



Malnutrition in Timor-Leste: A review of the burden, drivers, and potential response

Anne Provo, Steve Atwood, Eileen Brainne Sullivan, Nkosinathi Mbuya

Table of Contents

Acknowledgements	ii
List of Acronyms	iii
Glossary	v
Foreword	ix
Executive Summary.....	1
Chapter 1. Background.....	5
Chapter 2. Nutrition Situation in Timor-Leste	14
Chapter 3. Determinants of Malnutrition in Timor-Leste	26
Chapter 4. Commitment and Capacity to Address Malnutrition	46
Chapter 5. Nutrition-Specific Interventions and Approaches.....	66
Chapter 6. Nutrition-Sensitive Programs and Approaches Address Underlying Determinants of Malnutrition.....	76
Chapter 7. Development Partner Coordination and Support for Nutrition.....	87
Chapter 8. Costing and Financing for Nutrition	94
Chapter 9. Conclusions and Recommendations	107
References	116
Annexes:.....	127
Annex 1: Sources of Data in the Report.....	127
Annex 2: Nutrition and Maternal, Infant, and Young Child Feeding-Related Knowledge, Attitudes, and Practices	128
Annex 3. Immediate and Underlying Causes of Stunting by District	131
Annex 4. KONSSANTIL Structure.....	132
Annex 5. Nutrition-relevant considerations in the National Health Sector Strategic Plan.....	133
Annex 6. Ministry of Health Organizational Structure	136
Annex 7. Structure of District Health Services	137
Annex 8. Ministry of Agriculture and Fisheries Organizational Structure	138
Annex 9: Nutrition Capacity Assessment Framework	139
Annex 10. Job Description for RDTL Workforce with Potential to Improve Nutrition	140
Annex 11: Comparison of international, national priority actions & interventions for mitigation of Mother and Child Undernutrition	147
Annex 12. Nutrition components of Primary Health Care in Timor-Leste Summary of Services Offered through Primary Health Care	148
Annex 13. The SISCa Program	151
Annex 14. The LISIO Card	153
Annex 15. Maps of the distribution of malnutrition, immediate, and underlying drivers in Timor-Leste	154

Acknowledgements

This report was prepared under the overall guidance of Toomas Palu (Practice Manager of East Asia and Pacific Region, Health, Nutrition and Population Global Practice), Franz Drees-Gross (Country Director for Timor-Leste, Papua New Guinea & Pacific Islands, East Asia and Pacific Region) and Bolormaa Amgaabazar (Representative for Timor-Leste) by a team consisting of Eileen Brainne Sullivan (Senior Health Operations Officer and Task Team Leader), Anne Provo (Research Analyst, Lead Author), Steve Atwood (Consultant), and Nkosinathi Mbuya (Senior Nutrition Specialist and author). Antoninho Pereira, Cornelio Quintao De Carvalho, David Knight, Eric Vitale, provided technical and administrative support throughout the field work and the preparation of the report. Xiaohui Hou and Augustine Asante conducted the analyses which formed much of the basis of Chapter 8. The team also thanks Heather Grieve, Kate Snowball, Elizabeth Belo (Australian Government, Department of Foreign Affairs and Trade), Marrie-Ann Merza (Food and Agriculture Organization), TMap, and the Office of the President (RDTL) for their collaboration on identifying drivers of malnutrition and informed the preparation of Chapter 3.

The authors are very grateful to the peer reviewers, Jumana Qamruddin (Senior Health Specialist), Junko Onishi (Senior Social Protection Specialist), and Ziauddin Hyder (Senior Nutrition Specialist) who provided technical guidance and quality review of the work. We also thank Gayatri Acharya (Lead Economist), Venkatesh Sundararaman (Program Leader, Human Development) for their valuable comments.

The authors would also like to sincerely thank the Minister and staff of the Ministry of Health, the Ministry of Agriculture and Fisheries, Ministry of Social Solidarity, Ministry of Commerce, Industry and Environment, Ministry of Finance, and the many development partners and key agencies who are referenced in this report for their guidance, assistance and major contributions throughout this study.

This study was completed as a part of the World Bank’s Externally Financed Output “Support Nutrition Analysis and Activities in East Asia and Pacific Region” and would not have been possible without the financial support from the Australian Department of Foreign Affairs and Trade, Canberra, Australia, and the financial contribution from the European Commission for the dissemination of the study.



List of Acronyms

ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
ANC	Antenatal Care
BdM	Bolsa da Mae
BESIK	Bee, Saneamentu no Igiene iha Komunidade
BMI	Body Mass Index
CEDAW	Convention on the Elimination of Discrimination Against Women
CHC	Community Health Center
CICL	Corporation International for Countries Linga Portugues
CPLP	Community of Portuguese Language Speaking Countries
CSO	Civil Society Organization
DFAT	Australian Department of Foreign Affairs and Trade
DFNSC	District Food and Nutrition Security Committee
DNSP	National Directorate of Public Health
DP	Development Partner
DV	Domestic Violence
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FNSWG	Food and Nutrition Security Working Group
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GNI	Gross National Income
HIES	Household Income and Expenditure Survey
IDA	Iron Deficiency Anemia
IFA	Iron Folic Acid
INGO	International Non-Governmental Organization
JICA	Japan International Cooperation Agency
JMAK	Community Management of Acute Malnutrition
KONSSANTIL	National Council on Food Security, Sovereignty and Nutrition
MAF	Ministry of Agriculture and Fisheries
MAM	Moderate Acute Malnutrition
MCIE	Ministry of Commerce, Industry and Environment
MDG	Millennium Development Goals
M&E	Monitoring and Evaluation
MOE	Ministry of Education
MOF	Ministry of Finance
MOH	Ministry of Health
MNP	Micronutrient Powder
MPW	Ministry of Public Works
MSS	Ministry of Social Solidarity
NGO	Non-Governmental Organization
NIEWS	National Information and Early Warning System
NNS	Timor-Leste National Nutrition Strategy
ODF	Open Defecation Free
PAKSI	Community Action Plan for Sanitation and Hygiene
PAN-HAM-TIL	National Action Plan for a Hunger and Malnutrition Free Timor-Leste (Zero Hunger Challenge)
PDD	Program for Decentralized Development

PDID	Planeamento Desenvolvimento Integrado Distrital, Integrated District Development Planning
PNDP	National Program for Village Development
PNC	Post-Natal Care
PSF	Family Health Volunteer
PTS	Permanent Technical Secretariat
RUTF	Ready-to-Use Therapeutic Food
SAM	Severe Acute Malnutrition
SDG	Sustainable Development Goal
SDP	Strategic Development Plan (Timor-Leste National)
SGA	Small for gestational age
SLS	Survey of Living Standards
SLMS	<i>Suco</i> -Level Food Security Monitoring System
TLDHS	Timor-Leste Demographic Health Survey
TLFNS	Timor-Leste Food and Nutrition Survey
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	Water, Sanitation, and Hygiene
WFP	World Food Programme
WHO	World Health Organization

