating money, often from the sale of animals that could otherwise be used for food, for traditional ceremonies. These ceremonies use a large proportion of household incomes, leaving little left for health and nutrition.

LEADING ISSUES AND CONCERNS IN AGRICULTURE

Many of the people in the community discussions were involved with agriculture. They discussed the assistance they received, such as government-led agricultural development that includes subsidizing equipment and providing technical support. People liked these programs and wanted them to continue and expand. People also discussed the challenges in moving towards more commercial agriculture including not being able to reach the level of mechanization necessary. They requested the formation of farmers' groups that would help with this transition.

The government also buys farmers' products, especially rice, at an agreed upon price. People also liked this program, despite it not always working, but wanted more access to markets in order sell their products to consumers directly. They identified poor road infrastructure, poor seasonal road conditions, and a lack of access to transportation as the main barriers to reaching markets and selling their products. They also discussed the challenges of having low market prices for food in the face of high production costs. People discussed how hard it was to make a profit and that this was a large disincentive to produce more food than they would consume themselves. People believed that agroforestry was a possible solution to growing more diverse crops and making larger profits. They thought that this could provide good rural jobs, especially for youth.

Farmers face challenges with access to seeds, water, and high-quality soil. People wanted more information and access to seeds that would be the best for their area. They described having difficulty managing water between rainy seasons. A lot of the soil is of poor quality and needs to be improved. People were worried about using chemical

fertilizers because of a lack of knowledge about which ones to use and how to use them. They were concerned with risks to their own safety due to chemical exposures.

People also discussed the large amounts of land that were unused. This is due to a low incentive to farm from low profits, cheap imported food, youth moving to urban centres and large veteran's pensions.

COMMUNITY THOUGHTS ON IMPROVING MALNUTRITION, FOOD INSECURITY, AND AGRICULTURE PRODUCTIVITY



Figure 11: Rice fields in Gariuai near Baucau. Photo: WFP Marianne Kearney

The unique approach identified to change mentalities and practices to improve nutrition and agriculture outcomes and to support climate-smart behaviours and sustainability issues is to disseminate information through civic education and to develop integrated strategies through collaboration between the government and agencies, with strong coordination between relevant ministries and local leaders for joint actions. Community members suggested an “inter-sectoral and collaborative approach with community leadership”.

Communities consulted have increasingly called for a civic education campaign with an integrated action approach to be coordinated between agriculture (food production), health (nutrition science), and education (best practices),

using practical field and kitchen demonstrations to engage communities in promoting local food consumption and using local varieties.

Nutrition education programs need to be reinforced using a whole-of-family approach; Integrated Community Health Services (SISCa) and MoH activities need to be expanded and staff need to be trained in counselling facilitation skills; while the engagement of young people and enabling a healthier food environment should remain priority targets. Suco leaders need to be proactive in their support of PSF to best enable communities to identify signs of malnutrition and attend community clinics early on. Health and nutrition education should be incorporated into the school program in close collaboration with the MoE and further coordination with CSOs, the Church, and the media for promotion at all community levels.

It is imperative for extension workers to coordinate with suco leaders to ensure that land is productive and farmers' groups are operational all year-round while prioritizing drought resistant crops, best water management practices, and the development of regional markets. This should all be part of an integrated rural development scheme. Supporting farmers to separate seeds and harvested crops for consumption, sale, and storage is much needed, while ensuring land tenure security and socialization of new technologies. Effective social assistance for the most vulnerable in urban and rural areas, and during weather events relief, is a must.



Figure 12: Vegetables and eggs available at a local market. Photo: CEPAD Gianna Bonis-Profumo

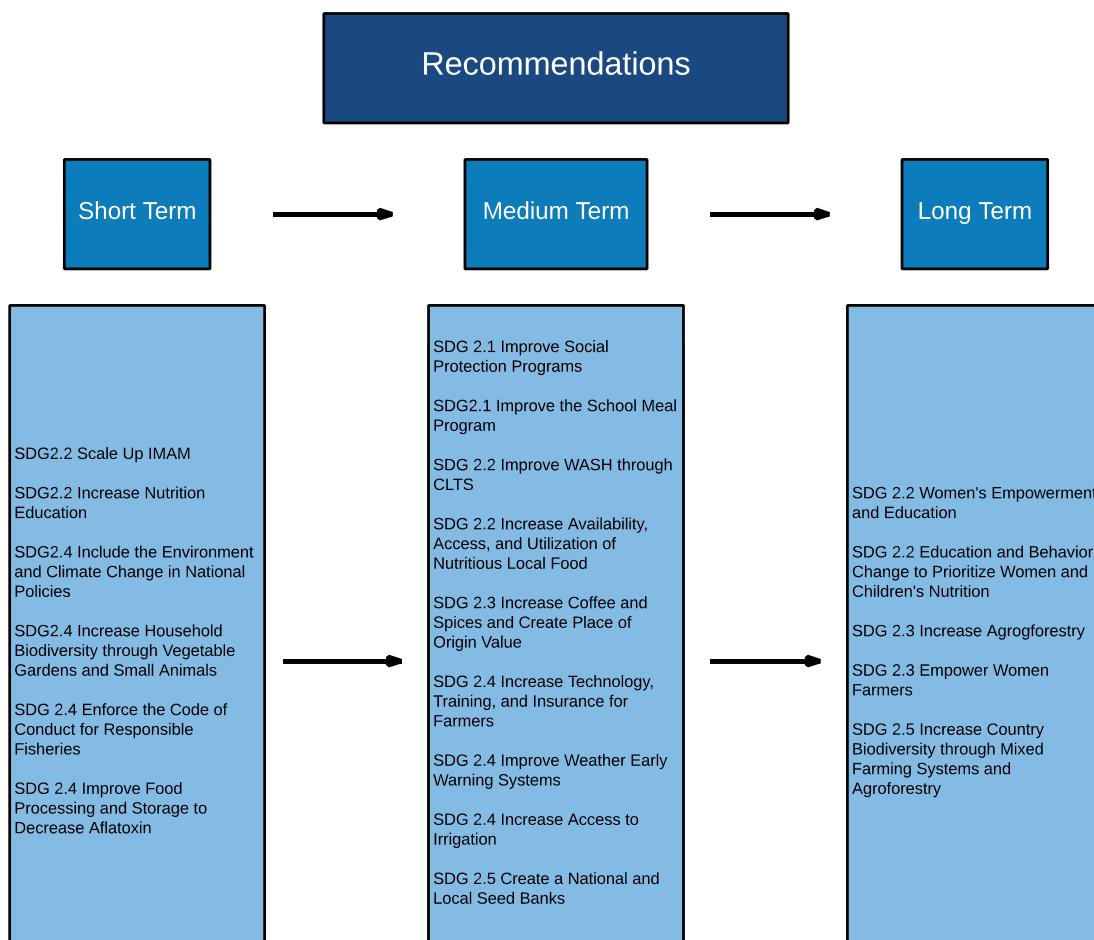
PATHS FORWARD AND RECOMMENDATIONS

The recommendations for Timor-Leste are grounded in the five targets of SDG2 – which are to end hunger, achieve food security and improve nutrition, and promote sustainable agriculture. In addition to the 12 recommendations that centre around these five targets, there are also three key political economy recommendations that must occur now and into the future. They are improving coordination and accountability, building human capacity, and increasing funding and national investment. Without these, any of the other 12 recommendations could stall.

The recommendations were formulated using the latest evidence of what has made an impact on hunger, food insecurity, nutrition vulnerability, and unsustainable food systems. In addition, the recommendations were formulated based on other national or expert reports that have assessed the food security and nutrition situation in Timor-Leste as well as “what has worked” in other country settings. For each recommendation, the main duty bearer is identified, as well as the evidence of why that recommendation is important, how it has demonstrated an impact, and where the recommendation has worked in other settings. While not every recommendation has a long history of evidence-based solutions, most if not all, have a strong experiential evidence base.

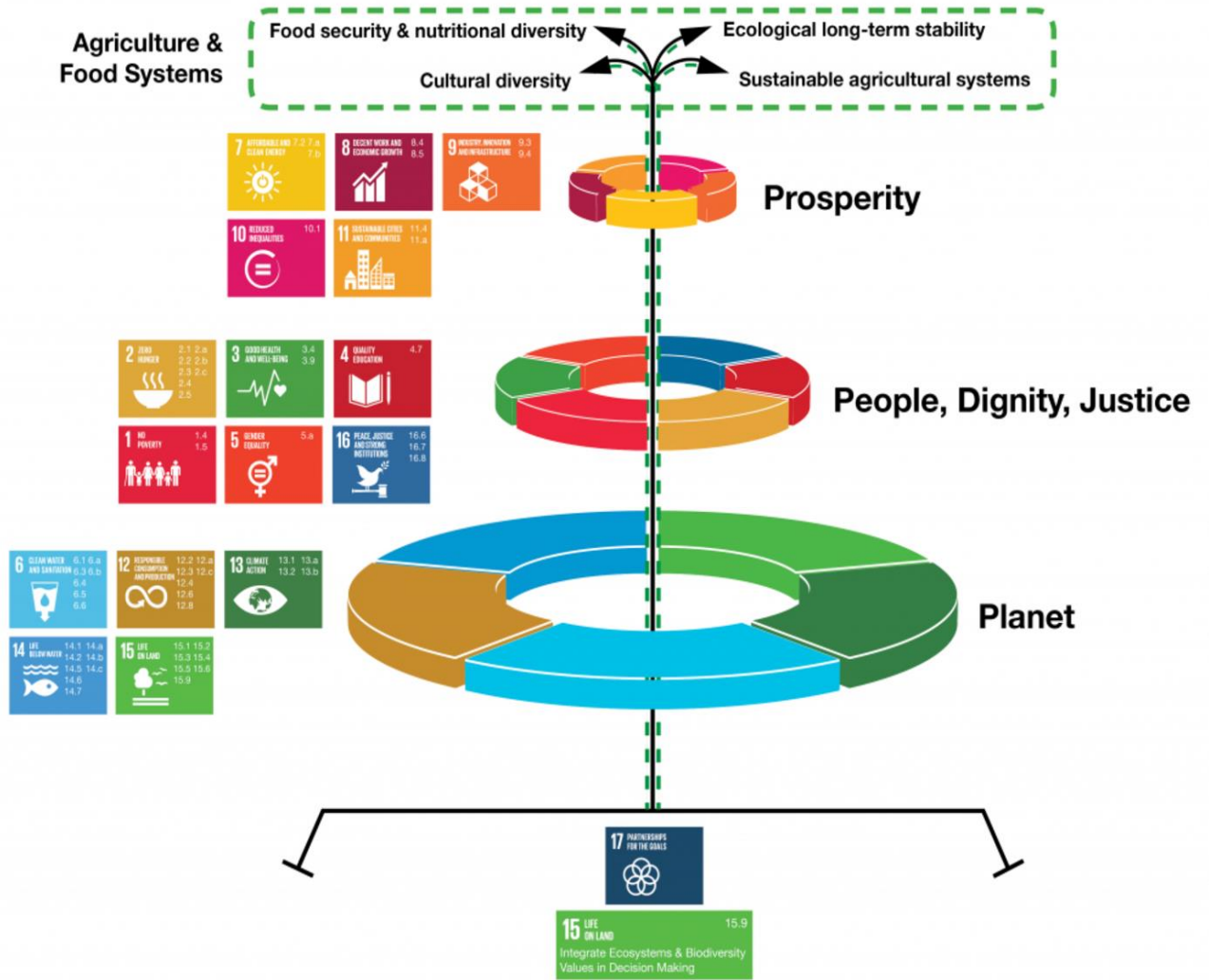
As part of the recommendations, next steps or action points are recommended. Some of these actions can be undertaken in the short term, while others will require a long-term, sustained commitment as shown in **Figure 8**.

Figure 8: Temporal Prioritization of Recommendations



Each recommendation is tethered to other SDG2 recommendations as well as the other SDGs. While Timor-Leste is prioritizing several SDGs in the near term, all 17 SDGs should be thought of in an integrated way, in which SDG2 sits at the core. Each section of SDG2 is important and Timor-Leste should commit to all of the recommendations in order to improve the country's food security and nutrition and overall food systems. However, in order to prioritize the recommendations, Timor-Leste should commit the most focus and resources on SDG2.1 and 2.2 to end hunger and malnutrition, as these are essential for the country's health and development. While each SDG2 target is very much dependent on the others, the SDG2 goal in and of itself is dependent on many of the other SDGs that should be implemented and scaled up. SDG2 sits in the middle of what has been called a "SDG food cake" – the societal SDGs that are supported by the economic and biosphere SDGs. **Figure9** shows the integration of the SDGs to promote the welfare of people and promote dignity, peace, and justice, while ensuring planetary health and prosperity, as well as how food systems benefit from this integrated approach.

Figure 9: SDG Food Cake



Source: TEEB 2017

SDG2.1 -- ENDING HUNGER: RECOMMENDATION #1

Recommendation

Ensure the national social protection programmes including Bolsa da Mãe, Social Safety Nets and Relief, ad hoc, and disaster relief programmes are meeting the needs of the vulnerable and are more nutrition sensitive by:

1. Improving the food transfer, which could include fortified rice, legumes or other protein sources such as tempeh or tofu, and vitamin A/D fortified cooking oil into the Food Security Program;
2. Refining the universality and inclusion of the most vulnerable populations for these social protection programmes which would include women, elderly, orphans, disabled and ultra-poor marginalised communities; and
3. Evaluating the impact of the social protection programmes on food security, as well as on hunger and poverty reduction.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG2.2 – Short and Medium Term

Who is Responsible

Ministries of Social Solidarity; Commerce, Industry, & Environment; and Agriculture & Fisheries.

Why It Matters

In low- and middle- income countries, social assistance is a leading policy option to address poverty and vulnerability, especially through social safety nets (World Bank 2015a). Social safety nets involve non-contributory transfers where targeting is based on vulnerability or poverty levels to protect these populations from further risk (IEG 2011). Examples include pensions, transfers in the form of cash or food, and school meals programs. The primary objective of cash transfers is to enable household consumption of basic needs – particularly, food (Slater 2011). Transfers can be conditional or unconditional to the utilization of health and education services to ensure human capital investments. Conditional transfers are useful in promoting behaviour change. Transfers can also target populations based on social or demographic categories, like the elderly or orphans, and targeting based on verifiable income criteria. This provides a better poverty focus but rigorous targeting requires greater administrative capacity, while targeting based on social categories is likely to involve major errors of inclusion and exclusion, it may also be inappropriate where behavioural change is sought and when the policy focus is on poverty reduction among wider sections of the community (Slater 2011).

Social protection and nutrition are intrinsically linked by the fact that poverty is the most important root cause for malnutrition (FAO 2015). Considering malnutrition underlying determinant interventions and policies as a platform for direct nutrition actions is a useful approach. Since social protection programs do not necessarily translate into malnutrition reductions, these can be redesigned to be more nutrition-sensitive and generate higher economic returns throughout people's life cycles (IFPRI 2016) and address vulnerabilities at various life phases, including during infancy and childhood (FAO 2015). Nutrition-sensitive social protection interventions should always consider women as the recipients of these benefits, especially in the case of food or cash transfers (FAO 2015). There are three major methods for food transfers: in-kind transfers, food vouchers, and school feeding, with voucher-based transfers increasingly used as a mechanism for improving household access to various foodstuffs. These have the potential for strengthening markets for local producers and stimulating the production of certain foods, where such production is feasible (FAO 2015).

Efforts to track the extent to which national policies and programs are sensitive to nutritional concerns are relatively new and there are no agreed-upon metrics or data sources, while the tracking of governments' and donors' nutrition-sensitive budget allocations and disbursements leads this space (IFPRI 2015). Including nutrition targets in

social protection plans and tracking their impact can yield significant nutrition returns (IFPRI 2016), particularly when targeting impacts on infants and young children (FAO 2015). Similarly, during emergencies or severe weather events, there is a need to strengthen nutrition action for those affected by systematically using climate science, social protection mechanisms, and new data technologies to improve the ability of underlying drivers to improve preparedness for and response to shocks (IFPRI 2016). These illustrate the importance and value in evaluating the impact of social protection programmes in the context of national programmes and disaster relief.

Where It Has Worked

In Ethiopia, the Productive Safety Net Programme (PSNP) for rural households, which focused originally on food security outcomes through a public work cash transfer scheme, went through a series of changes to make its features more nutrition-sensitive (IFPRI 2015). Nutrition-related changes included integration with cross-sectoral policies, reformulation of targeting and transfers, introduction of community-based behaviour-change communication, and stronger links with existing health services. For example, enhancing dietary diversity was achieved by providing participants with food baskets that include pulses and cereals; helping farmers with livelihood support to diversify crops; and using public works to construct homestead and school gardens; by which they promote harmonization of nutrition related activities by the MAF and MoE. Also, men and women attend education on health, nutrition, sanitation, and family planning instead of public works participation to support changes at the community level (Ethiopia MOA 2014).

In Bangladesh, recent research showcases the potential impact of using social protection interventions as a platform for direct nutrition interventions (IFPRI 2016). World Food Programme piloted cash transfers that added education around infant and young child feeding. The evaluation of this innovative approach found it had a large, positive, and significant impact on stunting, and those cash transfers without education did not; yet nearly all modalities showed positive impact on household food security and child diets (Ahmed et al. 2016). Other approaches are recommended in Bangladesh for nutrition-sensitive social protection, including design programs to target nutritionally vulnerable groups and periods such as children's first 1,000 days, using cash transfers to enable households to purchase a nutritious diet, strengthening nutrition awareness-raising activities involving men alongside women, and ensuring that monitoring and evaluation systems measure impact on nutrition (StC2015).

The Path Forward for Timor-Leste

In Timor-Leste, the main cash transfer programs managed by the MSS (Bolsa de Mãe and Elderly, Disability, and Veteran's Pensions) are not reaching large numbers of the poorest households, where among the poorest 40 percent, elderly pensions covered most (34 percent) while Bolsa de Mãe and disability only covered around three percent in 2011 (World Bank 2015b). The amount for Bolsa de Mãe, the only program targeting vulnerable households with children, represents 3.5 percent of the average total household expenditures, compared to ten to 15 percent from other international conditional cash transfer programs (World Bank 2015b). The Bolsa de Mãe has the potential for large-scale national poverty reduction, but despite recent improvements in coverage, it needs to reach more people and have a higher benefit level (World Bank 2015c). Other 'ad hoc' social assistance programs include food security measures like rice distribution to El Niño affected households.

The MSS, in coordination with the MOH, should improve the Food Security Program from rice only to a nutritious basic food basket transfer composed of fortified rice, legumes or other protein sources, and fortified cooking oil. Making this food transfer available to Bolsa de Mãe recipients and integrating it with conditional behaviour change activities required to obtain the food basket will promote better dietary and infant and child feeding practices. This would also require updating the memorandum of understanding with the Centre for National Logistics (MCIE) to develop the necessary procurement lines for this nutritious food transfer. Ensuring the nutritious basic food basket is distributed during adverse weather events and developing a joint monitoring framework between the MSS and MCIE to evaluate their distribution is crucial to meet the nutrition needs of the most vulnerable.

The Government of Timor-Leste and MSS should raise the Bolsa da Mãe transfer amount to at least \$34/month and increase coverage to 95,000 households, using the current MSS budget (as per World Bank 2015c calculations) to have a substantial impact on poverty reduction. This approach requires reviewing and assessing its targeting system to ensure it reaches the most vulnerable families. Extending the other social assistance programs (Elderly and

Disabled Pensions) to reach the poorest 40 percent will also generate measurable gains in meeting the needs of impoverished populations. Sound monitoring and evaluation is crucial to support evidence-based interventions. The MSS should evaluate the performance of all social assistance programmes against food security, hunger, and poverty reduction targets on a yearly basis, particularly during natural disasters responses. Developing effective data collection systems for improved targeting and a monitoring and evaluation framework for these programmes is fundamental to ensure the social assistance package reaches the most vulnerable. The findings should be reported to the highest MSS and government levels prior to budget discussions to ensure a timely and adequate response to the yearly evaluation and plan during the following budget cycle.

Community Input

Communities expressed concern, repeatedly, about the inadequate targeting of the Bolsa de Mãe, due to not reaching those in most need. Many expressed concerns over higher levels of food insecurity among vulnerable cash-dependent households, as the perception is that rural households can always access some food sources. There is a preoccupation with the impact the Veteran Pensions are having on agriculture production due to disincentivizing recipient families to continue farming activities and resulting in empty arable lands. While this is a sensitive issue, there is a demand to assess this with responsive monitoring and evaluation.

Since communities report having little information on adequate dietary practices and identifying nutritious foods, a basic nutritious food basket targeted at those most vulnerable would serve the double function of providing nourishing foods while educating people on what those foods are. If such an approach was also integrated with behaviour change communication and practical approaches on how to prepare healthy meals and food requirements by age, like cooking demonstrations for infant and child feeding, it would follow the suggested strategy for changing nutrition habits that communities identified.

Some expressed concern on the performance of middlemen that purchase and distribute imported rice from the MCIE, as some mention that communities in rural areas are overcharged with abusive prices-mark ups. Through the suggested improvement on the accuracy and comprehensiveness of MSS and MCIE monitoring and evaluation systems and impact evaluation to social assistance programs, this issue could be tracked to ensure the most impoverished do not pay abusive prices for rice and other basic products. Thus, this recommendation is well aligned with communities' views.

SDG2.1 -- ENDING HUNGER: RECOMMENDATION #2

Recommendation

Improve the operations and nutrition of the nationally owned School Meals Programme by:

1. Enhancing monitoring and evaluation of the program on hunger and education goals;
2. Procuring local produce/foods directly from family farms through designated School Meal Committees which lead on local food procurement; and
3. Diversifying the school meals to include protein and micronutrient rich sources of food including legumes and eggs. Eggs should be locally sourced when quantities allow and production and import should be scaled up to meet demand.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG2.2 and 2.3 – Short and Medium Term

Who is Responsible

The Ministries of Education and Agriculture & Fisheries

Why It Matters

School feeding programmes (SFP) aim to alleviate short-term hunger, improve nutrition and cognitive development of children, and act as a cash transfer to families. SFP programs intend to improve the concentration span and learning abilities of school children by providing meals through the schooling system to reduce short-term hunger that can impact their performance. There is evidence that SFPs in low- and middle-income countries have relatively consistent positive effects on energy intake, micronutrient status, school enrolment, and attendance of participant children; while their impact on growth, cognition, and academic achievement is less conclusive (Jomaa et al. 2011). Research shows that the effects of SFPs on school-aged children's dietary intake and growth is greater among those that are malnourished (Grillenberger et al. 2003, Kruger et al. 1996). The design and implementation of SFPs can highly benefit from impact evaluations that assess their benefits (Jomaa et al. 2011), as was the case for Brazil where investment in data and evidence has played a key role in reducing hunger (Chmielewska and Souza 2011).

Home-grown school feeding (HGSF) programs are a new framework that link school feeding with local agriculture production (Espejo et al. 2009), where schools purchase food for school meals directly from farmers. School feeding is increasingly expected to support agriculture development through HGSF, in addition to meeting nutrition, education, and social protection objectives. This model has two trade-offs: it requires a decentralized approach to supply schools with regional farmers' produce, which makes food fortification more challenging and it compromises the reliability of food supplies due to the logistical difficulties during seasonal shortages or droughts (IFPRI 2016). However, overtime, HGSF might improve dietary diversity and food security among low-income producers. Additionally, HGSF programs address issues with traditional SFP supplied by food aid that generates concerns about sustainable financing and effects on local markets (Adelman et al. 2009). Integrating HGSF management with community delivery service committees is an accountability mechanism for user-led governance (IFPRI 2015).

In low- and middle-income countries, using food supplementation to overcome multiple micronutrient deficiencies among school-aged children is a key area of interest for some program planners. SFPs offer a possibility to improve dietary diversity and provide children with a good source of high-quality protein that is also rich in multiple micronutrients (Jomaa et al. 2011). This is important, especially among children living in rural communities where the staple plant-based foods are low in iron and zinc and people are susceptible to micronutrient deficiencies. SFPs that include meat (Newman et al. 2007) and eggs have been shown to improve children's micronutrient intake (Cao et al. 2013). A study on a mandated SFP in India assessed the extent to which children benefit from the targeted SFP, showcasing that it provided children with a significant proportion of their daily intake of five nutrients

(energy/calories, proteins, carbohydrates, calcium, and iron) (Afridi 2010). The programme succeeded in improving dietary intake of five essential nutrients for which the diets of children in India were deficient (Afridi 2010). To increase the effectiveness of SFPs and their impact on nutrition, cognition, and health of children, SFPs should offer nutritious food fortified or supplemented with required micronutrients (Jomaa et al. 2011). Also, schools can be used as a platform for nutrition education and other nutrition-services (IFPRI 2016).

Where It Has Worked

Ghana has seen dramatic reductions in malnutrition, with some improvements likely to be linked to political stability and faster economic growth. The stunting rate declined from over 30 percent in 2008 to 19 percent in 2014 (GSS et al. 2015) because of multiple interventions involving the immediate and underlying causes of malnutrition. Among these, the home-grown National School Feeding Program provides one hot meal daily to children in targeted basic schools in almost 200 districts (Ofei-Aboagye 2013).

In 2009, Brazil revised its Law on the National School Meal Program (PNAE), where the program was reshaped to promote links between family farmers, food, and nutrition education in basic education, and transforming public procurement as a nutrition-sensitive policy. The law requires 30 percent of the national budget for food served in the SFP to be spent on foods from family farms, with priority given to foods produced using agro-ecological methods (IFPRI 2015). A food acquisition program was designed to create public procurement markets for smallholder farmers that mostly produce fresh products, thus promoting healthy eating habits among beneficiaries while contributing to farmers' food security by increasing their incomes (IFPRI 2016). A simplified public bidding process and shorter supply chains, which tend to be more sustainable and inclusive of local cultural practices, enabled its success. The model is under consideration by more than 30 low- and middle-income countries and has recently been endorsed by the African Union, including Mozambique, with technical leadership and expertise from the FAO and WFP (PAA Africa 2016).

In Brazil, after the reshaping of the PNAE, a new set of criteria were established, requiring nutritionally balanced meals for every age group that contain cooked and fresh food while avoiding processed foods, and expanded the provision to preschools and nurseries for vulnerable groups where up to 70 percent of their daily nutritional requirement was met (IFPRI 2016).

The Path Forward for Timor-Leste

The Government of Timor-Leste has managed a SFP, the Programa Merenda Eskolar (PME) since 2012. Previously, this was managed jointly with WFP from 2005 to 2012. The PME had a \$US17 million budget in 2017 to cover all municipalities (Government of Timor Leste 2017), allocating US\$0.25 per student per day and executed by each school (PDHJ 2016). The PME's main goal is to incentivize school attendance and reduce dropouts, with the sub-goals of improving students' nutritional status, providing energy for academic performance, supporting the local economy, and involving the local community in school management (PDHJ 2016). Multiple national stakeholders mentioned how the current implementation is not nutrition-sensitive enough and advocated for the benefits of serving fortified foods. The MOE, and more specifically, the Diresaun Nasionál ba Asaun Sosiál Eskolár (DNASE), should continue to strengthen the monitoring work on the effectiveness of the PME on achieving hunger and education goals. A yearly evaluation of the PME on its education and nutrition goals is required to assess the impact and generate data to better target actions in a timely manner. As recommended by the DDHJ report (2016), the MOE should develop a clear policy specifying the core objectives of the PME with measurable targets, implement a monitoring and evaluation framework, and improve accountability of procurement implementation by supporting a position in each municipality to monitor the PME performance.

To supply the needs of the PME, imported rice is provided through the National Logistics Centre of the MCIE (PDHJ 2016). While the carbohydrate component of meals could be supplied using local crops such as maize or tubers at least on a seasonal basis, if rice is to stay in the menu, it would make nutritional sense for it to be fortified - one means by which school meals can effectively reduce micronutrient deficiencies (IFPRI 2016). There are constraints with farmers' current ability to supply required amounts to satisfy the PME, suggesting a procedural adaptation to the HGFSF approach. A mixed model for Timor-Leste is recommended, where imported foods, like fortified rice or eggs, are used while the country's agricultural supply catches up. These imported foods are combined in menus with

local legumes, tubers, vegetables, and fruits –with the establishment of a gradually increasing quota for local produce. A common strategy between the MoE and MAF should drive this process and plan how the demand will meet the supply. Establishing School Meal Committees at the municipal level under the Diresaun Edukasaun Munispál is advised to manage the procurement with the current Grupu Fornesedór Lokal and ensure a regional and efficient approach. Current efforts to promote school gardens are valued by national stakeholders, with the potential to supplement some produce to the PME.

In Timor-Leste, there is a strong need to diversify diets particularly among children. Most children 6 to 23 months ate only two food groups per day, increasing to three for children 24 to 59 months old (NSD 2015). Animal-source foods are consumed rarely, which for the older cohort particularly, has a significant positive association with stunting (NSD 2015). The PME embeds a huge potential to support acquiring an early taste for diverse foods as well as providing at least a proportion of the required macro and micronutrients for optimal growth. Including protein and micronutrient rich ingredients in school meals is urgent to support nutrition outcomes and was frequently mentioned during the national consultations. The PME should use eggs and legumes as a cost effective and practical way to support quality meals in schools, from local sources when possible. Despite the current supply of eggs being insufficient for the PME, there should be efforts from the MoE and MAF, as well as the private sector, to promote their increased production. Several opportunities to supply schools arise: farmers report being responsive to stable demand generating an incentive to ensure local legume supply and for eggs, creating a public-private enterprise to raise layer chickens and satisfy the public food procurement needs. Changes in the food system to achieve dietary goals can be very powerful, such as improving varieties of legumes to boost production, support management practices to reduce loss, and developing quick cooking bean flours (IFPRI 2016). Ultimately, school feeding must be framed as a nutrition-sensitive intervention.

Community Input

Communities have expressed very clearly how important the role of the education system is to ensure food security and nutrition outcomes. While there was not an explicit discussion about the monitoring and evaluation of the PME, many people recognized its crucial contribution to ensuring children’s school attendance and demanded ensuring the meals provided are nutritious and use locally produced foods. Some also advocated for a breakfast programme with milk and maize porridge.

Procuring local foods is fully aligned with communities’ views, since there is a very strong demand for linking local food producers with the PME to promote local foods, both at the demand and at the supply sides, and their nutritional value. This core recommendation answers to two very poignant concerns among communities, supporting rural farmers by identifying markets while ensuring a regular demand, and promoting local food consumption and nutritious diets among vulnerable population, children, and farmers.

Diversifying diets with local produce and promoting balanced meals through the schooling system has been repeatedly discussed and demanded during the community consultations. Concerns with training staff on preparing healthy and nutritious meals were mentioned too while ensuring the food safety and hygiene practices of food served. Moreover, nutrition education as a key approach to support better dietary choices and health promotion throughout the school curriculum are demanded.

SDG2.2 -- ENDING ALL FORMS OF MALNUTRITION: RECOMMENDATION #3

Recommendation

Address wasting and stunting through a five-pronged approach: food based approaches, primary healthcare, WASH, education and women's empowerment, and behaviour change to address social norms by:

1. Increasing the availability, access, utilization, and promotion of nutritious, locally adapted, and resilient seeds and seasonal crops/trees/animals that contribute to a positive diversification of the diet (fruits, vegetables, pulses, nuts, orphan crops, seafood/fish, small animals), considering the interests of small-scale, female, and marginal farmers as well as natural resource management. This could be done by preserving globally important agriculture heritage systems that provide sustainable diets in local food systems, protecting indigenous and traditional cultures and crops, promoting biodiversity conservation and sustainable use, and promoting best infant and young child feeding practices;
2. Increasing access to primary healthcare for women and children with a focus on preventative services including deworming and vitamin supplementation.
3. Improving water, sanitation, and hygiene (WASH) and eliminating open defecation through Community-Led Total Sanitation (CLTS);
4. Promoting women and children's health, nutrition, and empowerment and access to formal education for adolescent girls by providing social protection programs that involve a food safety net for families that also encourage girls to stay in school; and
5. Identifying leverage points (i.e. through women's empowerment) for developing effective intervention strategies to promote food utilisation, and specifically address individual factors, behavioural settings, sectors of society, and social norms and values that may constrain or reinforce healthful eating.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG2.2, 2.3 and 2.5– Short, Medium, and Long Term

Who is Responsible

The Ministries of Health, Education, and Agriculture & Fisheries

Why It Matters

To address undernutrition, the food system needs to be improved so that everyone, especially the most vulnerable, has access to sufficient, nutritious, and diverse foods. This requires producing more nutritious food and ensuring that people can access and afford them. It also requires that these nutritious foods are culturally appropriate. Dietary diversity can be achieved by farmers growing more crops and varieties (Tomlinset al. 2007) as well as increasing market access so that people are able to buy more diverse foods. Dietary diversity as measured by the number of different food groups consumed has been repeatedly shown to be a reliable indicator for nutrition in women (Arimond et al. 2010) and in children (Arimond and Ruel 2004, Steyn et al. 2006, Kennedy et al. 2007, Moursi et al. 2008).

Access to primary healthcare improves overall health, which has a large impact on nutritional status. People with infectious diseases have both increased nutritional needs and decreased nutrient absorption. It is important for all people to have access to healthcare that provides preventative services with a focus on detecting and treating tuberculosis, diarrheal disease, and gastrointestinal parasites (Ngure et al. 2014). Nutrition can also be incorporated into primary healthcare and can lead to greater identification and treatment of micronutrient deficiencies such as

anaemia. Both treating parasites and providing iron supplementation are important in preventing and treating anaemia (Yip 1997). It is essential that these services be offered to women of reproductive age and to children.

Access to safe water, sanitation, and hygiene (WASH) is an important component of health that dramatically decreases infectious diseases, including diarrheal disease, and environmental enteropathy. Diarrheal disease and environmental enteropathy both contribute to malnutrition and stunting. Good nutrition status requires adequate intake of nutritious food as well as the absorption and utilization of the nutrition in that food. When people suffer from gastrointestinal illnesses or environmental enteropathy, they are unable to absorb and utilize the nutrients in the food they consume (Ngure et al. 2014). Community-led total sanitation is a method to give communities the lead and power to improve their own sanitation and eliminate open defecation. This is important because it allows communities to decide on the solutions that work for them and helps to ensure that improved facilities are used. This is key because sanitation interventions are only successful if everyone uses them (Kar 2008).

Women's health and nutrition is vital not only for her own well-being, but for her children's as well. Poor nutrition often begins in utero and extends, particularly for girls and women, well into adolescent and adult life. It also spans interminably into future generations. These intergenerational effects are cyclical, reinforcing, and often devastating. If improvements in nutrition of women and adolescent girls could be accelerated, multiple impacts and positive feedback linkages could be a reality, including: avoidance of pregnancies at a young age, declines in low birth weight and better birth outcomes, improvements in child growth (e.g. decreases in stunting) for healthy, well-nourished children, and productive, engaged woman citizens (undernutrition that occurs during early childhood, adolescence, and pregnancy has an additive deleterious impact on the birth outcomes of infants (ACC/SCN 1992). Term low birth weight (LBW) infants who have suffered intrauterine growth restriction (IUGR) as fetuses are often born undernourished and are at a higher risk of mortality in the neonatal period and later in infancy. If they survive, catching up on lost growth is challenging and they are more likely to experience a variety of developmental deficits, including cognitive and immunological dysfunctions and increased morbidity (Victora et al. 2008).

Education for girls and women is an important component in addressing undernutrition. Data from low- and middle-income countries from 1970 to 1995 showed that education for women was responsible for 43 percent of the decrease in hunger (Smith and Haddad 2000). In India, children whose mothers had some education were less likely to be underweight, wasted, or stunted compared to children with mothers with no education (Mishra and Retherford 2000). The same connection has been found in Kenya (Abuya et al. 2012) and Bangladesh (Anwar et al. 2013).

The amount of and access to nutritious foods is necessary but not sufficient to address undernutrition. There also needs to be work on education and behaviour change to promote the purchase and consumption of nutritious, diverse foods throughout the year. This needs to be focused on pregnant women, infants, and young children because children's first 1000 days are essential for health, not just during that period, but for an individual's entire life (Black et al. 2013). During pregnancy, women need to eat sufficient foods to provide calories, protein, and micronutrients. Infants should be exclusively breastfed for the first six months. Young children should receive nutrient dense complementary foods from six to 23 months (UNICEF 2016a). Feeding young children animal source foods is especially important because they are high in protein and iron and zinc, which are absent from breastmilk (Dewey 2013). While the first 1000 days are critical, good nutrition is also important for older children and adults. Nutrition needs to be prioritized so that limited resources are used on nutritious foods.

Where It Has Worked

Agriculture-based solutions have made important contributions to dietary diversity, micronutrient sufficiency, and nutritional status in many countries. These include home gardens and other homestead food production models (Onley et al. 2015), intercropping and mixed landscapes (Kerr et al. 2007), irrigation (Burney et al. 2010), aquaculture (Murshed-E-Jahan et al. 2011), and animal production systems including poultry, goats, and cattle (Carletto et al. 2015). The Federated States of Micronesia improved nutrition in their country by increasing the amount of local nutritious food grown. They focused on growing indigenous foods and promoted these through a "Let's Go Local" campaign (Englberger 2011 and 2013).

Low- and middle-income countries with successful reductions in stunting had programs that included nutrition education and counselling, growth monitoring and promotion, immunisation, WASH, and social safety nets. Successful interventions were characterised by a combination of political commitment, multi-sectoral collaboration, community engagement, community-based service delivery platform, and wider programme coverage and compliance (Hossain et al. 2016).

Increasing access to primary healthcare is effective in decreasing malnutrition. In India, deworming increased children's weights (Awasthi 2008). In Zaire, deworming did not increase children's weights or heights but vitamin A supplementation led to increases in both (Donnen 1998). There are also innovative ways to increase access, such as providing care through schools. Many countries have effectively offered deworming and vitamin supplementation to children at school. In Zanzibar, deworming in schools was shown to increase children's weights and heights (Stoltzfus 1997) and decrease moderate-to-severe anaemia (Stoltzfus 1998).

WASH has long been shown to be an important component of malnutrition, especially stunting, across the world. A study from the 1990s found that improved WASH was associated with decreased wasting and stunting in Bolivia, Guatemala, Sri Lanka, Morocco, Burundi, Ghana, Togo, and Uganda (Esrey 1996). In India, household access to WASH was determined to be associated with decreased stunting. Household access to improved sanitation was associated with a 16 to 39 percent decreased odds of stunting in children under two years old (Rah et al. 2015). In Ethiopia, a five-year study compared the effectiveness of health interventions, nutrition education, and WASH and found that WASH was the only one to significantly decrease stunting. There was a 12.1 percent decrease in stunting in the WASH group (Fenn et al. 2012).

The majority of nutrition-specific interventions have targeted pregnant women in an effort to counter known negative birth outcomes associated with undernourished mothers. The success of an intervention is also predominantly measured in birth outcomes, not maternal nutritional status outcomes. Four nutrition specific interventions with sound evidence are: maternal counseling and education, micronutrient supplementation (iron and folic acid) and fortification, protein and energy supplementation, and lipid based supplements (Bhutta et al 2013). Evidence also suggests that promoting the nutritional wellbeing, physical and mental health along with protecting their overall empowerment, social standing, time and work burden, resources, and assets (e.g. land and technology) have potentially very positive impacts on women's lives. Nutrition-sensitive approaches and programs are key to addressing these changes (Jennings et al 2010).

In Bangladesh, they found that improving women's education and thus decreasing children's malnutrition had economic benefits and that for every Bangladeshi taka spent on women's education, the country would get back between two and eleven taka (Ahsanuzzaman 2016).

Education programs have been shown to improve infant and young child feeding practices. Breastfeeding education increases breastfeeding initiation rates (Dyson 2005) and duration of exclusive breastfeeding (Lumbiganon 2012). In the United States, a breastfeeding education program at a health centre increased breastfeeding rates from 18.9 to 47.1 percent for all infants and from 19.2 to 60.8 percent for low birth weight infants (Wagner et al. 2002). Education programs have also been effectively used in Bolivia with early initiation rates increasing from 56 to 74 percent and exclusive breastfeeding rates increasing from 81 to 88 percent and in Madagascar with rates increasing from 34 to 78 percent and 86 to 91 percent respectively (Baker 2006). In India, an educational program on complementary feeding practices led to an increase in energy intake and a small but significant increase in height in young children six to 18 months old (Bhandari 2004). The Alive and Thrive programs in Vietnam and Bangladesh that used mass media campaigns and behaviour change communication have also been successful (Nguyen et al. 2016).

The Path Forward for Timor-Leste

Timor-Leste should follow a similar approach by increasing the amount of nutritious food grown. The country should focus on growing more legumes, nutritious carbohydrates such as orange-fleshed sweet potatoes, vegetables, and fruits and should also grow more indigenous crops such as moringa, sago palm, kumbili, and Job's tears. These suggestions were echoed by multiple stakeholders during the national consultations. This will increase the amount of nutritious food for subsistence farmers to eat themselves as well as to sell to others. Farmers also need to ensure that crops can be grown year-round to decrease seasonal hunger. The country needs to increase market access,

especially in the most remote areas. Along with increasing the amount of and access to nutritious, diverse food, the country also needs to provide education and promote these foods so that people will buy and consume them.

Timor-Leste should focus on increasing healthcare access, especially for the most remote and poorest citizens. This can be done through strengthening and scaling up SISCa (Integrated Community Health Services), increasing community health posts, and training healthcare staff. Work needs to be done with community leaders so that more people access available services. Deworming and iron and vitamin A supplementation should be offered both through health posts and at schools. Offering these treatments at schools is important for broader coverage.

Timor-Leste has made a lot of progress in WASH. The country has increased safe drinking water and access to latrines and toilets, especially in urban areas. However, some people still live in areas where these are lacking. To address stunting throughout the country, WASH needs to be improved in the most remote rural areas. This should be done through a community-led total sanitation approach where community members develop their own unique solutions to ensure that they are appropriate for each community and that they will be used.

Timor-Leste should increase education for girls and women by providing families with access social protection that is conditional on school attendance for all girls in the family. The country has the Bolsa da Mãe program that provides the most vulnerable families with conditional cash transfers if their children attend school; however, this program does not cover all families and is not specific to girls' education. Increasing access to health services and nutrition programmes directed at women of reproductive age will also be key.

Timor-Leste needs to scale up the education programs that the country already has for nutrition in pregnancy and for infant and young child feeding practices. Many women limit their food consumption during pregnancy to have smaller babies and safer pregnancies. Changing this will require educating women about the importance of nutrition in pregnancy as well as improving healthcare so that childbirth is safer. There are also beliefs and practices around infant and young child feeding that are harmful. Many women do not follow best practices for breastfeeding and complimentary feeding but instead follow the advice of their family and community leaders. Some women may not breastfeed at all or may stop breastfeeding early. Some women may also only feed young children rice porridge and may not feed them enough food or feed them frequently enough. Changing this also requires education. These issues were raised by multiple stakeholders during the national consultations. The MoH and Alola Foundation are already doing education in these areas through healthcare facilities and in mothers' groups but this should be scaled up and a train-the-trainer approach should be used. Another barrier to improving nutrition in Timor-Leste is the traditional ceremonies. People use large amounts of resources, including food and money, on these ceremonies, even in the poorest areas. Families may sell their animals to get money for the ceremonies instead of using them for food for themselves and their children throughout the year. Education about the importance of nutrition needs to include the prioritization of resources for nutrition instead of for ceremonies but this needs to be done in a culturally sensitive way. There also needs to be work to gain community trust for people to change their practices. One national stakeholder suggested achieving this by working with the Church.

Community Input

Increasing access to nutritious foods is in line with the community consultations where people recommended growing more diverse and indigenous foods. However, people were worried that the production costs were too high compared to the market prices for local foods and there was not enough profit in growing local foods. They also suggested increasing access to markets in rural areas. People in rural areas criticized the roads and market infrastructure and said that it was difficult for them to sell and buy food.

While community members discussed the importance of water in agriculture, there was little discussion and a poor understanding of the connection between access to safe drinking water, sanitation, and hygiene and nutrition. This emphasizes the importance of using a community-led total sanitation approach because this can be used to educate and engage the community.

While promoting education for girls was not specifically mentioned in the community consultations, people did stress the importance of education and identified a lack of education as a factor in malnutrition.

Women discussed restricting food during pregnancy due to the fear of delivering large infants. People recommended increasing education about nutritious diets to counteract this. Women did not have the knowledge about nutrition in pregnancy or for infants and young children and followed the advice of family and community leaders. They also reported not having enough food due to traditions that dictate that men eat first. They stressed the importance of having education be for entire families including men since they are often the household decision makers. They also discussed the importance of including mothers-in-law because they are often the ones providing the information on food and nutrition, especially around restricting food during pregnancy and for infants and young children. They also stressed the importance of reaching remote populations and not only providing education at healthcare facilities because many people do not go to them. People also discussed the importance of traditional ceremonies and the practice of using money on these ceremonies even when that meant that there was not enough for food. They also recommended increasing nutrition education to improve this.

SDG2.2 -- ENDING ALL FORMS OF MALNUTRITION: RECOMMENDATION #4

Recommendation

Mitigate wasting by scaling up the Community-Based Management of Acute Malnutrition programme.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG2.1 and SDG2.4 –Short and Medium Term

Who is Responsible

The Ministries of Health and Social Solidarity

Why It Matters

It is important to devote sufficient resources to decreasing wasting because of its high morbidity and mortality (Black et al. 2013). Community-based management of acute malnutrition (CMAM), alternatively known as integrated management of acute malnutrition (IMAM), has been shown to be effective in treating moderate and severe acute malnutrition and decreasing wasting. The CMAM Surge approach was endorsed by the United Nations in 2007 and is now being used in 69 countries. It prioritizes including the treatment of acute malnutrition in routine healthcare. It focuses on long-term strengthening of the healthcare system for the screening and treatment of acute malnutrition as well as capacity building to meet short-term increased needs during hunger seasons and emergencies. The goal is to improve the healthcare staff, supply of materials, and infrastructure until the system has the capacity to treat seasonal and emergency levels of acute malnutrition without any outside assistance (Hailey and Teweldeberha 2010, Concern Worldwide 2016).

Where It Has Worked

The CMAM Surge approach was implemented in Pakistan in 2007, expanded in 2009, and used after the extensive floods in 2010. The floods caused acute malnutrition rates to increase from 2.9 to 15 percent in Punjab and from 6.1 to 23.1 percent in Northern Sindh. Pakistan only had CMAM programs in a few areas and did not have the capacity to meet the need on its own so they received assistance from the WHO and UNICEF. They screened 1.3 million children and treat 55,921 out of 89,832 children with severe acute malnutrition and 155,000 out of 301,000 children with moderate acute malnutrition. Areas of the country that had CMAM programs before the floods were the most effective, confirming the importance of implementing and strengthening programs before emergencies occur (Qazi 2012).

The Path Forward for Timor-Leste

The MoH has already developed and begun to implement a policy on CMAM and has trained healthcare workers at each health post in nutrition interventions. This is an important first step; however, this needs to continually be scaled up until the country can treat all the cases of acute malnutrition in an average year as well during emergencies. In the national consultations, several stakeholders stressed the impotence of improving acute malnutrition surveillance. Currently, many children are missed or are treated late because they are not brought to healthcare facilities. Increasing surveillance would allow the country to treat more children and to treat them earlier. It is also important to increase capacity to deal with seasonal increases and emergencies and to get outside assistance when necessary. Timor-Leste has hunger seasons as well as emergencies such as El Niño when acute malnutrition increases. During the last El Niño, the country was not able to adequately respond and many people suffered from acute malnutrition.

Community Input

In the community consultations, people did not mention hunger. When asked, they said that they had enough food to survive and thought that it might be a bigger problem in urban areas where people buy most of their food. However, in Timor-Leste, 38 percent of children under five years are underweight and 11 percent are wasted (Provo

et al. 2016). Wasting is higher in urban areas but it is a problem in rural ones as well. People in the community consultations said that they were not aware of the signs of malnutrition and suggested increasing education so that they would be better able to identify it themselves since they stated that seeking formal healthcare is a last resort. They discussed wanting to be able to catch and treat malnutrition earlier.

SDG2.2 -- ENDING ALL FORMS OF MALNUTRITION: RECOMMENDATION #5

Recommendation

Address rising obesity in women and children through mass media campaigns that promote healthy food consumption in urban centres and incentivize the retail – food environment to promote healthy foods.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG2.1 and SDG2.4 – Short and Medium Term

Who is Responsible

The Ministry of Health

Why It Matters

Although undernutrition receives the most attention in low- and middle-income countries, overnutrition is an emerging problem and rates of overweight and obesity are increasing due to a nutrition transition where processed foods high in salt, sugar, and trans and saturated fats are increasingly being consumed and physical activity in daily life and work is decreasing (Popkin 2006). Processed foods become cheaper, driving increased consumption (Drewnowski and Popkin 1997). In some cases, such as in the Philippines, Malaysia, and Indonesia, people consume more processed foods, but they also add more salt, sugar, and fat in the form of vegetable oil to traditional foods that they prepare themselves (Lipoeto et al. 2013). Since this transition is largely driven by cost and convenience, the poorest are the most at risk. Women are especially affected and obesity rates are often the highest in women (Dinsa et al. 2012). It is important to address this double burden of malnutrition to avoid the high rates of overweight and obesity as well as the related noncommunicable diseases seen in high-income countries. This can be done through nutrition education as well as food promotions and incentives. Nutritious foods can be promoted through marketing, which is especially effective in children (Glanz et al. 2012). Foods can also be promoted through prominent placement in markets. Financial incentives have been shown to be effective and decreasing the cost or offering promotions such as buy one, get one free for nutritious foods increases purchases (Chandon and Wansink 2012).

Where It Has Worked

This has been done in Chile, which had the highest obesity rate in Central and South America. Two-thirds of people in Chile were overweight and 27.8 percent were obese (Pan American Health Organization 2016). This was the result of increased consumption of processed foods. In 2012, Chile passed Law 20.606 that required foods high in salt, sugar, and fat to have a warning label and outlawed advertising these foods to children and the distribution or sale of these foods in schools (Chile Ministry of Health 2012). Since being implemented, 92 percent of people say that the law has impacted their food consumption (Valdabenito et al. 2017).

The Path Forward for Timor-Leste

In Timor-Leste, obesity is emerging and increasing in women and children. The availability of packaged foods is increasing and during the national stakeholder consultations, several stakeholders mentioned the increased consumption of instant noodles and other packaged foods. Packaged foods can easily be found in kiosks, markets, and grocery stores in Dili as well as in rural areas. It is important for Timor-Leste to act now to prevent more substantial increases in overweight, obesity, and noncommunicable diseases in the future. Timor-Leste can promote the consumption of nutritious foods such as vegetables and fruits and discourage the consumption of salt, sugar, and trans and saturated fat through nutrition education programs that promote whole foods and warn against processed foods, promoting whole foods through financial incentives such as subsidies, and regulating the marketing of processed foods to prevent them from being advertised to children. In the national consultations, several stakeholders also suggested community nutrition education through community groups and cooking demonstrations.

Community Input

In the community consultations, people noted the increased availability of processed foods and said that, while they were tasty and convenient, they wanted a balance between processed foods and local foods. Women reported preparing, serving, and eating more processed foods due to their convenience and said they were useful when they did not have a lot of time or access to more cooking equipment and fuel. People also discussed not knowing which foods to eat and recommended increasing education about which foods were nutritious and which foods they should avoid. People were interested and wanted this information but did not have access to it. They suggested providing this information through the media and in school curriculums. People also wanted to know how to prepare nutritious foods. Some people reported having enough money to buy nutritious foods but not knowing how to prepare them. They liked cooking demonstrations and requested that more of these be offered in their communities.

SDG2.3 -- IMPROVING AGRICULTURE PRODUCTIVITY: RECOMMENDATION #6

Recommendation

Promote agroforestry as a source of cash crops to export, natural resource restoration, and climate resilience.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG2.4 – Medium Term

Who is Responsible

The Ministries of Agriculture & Fisheries and Public Works, Transports, & Communications

Why It Matters

Agroforestry involves the integration of trees with annual crop cultivation, livestock production, and other farm activities in a series of land management approaches (Dawson et al. 2013). It includes both traditional and modern land-use systems where woody perennials (trees, shrubs, palms, bamboos, etc.) are managed in conjunction with crops and/or animal production systems in agricultural landscapes (FAO 2013b). Integration of agroforestry increases farm productivity when each component occupies a complementary niche and their associations are managed effectively (Steffan-Dewenter et al. 2007). Agroforestry sustains livelihoods, alleviates poverty, and promotes productive and resilient agricultural environments (Dawson et al. 2013). It also is a natural resource management system that is crucial for smallholder farmers because it can improve their food supply, income, and health, while providing a wide range of economic, sociocultural, and environmental benefits (FAO 2013b). When practiced at scale, it can enhance ecosystems through carbon storage, prevention of deforestation, biodiversity conservation, cleaner water, and erosion control, while enabling agricultural lands to withstand events such as floods, drought, and climate change (FAO 2013b).

Market data recorded for agroforestry tree products is sparse, yet tree commodity crops such as palm oil, coffee, rubber, cocoa, and tea –grown to a significant extent by smallholders, have a combined annual export value of tens of billions of United States dollars (FAO 2013a). For agroforestry systems to be productive, policies are required to reform land and tree tenure for the benefit of smallholders, to reform how small-scale farmers obtain agroforestry inputs, and to recognize agroforestry as an important investment option (Dawson et al. 2013). Mixed agroforestry regimes combine tree commodities in diverse production systems with locally relevant food trees and crops – such as shade coffee and cocoa systems (Jagoret et al. 2012, SCI 2013) – which increase, or at least do not decrease, commodity yields and profitability (Clough et al. 2011). Some international purchasers of tree commodity crops are now actively encouraging such systems through certification and other schemes (Millard 2011). Planting trees and shrubs as nitrogen-fixing green fertilizers is a demonstrated approach to improve soil fertility with consistent evidence of increasing average maize yields in Africa (Sileshi et al. 2008). This agroforestry approach has been able to stabilize crop production in drought years and during other extreme weather events, while also improving crop rain use efficiency in southern Africa (Sileshi et al. 2011 and 2012), resulting in important food security gains in the context of climate change and increased drought incidence in this region.

Where It Has Worked

The Malawi Agroforestry Food Security Programme is a good example of this approach where improved green fertiliser technologies increased maize yields and beneficiaries also had more food-secure months per year (CEI 2011). In East, Central, and West Africa, a private-public initiative is integrating cultivation and markets to support the sustainable development of a new tree commodity crop found wild in humid forests, the allanblackia seed, that yields edible oil for the production of healthy spreads that are low in trans fats, with a significant potential in the global food market. The integration of allanblackia into small-scale cocoa farms is being promoted to support more biodiverse and resilient agricultural landscapes, and as they are harvested at different times, spreading farmers' incomes throughout the year (Jamnadass et al. 2010).

The Path Forward for Timor-Leste

A core element of the government's Strategic Development Plan is to improve the productivity and sustainability of the agricultural sector (Government of Timor-Leste 2010), occupying 64 percent of the labour force (Ministry of Finance 2016b) and generating 25 percent of non-oil GDP (FHI 360 2014). Agriculture has a key role to play in reducing poverty, promoting rural development, and ensuring food security outcomes, both through food production and income generation for the rural poor. It is estimated that 50,000 households live below the poverty line and are non-commercial subsistence farmers, while 137,000 are deemed to be commercial smallholders (FHI 360 2014 based on Census 2010). About 80 percent of households are engaged in crop production, mostly maize, legumes, tubers, and vegetables, while coconuts, coffee, timber trees, and perennial fruit trees are grown by 51, 38, 37 and 49 percent of cropping households respectively; while 86 percent are engaged in livestock rearing mainly for sale with chickens being the most common type, followed by pigs, cattle, and goats (Ministry of Finance 2016b).

Timor-Leste has the potential to commercially develop a range of agricultural products for the domestic and export markets (World Bank 2011a). Diversifying the agriculture sector is essential to expand as planned and opportunities in the agroforestry sector in timber, such as high-value trees including sandalwood and teak, and non-timber products, such as bamboo, cocoa, coconuts, spices, coffee, perennial fruits, nuts, and animal fodder, integrated with livestock developments, need to be prioritized in MAF's strategy. The MAF should increase the range of products from the agroforestry sector for the export market and natural resource restoration by developing community-based nurseries, training rural populations in agroforestry establishment and management, offering continuous training, and promoting integrated animal systems. Additionally, MAF should explore private-public partnerships to support mid- to long-term investments in exports, including bamboo and high-value timber. Timor-Leste native resources of Indian sandalwood have been heavily exploited in the past (McWilliam 2001), presenting an opportunity to plant for trade and to restore endemic natural resources, as sandalwood provides high-value, low-volume, non-perishable products in demand on the international market (Page et al. 2012). Training for communities should include species of trees that are nutritious native forage for animals and also perform nitrogen-fixing functions. Land tenure issues should be revised for the benefit of smallholders and to support the development of accessible agroforestry inputs by liaising with the private sector. The GIZ (EU funded) and MAF programs on agroforestry for sustainable livelihoods and climate change resilience are particularly well placed to support these developments. A mixed agroforestry model for diversification would enable rural households to broaden their sources of food and income and overcome their vulnerability due to weather events and unexpected disasters. Finally, forest conservation is important to ensure food security buffers of wild foods that impoverished, at-risk households resort to during deficit years (Erksine et al. 2015).

Community Input

Communities advocated for the government to provide guidance on identifying suitable export crops and products and to support farming households to transition towards commercial production. Farmers are preoccupied with finding ways to increase income levels and agroforestry provides a double win by which rural populations can sustainably improve their livelihoods and resilience. Concerns around deforestation and its impact on groundwater supply and soil erosion are pressing. Farmers report high levels of vulnerability towards rain pattern variations and have little clarity regarding what can be done to adapt to climate change, demanding better capacity on climate-smart approaches.

SDG2.3 -- IMPROVING AGRICULTURE PRODUCTIVITY: RECOMMENDATION #7

Recommendation

Improve spices and coffee production, establish place of origin value, and improve product quality and production processes.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG 2.1 –Medium Term

Who is Responsible

The Ministry of Agriculture & Fisheries

Why It Matters

Low- and middle-income countries such as Madagascar, Comoros, and the United Republic of Tanzania earn a substantial part of their foreign exchange from spice exports; with vanilla, cloves, and cardamom as their main spices exported (ICT 2017). Other major low- and middle-income country exports are black pepper, ginger, paprika, coriander, cumin, cinnamon, and turmeric and the world market for spices and culinary herbs is valued at around US\$ 4 billion (ICT 2017). Coffee, on the other hand, has gone through structural changes in global supply and demand. On the supply side, the expansion of Robusta production in Vietnam during the 1990s and Arabica production in Brazil where innovative low-cost production systems have been developed, increase both the quantity and quality dramatically (Technoserve 2003). On the demand side, there has been unprecedented growth of branded ‘niche’ products, such as specialty, organic, fair trade, eco-friendly (such as shade-grown and bird-friendly), decaffeinated, and flavoured coffees and so on (Petit 2007). Specifically, coffee buyers’ requirements are focusing on higher quality and consistency and traceability of origin as well as economic, social, and environmental ‘transparency’ and capacity for direct long-term partnerships between producers and roasters (NRI 2006).

Geographical indication (GI) identifies origin-linked products that have specific quality attributes linked to the places where they are produced that build up a reputation over time (Lecoent et al. 2010). Naming the coffee growers attracts an even larger premium in the top niche coffee market (TTC 2016). Such approaches support sustainable rural development as they strengthen the ties between local stakeholders, places, and agricultural and food products. To implement a GI process, a set of rules needs to be laid down in a Code of Practice, requiring the establishment of a management system that is specific to the local conditions and capable of managing the GI strategy across the whole value chain (Lecoent et al. 2010).

Where It Has Worked

Ethiopia, the largest coffee producer and exporter in Africa, relies on the crop for a high proportion of its export earnings (Petit 2007). Coffee plays a central role in sustaining the livelihoods of smallholders who represent 95 percent of the total production in a low input–low output system, making Ethiopian coffee production naturally ‘organic’. Ethiopia plays an important role in the world coffee market because of its unique and world-renowned coffees with distinctive features, and is marketed as an Ethiopian product at high premiums (Petit 2007). Finally, coffee has also been an important source of tax revenue for the government (Love 2002). In Rwanda, American-trained domestic tasters, or “cuppers,” have strategically cultivated Rwandan coffee exports that appeal to growing markets in the United States, Japan, and Europe (Goldstein 2011). In the Netherlands, fair-trade coffee has the highest recognition and demand among consumers, indicating that raising the cultural premium and market salience of fair-trade can add value in the export market (Khamis 2015).

The Path Forward for Timor-Leste

Coffee began production during Portuguese colonization and is now the leading non-oil export (approximately 1 percent of non-oil GDP) and the main agriculture commodity in Timor-Leste (NSD and UNFPA 2011). Over one-third

(37.6 percent) or almost 77,000 households grow this important crop (Ministry of Finance 2016b). However, its yields are very low, thus households that rely on coffee for their livelihoods are likely to be poor (Inder et al. 2013). Due to the coffee industry employing many rural poor, its development has the potential to bring about economic and welfare returns (World Bank 2001). Barriers include overgrown and aging trees and a lack of management towards crop adequate cultivation, harvesting only 21 percent of the average in other coffee producing South Asian nations (World Bank 2011a). Opportunities include a unique variety, the Timor Hybrid, recognised as a high-quality organic coffee in the international market, and being the largest single source of organic coffee in the world (Government of Timor-Leste 2010). There is huge potential to develop a market for niche high-grade organic coffee with name of origin or GI as added value. To develop the coffee industry, the MAF should support coffee farmers to increase yields by strengthening farm management practices including improving soil fertility, replanting and pruning trees, and strengthening harvest techniques, timing, and grading while improving processing techniques to ensure more value remains for producers. They also need to develop a marketing strategy by capitalising on the geographical indication value, achieving a fair-trade and/or organic certification, and developing a Timor-Leste brand. The newly established Timor-Leste Coffee Association and sector support by ADB are promising advancements (ADB 2016). Some national stakeholders also recommended creating coffee extensionists and solving land tenure issues to support effective expansion.

Other high-value niche crops, such as spices, that the government has identified include black pepper, ginger, cloves, and vanilla, for which the unique selling point of de facto organic production is to be developed in a multi-product Timorese identity brand based on geographical identification (Government of Timor-Leste 2010). In order to achieve this, the MAF should formalise a Code of Practice through its Agribusiness Directorate, identify suitable areas for such cash crop production, and support local farmers to transition towards selected crops. Strengthening and learning from current export-led initiatives such as Cooperativa Café Timor (CCT) that trades coffee, cloves, and vanilla or Cocomau Cooperative that trades coffee, could be a good starting point. Efforts should also be made to transition towards ensuring their operational sustainability, since they both rely heavily in external technical assistance and marketing support (FHI 2014).

Community Input

Consultations in coffee growing municipalities were only undertaken in Ermera and the farmers involved worked on horticulture value chain projects. However, government leadership on the agriculture strategy is a clearly articulated demand from the farming community, from which identifying and supporting the development of cash crop production and markets was made. Also, many groups mentioned the value of a regionalised approach to enable the production of suitable crops and generate economies of scale that make commercial sense. MAF guidance in applying this strategy is certainly welcomed and sought after.

SDG2.3 -- IMPROVING AGRICULTURE PRODUCTIVITY: RECOMMENDATION #8

Recommendation

Invest in women farmers including access to land rights, technology for time and work savings, entrepreneurial management training, as well as legal representation for their rights and protection against violence to increase women's empowerment and agricultural productivity.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG 2.1 and 2.2 –Long Term

Who is Responsible

The Ministries of Agriculture & Fisheries; Public Works, Transports, & Communications; and Social Solidarity

Why It Matters

In low- and middle-income countries, women supply 43 percent of all agricultural labour and make an essential contribution to this sector and other rural enterprises (FAO 2011). However, women lack the resources and opportunities to make the most productive use of their time, while facing much higher constraints than men in accessing productive resources, markets, and services (FAO 2011). Moreover, rural women make up the majority of the world's poor, with the lowest levels of education and the highest rates of illiteracy (FAO 2009). This so called 'gender gap' reduces women's input to the agriculture sector, diminishes their productivity, and hinders the achievement of broader economic development and social goals (FAO 2011). Increasing access to water, energy, and transport are particularly beneficial in decreasing women's workload, improving their health, and providing access to easier and safer mobility (IFAD 2016). Investing in rural infrastructure and labour-saving technologies is essential to lessen the burden of water and firewood collection, to allow access to markets, and to increase their productivity (IFAD 2016). If gender-specific differences in input use could be overcome and female farmers could achieve the same yields as male farmers, a 20 to 30 percent yield gap, the evidence suggests that the production gains would be substantial, hunger and poverty would be reduced, and economic growth would ensue (FAO 2011).

Yet women face additional legal and social barriers that limit their ability to adapt and benefit from this change, like access to land. In almost a third of low- and middle-income countries, laws do not guarantee the same inheritance entitlements for men and women (UNSD 2015), and even when statutory laws ensure women's land rights these are often not recognized by customary practices (IFAD 2016). Because many of the constraints faced by women are socially determined, they can change. Strengthening implementation of gender-related policies and working with governments to develop mechanisms for implementation are fundamental to promoting gender equality and addressing structural inequalities (IFAD 2016). Finally, women's power to make and influence key decisions is essential to improving nutrition outcomes, and evidence shows how children are less likely to be stunted if their mother has secondary education (IFPRI 2016). Women are often targeted in conditional cash transfer programmes because of the overwhelming evidence that, when women control a higher proportion of household income, families tend to spend a higher share of their budgets on the education and nutrition of their children, as well as indirectly strengthening the bargaining position of women in the intra-household decision-making process (FAO 2011).

Where It Has Worked

In India, IFAD supports the Tejaswini Rural Women's Empowerment Programme, reaching over one million women. Self-help groups are an effective way to strengthen the decision-making and economic power of women in patriarchal societies. These are organized around a common purpose, such as savings and loans or economic activities. Most groups have strong social agendas, like supporting disabled people or addressing domestic violence and alcoholism. When self-help groups federate into apex organizations, these play a crucial role in improving production, marketing, and value addition and promoting value chain approaches and partnerships with financial service providers (IFAD 2013). In Morocco, the construction and rehabilitation of water sources in six rural provinces reduced the time that women and young girls spent fetching water by 50 to 90 percent. Primary school attendance

for girls in these provinces rose by 20 percent over a period of four years, which was partly attributed to the fact that girls spent less time fetching water (World Bank 2003).

The Path Forward for Timor-Leste

Timorese culture remains strongly patriarchal and is the key underlying barrier for women to claim rights to land and property, and while state laws may determine 'rights', the customary justice system determines ownership in practice (CEPAD 2014). Women's ability to claim rights to own land and property in Timor-Leste depends largely on the negotiations taking place within families, a process informed by their knowledge of laws and understanding of the process of claiming rights (CEPAD 2014). This suggests that educated women have a stronger chance to claim land rights, and since only 39.1 percent of rural women are literate (NSD and UNFP 2011) and most farmers live in rural areas, women farmers are at a particular disadvantage. Moreover, a recent study found that 59 percent of ever-partnered women have experienced physical and/or sexual violence in their lives (Nabilan 2016). The nation's policy framework; however, prohibits discrimination on the grounds of gender and promotes equality between women and men in all areas of life (Government of Timor-Leste 2002a).

Mainstreaming gender issues in the development of the agriculture sector is essential to achieve sustainable development and food security. To invest in women farmers, the MAF should continue to professionalise extension systems so that women are able to access technical knowledge and awareness on available services while increasing the number of female extension workers. The MAF should also provide training and business development so women are able to take advantage of emerging markets and enter into farmers' groups or business partnerships by strengthening the collaboration with the Secretary of State for the Support and Socio-Economic Promotion of Women (SEM). To provide support with technology and time-saving devices, MAF should promote and subsidize shellers and screens to reduce the workload of women in seed saving groups, since most users report significant time gains and women spend more time on grading cobs and shelling (SoL 2015). MAF needs to continue supporting rural households with water storage devices and water systems that have proven to significantly reduce women's time spent on water collection, while enabling improvements in agricultural production (BESIK 2016) by also working alongside and coordinating with the Ministry of Public Works, Transports, & Communication. Ensuring implementation of MAF's gender equality policy, developed with UNWomen, would ultimately support better investments in women farmers.

Community Input

Gender issues in agriculture production were generally not raised during consultations, despite talking with several women farmers and female extension officers. Appreciation for SEM's support to female farmer groups was reported. While talking about nutrition, gender issues were more often discussed, where some women reported that they go shopping while men have control over household budgets. Many community groups and national stakeholders discussed how significant amounts of household financial and physical resources, like livestock, are spent on traditional marriages and funerals and highlighted that such practices have a big impact on available household funds.

SDG2.4 -- SUSTAINABLE FOOD SYSTEMS AND CLIMATE RESILIENCY: RECOMMENDATION #9

Recommendation

Prioritise climate-smart agriculture, environmental sustainability, and nutritious, diverse diets across food production systems by:

1. Including the environment and nutrition as core objectives in national agriculture and food policies;
2. Promoting small animal rearing and kitchen gardens for vulnerable households and among female smallholders and supporting food biodiversity, i.e. nutritious species and local varieties/cultivars as a resilience mechanism in preparation for and in response to shocks;
3. Enforcing the Code of Conduct for Responsible Fisheries, particularly for indigenous communities;
4. Providing technology, training on sustainable practices (e.g. no till), and weather insurance to increase farmers' climate change resilience; and
5. Improve food drying and storage to decrease aflatoxin levels.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG 2.1, 2.2 and 2.3 – Medium and Long Term

Who is Responsible

The Ministries of Agriculture & Fisheries and Commerce, Industry, & Environment

Why It Matters

Climate change directly impacts food production and food security. Yields of staple crops are already decreasing and, in 2000, yields were 2.2 to 2.5 percent lower for maize, 4 to 15 percent lower for wheat, and 8.5 to 14 percent lower for soy (Porter et al. 2014). By 2100, these decreases are expected to be 20 to 45 percent for maize, 5 to 50 percent for wheat, and 30 to 60 percent for soy. Additionally, yields are expected to be 20 to 30 percent lower for rice (FAO 2016b). Climate change is also expected to decrease yields of vegetables and fruit and to decrease the availability of and access to these nutritious foods, especially for the most vulnerable. These changes in food access are expected to cause 529,000 deaths that otherwise would have been avoided by 2050 (Springmann et al. 2016). The severity of these effects on agriculture and nutrition necessitate including climate change in all national policies in these areas.

Increasing biodiversity is an important way to make food systems more resilient to climate change. Different crops, and even different varieties, have different survival rates in the face of increasing temperatures, changes in precipitation, and new pests and diseases. Increasing biodiversity decreases the risk of losing an entire harvest due to these changes. While one crop may be susceptible to a new pest and may suffer large losses, others may not be and may still produce a yield. This is important in maintaining yields and increasing food security (FAO 2016a). Increasing biodiversity also contributes to dietary diversity. Increasing household food production through home gardens and small animal rearing is also an important way to increase food security and nutrition for these households and a way to increase consumption of nutritious animal source foods, vegetables, and fruits. It can also provide an additional income source. This is especially important to increase resilience to short-term shocks and long-term stresses (Onley et al. 2015). Households can also access wild foods to increase their food security, especially when crops are lost or food prices increase. These foods are often good sources of micronutrients. They can also be sold to increase household incomes (Swiderska et al. 2011).

Fish are an important resource for nutrition. They are a good source of protein, omega-3 fatty acids, and micronutrients including calcium, iron, zinc, iodine, and vitamins A and D. Worldwide, people consume 17 percent

of their animal protein from fish but this is much higher in some countries. People consume 71 percent of their animal protein from fish in the Maldives, 59 percent in Cambodia, and 54 percent in Indonesia (FAO 2013). However, this important nutrition source is threatened by unsustainable fishing practices (UNEP 2010). Due to overfishing, the productivity of ocean fisheries peaked in the 1990s and has been declining ever since. Currently, 30 percent of ocean fisheries are overexploited and 57 percent are being used to their fullest potential (WRI 2013). This is exacerbated in the tropics by climate change, which is expected to cause fish to migrate from equatorial regions to the poles. This is expected to cause a 40 percent decrease of fish in the tropics (Cheung et al. 2010). The FAO developed the Code of Conduct for Responsible Fisheries in 1995 as a set of principles and standards for countries to follow to develop and maintain responsible and sustainable fisheries and to ensure that this resource will be maintained into the future (FAO 2011a).