Glossary

Term	Definition
Anemia	Anemia is defined as a hemoglobin concentration below a specified cut-off point, which can change according to the age, gender, physiological status, smoking habits and altitude at which the population being assessed lives. WHO defines anemia in children under 5 years of age and pregnant women as a hemoglobin concentration < 110 g/l at sea level. Low hemoglobin concentration impairs the ability to supply oxygen to body tissues and is associated with increased risks for maternal and child mortality. Anemia can be caused by inadequate intake/poor absorption of iron, folate, vitamin B12 and other nutrients, as well as infectious diseases (including malaria and hookworm infections) and genetic causes. Iron-deficiency anemia reduces the work capacity of individuals and entire populations, with serious consequences for the economy and national development. In addition, the negative consequences of iron-deficiency anemia on the cognitive and physical development of children and on physical performance - particularly the work productivity of adults - are major concerns.
Anthropometry	The measurement of physical body characteristics, most commonly weight and height, but also circumference of body parts (head, arm, waist, etc.) as a tool for monitoring growth. Anthropometry is also used as a proxy indicator of nutritional status. Anthropometric indicators can point to malnutrition, but do not provide evidence of deficiencies in specific macronutrients or micronutrients.
Body Mass Index (BMI)	A measure of relative weight given by weight in kilograms divided by height in meters squared (kg/m ²). In adults, both underweight (thinness) and overweight are measured using BMI.
Colostrum	The first breastmilk secreted in the first few days after childbirth, often thick and yellow. Colostrum has many health and nutrition benefits: it contains antibodies and other proteins which help transfer immunity from the mother to child and protect the infant from infection; it contains growth factors to keep the intestines mature; and is rich in vitamin A, vitamin K, and other nutrients.
Complementary Feeding (CF)	The process of introducing age-appropriate, adequate and safe solid or semi-solid foods in addition to breast milk or a breast milk substitute when breast milk alone is no longer sufficient to meet nutritional requirements of an infant. The target range for complementary feeding is 6-23 months.
Double Burden of Malnutrition	The coexistence of undernutrition (as evidenced by anthropometry in children and women, or micronutrient deficiencies) and overweight/obesity in the same country, community, household or even individual.

Epigenetic Modifications	Changes in the expression of genes (rather than genes, themselves) which can be due to external and internal environmental exposures and influence physiological processes such as metabolism and the development of disease. Epigenetic modifications provide a potential link between maternal nutrition, early life environmental exposures, and susceptibility to disease.
Food Fortification	Addition of micronutrients to food during or after processing.
Infant and young child feeding (IYCF)	Feeding of infants (less than 12 months old) and young children (12-23 months old). The key interventions of IYCF include protection, promotion and support of optimal breastfeeding practices (exclusive breastfeeding for the first six months and continued breastfeeding for two years or beyond) and support for and promotion of optimal CF practices (e.g. timely introduction of CF). Issues of policy and legislation around the regulation of marketing infant formula and other breast milk substitutes are also addressed by these interventions.
Low Birth Weight (LBW)	Weight of less than 2,500 grams at the time of birth. Low Birth Weight (LBW) is a significant public health concern and a major risk factor for perinatal mortality. It is associated with greater likelihood of stunting and chronic diseases later in life. It includes preterm neonates (born before 37 weeks of gestation), small for gestational age neonates at term, and the overlap between these two situations (preterm, small for gestational age neonates).
Macronutrients	Fat, protein, and carbohydrates needed for a wide range of body functions and processes.
Malnutrition	A broad term commonly used as an alternative to 'undernutrition' but which technically refers to any dysfunction of nutrition, including inadequate, excessive or unbalanced nutrition.
Metabolic Syndrome	A group of risk factors including abdominal obesity, dyslipidemia, hypertension, and impaired glucose tolerance.
Micronutrients	Essential vitamins and minerals required in miniscule amounts for the maintenance of essential body processes.
Mid-upper Arm Circumference (MUAC)	The circumference of the mid-upper arm measured on a straight left arm midway between the tip of the shoulder and the tip of the elbow. Can be used to measure acute malnutrition/wasting in children 6-59 months.
Nutrition-Specific Interventions	Address the immediate determinants of malnutrition, including fetal and child nutrition and development, and/or the nutritional status of older children and adults (adequate food and nutrient intake, feeding, caregiving and parenting practices, and burden of infectious disease).
Nutrition-sensitive interventions	Address the underlying determinants of malnutrition and development (food security; adequate resources) at the individual (especially maternal and caregiver), household and community levels; access to health services and a safe and hygienic environment; access to information about healthy food choices) and that incorporate specific nutrition goals and actions. Nutrition sensitive programs can be used as delivery platforms for nutrition-specific interventions, which can increase their scale, coverage and effectiveness.
Obesogenic	Factors tending to make individuals overweight/fat, such as environments that promote decreased physical activity and/or increased intake of energy dense foods.
Overnutrition	Consumption of calories in excess of those needed to maintain growth and health.

Overweight/obesity	Among children under-five, overweight is measured as children who have a weight-for-height more than two standard deviations higher than the median for a child of the same height and sex according to the WHO Growth Standard. WHO has recommended classifications of overweight (BMI \geq 25) and obesity (BMI \geq 30) which are associated with increased risk of some non-communicable diseases. As a measure of relative body weight, BMI is easy to obtain. It is an acceptable proxy for fatness and has been directly related to health risks and death rates in many populations. At a population level, prevalence of overweight/obesity derived from BMI cutoffs can be useful to develop and implement policy actions and to facilitate prevention. BMI cutoffs for overweight and obesity can also be used as screening tools to identify high risk individuals and to be used for diagnostic purposes in combination with other clinical measurements and risk factors.
Short stature	Often measured in women of reproductive age and defined as height <145 cm. Women of short stature are at greater risk for obstetric complications because of a smaller pelvis. Small women are at greater risk of delivering an infant with low birth weight, contributing to the intergenerational cycle of malnutrition, as infants of low birth weight or retarded intrauterine growth tend to be smaller as adults.
Stunting	Often referred to as 'chronic malnutrition' and measured as low height-for-age, stunting is the most common form of undernutrition. Stunting is reflected in low height-for-age (being of a height that is more than two standard deviations below the median height for a child of the same age and sex according to the WHO Growth Standard) among children under age five. The percentage of children with a low height for age (stunting) reflects the cumulative effects of undernutrition and infections since and even before birth. This measure can therefore be interpreted as an indication of poor environmental conditions or long-term restriction of a child's growth potential.
Undernutrition	A state of inadequate and/or unbalanced intake and/or absorption of nutrients needed for growth and maintenance of health, resulting in nutritional deficiency. Undernutrition covers a range of disorders, including growth failure and micronutrient deficiencies.
Underweight	Low weight-for-age. Among children under age five, underweight reflects being of a weight that is more than two standard deviations below the median weight for a child of the same age and sex according to the WHO Growth Standard. The percentage of children who are underweight can represent both children who have low weight-for-height and low height-for-age. As such, it is a composite indicator and can be difficult to interpret.