Climate change is causing changes in weather patterns, including increased temperatures, less consistent precipitation, and more frequent and severe droughts and floods (Hansen et al. 2007). These changes present difficult challenges for agriculture and food production. Decreased production means less food for subsistence farmers who depend on their yields for their own consumption as well as increased food prices for those who buy it, which causes even greater food insecurity for the most vulnerable (Mason and Shrimpton 2010) and exacerbates hunger seasons (Devereaux et al. 2015). It is important to develop climate-smart agriculture to maintain food production in the face of climate change. This can be achieved by assisting farmers with training and technology. There are methods of farming that are more effective and more sustainable such as low- or no-till farming, which does not disturb the soil and increases the amount of water and nutrients in the soil, prevents erosion, and thus increases crop yields. There are also methods of farming including increasing biodiversity and taking advantage of ecosystem benefits through companion planting where one plant provides pest or disease protection for another, crop rotation where crops are moved season to season to decrease soil depletion and disease, and planting cover crops to increase soil nutrients (FAO 2016a). There are technologies such as tractors, seeders, and irrigation that can also increase yields and decrease labour. There is also insurance to provide farmers with a safety net when these methods fail and they lose crops in the face of droughts or floods.

Aflatoxin is a mycotoxin that is produced by *Aspergillus* species. It is a dangerous contaminant, even at low levels. At low levels, aflatoxin impacts child growth and is associated with underweight, wasting, and stunting (Gong et al. 2002, IFPRI 2012). One study found these associations to be dose dependent (Khlanguiset et al. 2011). Aflatoxin is also a carcinogen and consumption increases the risk of liver cancer. At higher levels, consumption can be fatal (Khlanguiset et al. 2011). Aflatoxin is a problem in many staple foods including grains and legumes, most importantly maize and groundnuts. When food is contaminated with aflatoxin, it must be destroyed, leading to increased food waste. *Aspergillus* growth increases in warm humid conditions and; therefore, aflatoxin levels are expected to increase with climate change. Carbon dioxide also promotes *Aspergillus* to produce 15 to 80 times more aflatoxin (Medina et al. 2014). This must be addressed to ensure an adequate and safe food supply. Food, especially grains and legumes, needs to be properly dried and stored. Food can be stored at cooler temperatures or in air-tight storage. Other moulds that do not produce aflatoxin can also be introduced to compete with aflatoxin producing *Aspergillus* species. Food can also be treated with hydrogen peroxide, methanol, dimethylamine hydrochloride, and perchloric acid (Villers 2015a). Food also needs to be tested and anything that is found to be contaminated needs to be disposed of.

Where It Has Worked

Many countries have incorporated climate change into their national and sub-national policies, including their policies on food and agriculture. While high-income countries such as Germany and Japan have a longer history of policies on climate change mitigation, these countries, as well as low- and middle-income ones such as Brazil, are now also focusing on adaptation. Incorporating these climate change policies into national and sub-national sectoral policies is a large determinant of their success (de Oliveira 2009).

In Tanzania, a program that promoted household vegetable gardens and chickens was successful in increasing child nutrition. After two years, children living in households with chickens had significantly higher height for age scores than children who were living in households without them (Alders et al. 2015, De Bruyn et al. 2016). In Zambia,

children who were living in households with animals also had lower rates of stunting, independent of income (Carletto et al. 2015).

In Barbados, their fisheries were threatened by overfishing and environmental damage. In 1995, the country implemented the Code of Conduct for Responsible Fisheries and used these principles and standards to manage and develop their fisheries with great success. The country has also prioritized the nutritional needs of local communities (FAO 2011c). In the Philippines, the Tagbanua people have worked with international and national policies to develop sustainable fisheries while also maintaining their culture and self-determination. They fish according to moon and tide cycles to allow fish populations to replenish and have determined areas along the reef where fishing is limited or banned (Capistrano 2010).

In Cambodia, Laos, and Bangladesh implements for two-wheel tractors were developed and distributed to increase sustainable farming. One of these implements was a seed drill that allowed for seed planting and direct fertilizer application. It also could create beds and cultivate between rows. This type of technology is important because it is meant to work with the equipment that farmers already have and use, in this case the two-wheel tractor that is low cost and meant for smaller field sizes (Esdaile 2009). No-till farming has been promoted throughout the world and works in many different landscapes and climates. It has been adopted the fastest in South America, where some countries are using no-till methods on up to 70 percent of their cultivated land and more than two-thirds of this land is never tilled. This has increased productivity and resilience to climate change (Derpsch 2010).

Aflatoxin is a problem in many warm and humid areas including Southeast Asia, Africa, and Central and South America. In Iran, there have been increasing levels of aflatoxin due to increasing temperatures and humidity (Tirado et al. 2010). It is important to properly dry and store foods to decrease aflatoxin levels. Solar drying has been used to effectively dry food before storage without using any fossil fuels. Food can then be stored in air-tight bags or larger containers. These methods have been tested and shown to be effective in Cambodia, Vietnam, Thailand, Bangladesh, Kenya, Uganda, Brazil, Mexico, and other countries (Villers 2015b).

The Path Forward for Timor-Leste

Timor-Leste has a large number of national policies on development, health, nutrition, and agriculture. While some of these policies mention climate change, most do not. The Government of Timor-Leste's Strategic Development Plan 2011 to 2030 discusses climate change and the need for the country to prepare for changes in temperature and precipitation. The MoH's Zero Hunger Challenge National Action Plan and National Food and Nutrition Security Policy both mention climate change and the importance of resilient food systems. The country has a specific policy on climate change, the National Adaptation Program of Action on Climate Change. This identifies climate change as the country's biggest challenge moving forward and stresses the importance of increasing resilience. Climate change was only briefly mentioned in the national consultations. The stakeholders who did mention it, focused on the need to increase resilience and work on preparing for climate change instead of just reacting to it. While it is important that the country has a policy on climate change and that several other national policies mention climate change, this is not enough. To prioritize climate change, the country needs to make it a part of every national policy moving forward and it needs to be an integral part of the process in developing these policies, not just a last minute addition. The country's nutrition and agriculture policies need to be climate-smart from the beginning for them to be successful. They need to include actions to increase resilience to address the stakeholders' recommendations.

There are several programs in Timor-Leste that are already promoting household food production with a focus on the most nutritious foods. USAID's Advancing Agriculture program is focused on increasing horticulture in communities and HIAM Health's Moringa program is focused on teaching people how to grow and prepare this nutritious species. These programs should be scaled up and used as models for more programs to increase household food production. These programs should provide training and inputs such as fertilizer and seeds or plants for these gardens. New programs focusing on raising small animals such as chickens should also be developed and implemented that include training and inputs such as the animals, feed, and vaccinations. There also needs to be education on the importance of keeping these animals to use for food instead of selling them for money. In the national consultations, several stakeholders suggested increasing vegetable production. They also focused on the need to increase protein consumption and several stakeholders suggested raising more chickens and other small animals.

Timor-Leste's fish consumption is only 1.96 kg per capita per year. While this is higher in Dili and in some coastal areas, it is still much lower than in other countries in the region (FAO 2009). The country should take advantage of their coastal geography and this nutritious resource by developing their fisheries. However, it is important to do this responsibly and sustainably. The country should enforce the FAO Code of Conduct for Responsible Fisheries uniformly to everyone. This needs to include larger private sector fisheries as well as smaller indigenous fishing communities.

Timor-Leste is already experiencing the effects of climate change and needs to act to increase farmer resilience. The MAF and FAO already have programs to train farmers in more effective and more sustainable practices such as no-till farming. These programs are small and should be scaled up to reach more farmers. New programs should also be developed in other areas such as soil management and fertilizer use. In the national consultations, several stakeholders discussed the importance of using fertilizer and improving soil fertility to increase productivity. One stakeholder estimated that the country could increase productivity by 20 to 30 percent by improving soil fertility. The country also has provided farmers with technology including tractors and could scale up these programs, as well as offering other equipment and technologies. Several stakeholders suggested increasing training and equipment for farmers to modernize agriculture and increase productivity. The country also needs to offer insurance to farmers to increase motivation to farm and offer protection when farmers lose their yields.

Timor-Leste already faces problems with aflatoxin contamination, although levels are lower than in many other countries. A study from 2013 to 2016 found that 10.5 percent of maize and 6.25 percent of groundnuts had aflatoxin levels that exceeded the WHO standard (de Almeida et al. 2016). As the country increases local food production, it is important that farmers and food producers properly dry and store food with solar drying and air-tight storage. This will ensure that the country minimizes food waste while maintaining a safe food supply in the face of climate change and will help to decrease stunting rates.

Community Input

Communities supported home gardens as a source of food, especially for the poorest households and during hunger seasons and short-term hardships. They wanted to increase the number of home gardens and the resources to do this. Many people raise animals already but discussed wanting more information about using these animals for their own consumption and for sale. They want to increase the local meat supply since they expressed concerns about the food safety of imported meat. They also wanted information about how to take care of their animals' health and described losing large amounts of chickens to diseases. People also supported the President's Nutrition Award and requested that this be continued. Those people working in fisheries discussed not having enough knowledge about modern practices or access to modern equipment.

There was an interest among communities in sustainable agriculture practices and people wanted to learn how to use them. People recommended doing more training in these methods, especially in soil management. People recognized the need to use fertilizer but did not know the most sustainable and safest ways to do so. They were worried about using chemical fertilizers and the impacts on their health as well as on the environment. People suggested having more community demonstration plots where the government and organizations could show farmers how to use these methods. They recommended improving extension services to offer better information and stressed the importance of coordinating between community leaders and extensionists to work together. There was also a large demand for equipment and technology but people wanted to have training alongside this to learn how to use and maintain the equipment. People had a low awareness about aflatoxins and did not know about the possible contamination of local foods.

SDG2.4 -- SUSTAINABLE FOOD SYSTEMS AND CLIMATE RESILIENCY: RECOMMENDATION #10

Recommendation

Protect against near-term seasonal variations, natural disasters, and El Niño like effects by:

1. Improving early warning systems and surveillance linked to seasonal changes, natural disasters, and episodes of conflict/social unrest and
2. Supporting small scale farmers to increase access to water and water infrastructure, particularly for more rural and remote communities that are more vulnerable.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG 2.1, 2.2, 2.3 –Short Term

Who is Responsible

The Ministries of Agriculture & Fisheries and Commerce, Industry & Environment

Why It Matters

Climate change is expected to cause increased frequency and severity of extreme weather events such as droughts, floods, and storms (Hansen et al. 2007). These are detrimental to agriculture and can cause crops and livestock to die from not getting enough water in the case of droughts or from damage in the case of floods and storms and can also cause increases in pests and diseases. Floods and storms can also damage or destroy food that has already been harvested and is being transported or stored. In 2016, Hurricane Matthew destroyed most of the crops and almost half of the livestock in the hardest hit areas of Haiti (WFP 2016). It is important for farmers and other people involved in food transportation and storage to have as much warning as possible so they can prepare. Data on past and current weather can be collected and used to make predictions and provide early warning. Modelling and GIS can be used to predict weather and other environmental conditions (Pitesky et al. 2014). This can be used by farmers to make changes in their planting and harvest schedules and for food producers to adequately protect stored food (Burney et al. 2010). This information needs to reach women farmers as well as be distributed to remote areas. Social unrest and conflicts can also cause problems in food production as there may be less labour available and farmers may not be able to effectively work or harvest their fields.

Climate change is expected to cause large problems with water availability through changes in precipitation that will result in areas that are already dry becoming dryer. It is also expected to increase the severity and length of dry seasons and droughts (IPCC 2014). Rain-fed agriculture is being impacted across the world. In Ethiopia, changes in rainfall have decreased food production and increased food insecurity, leading to child undernutrition, wasting, and stunting (Hagos et al. 2014). Ninety percent of the world's agriculture is rain-fed and is susceptible to these changes. Irrigated agriculture is much more productive and more protected against changes in precipitation. While only ten percent of the world's agriculture is irrigated, these crops produce 40 percent of the world's cereal yields (FAO 2011b). While irrigation dramatically increases yields, it also increases the demand for water. Agriculture already uses 70 percent of the world's water supply and many of the world's groundwater aquifers and rivers are overexploited (HLPE 2012). Therefore, it is important to increase the efficiency of both rain-fed and irrigated systems. In rain-fed systems, water can be conserved through rainwater and soil management. In irrigated systems, training is key to ensure that irrigation is used for the right crops and at the right times to minimize water use and drip irrigation can be used to focus water where it is needed. Lining canals also decreases water loss. Water associations and groups can be used to provide training and distribute technology (FAO 2016a).

Where It Has Worked

Providing farmers with weather information and predictions has been shown to make a large impact. In Bangladesh, weather and crop models were used to predict changes in yields and to change the planting schedule to improve production. Farmers drastically changed their planting schedules, by two to three months, to increase yields. In Kenya, similar models are being used to adjust planting locations and schedules (Thomas 2016). In countries in East and South Africa, farmers who were provided with this information avoided losing up to 25 percent of their crops (FAO 2016a). Gender has also been shown to impact what information is useful and is wanted. In Senegal, male farmers benefited from predictions about the onset of rainfall because they have access to field animals to prepare the land. Women do not have access to these animals and; therefore, are not able to act on that information and prefer information about dry periods and droughts (HLPE 2012).

In the Huai Hai Plain in China, irrigation was implemented efficiently and food production increased. The World Bank set up water user and farmer associations to train farmers. These associations also evaluated the irrigation programs to see how successful they were and how they could be improved (FAO 2016a)

The Path Forward for Timor-Leste

Timor-Leste needs to collect weather data about both seasonal variation as well as natural disasters and use this data to create an early warning system that will effectively inform everyone in the country but that should be focused on farmers. The country needs to ensure that this information gets to all farmers, even in the most remote areas. In the national consultations, many of the stakeholders who discussed climate change also suggested creating early warning systems.

Timor-Leste has been increasing irrigation throughout the country. The MAF, World Bank, and JICA have worked extensively on increasing irrigation. JICA's program was focused on rice but the country should focus future programs on more nutritious horticulture crops. These programs should be scaled up throughout the country with a focus on areas where rain fall is the scarcest and least reliable. Training should be provided to ensure that farmers are using irrigation correctly and in the most efficient way possible to conserve water.

Community Input

In the community consultations, people mentioned the changes in precipitation from climate change and the difficulty that this presented for agriculture. They requested more information about the expected changes in weather, especially rainfall. However, they said that weather predictions were not enough, they also need information about how to react to these changes.

Rainfall was a large topic of discussion in the community consultations. Rain is critical because most farmers in the country do not have access to irrigation. People were knowledgeable about the effects of climate change on water availability and were concerned by the changes in precipitation. They discussed how water shortages prevented them from increasing yields and from growing food year-round. People were thinking about how they could retain rainwater and get access to irrigation to increase the amount of food they could grow, as well as their incomes. People wanted more access to water retention and irrigation systems but said that building the systems was not enough, they also wanted assistance with maintenance.

SDG2.5 -- CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY: RECOMMENDATION #11

Recommendation

Build a national seed bank and promote seed savings.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG 2.2 and 2.3 – Long Term

Who is Responsible

The Ministries of Agriculture & Fisheries and Public Works, Transports, & Communications

Why It Matters

Seed banks are an important way to conserve crop species and protect them from being lost. Seed banks can be run on an international, regional, national, or local level. All of these levels have a role but local programs that are controlled by the communities themselves are essential (Tapia 2000). These local programs vary in size from informal seed collections maintained by single farms to larger and more formal community seed banks. Regardless of size or structure, all of them are important in maintaining biodiversity and providing farmers with more options for varieties to grow as well as a source of seeds during shortages. This increases food security and the resilience of the food system as well as empowers farmers and contributes to food sovereignty (Shrestha 2012).

Where It Has Worked

Countries across the world have established seed banks and used them successfully to protect biodiversity and increase food security and sovereignty. The strongest examples exist in Nepal, Bangladesh, India, Ethiopia, and France. In Nepal, there is a large network of community seed banks that help save, store, distribute, and protect seeds. These community seed banks maintain seeds for both indigenous and imported varieties (Shrestha 2012). Many countries in South America, especially in the Andes region, have also successfully established seed banks to preserve their biodiversity. Countries in the Andes have worked to preserve the many varieties of their indigenous crops such as amaranth, qaniwa, and quinoa. The International Potato Centre runs the Andean Root and Tubers project in Bolivia, Ecuador, and Peru to protect these species. In Peru, they set up a network of local seed banks and seed fairs throughout the country. The fairs also include opportunities to share knowledge (Tapia 2000).

The Path Forward for Timor-Leste

Timor-Leste has many indigenous crops that are unique to the country or region. In the national consultations, stakeholders mentioned the importance of crops such as kumbili and Job's tears. It is important for the country to conserve these species as well as others that are valuable for their climate resilience. Several stakeholders discussed the importance of conserving heat and drought resistant varieties. The country should do this by starting national and regional seed banks that focus on indigenous crops that are nutritious and climate resilient. The government should assist farmers by training them on how to save their seeds and start a program to collect seeds for the species that are indigenous or otherwise important to the country. Timor-Leste should also establish seed fairs to distribute seeds and information to farmers. This will provide an important resource for farmers moving forward and can be used to promote growing more local crops.

Community Input

In the community consultations, people discussed the importance of seeds, especially for more climate resilient varieties. People were unsure how to choose the most heat and drought resistant varieties and wanted information about this. They also wanted access to high-quality seeds and there is a strong desire to use all local seeds. People are already saving and storing their own seeds using a variety of methods ranging from jars kept in their ceilings to

large silos provided by the MAF. They suggested creating a national seed bank but stressed the importance of disseminating information and seeds to the people, especially in remote areas. People want modern methods to save and distribute seeds but also want to include their traditional methods and ceremonies around seeds.

SDG2.5 -- CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY: RECOMMENDATION #12

Recommendation

Promote sustainable use of agro-biodiversity through local, traditional varieties and nutritious crops such as moringa etc. through in-situ on-farm conservation.

Links to Other SDGs and Time Frame

Actions also contribute to achieving SDG 2.2, 2.3 and 2.4 –Medium Term

Who is Responsible

The Ministries of Agriculture & Fisheries

Why It Matters

Globally, food systems are moving towards fewer and fewer crops and are becoming more homogenous. Most of the foods consumed are from only 200 crops and five animal species (FAO 2004). While the focus on growing a few cereal and oil crops in intensified monocultures has increased the short-term productivity of these crops, it has decreased biodiversity and some varieties have been lost completely in this process, along with their unique nutritional and environmental characteristics (Khoury et al. 2014). Biodiversity is important for food security and nutrition. Some varieties are more nutritious and provide a larger range of micronutrients. Biodiversity is also protective against the increased temperatures and changes in precipitation from climate change. This increases the resilience of agricultural systems and increases yields. Different crops and varieties are more heat and drought resistant and have better protection against pests and diseases (Khoury et al. 2014, FAO 2016). This is especially true for indigenous varieties (Swiderska et al. 2011). A study comparing rice monocultures and diverse fields found that the diverse fields had greater disease resistance and 94 percent greater yields (Zhu et al. 2000). Mixed agricultural systems and agroforestry are good ways to increase biodiversity, and also offer other specific benefits. Mixed systems take advantage of the beneficial interactions between crops and livestock such as using crop waste to feed animals and animal manure to fertilize crops. These mixed systems increase yields and farmer incomes (Herrero et al. 2010). Agroforestry provides benefits to soil fertility and prevents erosion. It also protects crops from heat and wind (FAO 2004). Together, mixed systems and agroforestry produce more than half of the world's nutrient supply (Herrero 2017).

Where It Has Worked

Many other countries have increased biodiversity and seen improvements in food security and nutrition including Indonesia (Sibhatu et al. 2015), Kenya (Carletto et al. 2015), and Malawi (Jones 2017, Koppmair et al. 2016). Focusing on indigenous species has been especially successful. In China, Kenya, and Bolivia, farmers were able to increase yields and incomes by increasing biodiversity and focusing on indigenous crops that were adapted to the weather and land conditions. In China, farmer incomes increased by 30 percent over ten years (Swiderska et al. 2011). Agroforestry has been successful in improving soil fertility and crop yields in several countries in Africa. In Malawi, one farmer's yields of maize more than doubled and in Zambia, farmers' yields tripled after planting acacia trees (World Bank 2010).

The Path Forward for Timor-Leste

Timor-Leste needs to promote mixed agricultural systems and agroforestry with a focus on biodiversity. The country should add animals to their crop production, such as adding fish to rice paddies. This would also provide an additional protein source, which is important for the country. The government could also promote agroforestry. In the national consultations, the stakeholders who discussed climate change also stressed the importance of increasing biodiversity to create a more resilient food system. Several stakeholders also recommended agroforestry to increase biodiversity,

increase nutrition by growing edible species like moringa and sago palm, and strengthen the economy by growing profitable species like sandalwood.

Community Input

In the community consultations, people were concerned about deforestation and the resulting loss of rainwater and soil erosion. They thought that the country should increase agroforestry to counter this as well as increase biodiversity. People also thought that increasing agroforestry was a promising way for the country to increase employment.

SDG2 -- THE POLITICAL ECONOMY: RECOMMENDATION #13

Recommendation

Improve the coordination of food security and nutrition players throughout the country by strengthening the coordination mechanism, funding, and accountability of the Timor-Leste National Council for Food Security and Nutrition (KONSSANTIL).

Who is Responsible

Prime Minister's Office

Why It Matters

Nutrition is a national cause that is worth fighting for if the country is to be developed in an inclusive and participatory way. This requires a champion to lead on nutrition and bring together relevant line ministries (MoH, MAF, MSS, MoE, and Ministry of Finance), civil society, and the media to clarify current nutrition circumstances and recognize existing progress and obstacles before addressing these by effectively implementing existing policies. Timor-Leste has many policies that, however excellent they may be, are ineffective because they are context-insensitive in planning and implementation and lack an inclusive and participatory approach. A nutrition champion would ensure that nutrition stays on the government's agenda throughout every government mandate. This would require a close collaboration with relevant line ministries (MoH, MAF, MSS, MoE, and Ministry of Finance) for policy design or policy reform, with the national parliament for policy adoption, and with the government for policy implementation, making nutrition a common national cause. Nutrition policies are more likely to succeed when they have top level commitment, inter-sectoral and inter-ministerial implementation mechanisms, sufficient resources, and community buy in (IFPRI 2016).

Nutrition is uncoordinated and a system to address this in a systematic way is much needed at the national and municipal levels. The government is required to give nutrition the needed political commitment so that nutrition becomes a common national cause and to enable the MoH, MAF, MoE, and MSS with the authority to be the rightful owners over nutrition when designing or reforming and implementing nutrition policies in pursuit of the national nutrition goal and in line with SDG2. KONSSANTIL could be a natural home for nutrition to coordinate and report on programs and actions that different state and non-state institutions implement, once it is fully functional and operationally effective with an appropriate budget to host nutrition. Its operation should develop under the leadership of a nutrition champion who would work in close coordination with MoH, MAF, MoE, and MSS. This is to merge the disintegrated system and approach, which are currently worsened by a limited national capacity to lead nutrition and to implement cost-effective nutrition policies.

Where It Has Worked

Nepal is a good example of where vertical and horizontal coordination and multi-sectoral action has worked quite effectively. For vertical and horizontal coordination, different levels of government must cooperate to tackle undernutrition through agreed upon legal frameworks, technical capacities, and incentives to transfer resources and share information for accountability (Mejia Acosta and Fanzo 2012). At the central level in Nepal, the High Level Nutrition and Food Security Steering Committee (HLNFSSC), a coordinating mechanism like KONSSANTIL, is part of the National Planning Commission (NPC) which sits in the Prime Minister's Office. The NPC has established a Nutrition and Food Security Secretariat, which has some capacity to facilitate the nutrition coordination and provide technical support to the HLNFSSC. The capacity at the NPC level has been built to oversee all coordination of food and nutrition security actions in the country. Executive involvement, through the NPC, helps raise public awareness of undernutrition, coordinates the efforts of different line ministries, and protects funding allocations. With the NPC acting as the leading coordinating body, they implement several policies including the multi-sectoral nutrition plan, the agriculture strategy, and the food and nutrition security plan. The NPC coordinates vertically from central to regional to district levels. They also oversee, at the central level, the allocation of funding, monitor progress on outcomes, and bring the ministries together frequently to assess and re-focus. The NPC has high-level political support and appropriate funding. They are in the process of creating legal frameworks, technical capacities, and

incentives to transfer resources, share information, and to remain accountable to one another (Haddad et al. 2012).

The Path Forward for Timor-Leste

KONSSANTIL (Konsellu Nasional Seguransa, Soberania Ai-han no Nutrisaun Timor-Leste) is the National Council of Food Security, Sovereignty, and Nutrition for Timor-Leste. It was created in 2012 by the Community Member States of the Portuguese Speaking Countries (CPLP) model, from which Brazil is part. Its mission is to secure inter-ministerial coordination to synchronize activities through efficient and effective use of resources on food and nutrition security plans, with three core objectives: to strengthen the individual ministry's role for implementation, to consolidate existing resources, and to strengthen coordination of services between the ministries to be responsible according to their individual roles (KONSSANTIL 2012). It consists of representation from six ministries and government agencies in the key areas related to food and nutrition security, with participation of local interest groups and relevant stakeholders, including development partners and the private sector, to lead the important task of aligning investment and policy decisions by different Ministries (Government of Timor-Leste 2016). It is responsible for the implementation of the National Action Plan for a Hunger and Malnutrition-Free Timor-Leste (PAN-HAM-TL) (KONSSANTIL 2014) and the Food and Nutrition Security Policy 2017, where the importance of aligning agriculture and social protection policies is explicitly mentioned (Government of Timor-Leste 2016). A Municipal Food Security, Sovereignty, Nutrition, & Disaster Management Committee (Municipal KONSSANTIL) was established to coordinate at the decentralized level (Government of Timor-Leste 2016). KONSSANTIL's statutes are currently being revised to simplify its structure, open its presidency to elections –now permanently held by MAF, and narrow the scope of its Secretariat (Lehec 2017).

The Prime Minister's Office (PMO) should value KONSSANTIL as the crucial body to advance food and nutrition security in Timor-Leste by promoting its effective operations among involved ministries, regularly reporting to the highest levels –the Prime Minister (PM) and Council of Ministers, and developing accountability mechanisms to ensure ministerial performance against yearly plans. Strong leadership is fundamental to enable coordination for inter-sectoral and inter-ministerial policy implementation (IFPRI 2016) and many national stakeholders advocate for elevating KONSSANTIL's position under the PMO. Such change is not strictly necessary, and ultimately the government's decision. However, effective reporting lines and accountability need to be undertaken between the PM and KONSSANTIL on a regular basis to oversee performance of policy and program implementation and input from nutrition, food security, and agriculture must be balanced within KONSSANTIL, requiring that the MoH has a more prominent role to equilibrate the other two MAF competencies. KONSSANTIL should establish a rotational or elected president and ensure permanent technical support by nutrition international agencies. Stronger socialization of KONSSANTIL's mandate and ministries' contributions to its objectives should be done among participating ministries to raise engagement and ownership. It is also important for the SDG Working Group chaired by the PMO to regularly link with KONSSANTIL regarding SDG2 progress, reinforcing reporting and accountability mechanisms.

KONSSANTIL's key role is to coordinate policy and program implementation and guide ministerial actions and budgets to align with food and nutrition security planning. For such tasks, there is no need for substantial funding as there is no direct programmatic implementation. The core need resides in effective planning and coordinating skills paired with proficiency in the functioning of Timor-Leste's Government. Two figures should be strengthened to achieve better coordination: The National Directorate for Food Security and Cooperation (NDFSC) that acts as the Secretariat and the Chair. KONSSANTIL's Chair should also have good technical knowledge on food and nutrition security issues to lead facilitation and strategic planning. The Secretariat should create and fund a new dedicated position to solely focus on KONSSANTIL's operational coordination with project management and communication skills, and liaise with the Nutrition Focal Points in each Ministry as established in the NNS 2014 to 2019 (MoH 2014). Attentive planning should also observe budgeting cycles and organize KONSSANTIL Annual Action Plan (AAP) forums with sufficient time for decisions to be included in ministerial budget allocations. All member ministries and not MAF alone should fund the NDFSC to ensure ownership and shared responsibility of KONSSANTIL's engine. Finally, KONSSANTIL's structure should allow greater flexibility, as currently, the MoPW is not able to participate and provide input on water systems and sanitation since MoPW is not a member.

A crucial opportunity for KONSSANTIL is its presence at the municipal level, where strategies and AAP are operationalized through service delivery and program implementation. KONSSANTIL's ability to coordinate across

all municipalities is fundamental to achieve food and nutrition security gains, and its leadership by the Municipal Administrator is applauded. It is strongly recommended that such committee is replicated in the Special Economic Region of Oecussi, where malnutrition and poverty are strikingly high and Timorese citizens would greatly benefit from enhanced coordination of programme implementation. Provided the complementarity of activities and 'clients' between the MoH and MAF, and multiple synergies that an integrated approach could yield, a formal partnership between them at the municipal levels is recommended. A well-coordinated Municipal KONSSANTIL could achieve the same goal, yet in the context of the decentralization process with many changes at multiple levels, focusing on a practical and planned collaboration between MoH and MAF is the suggested approach for effective action.

Community Input

Communities' awareness of KONSSANTIL was variable but in all FGD, the need for improved coordination between ministries for activities and programmes was discussed. This is a key demand from communities as they report the huge impact program implementation at the municipal level can have in people's lives. Many participants came from government positions at the programme implementation level, particularly from MoH and MAF, acknowledging KONSSANTIL's structure, value, and sometimes inconstant functioning. In Oecusse, there was a strong request to operationalize such structures that were active in the past. Throughout Timor-Leste, there is a very strong demand for KONSSANTIL's reactivation and work at the municipality level, increasing its funding allocations for activities, with mixed views of its current functioning. Communities think that socializing and strengthening KONSSANTIL's work from national to municipal level activities and better funding for its budget and capacity is needed. Strengthening coordination between stakeholders and government in agriculture and nutrition, including NGOs and local authorities at the municipal level was recommended.

SDG2 -- THE POLITICAL ECONOMY: RECOMMENDATION #14

Recommendation

Build human capacity in the areas of food security and nutrition in the country including informal and trade training programs and formal education programs in secondary schools and universities.

Who is Responsible

Ministries of Health, Agriculture & Fisheries, and Education and research and academic institutions

Why It Matters

The growing political, institutional, and organizational commitment to reducing hunger and improving agriculture and nutrition as demonstrated with the SDGs, must be leveraged to develop capacities to deliver, scale-up, and sustain interventions on the ground. We do not solely need more studies and more data, but more and improved capacity to coordinate the successful interventions we have already identified. As the world begins to prioritize approaches to meet SDG2 there is a need to re-think and re-work how capacities to advance nutrition and agriculture can be built to support policy, research, programming, financing, and delivering of services to improve the livelihoods of people around the world.

The post-2015 development era is anticipating a grand convergence whereby new technology, increased investment, and a solid evidence-base informs the scale-up of interventions to reach the most vulnerable. Experts have cautioned that the grand convergence is only possible by narrowing the delivery gap – the divide between the types of interventions known to be effective and those being delivered – with attention to the major challenges ahead. Closing the gap and addressing emerging complex challenges of the food environment and system, will take keen attention to the capacities of those at the frontline of interventions. The global food security and nutrition community now finds itself in a critical inflection point, with donors, governments, civil society, and the private sector focused on using momentum to significantly expand the host of evidence-based interventions, yet this expansion cannot happen or will fail if it is not accompanied by attention to the capacities of individuals and institutions to support the targets, programs, and agendas that have been put in motion.

Where It Has Worked

What type of nutrition workforce and related competencies are needed for Timor-Leste? There are multiple ways to address the situation, involving policy formulation and advocacy, programmatic design and management, frontline effort that engages individuals and communities, and researchers and evaluators who can monitor and evaluate progress and generate evidence on what works and under what circumstances. While human capacity, particularly engaging youth, is a global challenge, there are lessons that have emerged and are summarized below (Jerling et al. 2016, Graziose and Fanzo 2017).

For program staff, technical competency needs to align with systems-based thinking that informs design, implementation, and monitoring and evaluation of nutrition policies and programmes. At the least, program staff should have a good basis of understanding of the links between the food system and the health system, as well as the capacity to design appropriate channels to deliver interventions through entry points of these systems.

Frontline staff work primarily with implementation and surveillance at the community level and must have the ability to empathize with households in the communities they serve. Their technical skills should allow them to perform implementation functions effectively. Context-based training should provide needed competencies, as well as an understanding of how a program fits in the broader system. This would include both community health workers and rural extension workers. Examples to help build frontline workers in Africa and Asia include Ethiopia's Health Development Army, which is primarily a volunteer female community health worker (CHW) program and Thailand's community health programme which has a ratio of one worker for every ten households.

Thought leaders and researchers with higher levels of training are needed. Although programming and management are essential skills, programming also needs to be supported with rigorous evidence, ongoing surveillance, and impact evaluations, which is where **researchers** play a key role. Researchers should have cross-disciplinary training to address complexities across nutrition, agriculture, and food systems. Historically, in most academic institutions, nutrition has been over professionalized with strict curricula to fulfil degree requirements. However, although core science competencies should be maintained, it is also necessary for the training to become responsive to current needs. There is a need to train a diverse research cadre that includes different disciplines, including those in professional practice, who gain experience and knowledge in practical settings.

The Path Forward for Timor-Leste

Promoting employment in post-conflict environments is not an easy task, and in Timor-Leste this is not an exception. However, the call is for the government to develop a national employment plan or policy that is conflict-sensitive, with a particular focus on addressing social inequalities. This requires making the employment of youth and women at municipal levels a priority, so that local level employment is encouraged, while the reintegration of veterans, war widows, and other conflict-affected groups is consolidated. Although the rural-urban divide provides different opportunities and challenges, and the challenges often found in the reintegration of war veterans and other conflict-affected groups remain unique, the employment of youth and women must be prioritized given that in post-conflict Timor-Leste, women are often trapped in a vicious circle of widespread poverty and intimate partner violence, while youth are often caught in a cycle of recurring violence and widespread unemployment. Such an approach, when well developed and effectively implemented, would either directly or indirectly ensure that each local household has enough income to afford healthy and nutritious diets.

This report recommends three approaches:

1. Training community health and agriculture extension workers on food systems, household food environments, and nutrition sensitive agriculture approaches;
2. Building a knowledge based economy with the country's youth through entrepreneurial skill training and small and medium enterprise development across the entirety of the food value chain; and
3. Developing formal education curriculum programs in nutrition, agriculture, food systems, and climate change through north to south and south to south partnerships.

Informal education and vocational training of the nutrition and agriculture workforce is important for those outside the net of formal education programs. Vocational and community schools can offer certificates and short-course trainings. More frequent and more in-depth opportunities to build both applied program and teamwork skills should also be provided. The opportunities could take the form of expanded in-service trainings, network meetings to build skills, massive open online courses (MOOCs), or case studies.

Professionalization, certification, and continuing education are critical for competency and relevance of a competent Timor-Leste food security and nutrition workforce. Immediate opportunities for training the current workforce could focus on midlevel managers or could use online platforms or MOOCs. Such courses could be adapted for in-person facilitation or tailored to organizational needs. At the country level, national nutrition associations, in collaboration with training institutions, can provide contextualized continuing competency training activities for their membership.

For the current workforce, technical skill building must include leadership training and on-site coaching. On-the-job technical training can be addressed with practitioner workshops, network meetings, and job training rather than semester or yearlong academic courses. Action learning projects, where practitioners translate knowledge into skills, are one example of an approach that mixes short technical courses, on-site coaching, and training by doing.

In-service training represents an opportunity to increase the skills and knowledge of those who have not had formal pre-service education or training prior to working in a position that focuses on food security nutrition. Community health workers and other frontline workers were more likely to take on the shorter trainings.

It is no coincidence that insufficient service delivery often corresponds with a lack of appropriate academic curricula and high-quality training programs such as in Timor-Leste. Thus, there is consensus on the need for revised program curricula for training and credentialing a nutrition and agriculture workforce that can work in teams to provide complementary of skill sets and expertise.

To foster multi-sectoral engagement and teamwork, those in formal nutrition and agriculture programs should be required to include in their coursework at least the hallmark, basic theoretical content in agriculture, food systems, environment, toxicology, ethnography, economics, climate change, and urbanization. It is impossible for one person to be an expert on these topics, but exposure to these cross-disciplinary areas is important, as is the desire to build one's own capacity and specialization. In addition to university degree programs, there should be serious consideration of vocational and community schools for implementing diploma or short-course trainings. Nutrition or food system certificates or diplomas could be offered, and the curricula could be supported by local universities and UN agencies working in those countries.

Youth entering the food security field need to be confident that they will have a career, with opportunities for advancement and adequate remuneration. However, budgets are tight, and funding is limited, particularly for building capacity. Therefore, many go abroad, where there are better incentives. Timor-Leste should explore sustainable means of retaining and sustaining the needed workforce. The involvement of national and low- and middle-income country universities will be a key driving force for developing the curriculum and competencies that match the social, cultural, and physical environment. UN agencies and international organizations can provide technical support to educational programs and give students opportunities to learn in the field, such as through coordinated internship programs in Timor-Leste.

Community Input

Often communities mentioned a need for developing the capacity and knowledge of public servants to disseminate information effectively among communities, such as counselling techniques. A key recommendation is to increase human resources dedicated to agriculture and nutrition and strengthen their skills, while developing integrated and specialized extension services (cereal, horticulture, livestock, aquaculture, coffee, orchards) according to productive potential in that area.

Youth unemployment and challenges of urban-rural dynamics are a preoccupation among consulted communities. The call is for the government to develop a national employment plan or policy that is conflict-sensitive, with a focus on addressing social inequalities. This requires making the employment of youth and women at municipal levels a priority, so that local level employment is encouraged, while the reintegration of veterans, war widows, and other conflict-affected groups is consolidated. Such an approach, when well developed and implemented, would ensure that each local household has enough income to afford healthy and nutritious diets.

Another important key recommendation emerged during the community consultations is for the MoH to socialize and implement nutrition education in the school curriculum so children learn about good nutrition early on. Due to a strong preoccupation with how climate change is impacting rain pattern variability, communities ask for the government to take the responsibility to disseminate information on what citizens, and specifically farmers, can do to adapt. Finally, some mentioned how technical agriculture schools need better organization and resourcing to engage youth's interest in the agricultural field, for which there should be a functional centre in each Municipality.

SDG2 -- THE POLITICAL ECONOMY: RECOMMENDATION #15

Recommendation

Increase national investments toward nutrition and agriculture programming to a minimum of five percent of the GDP, deliver on donor funded food security and nutrition projects, and consider alternative economic agriculture-led growth in a post-oil Timor-Leste.

Who is Responsible

The Prime Minister's Office and the Ministry of Finance

Why It Matters

Improving the production capacity of agriculture in low- and middle-income countries through productivity increases is an important policy goal where agriculture represents an important sector in the economy. The agricultural sector provides livelihood directly and indirectly to a significant portion of the population of all low- and middle-income countries, especially in rural areas, where poverty is more pronounced. Thus, a growing agricultural sector contributes to both overall growth and poverty alleviation.

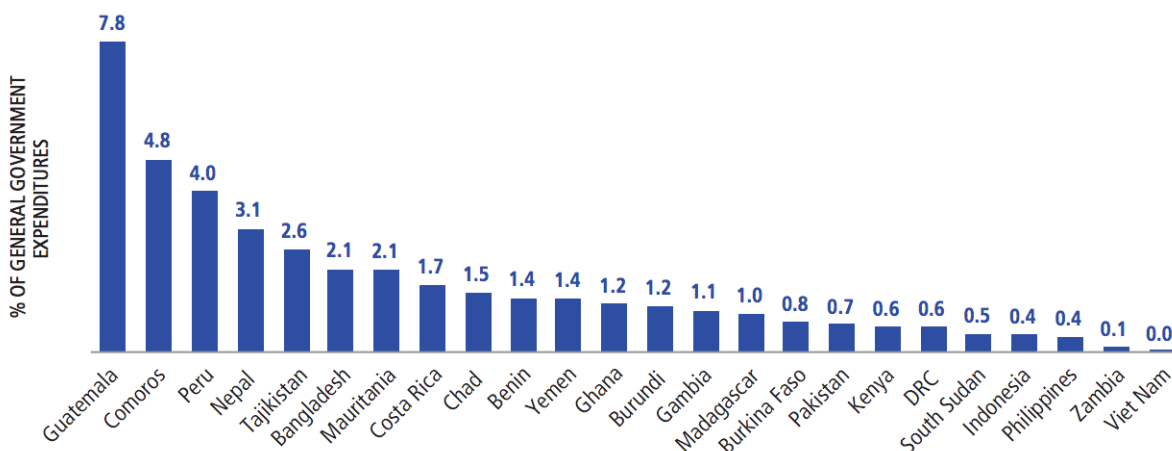
Investing in good nutrition can save lives and grow economies: for every US\$ one spent by donors on basic nutrition programs, US\$16 is returned to the local economy. Not many countries are yet investing in nutrition at the levels needed to reduce undernutrition and mitigate obesity. In Timor-Leste's Strategic Development Plan, very little financial resources were dedicated to addressing nutrition. If Timor-Leste wants to build a knowledge based economy, driving down stunting will be critically important, and significant investment needs to be prioritized.

Where It Has Worked

The African Union (AU) recognised the challenges of low agricultural productivity and the potential for agriculture to contribute to the long-term development of the continent. In 2003, African heads of state and governments pledged to allocate ten percent of their national budgets to the agricultural sector as part of the Comprehensive Africa Agriculture Development Programme (CAADP). The commitment, also known as the Maputo Declaration Target, rallied African governments to increase spending in the sector to stimulate agricultural growth, reduce poverty, and build food and nutrition security. While it is difficult to assess whether CAADP itself is responsible for boosting agriculture development, agricultural sector spending increased, on average, by more than seven percent annually between 2003 and 2010. There are many other examples of where agriculture led growth has led to overall economic growth of countries. China and Vietnam are key examples of this with both undergoing structural transformations that involved heavy investment in rural development and agriculture.

In countries that have invested in nutrition (see **Figure 10** below that shows the nutrition budget as a percentage of the total government budget), such as Peru and Nepal (up to four percent of the total government budget for example), these countries have made progress on reducing undernutrition (IFPRI 2016).

Figure 10: Nutrition Budget as a Percent of the Total Government Budget



Source: *Global Nutrition Report, 2016*

The Path Forward for Timor-Leste

Each ministry, but particularly the MoH and MAF, should increase their annual budgetary commitments to nutrition. Currently, Timor-Leste’s national budget allocates 2.5 percent to agriculture and the nutrition specific budget, largely from the MoH, dedicates 18 percent to nutrition. While both budgets have increased, there is a need for Timor-Leste to rethink where it wants to go and how. Investing in key sectors such as health, education, and agriculture may need to be ramped up once relevant infrastructure is underway (i.e. roads).

If Timor-Leste wants to drive a more knowledge based economy as opposed to an infrastructure based one, there needs to be some readjustments of priorities. There is no point in economic growth without investing in human capital. Timor-Leste needs to be thinking 10, 15, 20 years from now. Where will their national budgets come from? Will the oil revenues still be in place at that time? If not, then what will be driving the country’s economy? Agriculture, tourism, manufacturing, and service industries need to be planned for now. To do that, human, natural, and social capital must not be ignored or put off until later. How to build a resilient economy is beyond the mandate of this report, but should be thought of if Timor-Leste wants to achieve the SDGs and get on a path towards country owned sustainable development.

The Ministry of Finance must coordinate money flows and expenditures through these different funding streams. The government could create one financial mechanism for food security and nutrition (across all plans) to protect and earmark agriculture and nutrition funding and use it in a transparent way (Haddad et al. 2012).

Having reliable nutrition data and performance indicators can lead to better delivery of funds. To honour the commitments that donors have made to the country, and ensure that funds are being used effectively, data and monitoring systems need to be built, populated, and used. This often means that local ownership of outcome data on the food security, nutrition, and agriculture programmes can be important and should be encouraged. However, this ownership requires data collection at regular intervals and increased frequency of data observations to monitor progress and ensure that accurate and timely data can provide better response times to re-evaluate programmes.

Community Input

To solve malnutrition and improve agriculture productivity, communities demand an increase in investment in the agriculture and nutrition sectors, particularly in their human resources and Municipal KONSANTIL. Some older participants mentioned how lucky the country is now that it has substantial budgets compared to before, yet demanded that the government use it wisely. Youth participants, on the other hand, were more vocal about the

need to increase investments in nutrition and human capacity. Since many farmers think that the government should subsidise equipment and facilities, stronger budgets are implicitly in communities' agendas.

Interestingly, there was no mention about the sustainability of state financing during the consultations. However, farmers and participants are very clear in understanding the state as the key actor to lead the agriculture sector in a very prescriptive manner. The government needs to identify suitable agricultural areas, inform farmers on what crops are best grown in such areas, and support them to transition towards commercial and mechanised agriculture. Moreover, there is tangible preoccupation with the increasing penetration of food imports and identifying manners to promote the production and consumption of local foods.

CONCLUSION

At the end of the day, Timor-Leste will need to demonstrate sustainable progress beyond the strategies, policies, and plans on paper. Governments that have strong executive leadership to promote effective inter-sectoral cooperation to improve food and nutrition security in their countries are those that are the most successful. High-level government officials in Timor-Leste play a decisive role by coordinating actions across ministries and government offices, channelling donor and civil society efforts, and developing compelling narratives around nutrition as a poverty reduction priority.

There are many development partners who are working in the same areas of food-based approaches and this work should be complemented and coordinated with the partners who work in health-based nutrition approaches, not solely with the other food-based ones. It is recommended that the government leverage and partner with other development partners' nutritional programs and use their experience to inform programs. The structures that the government and NGOs have built can help inform and leverage other nutrition and food security programs in the communities.

If Timor-Leste can show a big impact in a short time with the SDGs, it will be in the best interest for the President to continue the work. It is also important for food and nutrition security to be embraced as a major objective of long-term national development strategies.

Lastly, long lasting change takes time. The nutrition, food, and agriculture plans are ambitious, which should be commended. At the same time, Timor-Leste is a young country, and on a long path towards development and economic security. Undernutrition reductions take time. Goals and targets should be aggressive, but also realistic and achievable in the appropriate time scales. Food security and nutrition should be important to development overall for Timor-Leste, not the other way around in which development and economic growth will improve food security and nutrition.

This report emphasizes the need to build on human, natural, and social capitals. Without these, any SDG will be impossible to achieve. Agriculture-led growth, and driving down undernutrition will be key for Timor now, and into the future. Timor-Leste must ask itself, does it want to be a knowledge based economy, one in which the youth of the country become the leaders for the world tomorrow? It is possible.

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APPENDIX 1: SDG2 TARGETS AND INDICATORS

Sustainable Development Goal 2 Targets and indicators

2.1

By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round

2.1.1

Prevalence of undernourishment

2.1.2

Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)

2.2

By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

2.2.1

Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age

2.2.2

Prevalence of malnutrition (weight for height $>+2$ or <-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)

2.3

By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment

2.3.1

Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size

2.3.2

Average income of small-scale food producers, by sex and indigenous status

2.4

By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

2.4.1

Proportion of agricultural area under productive and sustainable agriculture

2.5

By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

2.5.1

Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities

2.5.2

Proportion of local breeds classified as being at risk, not-at-risk or at unknown level of risk of extinction

2.A

Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks to enhance agricultural productive capacity in developing countries, in particular least developed countries

2.A.1

The agriculture orientation index for government expenditures

2.A.2

Total official flows (official development assistance plus other official flows) to the agriculture sector

2.B

Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round

2.B.1

Producer Support Estimate

2.B.2

Agricultural export subsidies

2.C

Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, to help limit extreme food price volatility

2.C.1

Indicator of food price anomalies

APPENDIX 2: BACKGROUND ON TIMOR-LESTE

A Long History of Conflict

Timor-Leste has a long history of conflict that has created many challenges for the country. They were colonized by Portugal from 1515 to 1975. Unfortunately, instead of being able to rebuild their country, they were invaded and occupied by Indonesia soon after being decolonized and were declared a province of Indonesia from 1976 to 1999. During this time, the people of Timor-Leste resisted and were ultimately successful. However, over the course of the fight, around one-fourth of the people were killed and many more were displaced. In 1999, a United Nations referendum forced the Indonesian troops to withdraw and the country spent the next two years under the United Nations Transitional Administration in East Timor (UNTAET). Over this time, more people were killed and displaced and much of the country's economy and infrastructure were destroyed before Timor-Leste finally gained independence in 2002.

The 2006 and 2008 Conflicts

In the time after gaining independence, the country made tremendous progress but underwent a period of civil unrest and violence in 2006 and then again in 2008. In 2006, there was fighting between people from the east and the west of the country and an attempted military coup. The violence was centered in Dili but also spread into the surrounding areas and over 150,000 people were killed or displaced. The United Nations Security Council and an International Stabilization Force led by Australia intervened. Prime Minister Alkatiri resigned and Ramos-Horta was appointed to the position. In 2008, rebel soldiers attempted to assassinate President Ramos-Horta and Prime Minister Gusmao.

Joining the G7+ and Statebuilding and Development

In 2010, Timor-Leste joined the G7+, a group of post conflict countries that work together to regain stability through their own self determined efforts at statebuilding and development. The G7+ supports developing legitimate politics with peaceful conflict resolution, security and justice for the people of Timor-Leste, strong economic foundations that provide adequate employment, and well managed revenues that provide capacity for equitable service delivery. Timor-Leste carried out its first G7+ Fragility Assessment in 2012, when the country also had freely democratic and peaceful elections, and its second in 2015.

Transition from the G7+ to ASEAN

It often takes post conflict countries between 10 and 30 years to reach stability (World Bank 2011). Timor-Leste has now been independent for 15 years and is currently politically stable. In 2011, the country was classified as a low-middle-income country. This is largely due to the oil reserves and revenues that the country has. Besides oil, the economy is largely dependent on the agricultural sector, with coffee being the primary export. The country is currently trying to join the Association of Southeast Asian Nations (ASEAN). Timor-Leste expressed interest in joining ASEAN shortly after its independence in 2002 but this was only supported by Indonesia in 2011 and there is still some resistance from Singapore and Laos. The country will most likely be admitted in the near future but it is uncertain when (Parameswaran 2016). The country has its next election in March 2017 so it is yet to be seen if there will be any political conflict or, more likely but also problematic, if there will be a continuation of a unified government with no meaningful opposition.

Changing Demographics

The population of Timor-Leste is increasing and undergoing large transitions. The population was 1.2 million in 2016 (UNDP 2016) but is expected to increase to as high as three million by 2050 (Molyneux 2012). The country has one of the youngest populations in the world with almost 70 percent of its population under 25 years old (UNDP 2016). The country is also rapidly urbanizing. While the majority of the population lives in rural areas, people, especially the youth, are increasingly moving to Dili and other urban centers. Between 2010 and 2015, the urban population growth rate was 3.8 percent per year with 32.8 percent of the population living in urban areas in 2015 (UN 2015).

Varied Landscape

Despite being a small country, Timor-Leste has many different landscapes within its borders, each with unique demographics, climate, agro-ecological characteristics, and economies. These differences are critical for understanding the situation and its challenges, especially as it relates to hunger, food and nutrition security, and sustainable agriculture. These different landscapes are often used to divide the country and target programs to the needs of each area. TOMAK has grouped these into seven groups or livelihood zones. The first zone is the northern coastal lowlands where there are 17 sucos with 50,654 residents and over 35 percent of the households grow rice. The second is the inland irrigable watersheds. This zone has 82 sucos with 146,063 residents and also over 35 percent of the households growing rice. The third zone is the southern coastal lowlands where there are 17 sucos with 42,182 residents and also over 35 percent grow rice. The fourth is the low altitude uplands, below 900 meters. This zone has 60 sucos with 99,315 residents and over 50 percent of the households grow coffee. The fifth zone is the high altitude uplands, above 900 meters, where there are 86 sucos with 166,389 residents and also over 50 percent of households growing coffee. The sixth is the northern rainfed. This zone has 61 sucos with 130,901 residents and both over 35 percent of households growing rice and over 50 percent of households growing coffee. The seventh and final zone is the southern rainfed with 91 sucos and 173,720 residents where also both over 35 percent grow rice and over 50 percent grow coffee. In general, the north of the country gets lower summer rainfall compared to the south but the southern rainfed zone has bimodal rainfall (TOMAK 2015).

Present and Future Challenges

Timor-Leste has faced many challenges in its past and still continues to do so today, while also needing to prepare for the future. The country is already feeling the impacts of climate change and these are expected to intensify with higher temperatures, increased precipitation leading to flooding but separated by dry periods and droughts, and rising sea levels. The temperature is expected to increase by 1.5 C and precipitation by ten percent by 2050 (Molyneux 2012). These will present challenges to ensuring that everyone in the country has sufficient, safe, and nutritious food. The country is also almost entirely dependent on fossil fuels and their oil resources are declining. Oil made up 93 percent of the country's revenues in 2014. These revenues go into the Petroleum Fund, which the government uses heavily to fund its budget. In 2014, 89 percent of the budget was from the Petroleum Fund and other oil money. At current rates of use, the oil fields could run out as soon as 2020 (La'ó Hamutuk 2014). Future revenues, and thus the strength of the Petroleum Fund, depend on the settlement of a legal dispute with Australia over the maritime Greater Sunrise oil and gas field.

APPENDIX 3: METHODOLOGY AND DESIGN

The Strategic Review will have three components: the desk review, national stakeholder interviews and community consultations at the sub-national level which will inform the overall strategic review report (see Annex 1 for outline of report). The tasks for collecting and analyzing data and writing the report will be done by Johns Hopkins University and CEPAD. Roles are delineated in Annex 2.

The draft review report will be presented at a national validation workshop to be organized in Dili as a conclusion of the Desk Research and Community consultations. This National Validation Workshop will be attended by key stakeholders (relevant line ministries, civil society, donors, UN Agencies, the Private Sector, universities, women and youth, church, marginalised groups and veterans) to be selected based on inclusiveness and representativeness with a certain command of legitimacy and respect in the work they do and represent as individuals and organizations with the women and youth groups at the district and national levels. The number of participants will be 150 (30 from the Districts and 120 from the national level), enough to both allow everyone to speak and to capture a range of views and experiences to strengthen the findings and arguments for validation and formulation of better solutions to the challenges.

I. Desk Review

The desk review will consist of a review of three components:

The first component will be a desk analysis of the current food and nutrition situation in Timor-Leste using the most recent reports and data produced in the country. We will also consult with the peer reviewed scientific literature on key subject matters.

The second component will consist of a policy and program analysis of how the country is working towards food security and nutrition improvements along, and in tandem with, the SDG2 targets. The analysis will examine:

- Linkages between SDG 2 and other SDGs, as required;
- Progress made so far - National Policy and Programmatic Response of Government and Partner Policies, strategies and plans;
- The government's plans and targets in development, food security, nutrition, social protection, disaster management, and other relevant sectors; and
- The plans of key non-governmental (i.e. international organizations, private sector, civil society, etc.).

The key government policies that will be examined are:

- National Food and Nutrition Security Policy 2016
- National Nutrition Strategy 2014-2019
- Ministry of Agriculture and Fisheries Strategic Plan 2014-2020
- Zero Hunger Challenge National Action Plan 2014
- National Aquaculture Development Strategy 2012-2030
- National Nutrition Strategy 2004 but revised in 2012
- National Health Sector Strategic Plan 2011-2030
- Strategic Development Plan 2011-2030
- Comoro Declaration 2010
- National Adaptation Program of Action on Climate Change 2010
- The Health Sector Strategic Plan 2008-2012
- National Food Security Policy 2005

The main programs that will be analyzed are:

Large donor investments:

- DFAT TOMAK and HAMATUK
- JICA Master Plan on Rice and Irrigation
- USAID Advancing Agriculture
- EU/KOICA CMAM Integrated Nutrition Project
- EU Agroforestry for Climate Change
- WB Watershed Management for Agriculture

Others:

- CRS Community Driven Nutrition Improvement Project
- Mercy Corps Nutrition Sensitive Agriculture
- CARE Improving Farming and Food Security
- CARE Improving Climate Resilience
- Oxfam Community Based Livelihoods and Health Program
- World Fish, Mercy Corps, and Hivos COMPAC-TL
- IFAD Maize Storage Project (finished)
- HIAM Health Moringa Project
- ADB Coffee Project

Government:

- Agriculture Extension
- National Food Reserve
- KONSSANTIL Programa Merenda Eskolar (School Meal Program)
- Ministry of Education School Gardens Project
- Veterans' Pension Program
- Bolsa da Mãe

Other key reports include:

- President's Office and DFAT Timor-Leste Mapping the Underlying Drivers of Malnutrition 2015
- World Bank Nutrition Assessment, Gap Analysis, and Donor Mapping Report 2016
- DFAT Measuring Child Undernutrition in TL 2016
- OXFAM Food Security Baseline Survey Report 2007

The third component will be a political economy and gap analysis to examine the financial, structural, governance and capacity aspects to support SDG2 presently and into the next decade. The political economy and gap analysis will be informed by the national interviews and community consultations and political science articles and documents. Lessons from other Asian countries will also be taken into consideration.

For this component, we will use an "Applied Political Economy Analysis" which asks questions about the development context, including the factors that impact growth and governance such as politics, rules and norms, social and cultural practices, beliefs and values, and historical and geographical determinants on nutrition and food security. Using Gillespie et al. (2013)¹ framework on the enabling environment, we will examine commitment,

¹Gillespie, S., Haddad, L., Mannar, V., Menon, P., Nisbett, N., & Maternal and Child Nutrition Study Group. (2013). The politics of reducing malnutrition: building commitment and accelerating progress. *The Lancet*, 382(9891), 552-569.

accountability, data, capacity and finances. We will also look at horizontal and vertical coordination within the country.²

II. National stakeholder interviews

A consultation will take place in Dili with representatives of relevant line ministries, donors, civil society and UN Agencies at the national level with focus on existing priorities in nutrition and food security and the Government’s plan to address these issues to meet SDG2. Below are the questions that will be asked to the relevant stakeholders. In addition, a survey monkey will be sent to local NGOs through the NGO forum. The survey questions are listed below. Stakeholder Categories include:

- Government
- UN, WB, iNGOs, and Bilateral Organizations (EU, DFAT, JICA, KOICA, and USAID)
- Local NGOs and CSOs
- Private Sector (rice and other food importers and retailers, coffee exporters)

General Questions to Stakeholders:

| PROCESS STEPS | KEY QUESTIONS | INPUT |
|--|--|---|
| 1. ANALYSIS OF THE FOOD SECURITY AND NUTRITION SITUATION | <ul style="list-style-type: none"> ➢ What are the main trends and problems? ➢ What are the causes? | <ul style="list-style-type: none"> • Literature and secondary data review • Vulnerability & food security assessments • Gender analysis • Consultations |
| 2. NATIONAL POLICY AND PROGRAMMATIC RESPONSE | <ul style="list-style-type: none"> ➢ What are the main national targets and goals? ➢ What programmes and policies are implemented to achieve these targets and goals? With what financial and institutional resources? | <ul style="list-style-type: none"> • Review of national policy and programme frameworks and budgets • National evaluations • Sector funding reviews • Consultations |
| 3. GAPS IN THE FOOD SECURITY AND NUTRITION RESPONSE | <ul style="list-style-type: none"> ➢ Which gaps, including in planning, design, implementation, capacity and resourcing, hinder the achievement of targets and goals? | <ul style="list-style-type: none"> • Benchmarking of the situation against the targets and the response • Review of findings from previous steps • Consultations |
| 4. RECOMMENDATIONS | <ul style="list-style-type: none"> ➢ What needs to be done to fill the gaps? ➢ What institutional, financial and human resources are required? ➢ How will priority actions be implemented? | <ul style="list-style-type: none"> • Review of all findings • Consultations including validation of outcomes |

Specific Questions for Stakeholders:

Government

- What are the lasting effects of the recent history of violence on government structures and in the general population? What barriers if any do these pose to food production and nutrition (disruptions to land ownership, access to capital, family structures, education, etc.)? What is being done to promote stability?
- What are your priorities within SDG 2, how do you expect to achieve these, and what are the key challenges that you expect to face? How do you suggest prioritizing ZHC/NNS/FHS?

²Acosta, A. M., & Fanzo, J. (2012). Fighting maternal and child malnutrition: analysing the political and institutional determinants of delivering a national multisectoral response in six countries. A synthesis paper.

- What is being done for climate change adaptation? How is this being targeted to the most vulnerable populations through social protection programs or other means? How is this information shared with the public?
- What is being done to move away from fossil fuels both broadly and specifically in the agricultural sector?
- What support is offered to farmers in the way of farm equipment, extension services, connections to markets, and social protection?
- What investments have been made to improve food value chains and networks for food commodities?
- What is being done, including corresponding budget allocations, to promote food production and nutrition especially in the areas with the greatest malnutrition? What about diversification of landscapes? Has production moved towards that or towards singular crops?
- What efforts are being made to intensify agriculture? What about sustainable intensification?
- What innovative approaches (methods, technology) to agriculture or nutrition are being tried? How are the outcomes recorded and analyzed and how is this information used? Is it shared with other farmers to increase education and capacity building? If nothing is being done in this area, are there any plans for these interventions?
- How do you plan to balance food supply with demand especially in regards to balancing food imports with domestic production to ensure access to sufficient and affordable food (and avoid price fluctuations)?
- What sort of investment is occurring on genetic conservation (on farm or in situ) and seed saving? Is there a national seed bank? Who contributes to it? What is being contributed?
- What investments have been made in fisheries along the coast and aquaculture in the mountains?
- Why do we think stunting has seen declines in the last 7 years? Why is wasting still so high and where?
- What are the roles of women and men, and how is this changing? How does this affect household nutritional status?
- What other policies or programs on agriculture or nutrition do you have that we have not discussed? What is their funding, capacity, and current implementation?
- How do different ministries and other stakeholders interact? Are there any challenges in communication and coordination? What is required to see better coordination to achieve SDG2?
- Capacity is a big gap. What ways do you see in filling the gap?
- What concerns do you have in achieving the five targets as they are stated? How would you envision that they should be modified for Timor-Leste over the next 13 years (by 2030)?
- If you were to recommend two actions (either policy or programmatically), what would they be?

UN, WB, iNGOs, and Bilateral Organizations such as DFAT

- What are the lasting effects of the recent history of violence in the general population? What barriers if any do these pose to food production and nutrition (disruptions to land ownership, access to capital, family structures, education, etc.)? What is being done to promote stability?
- What are your priorities within SDG 2, how do you expect to achieve these, and what are the key challenges that you expect to face? How do you suggest prioritizing ZHC/NNS/FHS?
- What is being done for climate change adaptation? How is this being targeted to the most vulnerable populations through social protection programs or other means? How is this information shared with the public?
- What support is offered to farmers in the way of farm equipment, extension services, connections to markets, and social protection?
- What is being done to promote food production and nutrition especially in the areas with the greatest malnutrition? What about diversification of landscapes? Has production moved towards that or towards singular crops?
- What efforts are being made to intensify agriculture? What about sustainable intensification?
- What sort of investment is occurring on genetic conservation (on farm or in situ) and seed saving? Is there a national seed bank? Who contributes to it? What is being contributed?
- What investments have been made in fisheries along the coast and aquaculture in the mountains?
- Why do we think stunting has seen declines in the last 7 years? Why is wasting still so high and where?

- What are the roles of women and men, and how is this changing? How does this affect household nutritional status?
- What is your relationship with the government and with other stakeholders? Are there any challenges in communication and coordination? What are the best ways of getting information from and sharing information between the government and other stakeholders?
- What other policies or programs on agriculture or nutrition do you have that we have not discussed? What is their funding, capacity, and current implementation?
- Where do you think there is a real need to build capacity in the government?

Local NGOs and CSOs

- What are the lasting effects of the recent history of violence in the general population? What barriers if any do these pose to food production and nutrition (disruptions to land ownership, access to capital, family structures, education, etc.)? What is being done to promote stability?
- What are your priorities within SDG 2, how do you expect to achieve these, and what are the key challenges that you expect to face? How do you suggest prioritizing ZHC/NNS/FHS?
- What is being done for climate change adaptation? How is this being targeted to the most vulnerable populations through social protection programs or other means? How is this information shared with the public?
- What is being done to move away from fossil fuels both broadly and specifically in the agricultural sector?
- What is being done to promote food production and nutrition especially in the areas with the greatest malnutrition? What about diversification of landscapes? Has production moved towards that or towards singular crops?
- What support is offered to farmers in the way of farm equipment, extension services, connections to markets, and social protection?
- What efforts are being made to intensify agriculture? What about sustainable intensification?
- What investments have been made in fisheries along the coast and aquaculture in the mountains?
- What sort of investment is occurring on genetic conservation (on farm or in situ) and seed saving? Is there a national seed bank? Who contributes to it? What is being contributed?
- What innovative approaches (methods, technology) to agriculture or nutrition are being tried? How are the outcomes recorded and analyzed and how is this information used? Is it shared with other farmers to increase education and capacity building? If nothing is being done in this area, are there any plans for these interventions?
- What are the cultural roles of both food production and consumption? Are these changing? What about cooking practices, or intrahousehold food distribution? Are there traditions that have negative consequences for health and nutrition?
- What other policies or programs on agriculture or nutrition do you have that we have not discussed? What is their funding, capacity, and current implementation?
- Why do we think stunting has seen declines in the last 7 years? Why is wasting still so high and where?
- What is the status of nutrition education both in the general population and in health care workers?
- What are the roles of women and men, and how is this changing? How does this affect household nutritional status?
- What is your relationship with the government and with other stakeholders? Are there any challenges in communication and coordination?
- If you could recommend two things for TL to achieve SDG2, what would they be?

Survey Monkey Questions for Local NGOs

- How does your organization support improved nutrition and sustainable food production?
- What activities and programs do you have in nutrition and food production?
- How many people do these programs reach and in how many municipalities?

- How does your organization capture, package and share its knowledge and skills? What challenges do you face in this?
- What are your sources of funding?
- What does your organization think are the biggest problems in nutrition and food security and what are the key activities and programs to address these?
- What role do you play in these interventions vs. the government and other stakeholders? How do you work together? How could this be improved?

Private Sector such as Rice Importers and Coffee Exporters

Food Importers

- What foods do you import and from where?
- What are the taxes on these foods? How would changes to these taxes impact you?
- What is the cost different between importing these foods vs. producing them in Timor-Leste? Are there other advantages to importing besides cost?
- What are your views on food fortification? Is any of the food that you import fortified? If so, please discuss which foods and in what ways. If not, would it be feasible to fortify any of the foods that you import?
- Would you advocate for government or regulatory incentives for fortified products or not? Why or why not?

Food Exporters

- What foods do you export and to where?
- Is there a larger market for these foods? Could Timor-Leste increase production to take advantage of that market? Are there markets for other foods that Timor-Leste could tap into such as spices?

III. Community Consultations

District Focus Group Discussion (DFGD) is a space that brings together selected members of the communities and relevant stakeholders including formal authorities and traditional structures, women and youth, boys and girls at the local level to discuss priorities of food and nutrition security and identify solutions to resolve these. Interactive dialogue-based research will encourage participants to reflect upon and share their own experience in a way that demonstrates a critical understanding of food and nutrition security at the household and community levels. This participatory action research approach will also encourage and allow participants to take their own experiences and use them as a reference for identifying and exploring priorities and gaps in the government's response at the national policy level, so that actions to be implemented are rightly identified and effectively implemented. In rural communities CEPAD's Interactive Dialogues have proven an effective adult learning approach appropriate to low-literacy groups that fosters their empowerment and participation while providing CEPAD with real-life experiences that are more convincing than simple statistics and graphs and which can be fed into broader processes at the local and national levels.

Capitalizing on existing community meeting infrastructure and CEPAD's Peace Houses, approximately 150 target participants will be selected to ensure inclusion and diverse representation of the local government, women and youth as ordinary citizens, traditional leaders, CSO members, university students, religious affiliations, the disability community, the elderly, and veterans.

The aim of these consultations is to consult with relevant groups and community members to assess 3 topics Food Security, Nutrition and Sustainable Agriculture at the district level, through the following objectives:

- Describe understandings on the 3 topics
- Identify key priorities, concerns and opportunities on these topics
- Provide a space to reflect on such topics and inform Government priorities through this Strategic review

This process is developed in the context of administrative decentralization in Timor-Leste, whereby districts (known as *Municipios*) are being transferred more competencies and financial allocations.

Dialogues will take place at six district-level Peace Houses established in 2009-2015 that have proven to be sustainable and safe centres for dialogue and local conflict resolution. The one-day focus group discussion per venue will be designed to accommodate both youth and women's participation and schedules and responsibilities. The group will be divided in two sub-groups (gender based) to provided women an opportunity to empower them to participate and take an active role in a more detailed problematization of obstacles to food and nutrition security, as well as in generating recommendations to improve food and nutrition security conditions and opportunities for sustainable livelihoods and personal empowerment. This is to ensure that a greater impact is generated by participants (i.e. women) as they take full ownership and responsibility for the process, one which is led entirely by Timorese.

- **Focus Group Discussions (FGD)**

- Target: 20 participants/district, with a similar proportion of male and female participants for gender-segregated FGDs (total of 120 participants)
- Participants: local authorities, representatives from Ministry of Agriculture and Health, farmer groups, staff from agricultural schools, women's and veterans' associations, youth and disability groups, representatives of relevant local NGOs, community members including pregnant women
- Geographical scope: aims to include participants from all district areas, yet participation from the district capital and its sub-district is expected to be higher
- Key topics: agriculture, nutrition, food security issues at the district level, including defining recommendations for each

- **Key Informant Interviews (KII)**

- Target: 2 from FGD and 2 from Stakeholders (SH) (total of 24 KII)
 - Interviewees FGD: Participants with more informed or unique views, and/or misrepresented during the discussion
 - Interviewees SH: District staff from key programs and/or national stakeholders
- Two interview profiles: agriculture and nutrition
- Key topics: content on SDG2 targets, with similar questions for both and a shorter version for FGD interviewees

- **Limitations**

- Pre-electoral climate and events might influence content of discussions and participants' availability - 20th March 2017 is the Presidential election
- Rainy season – rains pose access difficulties to the district capital by participants from farther areas and FGDs on rainy day are foreseen to have lower general attendance
- District capital over-representation – most participants are foreseen to come from the capital and its sub-district

Focus Group Discussion – leading questions

| Topic | Sub-topic | Aspects to talk about (for facilitators only) |
|--------------------|---|---|
| Agriculture | 1) Services are available to farmers | <ul style="list-style-type: none"> • How farmers access seeds, fertilizer, irrigation <ul style="list-style-type: none"> ◦ Is farm machinery available • Is there education - like Extension services, NGO programs; <ul style="list-style-type: none"> ◦ if so, it is useful • Access to insurance, loans (bank, micro-credit, local borrowing systems) • Do women and poor farmers have access to these services |
| | 2) Sustainable agriculture practices | <ul style="list-style-type: none"> • Farmers grow many crops and types of livestock, or tend to focus in one crop/animal • Are local varieties grown or imported seeds/animals; <ul style="list-style-type: none"> ◦ Community has a seed bank? • Any issues with soil, water, and ecosystem <ul style="list-style-type: none"> ◦ Communities use resources from forest, river - how are these managed <ul style="list-style-type: none"> • How important are these to families' diets |
| | 3) Main challenges faced in agriculture | <ul style="list-style-type: none"> • Are there problems with production storage; <ul style="list-style-type: none"> ◦ What processing opportunities • How farmers sell their crops – local/regional market, Dili, don't sell... <ul style="list-style-type: none"> ◦ How many days there is food market in the Municipal capital and in rural suku • What support would help farmers most |
| Nutrition | 1) What is understood about nutrition and why is malnutrition a problem | <ul style="list-style-type: none"> • What is nutrition – which food s good nutrition <ul style="list-style-type: none"> ◦ When you consume foods do you consume them just to feel full? Or do you consume these foods to assist your body's physical development, so you can enjoy a healthy mind and body ? ◦ From the foods you eat, which ones do you think help you to be healthy and enjoy a high quality of life ? • When people talk about child malnutrition, what do they mean <ul style="list-style-type: none"> ◦ Is it a problem in this municipality? ◦ Why is malnutrition a problem • What support would help families to have good nutrition |

| | | |
|----------------------|--|--|
| | 2) Food that people eat every day | <ul style="list-style-type: none"> • Describe a healthy meal for adults, and then for children <ul style="list-style-type: none"> ◦ What is the difference between soft and hard foods – give examples ◦ Is food now different from when you were a child <ul style="list-style-type: none"> • If different, is it better now • Is there differences on what people eat between: <ul style="list-style-type: none"> ◦ Rich and poor ◦ Urban and rural ◦ Men, women and children (After ask specifically about <u>eggs, fish, meat, dairy</u>) |
| Food security | 1) Where people get their food from: grow vs buy | <ul style="list-style-type: none"> • People grow or buy food <ul style="list-style-type: none"> ◦ Which ones are mostly grown or bought ◦ How is this changing <ul style="list-style-type: none"> • Is it different from when you were a child • Are most meals are eaten at home, or also at street food vendors, restaurants... |
| | 2) How important if food grown at home | <ul style="list-style-type: none"> • Are people able to grown and buy enough food to eat well <ul style="list-style-type: none"> ◦ Apart from rice, is the majority of food eaten grown by the household • Did El Niño (late and not many rains) affected this Municipiu last year <ul style="list-style-type: none"> ◦ Are changes in rainy patterns a worry • How does the lean season affect this Municipiu <ul style="list-style-type: none"> ◦ During the lean season, what would help families most |
| | 3) Issues being able to afford food | <ul style="list-style-type: none"> • Is food too expensive – which ones <ul style="list-style-type: none"> ◦ To eat <u>eggs, fish, meat, dairy, or other foods</u> – where are these sourced and are expensive • Who takes the decisions about how to spend money on food in households <ul style="list-style-type: none"> • If you had more money to buy food, would you buy more <u>eggs, fish or meat, milk/dairy products or other foods (please specify)</u> • Are these foods always available in local markets? • Women normally cook food; can they shop what they want to cook • Is food more expensive in rural areas compared Municipiu capital or Dili <ul style="list-style-type: none"> ◦ Are food prices the same throughout the year? In particular, Are rice prices the same throughout the year – when more expensive |
| | 4) Food access/availability | <ul style="list-style-type: none"> • Is it easy for you to access market where you can buy food? If not, why? (distance, lack of assets/infrastructures, geographic obstacles, other– please explain) |

Key Informant Interviews

Questions for the focused interviews will include:

Nutrition profile

- 1) What are the main challenges that families face to access nutritious and diverse food?
 - a) Is food affordability an issue for specific foods?
 - b) Is buying food more expensive during the lean season, ex. rice? If so, how much more?
- 2) Do you think there are cultural practices that do not support healthy diets for mothers and children?
 - a) What would be the best approach, in your opinion, to support healthier practices?
- 3) It is often said that women listen to their mothers and mothers-in-law advice about how to feed themselves during pregnancy and their babies. Sometimes their advice is different from what the MoH staff recommends. What do you think can be done in this situation?
 - a) Do you think other male family members have influence over these decisions?
- 4) In your opinion, if women could decide more often over how money is spent in the family, mothers and children would have better nutrition?
 - a) Please explain why you think so.
- 5) What programs are most needed to help families with their nutrition in this municipality?
 - a) In your opinion, which ones of the available programs are the most useful? Do you know if these are from the government or from NGOs?