Wasting	<p>Also known as acute malnutrition. Among children under age five, wasting can be measured using weight-for-height or mid-upper arm circumference (MUAC). Using weight-for-height cutoffs, wasting is defined as a weight that is more than two standard deviations below the median weight for a child of the same height and sex. Using MUAC, acute malnutrition is defined as MUAC lower than 125 mm and/or presence of bilateral pitting edema. There are different levels of wasting severity: moderate acute malnutrition (MAM) and severe acute malnutrition (SAM). Wasting in children is a symptom of acute undernutrition, usually as a consequence of insufficient food intake or a high incidence of infectious diseases, especially diarrhea. Wasting in turn impairs the functioning of the immune system and can lead to increased severity and duration of and susceptibility to infectious diseases and an increased risk for death.</p>
---------	--

Foreword

The World Bank Group (WBG) has conducted a nutrition assessment, gap analysis, and donor mapping report as part of the WBG's technical assistance to the Government of Timor-Leste. This report is intended for a technical and programmatic audience, providing an overview of the country's "nutrition system" for stakeholders seeking to engage in this area in the country. Specifically, the report aims to:

- Document the magnitude and severity of malnutrition in Timor-Leste and country-specific key determinant.
- Reviews the present capacity, institutional and implementation arrangements to address malnutrition and its determinant.
- Assesses the current nutrition-specific and nutrition-sensitive programs in Timor-Leste: map the coverage of various donor and government programs; document gaps in the scope, coverage and financing of these programs.
- Provides recommendations to the Government of Timor-Leste (RDTL) and the development partner community to scale-up programs and interventions and strengthen the overall response to malnutrition in the country.

Methods and Analytical Approach

The report documents the state of the nutrition system using recent data from a variety of sources, including:

- Synthesis of demographic and nutrition epidemiology data from existing surveys.
- Network assessment of key stakeholders in nutrition in Timor-Leste.
- Review of legal, strategy, policy, and guideline documents from relevant RDTL ministries and agencies in health and non-health sectors.
- Review of grey and published literature, as well as program and evaluation reports in health and non-health sectors from the Government of Timor-Leste and non-government agencies.

Primary quantitative data were not collected as a part of the assessment and the report *does not* serve as an evaluation of the impact and effectiveness of programs. It draws upon extant data and sources to synthesize what is already known about the nutrition situation, policies, and programs to identify promising areas for further consideration.

Structure of the Report

This report is organized into nine chapters:

Chapter 1 describes the Timor-Leste country context and the global nutrition landscape to provide background for the subsequent analyses.

Chapter 2 gives an overview of magnitude of the burden of malnutrition in Timor-Leste.

Chapter 3 draws upon the United Nations Children's Fund (UNICEF) conceptual framework and provides a systematic description of the key context-specific immediate and underlying determinants of malnutrition.

Chapter 4 reviews the political commitments, institutional arrangements, and capacity to address malnutrition across sectors in Timor-Leste.

Chapter 5 describes the nutrition-specific programs gaps.

Chapter 6 describes programs aimed at the underlying drivers of malnutrition.

Chapter 7 explores the nature of development partner coordination for nutrition issues.

Chapter 8 reviews the costs of scaling up nutrition interventions and provides an overview of the fiscal space to do so.

Chapter 9 provides a series of policy and programmatic recommendations to strengthen the response to malnutrition, leveraging opportunities and addressing the identified gaps and challenges.

Executive Summary

This report presents the findings of nutrition assessment, gap analysis, and donor mapping exercise in the Democratic Republic of Timor-Leste (RDTL). Timor-Leste, though as a young and fragile state, has the preconditions for successful development. However, persistent high levels of malnutrition threaten to impede efforts to reduce poverty, capitalize on gains in human and skills development, increase productivity, and stimulate economic growth.

Though progress has been in other areas of human development, malnutrition -- particularly maternal and child undernutrition -- is the single greatest contributor to premature death and disability in the country and presents an unparalleled development challenge. In 2013, over half (50.2%) of all children under-five were stunted in their physical and cognitive development. Timor-Leste has the third highest stunting prevalence in the world, higher than all other g7+ countries and a significant outlier relative to its level of economic development. In 2013, nearly one in three (63.2%) children (6-59 months) and 2 in 5 women age 14-60 (39.5%) were anemic. Although the country is no longer in an emergency situation, the prevalence of wasting (11%)—an indicator of acute malnutrition and a prominent risk factor for child mortality—exceeds the WHO threshold for high public health significance, with emergency levels of wasting experienced in Covalima and Oecusse districts. Overweight prevalence is low relative to global averages, but has risen more than five-fold among adult women over the past decade. Though Timor-Leste does not yet suffer from the double burden of malnutrition, it will soon emerge if the problem continues unaddressed.

Findings and Key Themes

Malnutrition has serious—but preventable—adverse consequences for health, human capital, and economic development. Recent estimates indicate that malnutrition leads to US\$41.0 million annually in lost economic activity, equivalent to nearly the entire MOH budget and roughly 2% of the economic activity in the non-oil sector. These very high levels of malnutrition affect the health of women and children, cognitive development, schooling attainment, lifelong productivity, and wage earning potential.

The causes of maternal and child undernutrition in Timor-Leste are multiple and span across sectors. These can be categorized as **immediate** (nutrient intake and disease burden), **underlying** (child care and feeding practices; reproductive health and women's status; household hygiene environment; dietary diversity and food insecurity; and demand for and access to quality health services), and **basic** (household poverty and macroeconomic context, sociocultural factors, and political context). Given the very high burden of undernutrition in Timor-Leste, all factors play a role in the country. For these causes—as well as dietary behaviors related to development of overweight—improvements are most often constrained by both demand-side factors related to knowledge, behaviors, and attitudes, as well as supply side factors related to resource availability and service delivery.

Timor-Leste has high level political commitment, overarching strategic frameworks, and a multisectoral coordinating body to provide the foundation for a strong national response to malnutrition. The Honorable President and Prime Minister have both publicly championed nutrition, while the National Strategic Development Plan (2011-2030) highlights nutrition as essential input for social and economic development. The National Council for Food Security, Sovereignty, and Nutrition in Timor-Leste (KONSSANTIL) is a high level coordinating body established to guide the national multisectoral response to food insecurity and malnutrition. KONSSANTIL has stewardship functions for the National Action Plan for a Hunger and Malnutrition-Free Timor-Leste (PAN-HAM-TL), which outlines the activities required across sectors to end malnutrition in the nation. However, the plan covers over 170 actions, and as nutrition accounts for only one of five pillars, KONSSANTIL has focused primarily on food security and food sovereignty.

The Ministry of Health (MOH) is the technical home for nutrition in Timor-Leste. The National Nutrition Strategy (2014-2019) defines an approach to improve nutrition through nutrition-specific, nutrition-sensitive, and enabling environment interventions. A Specific Nutrition Intervention Package (SNIP) has been developed for delivery through the health system and is aligned with the global evidence base focusing on the first 1,000 days between conception and age two. However, key gaps remain, including: stimulating the MOH leadership and ownership over strategic directions, development partner coordination, and technical directions; finalizing the supportive policy and strategy frameworks needed to guide future interventions; scaling up the coverage and quality of SNIP interventions and addressing anemia; building the nutrition capacity of frontline health workers; and enhancing community-based delivery of nutrition services.