Agriculture profile

- 1) Many farmers grow for consumption and sell some. In your opinion are services to small-holder farmers adequate? In what ways these could be improved and by who?
 - a) Is agricultural labor is shared within families? Who participates?
- 2) Are framers aware of and using sustainable agriculture techniques? Is there resistance to changing practices?
 - a) Some people mention that Timor-Leste is a fully “organic” nation because no synthetic fertilizers are used, is this the case in this municipality? Do you know if nutrient-cycling approaches like making compost are used in this municipality by farmers?
- 3) In many reports it is said that access to markets is a problem for farmers. How roads have changed/ are changing the way farmers make a living?
 - a) What do you think could be done to further support farmers linking to markets in this municipality?
- 4) Last year there was El Niño with less and late rains, how did it impact this municipality? Were farmers and families supported well in this municipality?
 - a) Are there issues on water, soil and ecosystem maintenance that are impacting farmers?
- 5) What programs are most needed to help farming families in this municipality?
 - a) In your opinion, which ones of the available programs are the most useful? Do you know if these are from the government or from NGOs?

SDG 2.1

The Sustainable Development Goal 2.1 aims to end hunger by 2030 and ensure that all people, particularly the poor and people in vulnerable situations, have access to safe, nutritious, and sufficient food throughout the entire year. The following section addresses hunger in Timor-Leste, with a specific focus on annual hunger seasons and vulnerability. It also addresses food security issues, dietary diversity, and the diets of infants and children.

Hunger and Annual Hunger Seasons

Hunger is synonymous with chronic undernourishment, a state in which an individual is not able to acquire enough food to meet the daily minimum dietary energy requirements over the course of a one-year period (FAOSTAT 2015). Since 2001, the three-year average for the number of people experiencing undernourishment in Timor-Leste has held constant at 300,000 (FAOSTAT 2015). This figure represents approximately one-quarter of the country's population.

In 2011, the Seeds of Life Baseline Survey evaluated hunger both nationwide and regionally through its Household Hunger Scale. This study measured food quantity, not quality; dietary quality, an important component of nutritional status, is discussed in greater detail elsewhere in this report. Nationally, three percent of households reported severe hunger, nine percent experienced moderate hunger, and 88 percent reported little or no hunger (Belo, Snowball, and Grieve 2015).

Timor-Leste also experiences annual hunger seasons that vary depending on region and time of year. Rural households typically experience a first phase of hunger when their stocks of maize and rice are almost gone but there are still reserves of root crops. In this phase, households decrease their food consumption, with adults eating once or twice each day and children eating two to three times (da Costa et al., 2013).

Households also often experience a more severe hunger period from approximately November until March. During this period, approximately eight months after the maize harvests have ended, access to all staple foods becomes more difficult for farming households as their stores run low. January and February are the months of greatest food shortages. In one survey, half of respondents ate only one meal or less during February, whereas one-fifth of respondents reported eating one meal or less during the harvest season in August (Belo, Snowball, and Grieve 2015).

The municipalities of Bobonaro, Ermera, and Liquica may experience two severe hungry seasons; the first as a wet insecure season from January to March and the second a dry insecure season from June to August. The second hungry season occurs just before the harvest time for corn. Wind-related storms, uncertain weather patterns, and destruction of stored foods by pests all contribute to diminished agricultural gains. Households cope with hunger seasons by reducing the sizes of their meals (47 percent), eating less preferred food (38 percent), and reducing the number of meals eaten (26 percent). The limited food access experienced during hunger seasons may be exacerbated by El Niño weather patterns and natural disasters, which is discussed further in subsequent sections (Belo, Snowball, and Grieve 2015).

To survive the hunger season, households rely on different support mechanisms. Farming households may harvest wild foods or rely on the purchase or loan of food from other sources. Households often consume their seed stores and must rely on imported rice or maize seed from the government to plant their next crop. Social networks, such as neighbors, relatives, and members of a farmer's working group, also provide support through lending, borrowing, bartering, or gifting food items. In many cases, the gifting of food occurs as a form of delayed reciprocity, in which the gift is returned at a later date when the recipient of the original gift has a food surplus or the giver of the original gift is in need (da Costa et al., 2013).

Vulnerability

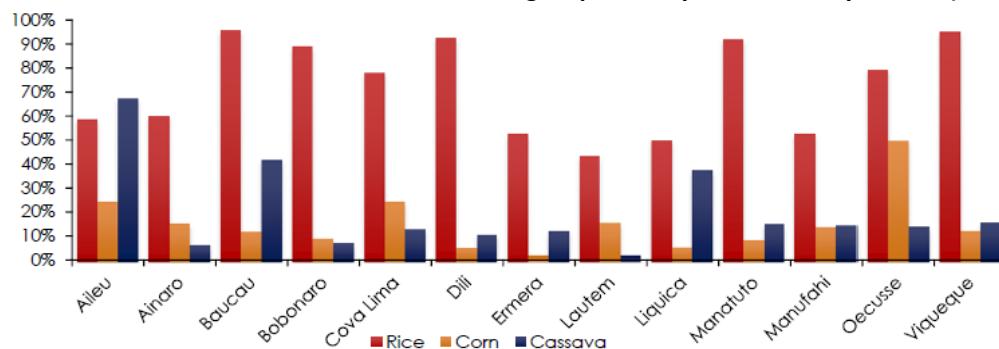
Those vulnerable to hunger issues in Timor-Leste include children, women, and poor households. A regional survey found that approximately one-quarter of responding households gave meal preference to men or heads of household and roughly one-fifth gave preference to children. However, this study found no difference in the amount of protein foods distributed amongst household members (Belo, Snowball, and Grieve 2015). Another study found that when food is limited and household members forced to eat less, children received less food approximately half the time. Poorer households are also more vulnerable to food insecurity, as is discussed in greater detail throughout this section (Belo, Snowball, and Grieve 2015).

Food Security at the Household Level: Availability

Food availability refers to the adequacy of the food supply. The average dietary energy supply adequacy measures dietary energy supply as a percentage of the average dietary energy requirement of the country, thereby measuring the adequacy of the national food supply in terms of calories. For the 2013-2015 period, the average dietary energy supply adequacy rate was 106 percent, which is part of a general upward trend experienced since 2004 (FAOSTAT 2015).

While the dietary energy supply adequacy rate suggests that there is sufficient food available to meet the country's needs, it is notable that a large share of this dietary energy is derived from calorie-dense staple foods that do not provide significant amounts of bioavailable proteins or micronutrients (Provo et al. 2016). The share of dietary energy supply derived from cereals, roots, and tubers was 70 percent for the 2009-2011 period, part of a minor downward trend that began in 2006. **Figure 1** "Percent of Timorese households consuming staples 7 days per week, by district, 2014" shows a breakdown by type of staple crop, with rice being the most widely eaten staple food. The average protein supply was 55 grams per capita per day for 2009-2011 period, and the average supply of protein of animal origin was 17 grams per capita per day for the same time period. The supply of protein of animal origin represents part of a small upward trend that began in 2007 (FAOSTAT 2015). In 2010, 29 percent of available calories came from non-staple foods. Around this time, the availability of fruits and vegetables experienced an increase, rising from 114 grams in 2010 to 135 grams in 2011, after a lengthy downward trend in availability since 1991 (FAOSTAT 2014, cited in Global Nutrition Report, 2015). This is depicted in **Figure 2**. Lastly, the average value of food production was \$111 (constant international dollar) for the 2011-2013 period (FAOSTAT 2015).

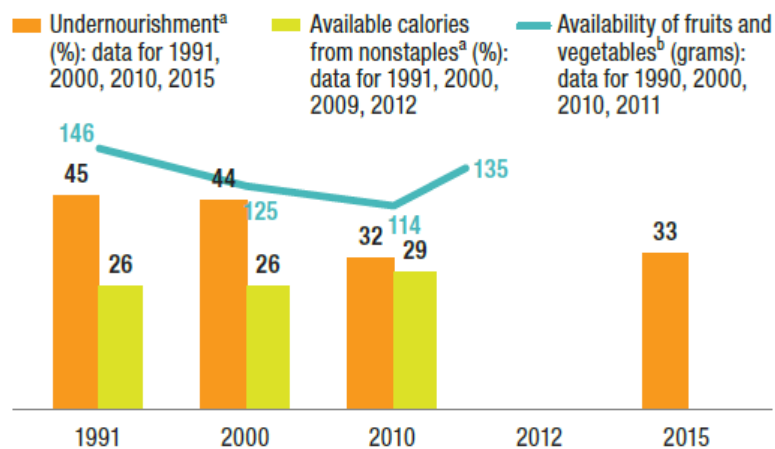
Figure 1: Percent of Timorese Households Consuming Staples 7 Days Per Week, By District (2014)



Source: World Bank 2015b.

Source: Provo et al. (2016)

Figure 2: Food Supply of Timor-Leste



Source: ^aFAOSTAT 2015; ^bFAOSTAT 2014.

Source: *Global Nutrition Report (2015)*

Food Security at the Household Level: Access

Access to nutritional, culturally acceptable food is determined by physical and economic ability. The prevalence of undernourishment is on the decline in Timor-Leste: since peaking in the 1998-2000 period at 44.1 percent, it has decreased to 26.9 percent during the 2013-2015 period (FAOSTAT 2015). The 2013 Household Food Consumption Score assessed household food security in the country through survey data, producing a composite score based on food frequency, dietary diversity, and relative nutrition importance of different food groups. Nationwide, the survey found that 61 percent of households met an “acceptable” Food Consumption Score (FCS) (Belo, Snowball, and Grieve 2015). Only ten percent of households had a “poor” FCS (Provo et al. 2016). Access to nutritional and diverse diets is affected by low crop production diversity, lack of water for horticulture, lack of income, and low market prices resulting from low demand (Provo et al. 2016).

Economic ability to procure food is measured by both indicators and survey data. Timor-Leste’s gross domestic product per capita was \$2124.6 (constant 2011 international \$) as of 2014, representing the peak of an upward trend in GDP that the country has been experiencing since 2006 (FAOSTAT 2015). The depth of the food deficit is on the decline, measuring 184 kilocalories per capita per day for the 2014-2016 period.

Physical impediments also affect the ability of households to access food. Throughout the country, the percentage of compacted, or sealed, roads vary widely by municipality. In Oecusse, for example, 94 percent of households are accessible by compacted roads, while only 27 percent of households can be reached by compacted roads in Bobonaro. On average, just under half of all households in the country are accessible by these types of roads. Furthermore, the country’s transportation system is also affected by the annual rainy season. An average of 60 percent of all aldeia’s, or hamlets, have roads that are rendered inaccessible throughout part of the year. Again, the level of inaccessibility varies widely between municipalities. The connection between transportation and food access is clear, as the time during which roads are inaccessible correlates with the availability of rice. High transportation costs and stock wastage during the wet season are associated with higher food costs, with households paying an average of \$2.50 more for sacks of rice in February than in August. This period coincides with the annual hunger season, when incomes were most reduced and households consume fewer meals (Belo, Snowball, and Grieve 2015).

Regional surveys of household diets found that over half of households in a majority of municipalities experienced difficulties in obtaining rice, a major staple crop. Across all areas, households reported that they faced difficulties because of price increases, lack of money, and transport and supply problems (Belo, Snowball, and Grieve 2015). As

noted elsewhere in this report, rice is the preferred staple crop despite the fact that only 25 percent of households grow it. In addition, it has been observed that households will report “hunger” when they are not able to access rice, even if they have other staple crops available (Provo et al. 2016). A study in Liquica found that a key challenge for residents was their ability to access a variety of foods, rather than a lack of food (Belo, Snowball, and Grieve 2015).

Food Security at the Household Level: Stability

Stability refers to the consistency of food availability, access, and utilization regardless of season or irregular shocks. The country’s cereal import dependency ratio has been reported differently according to various sources, although most agree that the country relies on imports to satisfy 30-40 percent of its cereal needs (Molyneux et al. 2012; National Food and Nutrition Security Policy, 2016; FAOSTAT 2014 reports that that cereal import dependency ratio is 10.6 percent). The majority of rice, the preferred staple food crop, consumed in the country is imported, as only 25 percent of households grow it (Provo et al. 2016). For the 2011-2013 period, the value of food imports over total merchandise exports was 343 percent for the 2011-2013 period. As of 2013, the per capita food production variability was \$10.1 (constant international dollar) per person. The per capita food supply variability was 14 kilocalories per capita per day as of 2011. In terms of political stability and absence of violence/terrorism, Timor-Leste ranks at -0.22 (FAOSTAT 2015).

Stability is also affected by seasonal changes in weather. As mentioned earlier, Timorese households experience at least one hunger season. Approximately two-thirds of farmers report experiencing a food shortage at some point during the year. It is notable, though, that within any given month, more farmers report a “hunger season” than a “food shortage.” This discrepancy may be because households may report they “haven’t eaten” or “are hungry” when there is no rice available, even if other staples are available; the associations between hunger seasons, dietary diversity, and caloric deficits demand further attention (Provo et al. 2016).

Dietary Diversity

Dietary diversity is an issue for households in Timor-Leste. As noted previously, low crop production diversity, lack of water for horticulture, lack of income, and low market prices resulting from low demand all affect access to nutritionally diverse diets (Provo et al. 2016). Rice is the main staple crop consumed in Timor-Leste, with the exception of Aileu. Households in Aileu primarily eat cassava (Belo, Snowball, and Grieve 2015). Rice has displaced corn/maize as the preferred staple crop due to its association with wealth, although only 25 percent of farming households grow it (Provo et al. 2016). Daily consumption of animal protein is relatively low: regional surveys indicate that between 30 and 54 percent of those surveyed eat it daily. Chicken is the main source of meat consumed across all municipalities, although egg consumption is low throughout the country.

As noted before, the majority of households received acceptable Food Consumption Scores (FCS), a metric measuring food frequency, dietary diversity, and relative nutrition of different food groups. The results have a strong relationship with dietary diversity: households with poor FCS reported a diet largely based on homegrown staple foods and devoid of animal source foods. Animal source foods were only prevalent among those households with acceptable FCS. Pulses, fruit, and milk were rarely consumed by household members across the FCS spectrum (Belo, Snowball, and Grieve 2015).

Dietary diversity is notably poor among infants and young children. **Figure 3**, “Dietary diversity among Timorese infants and young children 6-23 months of age, 2013,” indicates that only 28 percent of infants and children nationwide meet the minimum recommended dietary diversity. Of all municipalities, the best performing are Ainaro, Aileu, and Dili, yet no more than half of all children in these municipalities meet minimum dietary diversity. The most consumed foods were grains, roots, and tubers, and vitamin A-rich fruits and vegetables. Least consumed foods include legumes and nuts, animal source foods, and other fruits and vegetables, a finding that generally reflects that of the FCS. More information on infant and child diets is included in the following section.

Figure 3: Dietary Diversity Among Timorese Infants and Young Children Ages 6-23 Months (2013)

| | Minimum dietary diversity | Grain/roots/Tubers | Legume/nuts | Dairy (milk, yogurt, cheese) | Flesh food | Eggs | Vitamin A rich fruits and | Other fruits and vegetables |
|----------|---------------------------|--------------------|-------------|------------------------------|------------|------|---------------------------|-----------------------------|
| National | 28 | 99 | 13 | 23 | 27 | 41 | 82 | 46 |
| Ainaro | 42 | 99 | 22 | 23 | 27 | 42 | 82 | 46 |
| Aileu | 43 | 100 | 23 | 27 | 29 | 40 | 86 | 42 |
| Baucau | 21 | 99 | 8 | 14 | 21 | 21 | 67 | 25 |
| Bobonaro | 30 | 99 | 15 | 26 | 26 | 24 | 67 | 28 |
| Covalima | 21 | 99 | 7 | 30 | 21 | 18 | 68 | 23 |
| Dili | 42 | 99 | 19 | 47 | 39 | 28 | 70 | 35 |
| Ermera | 16 | 98 | 10 | 20 | 14 | 14 | 62 | 23 |
| Liquica | 19 | 100 | 12 | 12 | 16 | 14 | 61 | 23 |
| Lautem | 13 | 100 | 9 | 14 | 18 | 17 | 46 | 16 |
| Manufahi | 17 | 100 | 10 | 17 | 18 | 15 | 62 | 19 |
| Manatuto | 30 | 100 | 11 | 28 | 25 | 27 | 69 | 33 |
| Oecusse | 13 | 100 | 5 | 16 | 15 | 8 | 60 | 22 |
| Viqueque | 23 | 100 | 14 | 14 | 20 | 29 | 73 | 33 |

Source: TLFNS 2013. *Minimum dietary diversity* is the proportion of children 6-23 months of age who receive foods from 4 or more food groups (out of 7 food groups) during the previous day.

Source: Provo et al. (2016)

Infant and Child Diets

The minimum acceptable diet (MAD) indicator measures both minimum meal frequency and minimum dietary diversity. Data from the 2013 Timore-Leste Food and Nutrition Survey (TLFNS) indicates that eighteen percent of children aged 6-23 months consumed a minimum acceptable diet. Apart from the municipalities of Ainaro and Aileu, where the diets of approximately one-third of children met MAD requirements, between one-tenth and one-quarter of children in other areas received minimum acceptable diets. The national average for minimum dietary diversity is slightly higher at 28 percent. Among children aged two to five, national survey data shows that twenty-five percent receive MAD and slightly over one-third meet the minimum dietary diversity (Belo, Snowball, and Grieve 2015). The municipalities of Bobonaro, Ainaro, and Aileu fared best with the diets of 29, 44, and 32 percent of children, respectively, meeting MAD. In other municipalities, this proportion ranged from one-tenth to one-quarter of children.

Dietary diversity is also relevant for child malnutrition. Diversity in infant and child diets is discussed in greater detail in the previous section. Consumption of diverse, nutrient dense foods is constricted by limited market availability and affordability (Provo et al. 2016). A child malnutrition study determined that two-thirds of children who were malnourished consumed only 0-3 food groups each day, while stunting and underweight rates were low (7 and 6 percent, respectively) among children with high dietary diversity (Belo, Snowball, and Grieve 2015).

SDG 2.2

Sustainable Development Goal 2.2 commits to ending all forms of malnutrition by 2030. This goal includes the achievement of the internationally agreed targets on stunting and wasting in children under five years of age by 2025, and a focus on the nutritional needs of adolescent girls, pregnant and lactating women, and older persons. This section features information on the drivers of malnutrition; food security issues related to utilization of food; different forms of malnutrition, such as undernutrition, micronutrient deficiencies, and overnutrition; and health burdens associated with diet.

Drivers of Malnutrition

The drivers of malnutrition are many in Timor-Leste, especially those that affect maternal and child nutrition. Immediate causes of malnutrition include nutrient intake and disease, especially as they relate to breastfeeding, complementary feeding, maternal nutrition, infectious disease, and aflatoxin exposure. Underlying causes include care for women and children, which encompasses women's education; women's social status and employment; and stress, violence, and mental health. Health services and health environment is another underlying cause, especially services related to maternal and reproductive health, and access to water, sanitation, and hygiene. Lastly, food insecurity is another major underlying cause, with components including availability, household food security, utilization, and stability (Provo et al. 2016). Inadequate dietary diversity is an especially salient driver of malnutrition across all municipalities in Timor-Leste. There is also a need to increase behaviors that promote nutrition through social and behavioral changes at the household level (Belo, Snowball, and Grieve 2015). This report focuses on immediate causes of malnutrition, namely nutrient intake, though it also addresses select underlying causes, such as food security and WASH. The following section continues the discussion of food security issues, but is more focused on how they relate to malnutrition.

Utilization

Utilization refers to the allocation of food within households, the nutritional quality of food, and the ability of individuals to absorb nutrients. Households in Timor-Leste do not necessarily utilize all available food resources. Regional surveys conducted in 2013 and 2014 indicated that the vast majority of households owned poultry, yet the consumption of animal source foods was markedly low, especially among children. Likewise, a study of select municipalities found that most (85-95 percent) owned livestock, but less than 20 percent of mothers and children consumed animal source foods (Belo, Snowball, and Grieve 2015). In rural areas especially, livestock may be used as savings or bartered/sold rather than consumed (Provo et al. 2016). A study on child malnutrition showed that households will purchase rice even if they have adequate stores of homegrown staple crops. These patterns of utilization may be informed by beliefs and practices surrounding appropriateness or the status of food: over half of survey respondents stated that children aged 6 to 23 months should not eat eggs, meat, or freshwater fish. With the exception of Dili, households primarily eat animal source foods during traditional ceremonies, a practice that also may contribute to the low consumption of animal proteins among mothers and children. A respondent in the malnutrition study characterized the status of rice by saying, "When we have money, we buy rice" (Belo, Snowball, and Grieve 2015). While taboos and beliefs on food are widespread in Timor-Leste, they are often limited to kin groups or lineages and cannot necessarily be generalized across households or districts (Provo et al. 2016).

Demand is another important component of utilization. Although urban areas have experienced an increased demand for animal source foods, vegetables, and fruits, this trend has not spread to rural areas. As noted above, there is little demand for animal source foods or vegetable proteins outside of traditional ceremonies. According to the Market Development facility, the gap between demand and recommended consumption is estimated to be over 50 percent for supplementary foods (soybeans, mung beans, and peanuts) and 10 percent for fresh foods. This lack of demand contributes to the slow pace of rural market development and helps explain why livestock are not more commonly consumed in rural areas. Consumers are also driven by convenience and marketing, with many preferring the recently introduced instant noodles over other foods. The rise in consumption of instant noodles has also resulted from their taste, ease of transport and preparation, and minimal cooking fuel required for their preparation (Provo et al. 2016).

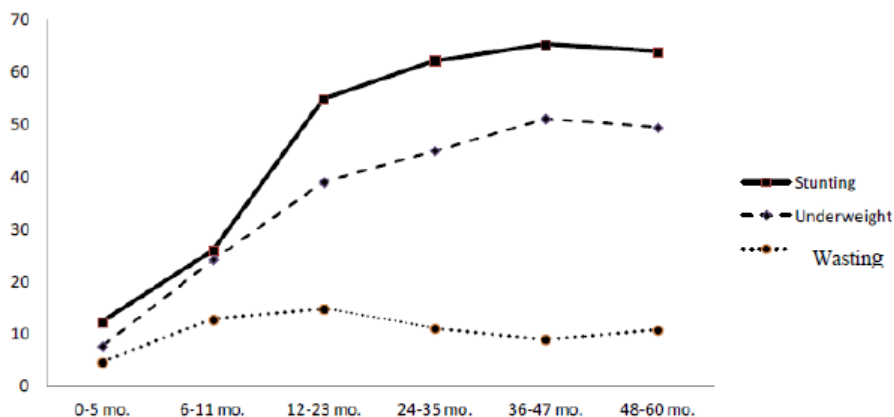
An individual's ability to absorb nutrients is influenced by their health status as well as by water, sanitation, and hygiene. Among children under five, 38 percent were underweight, 11 percent were affected by wasting, and 50 percent were stunted in 2013 (Provo et al. 2016). Among women of reproductive age (15-49 years of age), 25 percent were underweight in 2013 (Belo, Snowball, and Grieve 2015). The 2013 TLFNS survey showed that 63 percent of children aged 6-59 months were anaemic nationwide. In 2013, 24.8 percent of women of reproductive age were underweight (Provo et al. 2016). Of this same group, 40 percent were anaemic (Belo, Snowball, and Grieve 2015). In 2014, nearly 72 percent of the population had access to improved water sources. In 2015, 41 percent of the

population had access to improved sanitation facilities, while 26 percent practiced open defecation. This is a notable change from 2000, when 48 percent of the population practiced open defecation (WHO/UNICEF JMP, 2015, cited in Global Nutrition Report, 2015).

Undernutrition

Undernutrition is a nutritional status that includes underweight, stunting, and wasting. Underweight is measured through weight for age and has been replaced by stunting as the main anthropometric indicator for children. The most recent data from the 2013 TLFNS indicates that 38 percent of children under five are underweight in Timor-Leste. The rate was slightly higher among boys (39 percent) than girls (36.3 percent) (Provo et al. 2016). This rate is a decline from the 2009 rate of 45 percent (FAOSTAT 2015). **Figure 4** below, “Prevalence of child stunting, wasting, and underweight in Timor-Leste by age group, 2013,” shows how prevalence of undernutrition correlates with age: prevalence of wasting peaks between 12-24 months, while prevalence of both underweight and stunting increase significantly starting at 6-11 months and peak at 36-47 months (Provo et al. 2016).

Figure 4: Prevalence of under five years of age stunting, wasting and underweight in Timor-Leste by age group in months (2013)

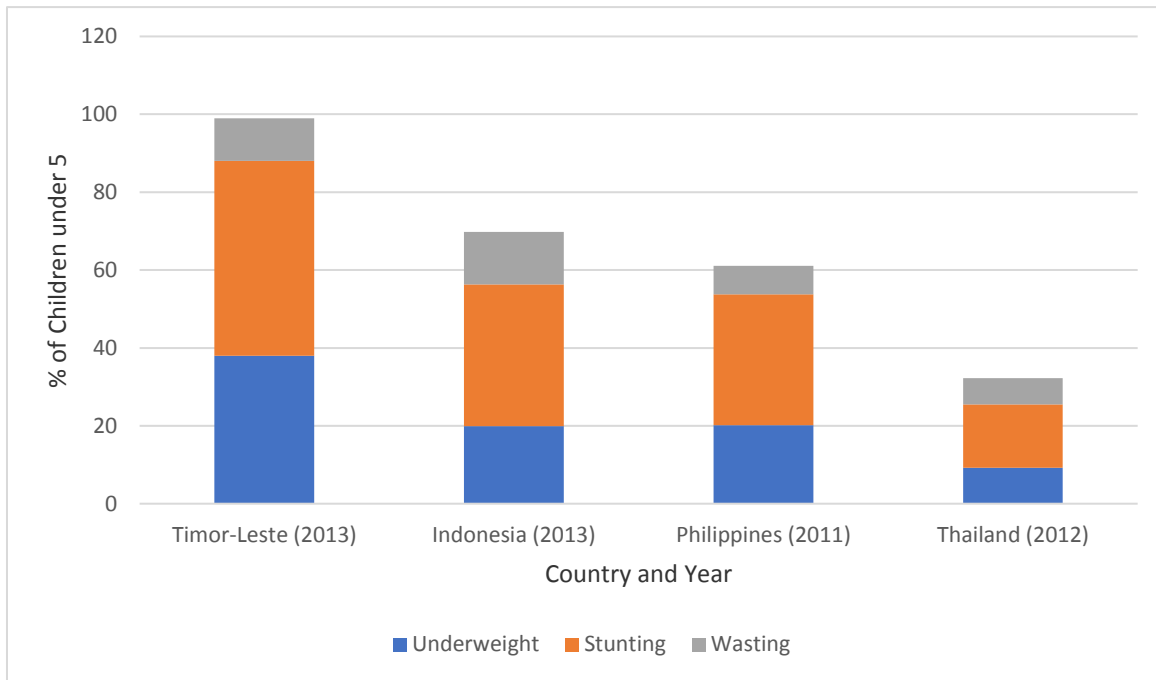


Source: TLFNS 2013

Source: Provo et al. (2016)

Figure 5 provides the most recent data on underweight, stunting, and wasting rates for children under 5 for Timor-Leste and the neighboring countries of Indonesia, the Philippines, and Thailand. As the figure shows, Timor-Leste’s underweight rate is far higher (38 percent) than that of the other countries (19.9, 20.2, and 9.2, respectively). Stunting is also significantly higher in Timor-Leste (50 percent) than the others (36.4, 33.6, and 16.3, respectively). In wasting, Indonesia has a slightly higher rate (13.5 percent) than Timor-Leste, although the other countries’ rates are much lower (7.3 percent for the Philippines and 6.7 percent for Thailand).

Figure 5: Country Comparison of Undernutrition



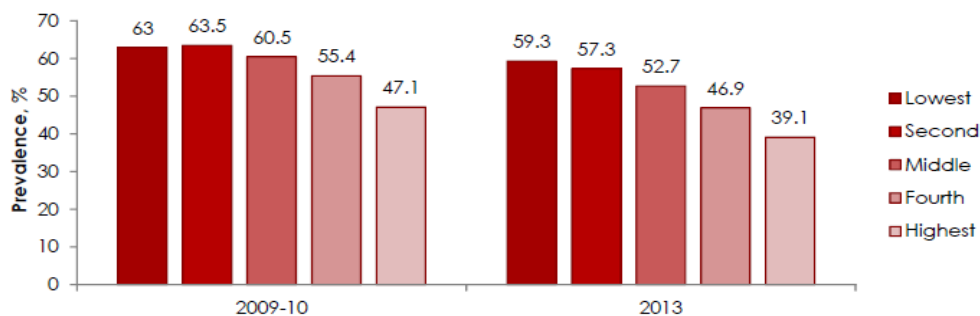
Source: Created by authors, based on UNICEF (2016)

For adults, underweight is defined as having a BMI of less than 18.5 kg/m². Among women of reproductive age (15-49 years of age), 24.8 percent were underweight in 2013. This represents a slight decline from 2009-2010, when 27 percent of women were underweight (Belo, Snowball, and Grieve 2015). However this figure represents high prevalence or a serious situation according to WHO guidelines (Provo et al. 2016). High rates of underweight women are concentrated in Oecusse, Bobonaro, Ermera, and Liquica (Belo, Snowball, and Grieve 2015). Underweight was most prevalent among young mothers, with 41.8 percent of mothers under the age of 20 underweight. This is considered a critical situation for this sub-population (Provo et al. 2016).

Stunting, measured as height for age, is widespread throughout the country. According to the TLFNS 2013, 50 percent of children under five were stunted (Belo, Snowball, and Grieve 2015). This is far higher than the regional average of 11.3 percent for East Asia Pacific (Provo et al. 2016). Timor-Leste has the highest prevalence of stunting in EAP and, using 2013 estimates, the third highest prevalence globally (Provo et al. 2016). This rate represents a decline from the DHS 2009-2010 data, which showed that 57.7 percent of children nationwide were stunted (Belo, Snowball, and Grieve 2015). However, the average annual rate of reduction in stunting was 0.7 percent between 2002 and 2013, which is less than half the current global average of 2.1 percent (Provo et al. 2016).

Stunting rates were very high (over 40 percent) in every municipality. In the 2009-2010 data, Aileu had a stunting rate of 31 percent (high), but in 2013 this rose to 52 percent (very high) (Belo, Snowball, and Grieve 2015). Stunting tends to be higher in areas with higher poverty levels and a higher proportion of market orientation in agricultural production. Children from the wealthiest households experienced the lowest prevalence of stunting, though there was a nearly 40 percent stunting prevalence among the wealthiest households. This data is reflected in **Figure 6**. Stunting prevalence was also higher among rural areas (54.5 percent) than urban (38.9 percent). **Figure 7** provides a more in-depth focus on stunting rates: Timor-Leste has experienced an overall downward trend in stunting prevalence since approximately the mid-2000s, akin to many other countries in the region, yet it still has the highest prevalence rate.

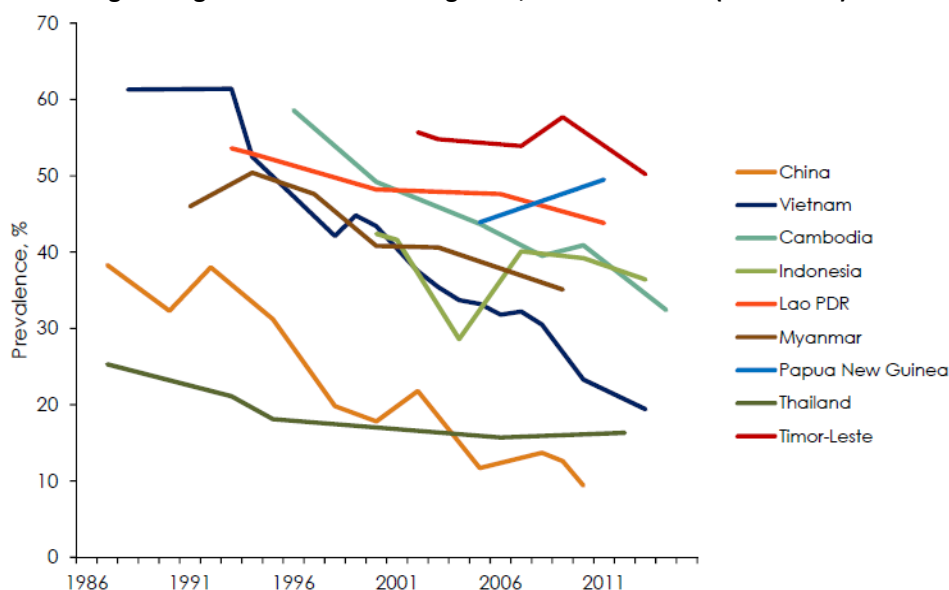
Figure 6: Children under five years of age Stunting in Timor-Leste by Wealth Quintile, 2009-2010 and 2013



Source: DHS 2009-10; TLFNS 2013.

Source: Provo et al. (2016)

Figure 7: Stunting Among Children Under the Age of 5, East Asia Pacific (1986-2014)

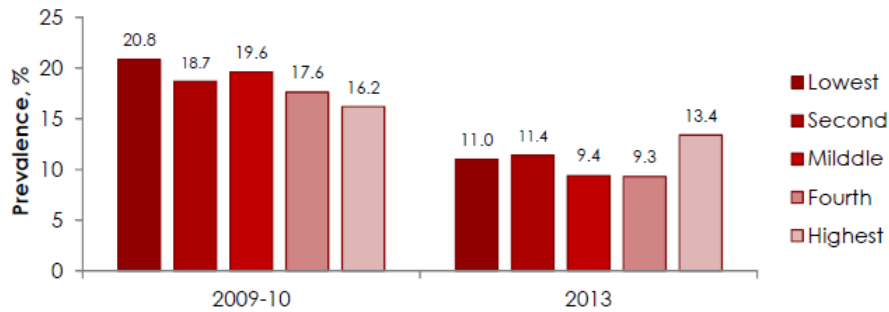


Source: World Bank 2015a with addition of TLFNS 2013 data for Timor-Leste.