The Ministries of Agriculture and Fisheries (MAF), Social Solidarity (MSS), Education (MOE), Commerce, Industry, and Environment (MCIE), and State Administration (MSA) are critical partners for addressing malnutrition in Timor-Leste. The strategies, policies, and guidelines for these ministries acknowledge the contributions of the respective sectors in reducing malnutrition. The ministries have programs which address underlying drivers of malnutrition, targeting areas such as: (a) increased productivity and income from agriculture production; support to vulnerable mothers and children; (b) provision of school meals; (c) increased access to locally produced foods; and promotion of community-driven development, among others. However, the nutritional impact of these and other programs tends to be limited by one or more of the following factors: (a) limited consideration of nutrition in technical program design decisions; (b) capacity constraints in relation to organizational, human resource, and public financial management; (c) weak data collection and availability for evidence-informed decision making; and (d) insufficient attention to supervision, resources, and skill-building needed by frontline workers.

Development partners play a key role in the response to malnutrition and its determining factors, but greater leadership and coordination is required to maximize the impact of these investments. Non-state actors have filled a critical gap in the delivery and financing of nutrition-specific and nutrition-sensitive programs and have provided systems strengthening and capacity building support across all relevant ministries. Though a large number of agencies are involved in addressing the immediate and underlying determinants of malnutrition, they often act in silos without a harmonized and convergent approach to social and behavior change communication, training, and programming.

The current level of nutrition investment is not sufficient to support the goals outlined in national plans. The Zero Hunger Action Plan approximates that US\$176.0 million annually (roughly 1/10th of the General State Budget) will be required to implement the plan over ten years. However, overall fiscal space is tightening as oil revenues decline and key KONSSANTIL Ministries (Health, Education, Social Solidarity, and Agriculture and Fisheries) experience budgetary contractions due to frontloading of investments in infrastructure. With high recurrent expenditure on wages and salaries, ministries increasingly rely on donor support to supplement goods and services budgets and to deliver services to citizens. As donors begin to scale down their development assistance to the country, there is a need for greater advocacy and engagement with the Ministry of Finance and Parliamentarians to increase budget allocations for nutrition, maximize available resources, and develop a nutrition financing strategy to ensure sustainable service delivery.

Recommendations

Timor-Leste has endorsed the Zero Hunger Challenge and Sustainable Development Goals (SDGs) and has built the necessary strategic and institutional foundations to improve nutrition. The key challenge is to build awareness among a broad-based constituency which can elevate the quantity and quality of implementation and financing to levels necessary to achieve the targets in these ambitious commitments. Recommendations for rising to this challenge are divided into actions at five levels, building from the grassroots family/community to the cross-sectoral coordination and financing of institutions at the highest levels. Chapter 9 presents specific, recommended short-, medium-, and long-term actions which are applicable to government and non-state stakeholders working at each level. To maximize impact and accelerate progress, it is critical that actions are initiated at each level and build off of the comparative advantages of the various players working in this space.

1. **Family/Community: Empower families and communities with the knowledge and resources necessary to demand optimum nutrition and growth for their children.** Improvements in nutrition in Timor-Leste will not be possible without close engagement with families and communities to reduce the normalcy of stunting, build knowledge of malnutrition, and define solutions, building off of community assets and institutions. Appropriately crafted messages must reach communities through a variety of channels, supported by a cadre of motivated frontline workers and para-professionals who can build the dialogue on how to take the recommendations forward.
2. **Services: Scale up the delivery of a package of evidence-based nutrition-specific and key nutrition-sensitive interventions focused on improving nutritional status in the first 1,000 days.** The package of nutrition-specific interventions needs to be delivered as component of an integrated Primary Health Care package with universal coverage. Attention is needed to implement supplementation and fortification interventions which can address anemia and micronutrient deficiencies and define and strengthen the community-based delivery platform for these interventions.

Key evidence-based nutrition-sensitive services need to be scaled up to address the underlying determinants of early life malnutrition. Among others, these include: (i) improving knowledge and access to reproductive health and family planning counselling and services; (ii) increasing the prevention and identification of nutrition-related chronic diseases; (iii) harnessing agriculture as a means of improving dietary quality and reducing exposure to environmental pathogens; (iv) improving hygiene and sanitation behaviors; (v) providing safety nets and health/nutrition demand-generation activities for women and children; and (vi) improving parents' ability to provide appropriate care and stimulation for young children. Delivery platforms for these interventions should also, as possible, be leveraged for the delivery of nutrition-relevant messages. In order to increase likelihood of impact, these programs need to focus on nutritionally vulnerable women and children, but also need to be available to adolescents (the next generation of parents) and support systems (husbands, mothers-in-law, community leaders). These programs also need clearly defined pathways from intervention to nutritional outcome, gather appropriate data and indicators of nutritional status, and address underlying assumptions.

3. **Institutions: Build capacity and strengthen institutions to promote efficient, quality service delivery.** Within ministries at the central and sub-national levels, critical systems strengthening actions must be taken in order for services to be scaled up and ensure that they are of sufficient quality. Many of these actions are ongoing and should continue, including: (a) nutrition training and capacity building for frontline service providers to maximize investments in the public sector workforce; (b) strengthening human resource management and supportive supervision functions, especially at lower levels; (c) improving supply chain management; and (d) strengthening public financial management capacity.

4. **Coordination: Strengthen coordination and accountability mechanisms for a multisectoral response to malnutrition.** High level coordination and leadership is needed to move the nutrition agenda forward in Timor-Leste. Improving nutrition must become a central priority for KONSSANTIL and member ministries, and can be evidenced through leadership commitment, prioritization of PAN-HAM-TIL activities, which has five pillars, with priority nutrition results included under Pillar 2 (with nutrition-sensitive sub-activities found across pillars), and creation of a common results framework with sectors responsible for appropriate nutrition-related indicators. The creation of a multi-stakeholder coordination platform for nutrition, involving the public sector, donors and development partners, and private sectors is also urgently required and can contribute to improved convergence at national and sub-national levels.

5. **Financing: Secure domestic and donor financing needed to deliver the package of nutrition programs at scale.** In order for nutrition improvements to be realized, it is imperative that sufficient domestic, donor, and private sector financing is available and used efficiently. Advocacy with the Prime Minister, Parliamentarians, Ministry of Finance, and civil society throughout the budget cycle is needed, supported by actions to improve efficiency and execution of budget allocations. These include the development of a system for monitoring nutrition budget allocations and expenditures against the common results framework, moving towards results-based financing for nutrition as appropriate.

Chapter 1. Background

CHAPTER 1 KEY MESSAGES

1. Timor-Leste has made progress in building peace and establishing institutions since gaining independence in 2002.
2. Economic growth has been driven by oil wealth, allowing Timor-Leste to achieve lower middle-income status in 2011.
3. Although improvements have been made in human development, Timor-Leste has high fertility and an epidemiological profile comparable to many low-income countries. Over one third (36%) of all deaths are attributable to communicable and infectious diseases.
4. Child and maternal malnutrition is an underlying risk factor for 27% of all deaths in children under age 5.
5. There is a critical window of opportunity during the first 1,000 days of life from conception through a child's second birthday where interventions can have the greatest impact on reducing the lifelong consequences of malnutrition.
6. There is global and national momentum to accelerate progress on malnutrition as a key driver of sustainable development.

A. Timor-Leste Country Context

1. History, Economic Development, and Poverty

The Democratic Republic of Timor-Leste (RDTL) is a small lower-middle income country in the World Bank's East Asia and Pacific (EAP) region. Gaining independence in 2002, the nation is the second youngest in the world. The Island of Timor is divided between Timor-Leste (also known as East Timor) and Indonesian West Timor. Administratively, Timor-Leste is divided into 13 districts, with each district further subdivided into sub-districts (65 total), *sucos* (442 total) and *aldeias* (2225 total). Administrative decentralization is outlined in the Constitution of Timor-Leste and a slow process is underway to transfer budgetary power from central level ministries to the districts. District and sub-district administration will be combined into municipalities, and municipal administrators/authorities will be delegated powers for spending and management for delivery of services (including civil registration, primary healthcare, primary education, water and sanitation, and roads).

Timor-Leste achieved lower-middle income status in 2011, largely due to oil income and high global oil prices. To increase the sustainability of its oil wealth, the government channels its oil revenue into the Petroleum Fund (PF), which had a balance of \$16.6 billion at the beginning of 2016 (around ten times non-oil gross domestic product (GDP)). The annual per capita non-oil GDP growth rate peaked in 2008 at 14.2% and has slowed steadily (World Bank 2015a). Non-oil growth has been largely driven by public spending: the public sector experienced average annual growth of 11% over the period 2002-2010 as the civil service was built. There have been recent improvements in poverty reduction. Data from the recently completed 2014-15 Timor-Leste Survey of Living Standards (TLSLS-3) show that the share of the Timorese population living in poverty declining from 50% in 2007 to an estimated 41.8% in 2014 based on the national poverty line. This provides the most accurate measure of poverty in Timor-Leste, given local conditions but is not directly comparable with poverty rates in other countries. The share of the Timorese population living in extreme poverty (\$1.90 a day in 2011) has fallen from 47.2% in 2007 to 30.3% in 2014 (NSD 2016; NSD 2008).

2. State-Building

Timor-Leste is a post-conflict country emerging from a long history of occupation, a violent struggle for independence, and internal conflicts between 1999 and 2006. Substantial achievements were realized since gaining independence in 2001, including the development of political and state institutions, physical infrastructure, and a sustainable economy.¹ Given that, on average, post-conflict countries take 15-30 years to transition out of fragility (World Bank 2011 a), Timor-Leste's pace of peace building and state building is impressive. The influx of petroleum revenue provided the economic basis for securing stability, including provision of: incentives for "petitioners" to surrender; cash grants to displaced residents to encourage them to return home; generous pension benefits for veterans; and work opportunities through infrastructure development and construction contracts (ICG 2013). However, these programs now continue and divert fiscal resources away from inclusive growth and human development. A recent government-led fragility assessment² suggested that economic foundations remain weak, as demonstrated by persistently high youth unemployment, poor human development outcomes, regional inequities, and food vulnerability.

Timor-Leste was a founding member of the g7+ group of conflict and fragile states, which aims to draw upon the shared experiences of these nations as they transition towards resilience and the next stages of development. The country is also a member of the Community of Portuguese Language Countries (CPLP), aims for full accession to Association of Southeast Asian Nations (ASEAN), and belongs to the United Nations group of small-island developing state (SIDS).

3. Climate and Food Production

With over 70% of the population living in rural areas, Timor-Leste is an agrarian society which has adapted to the tropical climate of wet (i.e., November to May depending on elevation and geography) and dry seasons. Agriculture on the island has not reached its full productive potential. Only 30% of arable land is in use for crops or grazing. Due to chronic underproduction the food supply must be supplemented with imported cereals. Higher elevations (over nine months in the high cold zone) and the moist zone of the south coast tend to receive greater rainfall (as much 2000 mm per year and ~1500 mm over 7-8 months, respectively), while the northern coast is hotter and drier. The mountainous and steep terrain is predisposed to extensive soil erosion on the slopes. Climate change is expected to intensify wind and rainfall, increasing erosion from steep, deforested hillsides and affect agricultural productivity. Along with climate change, population growth will exert further pressure on the agricultural system, potentially exacerbating food insecurity if cropping systems and varieties do not improve (Molyneaux et al. 2012).

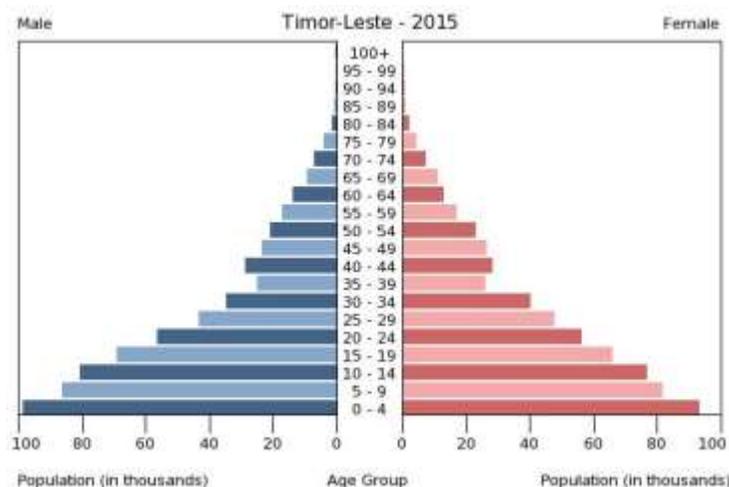
¹ Up to 70% of Timor-Leste's infrastructure, including houses, schools, offices, irrigation systems, water supplies, and the electrical grid was destroyed as the Indonesian military withdrew in 1999.

² The Fragility Assessment reviewed Timor-Leste's progress against five Peacebuilding and Statebuilding Goals (PSGs) agreed as part of the New Deal for Engagement in Fragile States. The New Deal for Engagement in Fragile States is a compact championed by the g7+ group of fragile and conflict affected countries and regions, a multi-government advocacy and policy body made up of 18 countries across Africa, Asia, and the Pacific. The New Deal establishes new principles for development architecture and calls for new ways of working that better respond to the needs and challenges faced by fragile countries; the PSGs promote the development and delivery of services which do not promote conflict. Forty countries and international organizations, including the World Bank, endorsed the New Deal at the Fourth High Level Forum on Aid Effectiveness in Busan (November 2011).

4. Demographics, Health and Human Development

According to the 2015 Population and Housing Census, Timor-Leste has a total population of 1.17 million (NSD 2015). Timor-Leste is one of the youngest nations in the world, with estimates indicating that up to 60% of the total population is under the age of 25 (Figure 1). The population has doubled since 1980 and is expected to reach 2.5-3 million by 2050. Population growth is slowing, and declined from 15.5% during the period 2004-2010 to 9.5% during 2010-2015 (RDTL 2015).