Source: Provo et al. (2016)

Wasting is measured as weight for age. Nationwide, wasting prevalence was at 11 percent in 2013 (Provo et al. 2016). This represents a significant decline from 2009, when 18.6 percent of children under five experienced wasting (FAOSTAT 2015). Severe wasting declined from 7 to 1.9 percent from 2010 to 2013, while moderate wasting declined from 18.6 to 9.1 percent during the same period. Wasting was higher among children in urban areas (14.3 percent) than rural (9.8 percent). Levels of wasting on par with emergency conditions were seen in Covalima (17.4 percent) and Oecusse (19.8 percent). Wasting was more prevalent among the wealthiest children (13.4 percent) than among the poorest (11 percent). **Figure 8** reflects this data and shows how it has changed over time: the prevalence of wasting by wealth quintile has reversed over time, with a greater prevalence of wasting among children of the lowest wealth quintile in 2009-2010 (Provo et al. 2016). The high prevalence of wasting among the wealthiest suggests that food shortages are not underlying drivers of wasting, but rather that infant and young child feeding, hygiene, and caregiving are. Prevalence of wasting is most common among children between one and two years of age and decreases in prevalence thereafter (Provo et al. 2016).

Figure 8: Children Under the Age of Five Wasting in Timor-Leste by Wealth Quintile, 2009-2010 and 2013



Source: DHS 2009-10. TLFNS 2013.

Source: Provo et al. (2016)

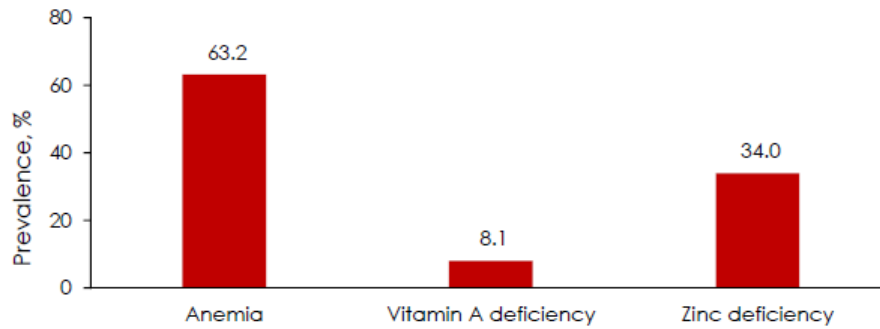
Micronutrient Deficiencies

Malnutrition also encompasses micronutrient deficiencies such as anemia, and vitamin A and iodine deficiencies. The 2013 TLFNS survey showed that 63 percent of children aged 6-59 months were anemic nationwide. Rates of anemia were severe (over 40 percent) in every municipality. These figures are a major increase from 2009-2010, when the DHS survey showed national child anemia rates at 38 percent. At that time, eight percent of municipalities experienced severe anemia rates, four were moderate (20-39.9 percent), and one was mild (5-19.9 percent) (Belo, Snowball, and Grieve 2015). There is no clear indication for this rise in prevalence of anemia. Anemia prevalence peaks among the 6-11 month age group, which is younger than peak anemia prevalence in other countries. There are no significant differences in anemia prevalence based on sex, residence, or household wealth (Provo et al. 2016).

Anemia is also a concern for women of reproductive age. In 2013, 39.5 percent of women aged 14 to 60 were anemic across the country. This rate represents an increase from 21.3 percent in 2011 (Provo et al. 2016). High prevalence of anemia was concentrated in Oecusse, Liquica, Dilli, Bobonaro, and Baucau (Belo, Snowball, and Grieve 2015). Anemia was highest among women aged 35-45 (42.6 percent). Prevalence was highest among women in the highest wealth quintile (45.7 percent), and was more pronounced in women in urban areas (46.7 percent) than those in rural areas (36.6 percent).

Other micronutrient deficiencies include deficiencies in vitamin A (VAD) and zinc. In 2013, 17 percent of children aged 6-59 months experienced Vitamin A deficiency (Stevens et al., 2015, cited in Global Nutrition Report, 2015). According to WHO guidelines, VAD has transitioned from a severe public health problem to a mild one (Provo et al. 2016). In 2013, 34 percent of children were deficient in zinc. These figures are reflected in **Figure 9** (Provo et al. 2016).

Figure 9: Summary of national prevalence of micronutrient deficiencies of children ages 6 to 59 months in Timor-Leste



Source: TLFNS 2013. Anemia defined as hemoglobin <110 g/L. Vitamin A deficiency defined as serum retinol < 70 umol/L. Zinc deficiency defined as serum zinc < 8.7 umol/L.

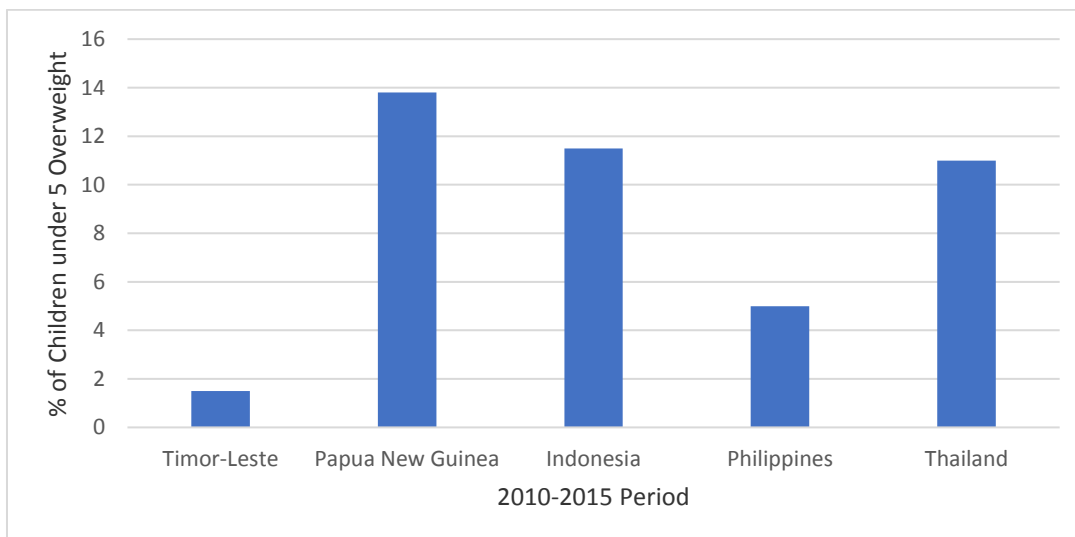
Source: Provo et al. (2016)

Women of reproductive age are also vulnerable to micronutrient deficiencies. Vitamin A deficiency exists among 13.5 percent of women and 26.7 percent of non-pregnant mothers are deficient in iodine. These deficiencies are a concern given the implications for fetal and child development.

Overweight and Obesity

Overweight and obesity is a nutritional status measured as weight for height, and it includes both overweight and obesity. Child overweight is low at 1.5 percent, and it is considerably lower than rates in neighboring countries, such as Papua New Guinea’s 13.8 percent child overweight rate and Indonesia’s 11.5 percent (UNICEF, 2016, Provo et al. 2016). However, it is notable that this prevalence has doubled since 2009-2010 (Provo et al. 2016). **Figure 10** below, “Country Comparison: Overweight,” shows how prevalence of child overweight is much higher in neighboring countries (UNICEF, 2016).

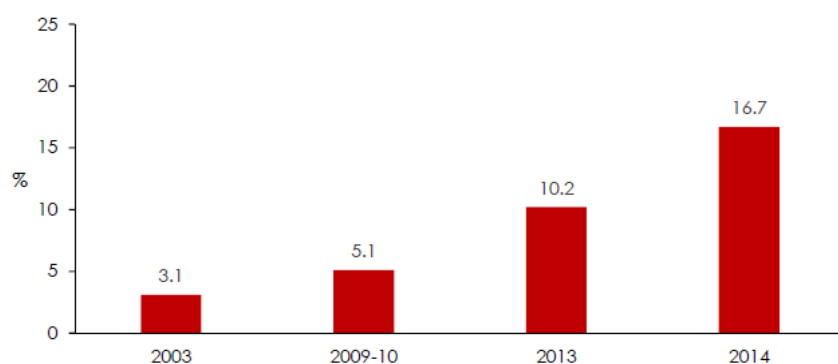
Figure 10: Country Comparison of Childhood Overweight



Source: Created by authors, based on UNICEF (2016)

Overweight and obesity is a more significant issue for adults, especially women. Data from 2014 shows that between 16.7 and 18 percent of women of reproductive age were overweight (BMI ≥ 25) and three percent were obese (BMI ≥ 30) (Provo et al. 2016; Belo, Snowball, and Grieve 2015). For men, between 8.2 and 11 percent of the population was overweight and one percent obese (Provo et al. 2016; WHO 2015, cited in Global Nutrition Report, 2015). As depicted in **Figure 11** below, the rate of overweight women is a clear increase from previous years. The TLFNS 2013 survey showed the 10 percent of women of reproductive age were overweight, while the DHS 2009-2010 survey showed that only five percent of women were overweight. It is notable, however, that these were three different surveys with varying methodologies. The TLFNS study evaluated women aged 14 to 60, while the DHS study evaluated women aged 15 to 49 (Belo, Snowball, and Grieve 2015).

Figure 11: Prevalence of Overweight (BMI > 25) among Timorese women (2002-2014)



Source: DHS 2003; DHS 2009-10; TLFNS 2013; STEPS 2014.

Notes: Survey inclusion criteria are as follows: 2003 DHS: ever-married women age 15-49; 2009-10 DHS: Women age 15-49; 2013 TLFNS - non-pregnant mothers (age 14-60) with children under age five; 2014 STEPS: Females age 18-69.

Source: Provo et al. (2011)

Health Burdens Associated with Diet

A nationwide study of childhood diarrhoea found that between eight and 24 percent of children under five had experienced diarrhoea in the two weeks prior to the survey. Of this figure, between 14 and 32 percent of affected children received proper feeding and between three and 12 percent received proper feeding, zinc, and oral rehydration treatment. A study of risk factors for child malnutrition found that diarrhoea is commonly perceived as a normal childhood event, not as an illness (Belo, Snowball, and Grieve 2015). It is notable, however, that these results are contradicted by the DHS 2009-2010 survey, which found that 71 percent of children under five with diarrhoea received oral rehydration salts (Global Nutrition Report, 2015).

Respondents in one study also displayed a lack of knowledge about the causes of diarrhoea, often attributing it to child development milestones (such as teething) (Belo, Snowball, and Grieve 2015). Another study found that sub-optimal hygiene practices, such as reduced hand washing and children drinking untreated water, were associated with poor accessibility to quality water, distance to water supply, and water shortages (Belo, Snowball, and Grieve 2015).

Many families prioritized traditional means of healing over the local health centre, yet Health Staff and SISCa (Integrated Community Health Services) volunteers were identified as major sources of health information. In a national study, 50 to 80 percent of respondents across all municipalities indicated difficulties in accessing doctors (Belo, Snowball, and Grieve 2015).

SDG 2.3

SDG 2.3 aims to double the agricultural productivity and the incomes of small-scale food producers through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment. This goal has a particular focus on women, indigenous peoples, family farmers, pastoralists and fishers. This section focuses on agricultural productivity and incomes in Timor-Leste, as well as services available to farmers, namely family farmers.

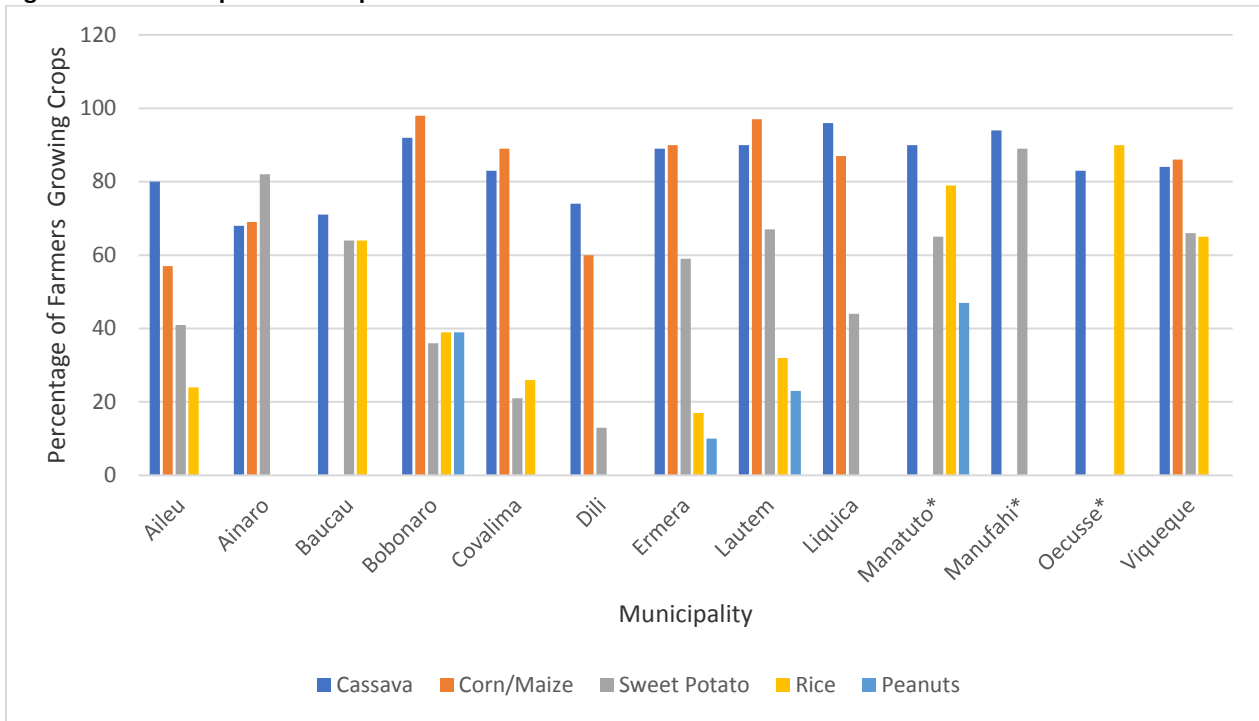
Agricultural Productivity and Incomes

Timor-Leste's agricultural sector consistently produces less food than is needed to feed the population (Molyneux et al., 2012). Although the country is an agrarian society with over 70 percent of the population living in rural areas, only 30 percent of arable land is used for crops and grazing (Provo et al. 2016). In addition, 70 percent of the population relies on rain-fed subsistence agriculture (Barritt, 2016). As mentioned previously, the country imports approximately one-third of its cereal requirements. Yields of rice and maize are low, with averages around 1.1 for maize and 1.5 t/ha for rice in 2008 (Molyneux et al., 2012). In 2009 and 2010, maize yields averaged 2.0 t/ha. These yields are far lower than those of neighboring countries with similar agro-economies, such as Cambodia, Laos, Indonesia, Thailand and Vietnam, where maize yields average above 4 t/ha (da Costa et al., 2013). The four major crops (maize, rice, sweet potato, and cassava) provide 87 percent of the daily calorific intake needed, but only 53 percent of daily protein requirements and 22 percent of daily fat requirements (FAOSTAT 2010, cited in Molyneux et al., 2012). However, it is notable that these calculations assume that all crops are eaten, whereas others estimate that up to one-third of all production is lost in the post-harvest stage (Molyneux et al., 2012).

Traditional farming systems have remained much the same since the early twentieth century (Molyneux et al., 2012). Shifting cultivation and bush-fallow rotations, also known as "slash and burn," are most commonly used. With this method, plots of weedy land or young forest are burned at the end of the dry season so that seeds can be directly planted. The land is then used until the weed burden increases substantially, at which time the land is abandoned for another plot. For the most part, chemical inputs such as fertilizers, pesticides, and herbicides are not available due to high cost and/or low interest. Combined with poor-yielding local varieties, poor soils, high weed burdens, steep slopes, and highly variable rainfall, these agricultural practices result in the low yields discussed previously (Molyneux et al., 2012). Agriculture in Timor-Leste is primarily subsistence rather than market-oriented. For rural households, there is generally a lack of off-farm income. Coffee is the major rural export commodity, comprising 90 percent of all non-oil exports (CFE-DM, 2016). Though they are some of the poorest farmers, coffee growers earn some extra income from this export crop (da Costa et al., 2013).

Throughout the country, the majority of farmers cultivate between one and four main staple food crops per farming plot. Predominant staple crops include cassava, corn, sweet potato, and rice. The type and number of crops grown vary by municipality. As noted elsewhere, only 25 percent of farming households grow rice (Provo et al. 2016). Below, **Figure 12** "Main Staple Food Crops Grown in Timor-Leste" depicts the percentages of farmers in each municipality who grow five different main staple crops. The production of staple crops fluctuates widely by year and region. **Figure 13** "Production of Rice in Select Municipalities" shows the production of rice in top rice-producing municipalities. All seven regions experience yearly fluctuations with an overall decline since 2012: a sharp decrease in production is observed between 2012 and 2013; then a slight increase between 2013 and 2014, though not approaching the 2012 production levels; and then another decline projected for 2015. The reasons for these fluctuations in production are unclear (Belo, Snowball, and Grieve 2015). Farming households grow a variety of other crops to mitigate the risks of crop failure. In addition to staple crops, households supplement with pumpkins, beans, taro, and a wide range of other traditionally grown species (da Costa et al., 2013).

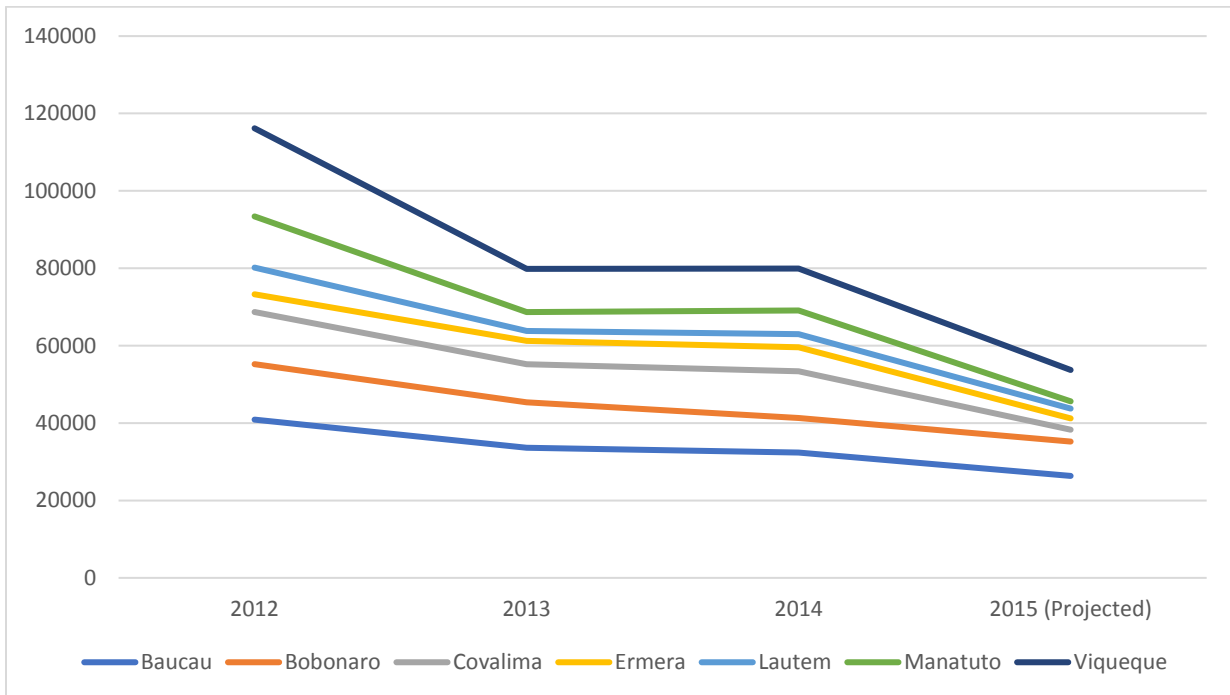
Figure 12: Main Staple Food Crops Grown in Timor-Leste



* The preliminary results from the Timor-Leste 2015 Population and Housing Census indicate that the majority of farmers in these municipalities grew corn, but does not provide specific figures.

Source: Created by authors, based on Belo, Snowball, and Grieve (2015)

Figure 13: Production of Rice in Select Municipalities



Source: Created by authors, based on Belo, Snowball, and Grieve (2015)

Services Available to Farmers

The government of Timor-Leste provides services to farmers that focus on increasing agricultural productivity. In tandem with bilateral and multilateral interventions, the Ministry of Agriculture and Finance (MAF) has expanded its support of agricultural extension services. There are currently over 400 village extension officers and three agricultural secondary schools with an enrolment of around 800 students. These programs encourage rural farming communities to adopt more modern agricultural techniques (da Costa et al., 2013).

Government programs also assist farmers with land management, especially weed control. As mentioned before, most traditional farming, especially in the upland area, uses the slash and burn method. To reduce the weed burden in a way that is less harmful to the land, the government supports the cultivation of land with deep ploughing and tillage. Between 2007 and 2009, the MAF imported nearly 2500 hand tractors and about 300 four-wheel drive tractors, which are available with drivers for farmers to use. In 2008 and 2009, the government imported fertilizers to use on hybrid rice crops, but these inputs were not available in all areas. There is low demand for fertilizers, largely because of farmers' negative perceptions of them (da Costa et al., 2013).

Seeds are also provided to farming households. As noted previously, rural households often must rely on the government to provide them imported seeds for the growing season. This is because many households are forced to consume their seed stores during the hungry season. In partnership with MAF, the Seeds of Life (SoL) program works to ensure seed availability to all farmers by connecting formal and existing seed systems at the community level. Seeds distributed through SoL are higher-yield and, in addition, the program is exploring the introduction of biofortified crops to address vitamin A and iron deficiencies (da Costa et al., 2013).

SDG 2.4

SDG 2.4 ensures sustainable food production systems by 2030. It implements resilient agricultural practices that increase productivity and production; help maintain ecosystems; strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters; and progressively improve land and soil quality. This section focuses on threats to agriculture from El Niño weather patterns, natural disasters, and climate change more broadly.

El Niño

The El Niño cycle is a major influence on the stability of food availability, access, and utilization in Timor-Leste. The weather pattern, which arises every three to seven years, leads to reduced annual rainfall for the country as a whole. It also affects the timing of the rainy season, resulting in a wet period that starts late and finishes early. El Niño is especially impactful for municipalities in the eastern and southern parts of the country, where annual rainfall may be reduced by as much as 34%. Less affected regions may experience a 5-15% reduction in annual rainfall during El Niño years. The reduction in rainfall may prevent the production of a second food crop in affected municipalities (Belo, Snowball, and Grieve 2015; Barritt, 2016). In addition to supporting this more generalized assessment of El Niño's impact, an evaluation of the 2015-2016 El Niño season also identified food security and gender implications. As a result of reduced or failed crop yields and dying livestock, over half of respondents in "worse impacted" areas reported decreasing the number of meals eaten each day. Communities in these areas suffered Moderate/Borderline Food Insecurity (Integrated Food Security Phase Classification Phase 2) with over 100,000 people affected. The study also found that women were more likely to experience negative impacts, as women engaged in more domestic activities related to water (e.g. collecting water) and were more likely to experience worsening nutrition as a long-term impact. Other impacts included an increase in reports of domestic and community disputes. There was also a gendered difference in perception, with a much greater percentage of female respondents reported suffering from a lack of water (87 percent women vs. 57 percent men) (Barritt, 2016).

Natural Disasters

Timor-Leste is vulnerable to a number of natural hazards as a result of its location in a region with seismic activity, its own topography and regional climate, and the prolonged use of poor agricultural techniques. The country has a medium exposure to natural hazards, but the absence of coping and adaptive strategies makes it the seventh most disaster prone country in the world. It is especially prone to severe and recurrent drought, flooding, and landslides. The most frequently occurring natural hazards are floods and landslides, which pose special threats to the transportation system and result in destroyed bridges and washed-out roads. As previously noted, drought is a major issue during the dry season, especially during El Niño years. Drought may be compounded by locust infestations. Tropical cyclones, tsunamis, and earthquakes also pose risks for the country. The lack of infrastructure, especially buildings designed to withstand seismic activity, exacerbates these risks. All of these natural hazards increase the country's vulnerability to agricultural challenges, food shortages, and food insecurity more broadly (CFE-DM, 2016).

Climate and Resilience

Climate change poses serious threats to food security in Timor-Leste, some of which are already occurring and others of which are projected to intensify. Though the historical record of climate conditions in the country is limited, existing records from 1950-2009 show definitive effects of climate change: regional sea surface temperatures have increased 0.15-0.2 degree C per decade, which is likely reflected by a similar increase in air temperatures, and sea levels have risen by 9 mm per year since 1993. The rise in sea levels is much higher than the global average increase of 2.8-3.6 mm per year. Coastal areas are consequently at a greater risk of flooding. Anecdotal reports of climactic changes mention hotter dry seasons, shorter and unpredictable rain seasons, more frequent extreme rainfall, and sea water intrusion (CFE-DM, 2016).

Climate projections indicate that the current effects of climate change will intensify and increase over time. By 2030, temperatures are expected to increase by 0.4-1.0 degrees C (CFE-DM, 2016). Other estimations project an increase of 1.5 degrees C by 2050 (Molyneux et al., 2012). Rainfall during the dry season is likely to decrease, while wet season rainfall will increase. Molyneux and colleagues project the country will become 10 percent wetter by 2050 (2012). Drought frequency is unlikely to change in this century. Extreme rainfalls are expected to occur more often, while there will likely be a decrease in the number of tropical cyclones. Sea level is expected to rise 6-15 centimetres by 2030. The impacts of storm surges and coastal flooding are likely to be more noticeable as a result of sea level rise. The effects of climate change on food supplies is projected to be most detrimental in the future (CFE-DM, 2016).

Production

The use of poor agricultural techniques has negative impacts on the environment and food yields, as noted previously in this report. Sustainable practices in production help to support soil, water, and ecosystem maintenance. As climate change affects the phenological process of crops, it is expected that farmers will have to adapt and change their practices to continue farming in the same areas. Current varieties of crops may not continue to thrive as a result of changes in rainfall variability and onset of the wet seasons, as well as increases in average temperature. **Table 1** below, from Molyneux and colleagues 2012, shows the different agro-climatic zones of Timor and the major crops grown in each area. The type and extent of crop damage will also change as crop diseases are affected by climate change. Droughts will likely increase instances of aflatoxin contamination, while increases in rainfall may lead to more widespread groundnut rosette disease. Increases in rainfall will also exacerbate erosion in areas with steep slopes. Currently, slopes as steep as 40 percent are utilized for major staples and other food crops. Terracing, micro-catchments, and contour hedgerows of vegetation are all means of stabilizing crop production on slopes. In particular, hedgerows of leguminous shrubs and grasses can facilitate soil fertility or provide food for livestock animals. The use of crop residues and leguminous leaves for fodder has been shown to improve meat production in livestock (Molyneux et al., 2012).

Table 1: Agroclimatic zones of East Timor and Crops

| Agro-climatic zones of East Timor, their relative area, and the major crops in each zone (originally adapted from Fox 2003). | | | | |
|---|--------------|-----------------------------------|-----------------------------------|--|
| Zone (% of land area) | Altitude (m) | Rainfall (mm year ⁻¹) | Length of growing season (months) | Major crops |
| North coast lowlands (10) | <100 | <1000 | 4-5 | Rice, maize, cassava, coconut |
| Northern slopes (23) | 100-500 | 1000-1500 | 5-6 | Maize, cassava, rice, sweet potato, cowpea |
| Northern uplands (19) | 500-2000 | >1500 | 6-7 | Red beans, coffee, maize, rice, cassava |
| Temperate uplands (2) | >2000 | >2000 | 9 | Potatoes, wheat, barley, arrowroot |
| Southern uplands (14) | 500-2000 | >2000 | 9 | Maize, cassava, rice, sweet potato, cowpea |
| Southern slopes (21) | 100-500 | 1500-2000 | 8 | Maize, cassava, rice, sweet potato, cowpea |
| South coast lowlands | <100 | <1500 | 7-8 | Rice, maize, cassava, coconut |

Source: Molyneux et al. (2012)

Storage, Processing, and Transportation

The storage, processing, and transportation stages are important nexus points for protecting nutrition and preventing food loss and safety concerns. Post-harvest storage losses of major food crops are significant in Timor-Leste. With conventional storage techniques, an estimated 30 percent of grain is lost, largely to weevils and rats (da Costa et al., 2013; Molyneux et al., 2012). Other grains, tubers, and root crops are also at risk of destruction from weevils, rats, and mould. Since 2007, the government and NGOs have provided thousands of airtight containers, such as silos, drums, and plastic bags, to farmers' groups. Other, non-airtight containers have also been provided for the storage of peanuts and rice, as these crops are not prone to weevil damage. Information on the storage of maize by households indicates a significant reduction in the number of at-risk households from 2006/2007 to 2010/2011 (da Costa et al., 2013). As previously noted, the effects of climate on transportation can imperil food security. Periods of extreme weather that limit transportation can lead to high transportation costs and food waste, which in turn drives up food costs (Belo, Snowball, and Grieve 2015).

Social Protection

In Timor-Leste, the national program Bolsa de Mãe provides conditional cash transfers to vulnerable households. The goal of this program is promoting poverty reduction, basic education, and primary healthcare services; there is little information available about the program's effect on nutrition or food security (Belo, Snowball, and Grieve 2015).

SDG 2.5

SDG 2.5 aims to maintain genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species by 2020. This goal is to be accomplished through soundly managed and diversified seed and

plant banks at national, regional and international levels. SDG 2.5 also ensures access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge as internationally agreed. The preservation of genetic diversity and the sharing of knowledge arising from traditional and modern resources are of greatest relevance for Timor-Leste.

Genetic Diversity

In the 2014 Draft National Seed Policy, the MAF outlined its plan to facilitate the establishment of a national gene bank (Martins, 2016). In 2016, the MAF did not import seeds for the first time (interview with Williams and Browne, 2017). Timor-Leste has a National Seed Officer and 65 producing groups (interview with Williams and Browne, 2017). Additionally, the Seeds of Life program introduces non-genetically modified, improved crop varieties into local production. As noted previously, this program works to improve yields through close partnership with MAF and local farmers. Since 2000, SoL has been continually testing and introducing new genotypes of major staple food crops, as well as numerous types of legumes (mungbeans, pigeon peas, wingbeans, and climbing beans) and temperate species (wheat, barley, and potato) (Molyneux et al., 2012). These varieties are designed to replace low-yield ones, while maintaining cultural and traditional acceptability.

Traditional and Cultural Knowledge on Food and Agriculture

In addition to the agricultural crops discussed throughout this section, there are also a number of food crops endemic and/or well-suited to Timor-Leste that support nutrition. Some of these crops are cultivated, while others are found growing in the wild. For example, there are traditional leafy vegetables and ferns that have ten times the nutritional value of comparable imported crops (FPS 2015). One example is moringa, a pan-tropical species of tree that has significant levels of vitamin A, vitamin C, potassium, and protein. Moringa has been used to combat malnutrition in nursing mothers and infants, and it also has the potential for other therapeutic uses (Fahey, 2005; Razis, Ibrahim, and Kntayya, 2014). Many rural households rely on the collection and consumption of wild foods during the annual hunger seasons. The most commonly consumed wild foods include lesser yam, elephant's foot yam, and bitter bean (Erskine et al., 2015). The preparation of some of these foods, such as bitter beans or sago palm, are very labor-intensive, especially for women. The harvest may be opportunistic and not necessarily reliable, as in the case of wild yam or moringa (da Costa et al., 2013). Though time and energy-intensive, collection of wild foods provides an important safety net for households in times of need. Moringa, for example, is in full leaf at the end of the dry season, when many other foods are scarce (Fahey, 2005).

The encouragement of traditional and cultural knowledge on agriculture and food also supports SDG 2.5. While parts of this section have discussed traditional and cultural norms that do not uphold a healthy nutritional status or engender sustainable agriculture, there are numerous practices that are beneficial. For example, indigenous soil conservation methods involve using felled weeds to prevent erosion, intercropping cereals with legumes, and using stones along contoured land. In some places, velvet beans are used as a weed suppressant and soil improvement. Velvet beans are predominantly grown only as a food crop, but the alternate use of them for mulch and soil improvement increases yields of cereal crops (da Costa et al., 2013).

APPENDIX 5: POLICY AND PROGRAM ANALYSIS

Introduction

Since gaining independence in 2002, Timor-Leste has worked to rebuild the country and improve life for its people. One of the many challenges that the country has faced is that of hunger, food and nutrition security, and sustainable food production. These goals are the basis of SDG2, which Timor-Leste is now focusing its efforts to achieve. While SDG2 was finalized in 2014 and Timor-Leste is just starting to work towards it specifically, the country's policies and programs have long been focused in these areas.

Nutrition and Agriculture Policies

While this section will focus on current policies, it is important to briefly mention some of the earlier policies that emerged shortly after the country gained independence. In 2002, the country underwent extensive community consultations that occurred in 980 communities and included 38,293 people. These were used to create **Timor-Leste Our Nation Our Future 2020**, a report that focused on the people's priorities and goals for the country and was used to shape the 2002 **National Development Plan**. The people identified health and agriculture as the second and third priorities respectively, after only education. Within health, malnutrition was mentioned but was not as much of a focus as maternal and infant mortality and infectious disease. Within agriculture, food self-sufficiency and the elimination of hunger were both key goals that people believed could be achieved by growing more diverse crops, increasing livestock and both aquaculture and wild catch fisheries, and increasing agroforestry as well as providing seeds, irrigation, fertilizer, training, and equipment to farmers to increase food production and farmer incomes. The report recommended that the government and CSOs repair and expand irrigation, provide seeds, fertilizer, livestock, farm equipment, and microcredit and the government also reduce rice and vegetable imports and control coffee prices. The report suggests that agriculture productivity, food availability in the hunger season between November and February, population nutritional status, and rural incomes should be used as indicators. This early report, released just after the country's independence, shows that the government, as well as the people, have known about the importance of hunger, food and nutrition security, and sustainable agriculture for over fifteen years.

Other early reports and policies that focused on food and nutrition were the 2010 Comoro Declaration and the 2014 Zero Hunger Challenge National Action Plan. The **Comoro Declaration** was a commitment between the Ministry of Health, Ministry of Agriculture, Ministry of Education, Ministry of Social Solidarity, Ministry of Commerce, Industry, and Environment, Ministry of Economy and Development, and Ministry of Finance to work together to end hunger and malnutrition and it declared that access to sufficient nutritious food was a human right. The **Zero Hunger Challenge National Action Plan** was in response to the 2012 United Nations Zero Hunger Challenge. It aims to reduce hunger and malnutrition to insignificant levels by 2025 and uses indicators for hunger including the Global Hunger Index, percent of households with food shortages of one month or greater, and food consumption scores and for malnutrition including stunting, underweight, wasting, anaemia, vitamin A deficiency in children under 5 years old, underweight and anaemia in women of reproductive age, and iodine deficiency. It sets targets for these indicators for 2017, 2020, and 2025. The plan has 5 pillars: (1) Equitable access to food year round for everyone, (2) Reducing stunting to zero, (3) Creating sustainable and climate resilient food systems, (4) Increasing smallholder productivity and income, and (5) Zero food waste. This plan is carried out by many different actors but KONSSANTIL is responsible for coordinating action as well as monitoring and evaluation.