Figure 1. Sex-specific age distribution of the population of Timor-Leste, 2015



Source: United States Census Bureau 2015

Improvements have been made, but human development remains at levels expected among low-income countries. In 2015, Timor-Leste ranked 133rd of 187 countries and territories countries on the UN's Human Development Index³ (UNDP 2015). Despite increased access to education, primary school completion rates remain low and education quality is a concern: a 2009 Early Grade Reading Assessment found that 70% of students were unable to read a single word of a simple text by the end of grade one, decreasing to 20% by the end of grade three (World Bank 2013a). Timor-Leste continues to experience rates of high fertility and infant mortality (Table 1), while maternal mortality is among the highest in the world, a reflection of lack of access to health care, poor infrastructure, and insufficient care for mothers during pregnancy and delivery. High maternal and child undernutrition contributes to poor health outcomes, low school achievement and productivity, and a cycle of impoverishment.

Table 1. Human development indicators, 2000-2014, Timor-Leste

Indicator	2000	2002	2007	2010	2014
Total fertility rate	7.1	7.0	5.7	5.6	5.1
Contraceptive prevalence rate, any method (% of women age 15-49)			19.8	22.3	
Under five mortality rate (deaths per 1,000)	110.2	99.1	74.1	63.8	54.5

³ The Human Development Index is a summary measure of key dimensions of human development: a long and healthy life, being knowledgeable, and having a decent standard of living.

Infant mortality rate (per 1,000 live births)	86.3	76.8	60.7	53.1	46.1
Maternal mortality ratio (national estimate per 100,000 live births)	570.0				
Life expectancy at birth	59.3	61.2	65.8	67.3	68.3

Source: World Bank 2015

An epidemiological transition, though at the early stages, is underway. Infectious, communicable, maternal and nutritional issues remain the key causes of the disease burden (Table 2) but new challenges are rapidly emerging. Child and maternal malnutrition remain the greatest risk for disease, but tobacco smoking, dietary risks, high blood pressure, and high fasting plasma glucose were among the top 10 risk factors in 2013 (IHME 2015). Critically, this growing burden of non-communicable diseases and associated risk factors has gone largely unaddressed.

Table 2. Timor-Leste, top ten causes and risk factors for death and disability in 2013 and trends in burden of disease, all ages, 1990-2013

Rank (2013)	Disease/condition	DALYs (% of total)		Rank (2013)	Risk Factors	DALYs (% of total)	
		1990	2013			1990	2013
1	Lower respiratory infections	11.9	8.6	1	Child and maternal malnutrition	32.1	15.4
2	Preterm birth complications	6.9	8.2	2	Dietary risks	2.5	6.5
3	Diarrheal diseases	19.2	5.6	3	Unsafe water, sanitation, and handwashing	19.2	6.2
4	Congenital anomalies	2.8	5.6	4	Air pollution	5.2	5.8
5	Ischemic heart disease	2.0	4.8	5	High systolic blood pressure	2.1	5.8
6	Other neonatal disorders	3.9	4.0	6	Tobacco smoke	1.6	3.7
7	Iron-deficiency anemia	2.5	3.5	7	High fasting plasma glucose	1.0	2.6
8	Cerebrovascular disease	1.5	3.5	8	Alcohol and drug use	1.0	2.0
9	Neonatal encephalopathy due to birth asphyxia and trauma	2.3	3.3	9	Occupational risks	0.8	1.7
10	Road injuries	1.4	2.9	10	High total cholesterol	0.5	1.4
	DALYs per 100,000	79,565	28,697				

Source: IHME 2015.

B. Rationale for intervention: The Global Nutrition Landscape

1. Maternal and Child Undernutrition: The First 1,000 Days Window of Opportunity

The greatest opportunity to reduce the risk of malnutrition—inadequate, excessive, and/or unbalanced nutrition—is in the first 1,000 days of a child’s life. Stunting, an indicator of chronic malnutrition in children under five, represents a child’s failure to attain the height⁴ expected among healthy children of the same age and sex. In 2006, the World Health Organization released the Child Growth Standards which demonstrated how children *should* grow in *all countries*. The Child Growth Standards were developed based on a six-year study⁵ of children’s growth in diverse country settings which had the pivotal finding that “when health and key environmental needs are met, the world’s children grow very similarly” (de Onis 2006). Thus, the variance in attained height *between* populations is determined to a greater extent by variations in environmental and behavioral factors than variations in genes. High levels of stunting at a population level are associated with poor socioeconomic conditions and frequent and early exposure to poor conditions such as inappropriate feeding, unsanitary environments, and food insecurity.

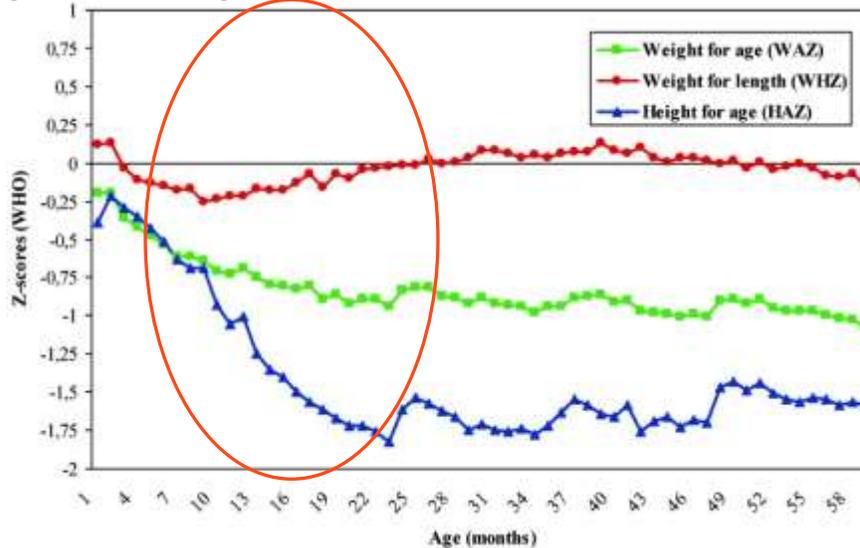
Nutrition influences child growth even before an infant is born. *In utero* factors related to the poor nourishment of the mother influence fetal development and a child’s potential for growth, cognitive development and health. Low oxygen and nutrients during gestation can lead to low birth weight, short stature, and impaired brain tissue development (which—in terms of neuron multiplication—is largely completed by the second trimester) (Dobbing 1974). This may explain the association between cognitive deficiencies and some cases of stunting, as the deficiencies *in utero* that lead to short stature and low birth weight are likely to have an effect on other developing organs, especially the brain.

Through a multitude of studies, the first 1,000 days between conception and the child’s second birthday was identified as a critical window to intervene and have lifelong impacts on nutrition outcomes. Interventions to reduce stunting will have their maximum effect during this window. The greatest losses in mean height-for-age z-score are accumulated between 6 and 18 months of age (Figure 2) (Victora et al. 2010), and growth in height not achieved during the first thousand days from conception to two years is largely irrecoverable. This growth failure has negative consequences across the life course (Shrimpton et al. 2001, Victora et al. 2010) and results in deficits in later life earning and poverty outcomes (Horton and Hoddinot 2014).