The largest and most comprehensive current policy is the **Strategic Development Plan 2011 to 2030**. This plan was revised and updated from the 2002 National Development Plan and used information from the 2010 **Strategic Development Plan from Conflict to Prosperity** that carried out community consultations in 65 sub districts. The plan has the ultimate goals of raising Timor-Leste into the group of upper-middle-income countries and eliminating extreme poverty by 2030. It focuses on three areas: (1) Social capital, (2) Infrastructure development, and (3) Economic development. Health and the environment lie within social capital and agriculture and broader rural development lie within economic development. The policy identifies nutrition as being fundamental for both current and future development and the section on health focuses on maternal and child nutrition by training healthcare workers to provide education on nutrition but, more importantly, through improvements in agriculture. The section

on agriculture sets the goals of reaching food security by 2020, self-sufficiency for food staples by 2020, and self-sufficiency for all foods by 2030 with another goal of building a government surplus of rice and maize. It recommends increasing agricultural diversity including tubers, legumes, vegetables, and fruit and sets the goal of replacing 50 percent of imported vegetables and fruits with local production by 2020. It also recommends increasing agricultural production through improved and expanded agriculture extension, access to high-yield variety seeds such as Nakroma rice, irrigation, and fertilizer, selective breeding and vaccination of livestock, expanded freshwater, brackish, and seawater aquaculture, support for wild catch fisheries, and improved food transportation, storage, and processing infrastructure. It sets specific goals of increasing livestock numbers by 20 percent by 2020. The policy also calls for increasing coffee, coconut, and other potential cash crops such as cocoa, cashews, hazelnuts, and spices through increasing training, providing seeds and fertilizer, and, in the case of coffee, replanting coffee plantations with the specific goal of increasing coffee production by 50 percent by improving 20,000 hectares of coffee plantations by 2020. The policy also calls for the creation of an Agricultural Advisory Council to develop additional policies, a Research and Development Institute to guide agricultural investment, a Livestock Production Research Center, and a Marine Research and Development Center. The section on environment focuses on rebuilding and protecting natural resources and biodiversity while preparing for the hotter temperatures, increased precipitation, and sea level rise from climate change and calls for the creation of a National Climate Change Center.

A 2017 update to the Strategic Development Plan 2011 to 2030 titled **The Roadmap for Nutrition** focuses on SDG2 and sets the priority actions for 2017 in nutrition that include: (1) Increasing nutrition resources, (2) Reducing chronic undernutrition and stunting, (3) Reducing Anaemia, and (4) Reducing acute undernutrition and wasting. For the first action, this includes increasing political commitment, investment, and social participation in nutrition with the specific targets of increasing government funding from one percent to 50 percent of total available funds with 90 percent of nutrition interventions planned by the government to be funded by the government and designing and carrying out four scientific studies on nutrition and food production. For the second action, this includes producing energy-protein supplementation locally and providing it to pregnant women and children under two years old, reviewing and improving current programs, and disseminating nutrition information focused on women and children with the specific targets of decreasing stunting in children under five years old by 40 percent by 2025 and to zero by 2030. For the third action, to fortify staple foods and ensure that imported foods are fortified with the target of decreasing anaemia in women of reproductive age by 50 percent by 2025. For the fourth action, to increase nutrition treatment, including for acute malnutrition, at healthcare facilities with the specific targets of decreasing wasting to less than five percent by 2025 and increasing treatment of acute malnutrition to 78 percent.

While the Strategic Development Plan 2011 to 2030 is all encompassing, the **National Health Sector Strategic Plan 2011 to 2030** is focused on health. The plan was revised and updated from the Health Sector Strategic Plan 2008 to 2012 and has the ultimate goals of improving primary health care through improving healthcare worker training, health care services, and facility access. While nutrition is included in this, it is not a primary focus.

The **National Nutritional Strategy 2014 to 2019** is even more focused and is solely on nutrition. This plan was revised and updated from the 2012 National Nutrition Strategy and the even earlier 2004 National Nutrition Strategy and has the ultimate goals of creating multi-sectoral action that is nutrition specific but also for all applicable health, agriculture, education, and social solidarity actions to be nutrition sensitive. The multi-sectoral approach is to be carried out primarily by KONSSANTIL as well as the other ministries. The policy identifies six priorities: (1) Increase nutrient intake in mothers, children, and adolescent girls, (2) Improve health care for mothers and children, (3) Improve household, community, and national food security, (4) Improve WASH access and practices, (5) Promote optimal nutrition practices, and (6) Improve capacity for nutrition action. These priorities are all focused on women and children under two years old to take advantage of the first 1000 days of life and maximize its impacts. The strategy assigns actions to the applicable ministries with the Ministry of Health working on maternal, infant, and young child feeding practices, malnutrition treatment, and infectious and chronic disease prevention and treatment, the Ministry of Agriculture working on increasing animal source food access for women and children and increasing agricultural income for women, the Ministry of Commerce, Industry, and Environment working on food fortification and trade, the Ministry of Education working on diet and nutrition education, school feeding, WASH, and girl's education, the Ministry of Public Works working on WASH, the Ministry of Social Solidarity working on social support programs, and the Ministry of State working on coordinating all of the actions discussed above. The strategy outlines

ultimate outcomes of stunting, wasting, underweight, and iron, zinc, iodine, and vitamin A deficiencies. KONSSANTIL is charged with coordinating action, ensuring funding, and monitoring and evaluating results to track progress on these outcomes. Monitoring and evaluation will also be carried out by the Nutrition Information Management system.

The 2016 **National Food and Nutrition Security Policy** is also focused on nutrition. This plan was revised and updated from the 2005 Food Security Policy and has the ultimate goals of eliminating hunger and malnutrition, while also considering sustainability and income generation, through two main outcomes: (1) Increase nutritious local food production and link producers to consumers and (2) increase sustainable food production and climate change resilience by 2030. For outcome one, it aims to increase the staple food production index by 30 percent from the 2012 level of 100, increase the dietary diversity score to five or more food groups for over 50 percent of households, and increase fish consumption from six to 15 kilograms per capita by 2020. Strategies to accomplish this include increasing crop productivity through water storage and irrigation, increasing animal source food access through chickens, pigs, cattle, and aquaculture, increasing extension services, offering business and financial support, developing new markets to connect producers to consumers, creating clear policies on food trade and prices, and focusing on women for all of the above. For outcome two, it aims to provide stable, year-round food security, support the National Adaptation Program of Action on Climate Change, and decrease the number of people living below the national poverty line to below 15 percent, and decrease the average household Coping Strategy Index by 2020. Strategies to accomplish this include increasing biodiversity, supporting new crop varieties that are more heat and drought resistant, improving food aid distribution and the strategic food reserve, improving food transportation and storage infrastructure, and focusing on the rural poor for all of the above. The strategy also has six additional outcomes: (3) Make safe, nutritious, high-quality food consistently available throughout the country, (4) Increase rural incomes, (5) Improve nutritious food access for the most vulnerable, (6) Improve women's and children's health status, (7) Improve food and nutrition education, and (8) Create effective food and nutrition information systems. For outcome three, as food production increases, it is critical to ensure food safety. The policy aims to do this by improving food transportation, storage, processing, and packaging, ensuring food safety especially for meat and fish through regulations and enforcement, joining Codex Alimentarius, and adopting the International Code of Marketing of Breastmilk Substitutes. For outcome four, increased income can be spent on food and health care and thus has the capacity to improve nutrition. The policy aims to do this by using local labor for infrastructure projects, developing fisheries, providing microcredit, empowering women, and training youth.

For outcome five, the policy aims to evaluate and improve the effectiveness of social safety nets including food assistance, promote good infant and young child feeding practices, increase food fortification, increase micronutrient intake for women and children, and improve school feeding programs. For outcome six, WASH, nutrition, and overall health status are all linked. The policy aims to increase WASH at schools, health care for women and children that includes nutrition, and treat moderate and severe acute malnutrition. For outcome seven, the policy aims to increase awareness about the importance of nutrition on development and health, improve nutrition education at schools and in agricultural extension programs, and hold workshops on home and urban gardening and cooking. For outcome eight, the policy aims to improve surveillance and data collection and analysis on food and nutrition, strengthen the Suco Food Security Monitoring System and the National Information Early Warning System, and allow the information to be available quickly. The policy outlines ultimate outcomes with specific targets of decreasing stunting below 40 percent, underweight below 30 percent, and wasting below 10 percent all in children under five years old, decreasing anaemia in women of reproductive age below 20 percent and in children under five years old below 30 percent, and decreasing women underweight below 15 percent, all by 2020. The plan is coordinated by KONSSANTIL with monitoring and evaluation through the National Statistics Office at the Ministry of Finance.

Along with the broader National Nutritional Strategy 2014 to 2019 and 2016 National Food and Nutrition Security Policy, Timor-Leste also has policies on more specific areas of nutrition and agriculture such as the **National Aquaculture Development Strategy 2012 to 2030**. This policy shows how important the government views fish as being for addressing both malnutrition and poverty. The ultimate goal is to increase fish consumption from six kilograms to 15 kilograms per capita by 2020 with aquaculture contributing 40 percent of domestic fish production by 2030 through both inland freshwater and coastal brackish water fisheries with a focus on providing the training

and supplies to rural poor and to women. The policy also aims to connect producers to markets and create partnerships between the government, NGOs and CSOs, the private sector, and Timor-Leste communities. It is overseen by the National Directorate of Fisheries and Aquaculture

Within agriculture, the **Ministry of Agriculture and Fisheries Strategic Plan 2014 to 2020**, outlines the agricultural priorities and goals. The plan focuses on four goals: (1) Increase rural incomes and reduce poverty, (2) Increase household food and nutrition security, (3) Support the transition from subsistence to commercial farming, and (4) Promote environmental sustainability and conservation of natural resources. The plan outlines the following five additional goals: (1) Sustainable increase in food production through improved crop varieties, livestock species, fisheries, and forestry, (2) Improve market access and market value addition, (3) Improve enabling environment including legislation, policies, institutions, and infrastructure, (4) Strengthen the Ministry of Agriculture, and (5) Conserve, manage, and utilize natural resources. The plan stresses the importance of results based frameworks to evaluate plans and budgets to accomplish these goals. In the past, the Ministry of Agriculture has provided farmers with seeds, irrigation, fertilizer, pesticides, machinery, infrastructure, boats, and nets and these concrete actions will still be important moving forward but will be part of a larger, more coordinated effort.

The **National Adaptation Program of Action on Climate Change** from the Ministry of Economy and Development addresses the country's strategy to increase resilience and adaptation in the face of climate change. It builds on the section of the Strategic Development Plan 2011 to 2030 on the environment as well as on the United Nations Framework Convention on Climate Change and identifies climate change as one of the country's greatest challenges. The country will face increasing temperatures, increasing precipitation but focused in more intense periods separated by more droughts, and rising sea levels. All of these will provide challenges for food production. Community consultations were done in Baucau, Bobonaro, Ermera, Manufahi, and Oecusse. The goals of the policy are to increase countrywide awareness about climate change, increase monitoring and early warning systems for climate change forecasting, and support resilience and adaptation actions. The policy outlines six areas where they have identified vulnerabilities and planned important actions: (1) Food security, (2) Water, (3) Health, (4) Natural disasters, (5) Biodiversity, and (6) Infrastructure. The priority actions in food security are to reduce vulnerability to droughts and floods, in natural disasters to improve capacity to prepare and respond to natural disasters, and in biodiversity to maintain and restore mangroves, forests, and coastal ecosystems and improve livestock feed reserves. Another key action is to create a National Institutional Capacity for Climate Change to coordinate all the above.

Nutrition and Agriculture Programs

Timor-Leste has a long history of programs in hunger, food and nutrition security, and sustainable agriculture from a wide variety of stakeholders including the Timor-Leste government, national NGOs and CSOs, foreign governments such as Australia, Japan, and the United States, and international NGOs. This report aims to mention most, if not all, of the current programs but will only go into more detail for the most important of these as determined by several factors including relevance to SDG2, size of outreach, and amount of funding. Programs are broadly divided into those that work on nutrition and those that work on agriculture; however, there is overlap between these.

Nutrition Programs

The government of Timor-Leste runs several programs in nutrition. The government runs a **Community Healthcare Clinic Program** throughout the country and is using healthcare workers in these clinics to increase nutrition education and treatment including vitamin A supplementation, treating diarrhoea with zinc, and deworming. Some clinics are also able to measure children's height, weight, and mid-upper arm circumference to evaluate, and when necessary, treat children for malnutrition. The Ministry of Health in partnership with UNICEF is also using these healthcare clinics to improve nutrition for children in the first 1000 days of life.

The government also runs school feeding and school garden programs. The government took over the **School Feeding Program** in 2011 but still receives assistance from World Food Program. The program provides food to children in schools throughout the country. The country, through Permatil, also has a **School Garden Permaculture Project** that is meant to provide food for the School Feeding Program to improve nutrition for children as well as to

teach students about gardening and permaculture. It will also allow integrated lessons to use the gardens for education. The project is planned to reach 1415 schools.

UNICEF and the World Food Program run the **Integrated Nutrition Program** in partnership with the Ministry of Health and the Alola Foundation. The program is funded by the EU. It is in Dili, Ainaro, Bobonaro, Covalima, Ermera, and Oecusse but is being scaled up to all of the municipalities in 2017. The program's main goal is to improve the nutrition of children under five years old through nutrition specific interventions. It aims to do this by training healthcare workers and improving healthcare facilities and supporting Ministry of Health actions including promoting infant and young child feeding practices, treating moderate and severe malnutrition with therapeutic feeding and supplementary food programs, increasing the number of the women and children receiving high impact nutrition packages, supporting integrated nutrition programs, and working on nutrition education to promote behavior change. They also aim to improve healthcare staff nutrition training. The specific targets are to decrease underweight in children under five years old by five percent by the end of 2017.

Catholic Relief Services runs the **Community Driven Nutrition Improvement Project** in partnership with World Bank that started in 2014 and will run through 2017. The program is funded by the Japanese Social Development Fund. It is in Baucau and Viqueque. The program's goal is to improve nutrition for children under two years old and it affects 5,000 pregnant and lactating women and 4,500 children. The program aims to reach its goal by focusing on nutrition education for entire households and using and reinforcing clear nutrition messages to lead to household behavior change.

World Food Program runs a **Food Fortification Program**. This program aims to fortify rice with key nutrients including iron, zinc, vitamin A, and B vitamins and to have this rice consumed by 60 to 70 percent of the population. The program has two stages. The goal of the first is to target rice that is bought and sold by the government including by the Ministry of Education for school feeding and Ministry of Social Solidarity for social support. This accounts for 20 percent of the rice consumed. The goal of the second stage is to target rice that is bought and sold by private sellers, including importers. This accounts for 80 percent of the rice consumed.

Other nutrition programs include USAID's **Timor-Leste Integrated Maternal and Child Health Care Project**, World Food Program's **Mother and Child Health and Nutrition Program**, CARE's **Maternidade Seguro Program**, UNICEF's **Severe Acute Malnutrition Treatment Program**, World Food Program's **Food Assistance Program**, and HIAM's **Moringa Project**.

Agriculture Programs

Within agricultural programs, the government runs the **National Agricultural Extension System Program**. This started under Indonesian occupation and used a Training and Visit model. At that time, there was an extensive network of offices and over 700 extension workers that were able to reach every village in the country. After the expulsion of Indonesia, the new Ministry of Agriculture had no capacity to run the extension program so it was abandoned. Later, the program was privatized and run by international NGOs. The government created a public system under the Ministry of Agriculture in 2008. The current system has the goals of improving farmer capacity especially with agricultural methods and technology, increasing agricultural production, and improving food security via a participatory model with the responsibilities to do this including delivering information and services to farmers, forming agricultural interest groups and assisting with their plans, collecting agricultural data, and implementing rural development actions. The focus is on land use, irrigation, forestry, fisheries, and livestock. There are extension centers in Dili as well as in Aileu, Bobonaro, and Aileu with more municipal and sub municipal offices throughout the country. In 2008, there were six to eight extension workers per municipality with the goal of increasing this to one worker for every suco who would live and work there and be coordinated at the sub municipal and then municipal level by Senior Extension Officers and Coordinators. The government also runs secondary schools to train people in agriculture. There are three schools that have 800 students.

The Japanese government runs the Irrigation Scheme program and the Project for Increasing Farmer Households' Income Through Strengthening Domestic Rice. The **Irrigation Scheme Program** launched in 2014 and was completed in 2017 in partnership with Ministry of Agriculture. It was funded by Japanese Official Development Assistance (ODA)

and Japanese International Cooperative Agency (JICA) and was in Baucau and Manatuto. The program repaired and improved the Buluto Irrigation Scheme to provide a reliable water source for 780 hectares of rice paddies and 600 households as well as allowing for the expansion of rice paddies. Action has been continued through the **Project for Increasing Farmer Households' Income Through Strengthening Domestic Rice** that started in 2016 also in partnership with the Ministry of Agriculture. This program is also funded by ODA and JICA and is in Baucau and Manatuto. This program's goal is to increase rice productivity and connect farmers to markets.

The United States runs the **Advancing Agriculture Program** through USAID that launched in 2015. The program is funded by USAID and is in Dili, Aileu, Ainaro, Bobonaro, and Ermera. The main goal is to increase food and nutrition security through a horticulture value chain approach and for 33,000 people in 250 communities to have better nutrition and increased income and economic asset management. There are two goals: (1) Increase horticulture value chain productivity and (2) Increase economic engagement. For the first goal, the program aims to increase crop diversity and promotes legumes, vegetables, and fruit. They do this by creating an enabling environment that includes training farmers in new methods and providing them with new technology, high-quality agricultural inputs including seeds, and access to finance through farmers groups including one that is just for women. The program aims to increase climate change resilience so that horticulture production does not decrease with the hotter temperatures, increased precipitation, and sea level rise that is expected with climate change. They have a broader focus on women's economic empowerment with the goal of allowing more women to be in the workforce and have more income. The program also focuses on connecting farmers to markets both in Timor-Leste and abroad such as in Singapore with the potential to create a horticulture industry focused on exports. For the second goal, the program aims to improve WASH and nutrition practices and improve utilization of productive assets.

The Australian government is starting **TOMAK or To'os Ba Moris Di'ak or Farming for Prosperity** that is set to run from 2017 to 2021 in partnership with KONSSANTIL, Ministry of Health, Ministry of Agriculture, Mercy Corps, and others. The program is funded by the Australian Department of Foreign Affairs and Trade and is in the inland watersheds with offices in Baucau and Maliana with plans to expand to Leucosis. The main goal is to ensure that rural households live more prosperously and more sustainably. The program has two main objectives: (1) Increase economic opportunity to participate in profitable agricultural markets and (2) Increase household food and nutrition security. For the first objective, the program plans to promote more nutritious and also profitable crops such as legumes including soybeans, red beans, mung beans, and peanuts to be grown with maize or in rotation with rice, off season vegetable production, fruit including papaya, mango, banana, and citrus, nuts including cashews, maize and cassava along with milling and processing of these, livestock including pigs and cattle to be sold to Dili and Indonesia, and aquaculture to be sold at local fish markets, all in the hopes of offering more income to rural households. The program also plans to create partnerships between local farmers and markets. After five years, the program hopes to have created four value chains that deliver between 500 to 2000 USD per year to 14,000 households and for this to be equitably shared between women and men. The program aims to empower women at all stages of creating these value chains. For the second objective, the program plans to increase production and utilization of diverse crops year round by increasing crop diversity and productivity, increasing safe food storage, and providing nutrition education and other behavior change actions. After five years, the program hopes to have increased knowledge, attitudes, and practices for 80 percent of all household members with a focus on women of reproductive age and children under two years old, improved food consumption and dietary diversity scores, decreased rates of underweight and anaemia in women of reproductive age and children under two years old, and increased nutrition surveillance and assessment capacity.

The World Bank is starting the new **Sustainable Agriculture Productivity Improvement Program** that is planned to run from 2017 to 2023 in partnership with the Ministry of Agriculture. The program is funded by the Global Agriculture and Food Security Trust Fund and is in Ainaro, Bobonaro, Covalima, Ermera, Lautem, Liquica, and Oecusse. The program has the main goal of increasing productivity and market access for smallholder farmers. There are six components: (1) Integrated watershed agriculture development planning with the formation of watershed management councils and watershed development plans, (2) Smallholder training and support with the formation and support of farmers' groups, (3) Sustainable watershed management with investment in food storage and processing infrastructure and training, (4) Ministry of Agriculture capacity with institutional support and monitoring and evaluation systems, (5) Project management and monitoring, and (6) Disaster risk response.

Several smaller programs are working to empower women and youth including CARE's **Haforsa Program**, GIZ's **Peace Building Through Improved Employability and Income Generating Opportunities for Marginalized People Program**, and GIZ's **Peace Development, Youth Promotion, and Fight Against Corruption Peace Fund Program**.

Several smaller programs aim to improve climate change resilience and adaptation such as Hivos' **Integrated Action for Resilience and Adaptation to Climate Change Program** in partnership with the Ministry of Agriculture. It is funded by the EU and GIZ. The program aims to increase sustainable water, food, and land practices and energy efficiency as well as OXFAM's **Haforsa Vida Moris Komunitade Program**. This program is in Oecusse and Suai and aims to increase agricultural productivity, increase farmer incomes, and support alternative income sources for 69,471 people. Other programs working on climate change is Mercy Corps' **Climate Resilience Program** in Dili and Ainaro that focuses on increasing resilience to natural disasters through improving community based disaster risk management and creating action plans in these areas and finally CARE's **Improving Climate Resilience Program**.

Other agricultural programs include CARE's **Improving Farming and Food Security**, CARE, CRS, Mercy Corps, and World Vision's **Smallholder Support Program**, Mercy Corps' **Nutrition Sensitive Agriculture Program**, Hivos, Mercy Corps, and World Fish's **COMPAC-TL**, GIZ's **Sufficiency, Economy, and Business Promotion in the Agricultural Sector Project**, and OXFAM's **Improving Marketing and Production through Agricultural Cooperatives in Timor-Leste or IMPACT Project**.

Social Support Programs

The Timor-Leste government provides social support programs through the Ministry of Social Solidarity. These include the **Veteran's Pension** that provides unconditional cash for those who served in the resistance against Indonesian occupation and **Bolsa da Mãe** that provides conditional cash for impoverished families and single mothers with school aged children that requires the families to send the children to school and provide them with health care. The program also provides money to orphans.

APPENDIX 6: PARTICIPANTS IN NATIONAL CONSULTATIONS

STAKEHOLDERS INTERVIEWED FOR THE NATIONAL CONSULTATION

| Organisation | Date | Participant and position |
|----------------------------------|----------------------|---|
| HPA – Human Partnership Alliance | 21st Feb | CARE International, WVI (World Vision International), PLAN, Oxfam, Caritas (HPA) + CRS (Catholic Relief Services) John McGown – PLAN, Water Programs Manager Aaron Littlefield – WVI, Fundraising Manager Fabiano Franz – WVI, Country Director Kathy Richards – Oxfam, Country Director Fernando P – Caritas, Country Director Peter Raynes – CARE, Country Director Grishma Bista – CARE, Health Manager Torrey Peace – CRS, Country Director Agustinho da Costa Ximenes, - CRS, Agriculture Manager |
| UN Women | 22nd Feb | Camille Waulters - Gender Mainstreaming |
| FAO | 20th Mar | Marrisa Anne - FS Advisor Solal Lehec – Policy Officer FIRST program |
| WHO | 20th Mar | Dr. Arun k Mallik - Medical Officer-Epidemiology Crispin Araujo – Health Officer |
| UNICEF | 20th Mar | Desiree Jongsma – Country Representative Scott Whoolery – Deputy representative, Adam Bailes – Nutrition Specialist |
| UNFPA | 20th Mar | John Pile – Country Director |
| EU | 21st Mar | Paolo Barduagni - Health & Nutrition Adviser Paolo Tosseli – Agriculture Adviser Dulce Gusmão – Health Officer |
| GIZ | 21st Mar | Dr. Silvio de Curtins – Country Coordinator Mirko Gamez – Programme Coordinator, Global Climate Change Alliance |
| MoE | 21st Mar | Ego Lemos - Advisor to the MoE (School Feeding and gardens) |
| DFAT - TOMAK | 21st Mar | Richard Holloway – TOMAK Team Leader Berissa Abdella – Nutrition Specialist Inga Mephram – Gender Specialist |
| JICA | 21st Mar | Hikoyuki UKAI – Chief Representative of JICA |
| RC UN | 21st Mar | Knut Ostby – UN Resident Coordinator Adelina Tilman Lourdes – Xefe Gabinete |
| Agora Food Studio | 21st Mar | Alva Lim - Co-Director Mark Noras – Co-Director |
| DFAT - HAMUTUK | 22 nd Mar | Hather Grieve – Senior Nutrition Coordinator Lanu – Nutrition Coordinator PHD Mina – Nutrition Coordinator HAMUTUK |
| MSS | 22 nd Mar | Rui Manuel Gago Exposto – Director General Social Assistance |

| | | |
|----------------------|----------------------|--|
| MoH | 22 nd Mar | Dra. Odete Araujo - Director General Services and Health Dra. Melania Gondomartujo – Health Advisor |
| PMO | 22 nd Mar | Alex Tilman – Policy Officer Manuel – Communications Adviser |
| Parliament | 22 nd Mar | Aderito Hugo da Costa – President of Parliament Bruno Texeira de Lencastre – Principal Advisor |
| Dr. Jose Ramos Horta | 23 rd Mar | Dr. Jose Ramos Horta |
| WB | 23 rd Mar | Eric Vitale - Program and Donor Coordinator Inacia Aleixo Dos Santos – Agriculture Consultant |
| MoPW | 23 rd Mar | Januario da Costa Pereira - Vice-Minister |
| CSO Agriculture | 23 rd Mar | Arseno Pereira – Executive Director NGO Forum, Virgilio Guterres – Exe. Director Haburas Foundation |
| MAF | 24 th Mar | Justino da Silva – Director of Food Security & Cooperation |
| MCIE | 24 th Mar | Abilio Fonseca – Climate Change expert |
| Youth | 24 th Mar | Gabriela Leite Soares |
| Helen Hill | 29 th Mar | Helen Hill - UNTL Academic on Education |
| Catholic Church | 20 Mar | Madre Guillermina – Head Mother of Canossianas Convent and School |

STAKEHOLDERS MEET DURING THE STRATEGIC REVIEW OF SDG2

| Organisation | Date | Participant and position |
|---|----------------------|--|
| Convener | 9 th Jan | Bishop of Dili, Dom Virgilio da Silva Guterres, SDB |
| PMO | 9 th Jan | Alex Tilman – Policy Officer PMO |
| Ministry of Commerce | 10 th Jan | Nivio Magalhães – Director National Logistic Centre |
| Ministry of Health | 10 th Jan | Dr. Horacio Sarmento – Acting General Director of Public Health Dr. Pedro Canisio Amaral - National Director of Public Health Dr. Olinda dos Reis - Head of Nutrition Department |
| Ministry of Finance | 11 th Jan | Elias Ferreira – Director General of Statistics |
| NGO Forum | 11 th Jan | Arseno Pereira – Executive Director |
| CSOs: TLMDC, Haburas, RENETIL, Mahein, Luta Hamutuk, La’o Hamutuk, TLMDC | 11 th Jan | Laurentino Alves – Research Team (La’o Hamutuk) Virgilio da Silva Guterres – Dir. Haburas Foundation Joni Julianos Ferreira – Economy Cooperation , RENETIL Silvino Pereira - Administration, RENETIL Abel Amaral – Program Coordinator – Mahein Foundation Arlindo da Silva - Administration, Luta Hamutuk Francisco Gari – Director – Timor-Leste Media Development Center |
| USAID, JICA, Japan Embassy | 12 th Jan | Flavia Araujo da Silva -EG Project Management (Economic Growth Program) and Rosantina dos Santos – Program Assistant, USAID Hiko Yuki - Chief Representative of JICA Yohei Higuchi– Researcher/Advisor Economic Cooperation Section |
| PLAN | 12 th Jan | Terrence McCaughey – Country Director John McGown – PLAN, Water Programs Manager |
| Bairo Pite Clinic | 13 th Jan | Dr. Daniel Murphy & the team of Malnutrition |

| | | |
|-------------------------------|----------------------|---|
| HIAM Health | 13 th Jan | Claire Georga – Nutrition Advisor (AVI) |
| Alola Foundation | 13 th Jan | Moeses (Maria Immaculada Guterres – MCH Manager not available) |
| World Bank | 13 th Jan | David Knight – Senior Economist |
| Minister of Agriculture | 16 th Jan | Estanislau da Silva Representation from WFP, NDFSC, FAO |
| FAO | 17 th Jan | Paula Lopes da Cruz - Assistant Rep. (Programme) Marrie Ann Merza – FS Advisor |
| KONSSANTIL / MAF - NDFSC | 17 th Jan | Justinu Silva - National Director of Food Security and Cooperation (NDFSC) Rofino Gusmao - Head Food Security and Information |
| President’s Office | 18 th Jan | Filipe da Costa - Advisor on the political support service |
| Minister of Social Solidarity | 18 th Jan | Mateus da Silva – National Director Social Assistance Denis – Head of Dept. Food Assistance |
| RC/UNCT | 19 th Jan | Knut Ostby - UNCT UN agencies – Country Representatives |
| EU | 24 th Jan | Simon Le Grand - Head of Mission Paolo Barduagni - Health & Nutrition Adviser Johanes Don Bosco – Programme officer Social Affairs |
| MoE | 24 th Jan | Marcelo Caetano – DG Vocational Training |
| DFAT | 27 th Jan | Heather Grieve – Nutrition Manager |
| ADB | 8 th Feb | David Freeman – Senior Economist |
| UNICEF | 7 th Feb | Desiree Jongsma - Country Representative Dr. Hemlal Sharma – Chief Child Survival & Develop. Maria Pualina Gonsalves – Nutrition Officer Adam Bailes – Nutrition Specialist |
| WFP | 9 th Feb | Stephen Kearney – Country Director Ash Rogers – Country Deputy Director Marina Kalisky – Nutrition Manager Jose Marcal – Nutrition Officer |
| Portuguese Embassy | 22 nd Feb | Paulo Maia e Silva – Political Advisor and Head of Consulat Affairs Danieal de Almeida Pereira – Head of Cooperation |
| WHO | 23 rd Feb | Dr Arun Mallik – Medical Officer, Epidemiology Cripstin de Araujo – Nutritionist |
| UNFPA | 6 th Mar | John Pile – Country Director |
| Ego Lemos | 8 th Mar | Ego Lemos – Advisor to the MoE (School Feeding and School gardens) |
| MAF | 8 th Mar | Bruno Benavente - Strategic Agriculture Policy Adviser |
| Advisory Board | 24 th Mar | Jose Ramos-Horta (Strategic Review Convenor), Alex Tilman (Prime Ministers’ Office), Knut Ostby (UN Country Team), Cesar da Cruz (KONSSANTIKL), Heather Grieve (DFAT), Stephen Kearney (WFP) |

APPENDIX 7: LOCAL NGO AND CSO SURVEY RESULTS

An online survey was sent to over 100 local NGOs and CSOs that work in the agriculture, nutrition, food security or advocacy across Timor-Leste in April 2017, from which 26 responses were obtained.

Aim: To further consult with the CSO sector on their perspectives on SDG2 and include the voice of smaller local NGOs and CSOs in the National consultation process in an innovative manner. *Justification:* Since the research team had limited time to meet with the many stakeholders that work on the SDG2 areas of concern, an online survey was identified as an adequate strategy to broaden the inclusion of civil society input into the national consultation process. *Methodology:* The organisations were selected according to their area of activity from the database of the Umbrella NGO called NGO Forum or FONGTIL. Organisations were invited to respond a 10 question survey in Tetun designed in Survey Monkey, sent through an email. A reminder email was sent a week later, and some followed up calls and physical visits were done for more relevant and Dili-based organisations.

Local NGOs and CSOs profile

The profile of 26 local NGOs and CSOs that answered the survey is detailed in the tables below. In terms of their area of activity, most of them focus on advocacy (54%), sustainable agriculture (42%) and nutrition or other areas like WASH or research (35%). This question offered multiple choices, as many organisations work across a board range of topics.

In terms of their size by number of beneficiaries, almost half were small (44%) working with under 50 beneficiaries, followed by a quarter that work with 51 to 100 and 101-250 participants. Only 8% of organisations work with over 250 beneficiaries. In terms of sources of funding, most indicated bilaterals and donor organisations and other sources of funding (44% respectively), followed by INGOs (40%). In terms of programs coverage, half of the respondents reported working in two to six Municipalities, whereas 35% indicated doing so in over 10.

The most **common profile of local NGOs** who responded the survey are working on advocacy and sustainable agriculture, work with under 50 beneficiaries in 2 to 6 Municipalities and are funded through Bilateral organisation or other sources.

| Local NGO/CSO area of activity – multiple choice (n=26) | % |
|---|-----|
| Advocacy | 54% |
| Sustainable Agriculture | 42% |
| Nutrition | 35% |
| Other | 35% |
| Food Security | 27% |
| All of the above | 8% |

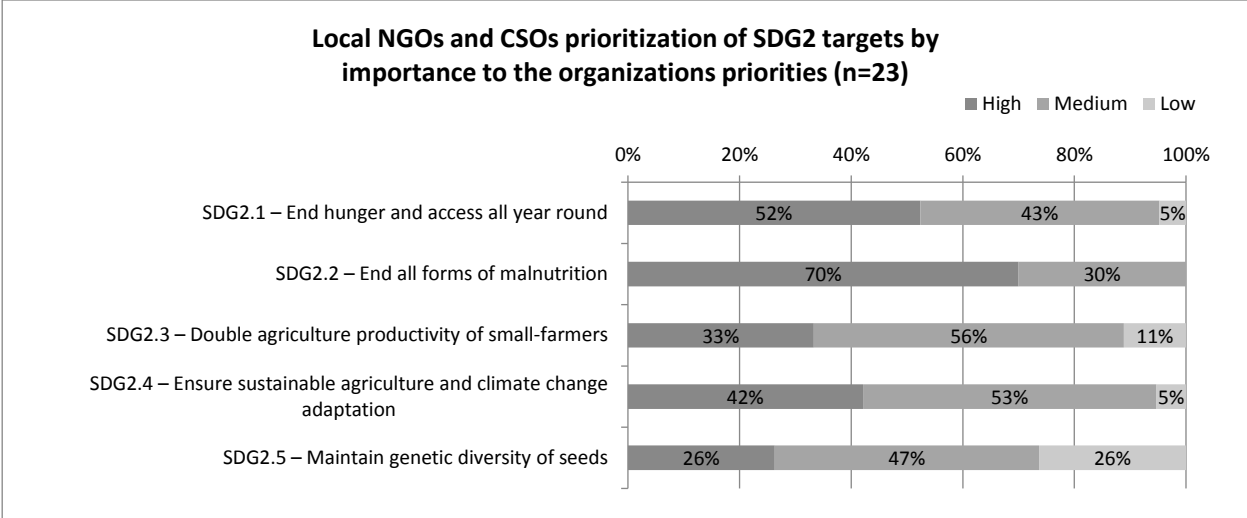
Other: WASH (3), Research (2), SDG16 (2), NSA (1), inclusive development (1), land (1)

| Local NGO/CSO number of beneficiaries (n=25) | % |
|--|-----|
| <50 | 44% |
| 51-100 | 24% |
| 101-250 | 24% |
| >250 | 8% |

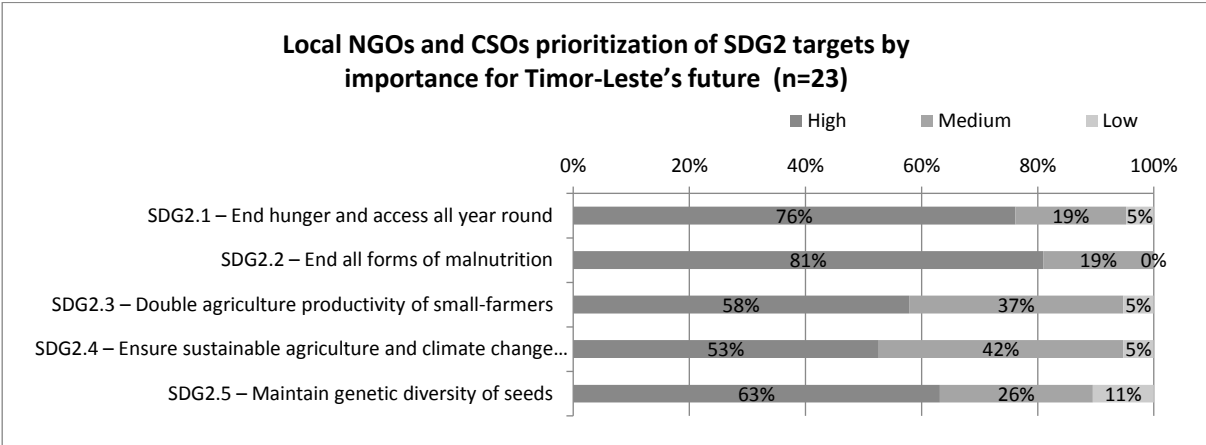
| Local NGO/CSO source of funding activity – multiple choice (n=25) | % |
|---|-----|
| Bilaterals organizations, donors | 44% |
| Other | 44% |
| INGOs | 40% |
| Government of Timor-Leste | 24% |
| International Organisations | 24% |
| Self-funded | 24% |

| Local NGO/CSO number of municipalities implementing programs (n=20) | % |
|---|-----|
| 1 | 15% |
| 2-6 | 50% |
| 7-9 | 0% |
| >10 | 35% |

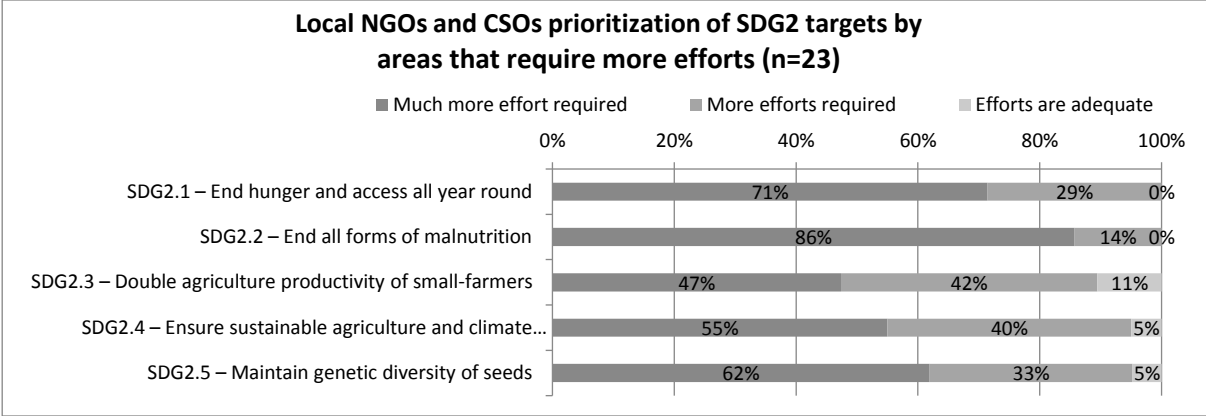
Local NGOs and CSOs prioritization of SDG2 targets



Local NGOs and CSOs order the following SDG2 targets regarding their organizational priorities, giving highest importance to addressing malnutrition (70%), followed by ending hunger (52%), and by ensuring sustainable agriculture and climate change (42%). This choice showcases how malnutrition is an inter-sectoral issue that permeates to many other areas of society, since only 35% of organisation chose nutrition as their area of activity. In terms of medium importance, the top three SDG2 targets are rated more similarly with doubling agriculture production (56%), ensuring sustainable agriculture (53%) and maintaining seed diversity (47%). This choice seems more aligned with their leading areas of work, advocacy and agriculture.