⁴ Height-for-age encompasses linear growth in children under five. In children under age two or <85 cm tall, linear growth is measured as recumbent length (distance from crown of the head to heel) when the child is lying down; in children over age two, linear growth is measured using stature, or standing height (WHO 1997).

⁵ The 2006 Child Growth Standards were based on the findings of the WHO Multicentre Growth Reference Study (MGRS). The MGRS was implemented between 1997 and 2003 and collected data on growth among 8440 affluent children from various ethnic, cultural, and geographic settings (Brazil, Ghana, India, Norway, Oman, and the USA). Children were required to have been breastfed, to have non-smoking mothers, and to live in environments which promoted optimum growth. The proportion of total variability between sites was 3%, while the proportion of variability attributable to individuals within sites was 70%, revealing inter-population differences (differences among the children living in one study site) were much stronger than cross-cultural differences. This study provided the rationale for constructing a single international growth standard (de Onis 2006).

Figure 2. Mean anthropometric z-scores according to age relative to the WHO standard (1 to 59 months)

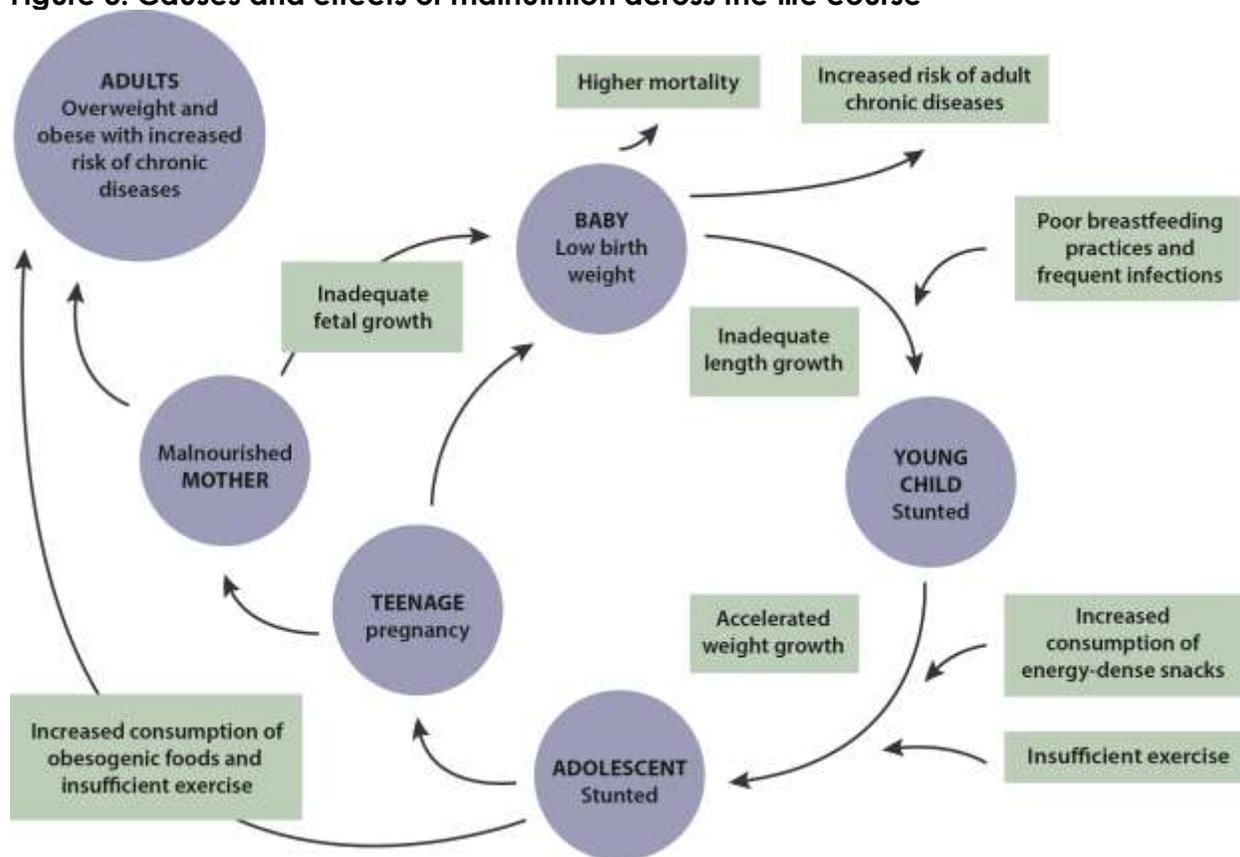


Source: Victora et al. 2010

2. The Double Burden of Malnutrition

Though undernutrition has long been considered the most salient form of malnutrition in the EAP region, the rapidly rising burden of overweight/obesity is of urgent concern. These dual forms of malnutrition are not mutually exclusive, and the double burden of malnutrition is defined as the coexistence of undernutrition (as evidenced by anthropometry in children and women, or micronutrient deficiencies) and overweight/obesity in the same country, community, household or even individual (Shrimpton and Rokx 2012). While it is well-known that undernutrition can exist in an inter-generational cycle, studies have also demonstrated associations between early life undernutrition and the development of overweight/obesity in later life (Figure 3). Poor maternal nutrition during pregnancy can trigger metabolic reprogramming in the fetus and elevate risk of later-life overweight and non-communicable diseases. Individuals born with a low birth weight or who were short or thin at birth have been found to be programmed for later coronary artery disease (Barker 1995). The processes which lead to young child stunting also increase the proportion of fat in the body as well as the susceptibility to nutrition related Non-Communicable Diseases (NCDs) such as diabetes and high blood pressure in adulthood (Darnton-Hill et al. 2004). Rapid weight gain after the first two years of life has been strongly associated with the risk of NCDs in adulthood (Victora et al. 2008).

Figure 3. Causes and effects of malnutrition across the life course



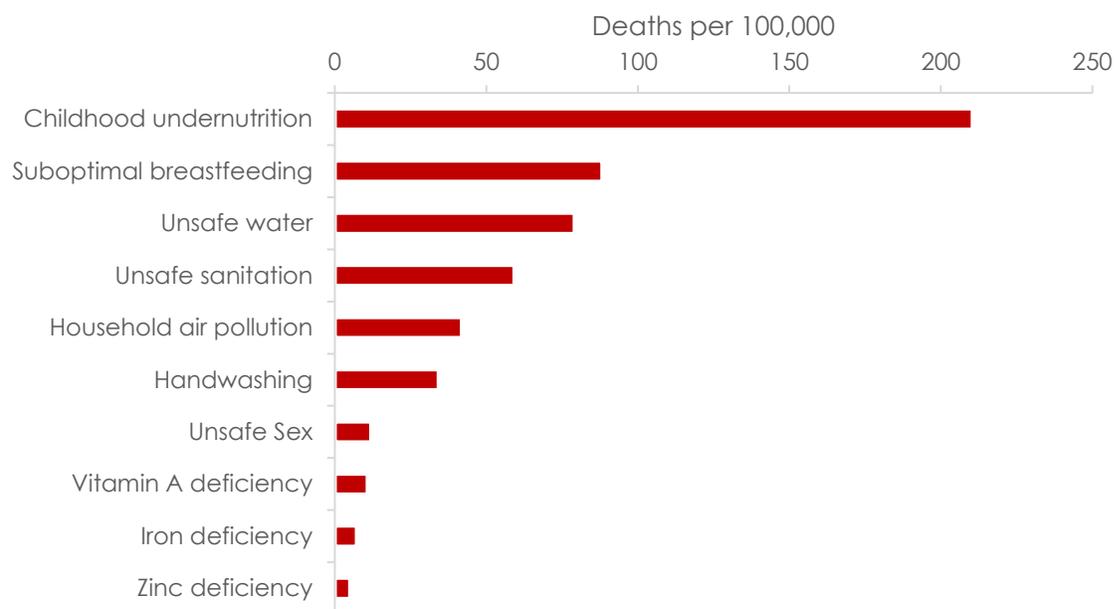
Source: ASEAN/UNICEF/WHO 2016. Note: Figure adapted from Darnton-Hill et al. 2004 for the UNICEF EAPRO Approach to Nutrition Programming in the East Asia and Pacific Region 2014-2025.