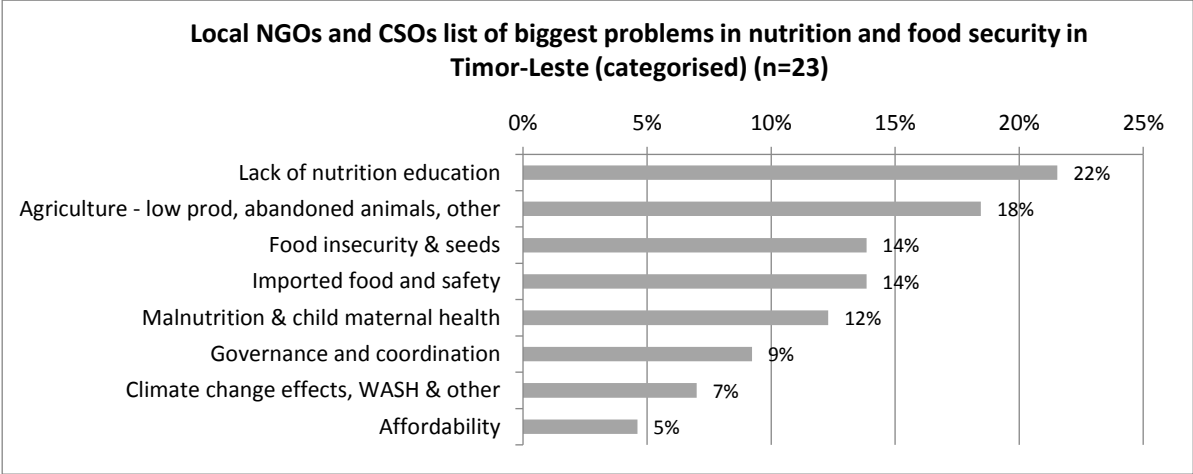
In terms SDG2 targets that are most important for Timor-Leste’s future, local NGOs and CSOs give the highest importance to addressing malnutrition with 81% prioritizing the SDG2.2 target, closely followed by ending hunger (76%), and maintaining genetic diversity with 63%. Generally, all SDG2 targets are rated of highest importance with over 50% rating, indicating that addressing SDG2 is a high priority for the civil society sector in Timor-Leste, and well aligned with the Government’s focus on prioritizing this SDG2 in 2017. In terms of medium priority, SDG2.4 ensure sustainable agriculture and climate change leads with 42%, followed by doubling agriculture production (37%) and maintaining genetic diversity (26%). Rating any of the SDG2 targets as of low importance was marginal.



Regarding the amount of effort required to address each SDG2 target, local NGOs and CSOs identify ending all forms of malnutrition and hunger in the leading top two for requiring much more focus, with 86% and 71% respectively. Following with the targets that need a substantial increase in efforts are maintain genetic diversity(62%), ensuring sustainable agriculture and climate change (55%) and doubling agriculture productivity of small farmers (47%). This is the only target rated below 50%, which also leads the SDG2 targets that requires more efforts, as opposed to much more. Only 11% classified a target being adequately attended, which is SDG2.3 on supporting small-scale farmers.

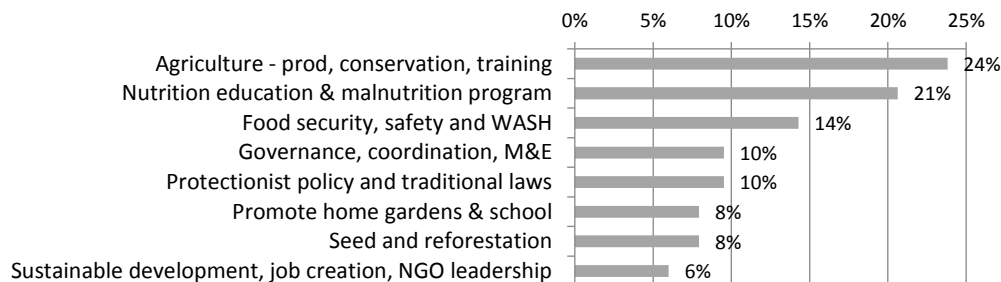
Local NGOs and CSOs identification of problems and solutions

The survey followed by asking organisation to identify the three leading problems in nutrition and food security in Timor-Leste, and then to list three actions or programmes to address them. These have been categorised in the following tables:



The biggest problems identified in nutrition and food security are lack of nutrition education (22%), exemplified with no knowledge on nutritious foods, not understanding the role of protein, and how to prepare healthy meals. The second leading issue is regarding agriculture (18%), such as low productivity to supply community needs, the impact of abandoned animals on crops without fence, lack of access to equipment and irrigation. The third problem involves food insecurity and seed as well as challenges with imported foods and safety consideration (14% respectively), with mentions of seasonal gaps of food supply, lack of promotion of local foods, as well as dominance of imported foods, poor food control (expired, formalin use) and challenges to access the international market. Other mentioned issues are wide-spread malnutrition and poor child and maternal health (12%). The remaining challenges identified are on governance and coordination (9%), climate change effects and WASH (7%) and affordability (7%).

Local NGOs and CSOs list of activities and programs to solve the identified problems in nutrition and food security in Timor-Leste (categorised) (n=23)



Following, organizations were asked to list key activities and programs that would support addressing the aforementioned problems. Leading the solutions are agriculture programs (24%), such as increasing production of local foods, activities on food diversification, socializing good land management practices, undertaking comparative studies to identify suitable areas or providing more equipment and facilities. The second group of activities are on nutrition education and malnutrition programs (21%), with education on improving nutritious foods and hygienic practices, targeting the whole household on nutrition, providing food supplementations and increasing funds in malnutrition and child and maternal programs. Third, food security, safety and WASH programs (14%), where increasing the budget on food security while promoting among communities, control imported foods quality and offer training on preparing foods hygienically. Other solutions include better Government coordination and governance (10%), using traditional laws and protecting local markets from imported trade (10%), promoting school gardens and school nutrition (8%), seed and reforestation programs (8%) and sustainable development with employment opportunities (6%).

Finally, organisations were **asked how CSOs, Government and stakeholders working in food security and** nutrition interventions could be improved, at which the majority stated with better coordination and cooperation to ensure a coordinated approach avoiding duplication, creating a common national action plan, linking base groups with relevant line ministries to articulate demands. Inter-sectoral focus and better monitoring and evaluation were also mentioned to ensure malnutrition is addressed effectively.

Conclusion

Local NGOs and CSOs clearly state that strengthening efforts on **addressing malnutrition** is paramount. Ending all forms of malnutrition and hunger have been the top two most selected SDG2 targets, in terms of their high importance for the future of Timor-Leste and being the key areas that require much more effort. Despite only 35% of organisations reporting nutrition and 27% food security as their main areas of work, addressing malnutrition and hunger were rated highest in terms of high relevancy to the organisation’s work. This suggests that both issues are multi-sectoral and that affect many other areas.

The **agriculture** based targets, SDG2.3-2.5, seem to form a second group of priorities as are rated more similarly in terms of their importance for Timor-Leste’s future and how much effort is required to improve them. Maintaining seed diversity leads both, indicating the importance of this topic among CSOs and local NGOs, while climate change and sustainable agriculture together with farmer’s livelihoods follow. When comparing the problems and solution listed by CSOs and local NGOs with the community consultations process, there is alignment between the perceived leading nutrition problem, identified as lack of nutrition knowledge and health education. Promoting **malnutrition and nutrition education programs** was the second proposed activity to solve this problem, also in alignment with community perspectives. However, socioeconomic challenges were mentioned as the second leading cause to malnutrition during the community consultations, while civil society only mentioned this in a marginal manner. CSOs frame the second problem and most needed solution around **agriculture production**, by supporting productivity increases, training and conservation methods. Organisations advocate for a **coordinated and collaborative approach** between actors with an inter-sectoral action to ensure effective impact. Ultimately, these results indicate that **addressing SDG2 is a high priority** for civil society sector in Timor-Leste, further legitimising the Government’s strategy to prioritize SDG2 in 2017.

APPENDIX 8: PARTICIPANTS AND FINDINGS OF VALIDATION WORKSHOP

NATIONAL VALIDATION WORKSHOP – PARTICIPANTS

| Government | | | |
|----------------------|-------------------------------|---|---|
| No. | Name | Position | Organization |
| 1 | Ana Paula Sequeira | Advisor | Prime Minister Office (PMO) |
| 2 | Rofino Soares Gusmão | Acting National Director of Food Security & Cooperation | Ministry of Agriculture and Fisheries (MAF) |
| 3 | Bruno Benavente | Strategic Agriculture Policy Advisor | Ministry of Agriculture and Fisheries (MAF) |
| 4 | Americo da Silva | Staff | Ministry of Agriculture and Fisheries (MAF) |
| 5 | Vidal E da Silva | Staff | Ministry of Social Solidarity (MSS) |
| 6 | Florentina da Conceição Smith | President of GMPTL and Member of Parliament | GMPTL (Grupo Mulher Parlamentar Timor-Leste) |
| 7 | Francelina Guterres | Advisor of GMPTL | GMPTL (Grupo Mulher Parlamentar Timor-Leste) |
| 8 | Cesar Martins | General Director Statistics | Ministry of Finance (MoF) |
| 9 | Nivio Magalhães | Director Executive National Logistics Centre | Ministry of Commerce, Industry and Environment (MCIE) |
| 10 | Abilio Fonseca | Climate Change expert / Consultant | Ministry of Commerce, Industry and Environment (MCIE) |
| 11 | Fernando Lobato | Supervisor | Ministry of Commerce, Industry and Environment (MCIE) |
| 12 | Ostarlino da Costa | Staff Partnership and Cooperation | Ministry of Education (MoE) |
| 13 | Duarte da Silva Magno | Staff | Ministry of Education (MoE) |
| 14 | Antonio Belo | Staff | Ministry of Education (MoE) |
| 15 | Dra. Odete M.da Silva Viegas | Director General of Health Services | Ministry of Health (MoH) |
| 16 | Dra. Olinda dos Reis | Head of Nutrition Department | Ministry of Health (MoH) |
| 17 | Dra. Melania Gondomartujo | Advisor | Ministry of Health (MoH) |
| 18 | Nilton da Cruz | Staff | Ministry of Health (MoH) |
| 19 | Cipriana Soares | Advisor | Minister of State Coordinating Economic Affairs (MECAE) |
| 20 | Vicente Sanches | CD | DSAMD |
| International Agency | | | |
| No. | Name | Position | Organization |
| 1 | Ash Rogers | Deputy Country Director | WFP |
| 2 | Marina Kalisky | Nutritionist | WFP |
| 3 | Jose Marcal | Senior Staff | WFP |
| 4 | Hiba Addulrazzak | Monitoring and Evaluation Officer | WFP |
| 5 | Patrick Teixeira | DCD | WFP |
| 6 | Adam Briles | Nutrition specialist | UNICEF |
| 7 | Flavia Araujo da Silva | EG Project Management | USAID |

| | | | |
|------------|---------------------------|---|--------------------------------------|
| 8 | Jose da Costa Menezes | Advisor | USAID - Avansa |
| 9 | Jose da Costa | Coordinator | Word Vision International |
| 10 | Heather Grieve | Nutrition specialist | DFAT |
| 11 | Berissa Abdella | Nutrition specialist | DFAT - TOMAK |
| 12 | Solal Lehec | Policy Advisor | FAO |
| 13 | Dr. Arun K Mallik | Medical Officer - Epidemiology | World Health Organization (WHO) |
| 14 | Crispin da Costa | Nutritionist | World Health Organization (WHO) |
| 15 | Paolo Barduagni | Health & Nutrition Advisor | European Union (EU) |
| 16 | Johanes Don Bosco MAU | Program Officer- Social Affair | European Union (EU) |
| 17 | Torrey Peace | Country Manager | CRS |
| 18 | Albino de Jesus Amaral | DPM | Mercy Corps |
| 19 | Mirko Gamez Arias | Programme Coordinator Climate Change | GIZ |
| 20 | Rod Willians | Staff | AI-COM |
| 21 | Euclitos da Costa | Staff | Japan Embassy |
| 22 | Paulo Maia e Silva | Political Advisor and Head of Consular Section | Portugal Embassy |
| 23 | Rebeca Charle | Consultant, Agriculture | Mercy Corps & Raitech |
| CSO | | | |
| No. | Name | Position | Organization |
| 1 | Francisco Gari | Director TLMDC | Timor-Leste Media Development Centre |
| 2 | Moises J. M | Staff | Renetil |
| 3 | Rogério da Cruz | Staff | Renetil |
| 4 | Abel Amaral | PC | Fundasaun Mahein |
| 5 | Arlindo da Silva | Administration | Luta Hamutuk |
| 6 | Julino G. Amaral | Staff | Luta Hamutuk |
| 7 | Maxi Tahu | Research | La'o Hamutuk |
| 8 | Mariano Pereira | Research | La'o Hamutuk |
| 9 | Koko Valenti | Director | FLATL |
| 10 | Rosalia Martins da Cruz | Director and Nutrition Specialist USAID - Avansa | HIAM - Health |
| 11 | Me. Guilermína Marçal | Canossianas Congregation Provincial | Church Representative |
| 12 | Jose S. Ximenes | Program Manager | Alola Foundation |
| 13 | Mateus S. Maia | Program Director | RAEBIA |
| 14 | Sophie Reyne | Communications Volunteer | RAEBIA |
| 15 | Herminia Pinto | Staff | Permatil |
| 16 | Ana Paula X. Dias | Staff | APLA |
| 17 | Jacinta de J. Vasconcelos | Health Promotion | HealtNet Timor Leste |
| 18 | Lucrecia da C.S. Bacun | Monitoring and Evaluation | HealtNet Timor Leste |
| 19 | Maria de Fatima Dias | Director | PAS (Prontu Atu Serbi) |
| 20 | Mario Alves | Coordinator | Private Sector |
| 21 | Dr. Daniel J. Murphy | Founding Director | BairoPite Clinic |
| 22 | Domingas Maia de Deus | Staff | BairoPite Clinic |

| | | | |
|--|-------------------------|--------------------------------|----------------------------|
| 23 | Sedeligio Leo Ximenes | Staff | Belun |
| 24 | Herman Van | Finance Mentor | CEPAD Finance Volunteer |
| University | | | |
| No. | Name | Position | Organization |
| 1 | Minguel Soares | Academic Director of Nutrition | UNTL |
| 2 | Julio de Menezes Pinto | Student | UNTL |
| 3 | Belris Shak | Teacher | Peace Education |
| 4 | Frederico dos S. Alves | Student | PEP - UNTL |
| 5 | Olderico Barbora | Student | PEP - UNTL |
| Municipalities (Communities Consultation) | | | |
| No. | Name | Position | Organization |
| 1 | Abina Monica da Silva | Membro | Grupo Feto ba Futuro |
| 2 | Luisa Inalia | Membro | Komunidade |
| 3 | Chiquita da Silva | Staff Officer | Ass. Moris Foun |
| 4 | Julieta Hornai Gusmão | Ass. MorisFoun | Office LS3 |
| 5 | Constâncio Ximenes | ChefiGrupo | Viveiros Hortikultura |
| 6 | DedimusKolin | Professor | M. Edukasaun - Manatuto |
| 7 | Silvia Ribeiro | Estudante | UNITAL Lautem Municipality |
| 8 | Rita Fernandes | Diretóra | SCJD |
| 9 | Hermenegildo da Costa | OfisialSeguransa Ai-han | MAP |
| 10 | Eurico dos Santos | Comisaun | Veteranus |
| 11 | Afonao Pereira | Staff | TID - Lautem |
| 12 | Tomas Pinto | DLO (District Liaison Officer) | CEPAD - Lautem |
| 13 | Olinda de Jesus martins | Katekista | Representative Chere |
| 14 | Jenoveva de F. Ximenes | Extensionista | MAP Ermera Municipality |
| 15 | Joaquim Maia | Extensionista | MAP Ermera Municipality |
| 16 | Claudino P. F. Martins | Estudante finalista | ETCI |
| 17 | Francisco Nascimento | Ofisial seguransa ai-han | Map Ermera Municipality |
| 18 | Domingos de Jesus | DLO (District Liaison Officer) | CEPAD - Ermera |
| 19 | Juliana Fatima | Fila liman | Grupo Negosiante Covalima |
| 20 | AnjelaSoares Barros | Chefi. Dep. | MAP - Covalima |
| 21 | Luzia D. Dias | Delegada | SukuLoro |
| 22 | Reinaldo M. Coli | Ofisial seguransa ai-han | MAP - Covalima |
| 23 | Agostinho Jose | Extensionista | MAP - Covalima |
| 24 | Mateus de Jesus | Community | Covalima |
| 25 | Anito Cardoso Pires | Veteranus | Asosiasaun Veteranos |
| 26 | Mateus da Costa A. | DLO (District Liaison Officer) | CEPAD - Covalima |
| 27 | Pasquela J. H | Program Coordinator | Alola Foundation |
| 28 | Mario C. Dos Remedios | Staff | Alola Foundation |
| 29 | Jose Antonio Ote | Veteranos | CMNR |
| 30 | Camilo Elo | DLO (District Liaison Officer) | CEPAD - Oecusse |
| 31 | Brigida F. de Araujo | Nutrition trainer | Hiam Health |
| 32 | Miguel dos Santos | Nutrition trainer | Hiam Health |
| 33 | Elga da S. Maria | Estudante | UNTL |

| | | | |
|----|-----------------------|---------------------|---------------------|
| 34 | Amandio J. da Silva | Estudante Nutrisaun | UNTL |
| 35 | Celicia T. dos Santos | Student | UNTL |
| 36 | Antonio da Cruz | Funs. nutrisaun | C. saude Vera Cruz |
| 37 | Orlando da Costa | Chefi aldeia | Autoridade lokal |
| 38 | Rui Freitas | Membro grupo modo | Komunidade Metinaro |
| 39 | Alvaro Pereira Afonso | Student | UNPAZ |
| 40 | Ambrosio X. Guterres | Student | UNPAZ |
| 41 | Sergio Amaral | Community | Hera |
| 42 | Jorge dos Santos | Student | Movimento Etrela |
| 43 | Moises J. M. de Deus | Student | UNTL |
| 44 | Mario Alves | Youth | Community |
| 45 | CarlitoAlves | Youth | PCTL |

NATIONAL VALIDATION WORKSHOP – FINDINGS

A National Validation Workshop (NVW) was held in Dili on May 17th 2017 as part of the Strategic Review process. The objective was for the selected and invited participants to appreciate the finding results and to validate the final recommendations. The event brought together some 150 participants, representing the government, civil society, youth, Church, academia, the Advisory Group, and international organisations, as well as participants from the municipalities who had taken part in the municipal-level FGDs. The NVW was inaugurated with a panel composed of:

- João Boavida, CEPAD - Executive Director
- Madre Guilermina Marçal, Catholic Church – Canossianas Congregation Provincial Representative
- Ash Rogers, WFP – Deputy Country Director
- Dra. Odete M. da Silva Viegas, MoH – Director General of Health Services
- Rofino Soares Gusmão, MAF – Acting National Director of Food Security & Cooperation, KONSSANTIL Secretariat
- Florentina da Conceição Smith, Parliamentarian – Leader of Parliamentarian Women’s Group

Participants were given the opportunity to appreciate the results of the findings before splitting into five sub-groups to deepen the discussion and enrich the recommendations with thoughtful inputs on each of the five SDG2 targets. An accompanying video documentary was also shown to deepen participants’ understanding of the consultation process, key issues and recommendations provided by the communities consulted.

The positive dynamic and high level of engagement observed in municipal-based community consultations was again observed during the NVW. It was clear from the plenary and sub-working group sessions that stakeholders and communities appreciated the opportunity to focus on the strengths that exist in Timor-Leste and to discuss HOW these could be articulated for implementation in support of food security, nutrition and agriculture outcomes. The process has shown how relevant SDG2 is and how timely is any effort to translate the recommendations into concrete actions as follow up actions.

Key inputs:

- The majority of participants agreed with and validated the recommendations provided
- A policy to regulate, monitor and evaluate food prices needs to be clearly incorporated as part of the recommendations
- Prioritise the importance of child and maternal health by improving mother’s access to preventative care services, with a focus not only in severe but also moderate malnutrition for early detection
- Agroforestry being relatively new needs State’ support to become this a national initiative and to lead on the development of both its concept and practice

- MAF to improve programs on sustainable practices and weather events' response
- Promote participatory seed bank management, and weather-resistant and resilient seeds with genetic diversity
- High demand for effective coordination between relevant line ministries and KONSSANTIL at the Municipal level, and make recommendations implementable particularly at the municipal level

The sub working groups focused on recommendations of each of the five SDG2 targets and the political economy recommendations. A summary of feedback is as follows.

SDG2.1 – Ending hunger

This group was composed of UNTL students, local producers, CSOs and WFP. On **REC 1**, they recognised the importance of Social Assistance programs, the key challenge as they highlighted resides in monitoring the targeting process; there are concerns on the impact the social assistance payments have on agricultural productivity, which needs to be evaluated against the potential for the recipients to be dependent on social assistance for living. Other comments include improving monitoring and evaluation (M&E) activities during natural disasters; ensure better socialisation of the impact of deforestation to retain water reserves; ensure the effective functioning of Municipal Disaster Management unit and its portfolio through well developed and implemented policies, so that their operation are not affected by change of government every five-year term; promote home gardens and reinforce KONSSANTIL at the Municipal level. On **REC 2** M&E needs to be strengthened to ensure local foods are used; ensure meals' nutrition through close collaboration between MoE and MoH, to improve hygiene and varieties of PME meals which consist mostly of plain rice or *supermie*; and to support the consumption of local meats instead of frozen imported chicken. Promote close collaboration between PME and farmers and avoid selection of local food providers on nepotistic basis.

SDG2.2 – Ending malnutrition

This sub-group consisted of international agencies (WFP, EU, WHO) government departments (MoH), CSOs and nutrition oriented academics. **REC 3** should include a five-pronged approach with an improved provision of preventative and health care services, with de-worming, TB and diarrhoea prevention as focus; micro-nutrient deficiencies should be prioritised with food supplementation and fortification, given the high burden of anaemia among mothers and children; WASH is key to prevent and combat stunting by addressing the challenges with environmental health (animal excreta) and chronic enteropathy; a focus on the first 1,000 days to improve mothers health needs to be more explicit –that 3.3 should be more specific and focused either on child and maternal health, or on women's of reproductive age and not on both; to support effective interventions to address food utilization, SISCa needs to be strengthened, scaled-up and consistent in its implementation nation-wide; a mother Train-the-Trainer approach through Mother Support Groups (MSG) is much needed to enable transformation at the suku level. On **REC 4**, Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) need to be prioritised to ensure detection of signs of malnutrition early on; this is to be combined with improved monitoring of food supplementation and the quality of mother's breast milk; and implementing the work of Nutrition Coordinators at each Community Health Centre with a domiciliary approach to be complemented with the activities of MSG and SISCa is much needed to ensure women and children attend the health services as soon as malnutrition is detected. On **REC 5**, men need to be included in obesity prevention programs.

Several participant raised interest on accessing the evidence available on Social Behaviour Change Communication (SBBC), since identifying evidence-based approaches has proven difficult for some agencies to implement – given that this can provide effective ways to change food restrictions based on cultural practices. The importance of using media for health education and the need to integrate this within the school curriculum was highlighted as extremely important, while access to water or water collection devices to support hygienic practices was equally underlined as priority. However, as generally agreed unless families' economy and family planning are improved, the improvement of nutrition will remain a major challenge.

SDG2.3 – Doubling agricultural production and incomes

This sub-group consisted of MAF staff, CSOs, horticulturalists and farmers. On **REC 6**, agroforestry is new and people need to be informed as diversification of crops other than staples with local varieties need to be strongly supported; so are the approaches to ensure water availability, by socialising the Environmental Law to address deforestation. State's support for production stability and growth using a subsidy-based model to transition to commercial production through farmers' groups' engagement is much recommended. On **REC 7**, a clear focus is needed on profitable spices with links to profitable markets such as China, India and Europe; extensionists need more targeted training to provide advice on crops depending on the quality and type of the soil, and on how to motivate farmers and support initiatives to use empty land; and coffee producers need to be educated on drinking their own produce an not instant coffee. **REC 8** household farmers need to be more functional and productive, while a specific focus on women farmers is supported.

SDG2.4 – Sustainable agriculture practices and climate change adaptation

This sub-group consisted of CSOs, university students, community members and MAF representatives. On **REC 9**, there is strong support for promoting local food consumption and for MAF to continue to implement the current programs that support sustainable agricultural and climate adapted practices. Suggested approaches include multi-cropping, demonstration plots and water management. Government needs to provide conditions for farmers to be able to farm sustainably, including increasing access to irrigation and subsidies, and promote and distribute seeds adapted to climate change. Extensionistas need to lead this process and ensure climate-smart seeds are used, while creating incentives for the private sector's involvement, and for universities to support agriculture research with the aim to increase production. Small animal rearing is valued and strengthening livestock and fish production is strongly recommended. There is strong support for minimising the use of chemical products by developing adequate legislation. On **REC 10**, the Government needs to collect better meteorological data and have an efficient system for early detection of the impact of weather events on farming communities; and create facilities at the municipal level to store food for distribution during the hungry season and emergencies. Ultimately, coordinated activities between ministries and an increase of the budget allocation for common activities are urgent.

Communities mention how *tarabandu* should be promoted in the local context to regulate not only animals that roam freely, but also "slash and burn practices" and deforestation.

SGG2.5 – Promoting genetic diversity

This sub-group was attended by UNTL and UNPAZ students, CSOs, international agencies and MAF. On **REC 11**, the socialization of the importance of seed banks among communities while using adequate us language that farming families can relate to, need to be emphasised; farmers need to be informed and encouraged not to consume and sell the whole production. Seed banks should be legislated and managed in participatory ways to facilitate group engagement and accountability. On **REC 12**, the use of local available breeds to produce dairy from cows and buffaloes in support of nutrition and rural economies needs to be encouraged. Some CSOs have undertaken nutritional value studies of local crops with very promising results, which needs to be encouraged particularly for Job's tears, as there is little awareness on this kind of studies. There is strong support for promoting the importance of genetic diversity. Such approaches have contributed to promoting local food consumption while supporting local communities to develop local seed banks.

Political economy

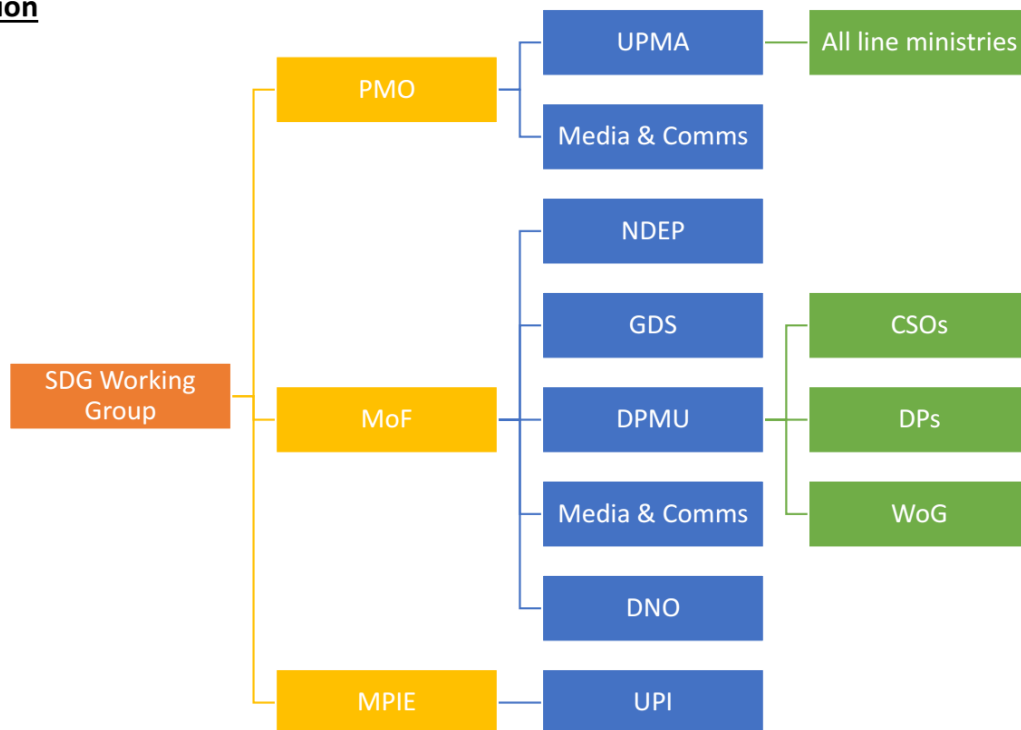
On **REC 13**, most sub-groups mentioned the importance of coordination action between relevant line ministries when implementing policies, and between Government, CSOs and agencies, like linking water and sanitation with health, as well as water planning with agriculture. Reinforcing KONSSANTIL at the Municipal level was also repeatedly suggested, while others recommended placing it as a supra-ministerial body. The Government needs to act on the recommendations with concrete actions, with less sophisticated bureaucracy. On **REC 14**, employment creation is a must to address nutrition and ensure incomes to afford quality food, and these should focus on promoting youth in agriculture. Local producers highlighted the need for developing local food processing industry needs, to promote

links with employment creation with youth and healthy as focus. On **REC 15**, increasing investment in both sectors is fully supported. Finally, participants mentioned how Timor-Leste is now impacted by global and regional policies and products, and as a result citizen's welfare needs to be prioritised.

APPENDIX 9: COORDINATION MECHANISMS

SDG Working Group Composition

Composition



PMO: To chair and provide secretariat functions.

UPI (MPIE): Collate information from all parties in the SDG Working Group to provide recommendations to the COM on a bi-yearly basis.

UPMA (PMO) & DNO (MINISTRY OF FINANCE): Provide information on budgeting and linking the SDG to budget.

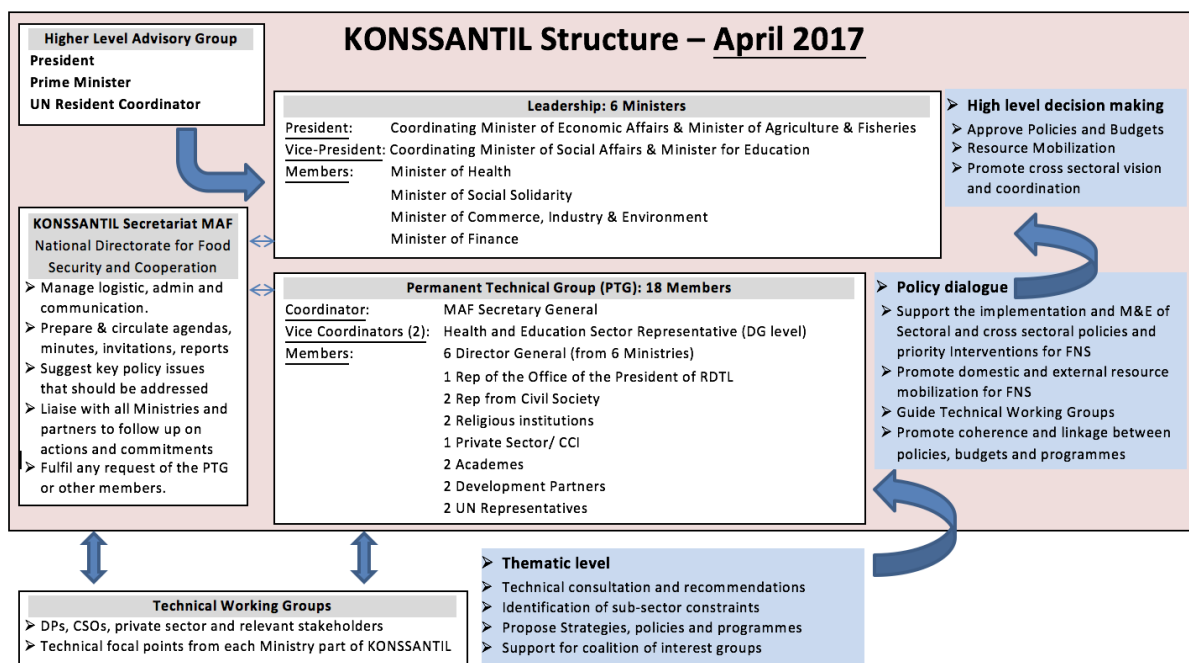
DGS (MINISTRY OF FINANCE): Develop and monitor indicators.

NDEP (MINISTRY OF FINANCE): Provide analysis, evaluate progress and develop annual reports.

DPMU (MINISTRY OF FINANCE): Provides a coordinating function with CSOs, DPs and the whole of Government through the DPCM.

Media and communications office (PMO, MINISTRY OF FINANCE & g7+): Communicate and sensitise line ministries and the population of developments relating to the SDGs.

KONSSANTIL Composition



* A Municipal Food Security, Sovereignty Nutrition & Disaster Management Committee (i.e. Municipal KONSSANTIL) exists in each of the 12 Municipalities and Oecussi. It is made of representatives of all Government institutions, suco councils, NGOs, CSOSs, private sector and any other partners working in the Municipality. The Municipal Administrator acts as Coordinator for the Municipal KONSSANTIL, with the Municipal Directors of MAF and MoH as Vice Coordinators.

** The Municipal KONSSANTIL Representatives are also part of the Plenary.

| Municipal KONSSANTIL | | ➤ Main Tasks and responsibilities ➤ Multi sectoral Planning ➤ Guide all sectors to focus their work in the priority vulnerable areas ➤ Coordinate the implementation of priority interventions by each organization ➤ Multi sectoral monitoring and evaluation ➤ Reporting on the local Food and Nutrition Security situation |
|-----------------------------|---|---|
| President: | Municipality Administrator | |
| Vice Presidents (2): | Director of Health, Director of Agriculture and Fisheries | |
| Members: | All Sectors / line Ministries representatives | |
| | CSOs, | |
| | INGOs | |
| | Suco Councils | |
| | Private sector representatives | |
| | Any other concerned stakeholders | |

Source: Government of Timor-Leste. 2016. National Food and Nutrition Security Policy.