3. Consequences of Malnutrition

As of 2013, maternal and child malnutrition is the single greatest risk factor for premature death and disability in the Timorese population, resulting in massive—yet preventable—health and economic consequences. Though deaths due to communicable, newborn, nutritional, and maternal causes are generally declining in the EAP region, substantial burdens persist particularly in low- and lower middle-income countries. In Timor-Leste, childhood wasting remains the number one risk factor for premature death and disability. Globally, undernutrition is a cause of 45 percent of all child deaths (Black et al. 2013). In Timor-Leste in 2013, childhood undernutrition was the leading risk factor for death in children under age five (Figure 4), accounting for 25.5% of all deaths in this age group. It has been estimated that ensuring that all Timorese children under five achieve a healthy weight⁶⁶ would prevent 65% of DALYs attributable to diarrhea and 100% of DALYs due to protein-energy malnutrition (Institute for Health Metrics and Evaluation et al. 2013).

⁶⁶ Healthy weight defined as achieving the median/reference value for a child of the same age and sex according to the WHO growth standard.

Figure 4. Leading risk factors for death among children (male and female) under age five, Timor-Leste, 2013



Source: IHME 2015. Note: Unsafe sex includes deaths due to congenital transmission of sexually transmitted infections including syphilis and chlamydia (causing neonatal conjunctivitis and/or pneumonia).

Dietary factors are the leading risks for NCDs in the EAP region. Timor-Leste has the lowest prevalence of NCD-associated death and disability in the region, yet these conditions already account for 41% of total DALYs (Institute of Health Metrics and Evaluation et al. 2013). The human development consequences of diet-related NCDs will be of particular concern in Timor-Leste, where the systems for prevention, diagnosis, and management of chronic diseases are not fully established.

Recent estimate of the economic burden of malnutrition in Timor-Leste are US\$41.0 million annually in lost economic activity, or 1% of the Gross Domestic Product (GDP) and 2% of the economic activity in the non-oil sector (Ministry of Health 2014a). This is in line with global estimates of average losses of 2-3% of GDP (Shekar et al 2006). Undernutrition reduces economic growth due to indirect losses from poor health and high costs of care, as well as indirect losses due to cognitive deficits, low educational attainment, decreased productivity and wage earning potential.

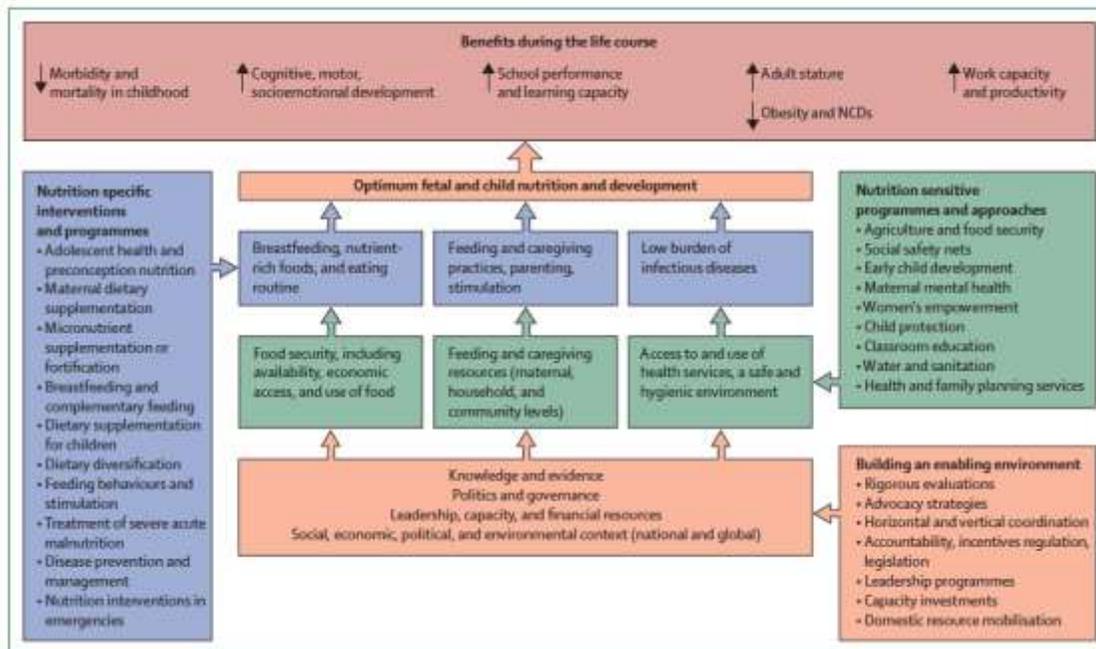
In addition to economic losses from undernutrition, rising burden of overweight and obesity will generate significant costs for health care systems and productivity losses due to absenteeism and associated illness. The economic burden of obesity worldwide has been estimated between 0.7-2.8% of a country's total health care costs, with obese individuals bearing medical costs that are 30% higher than those with normal weight (Withrow and Alter 2011).

4. What Works to Address Malnutrition: An Intervention Framework

The *Lancet* series' on maternal and child nutrition in 2008 and again in 2013 identified a package of evidence-based interventions which, when delivered at scale, have the ability to accelerate reductions in malnutrition (Figure 5). Both *nutrition-specific interventions* directed at immediate levels of causality (and mostly delivered through the health sector) (Bhutta et al. 2008; Bhutta et al. 2013) and *nutrition-sensitive interventions* directed at the underlying and basic levels of causality (Ruel et al. 2013) are needed to have

the greatest impact. The investments required to scale up these nutrition specific interventions have been identified by the Copenhagen Consensus⁷ as one of the most cost-effective development solutions (Copenhagen Consensus 2012).

Figure 5. Framework for actions to achieve optimum fetal and child nutrition and development



Source: Black et al. 2013

5. Global Momentum to Address Malnutrition

There is now strong global consensus regarding the essential role of nutrition in achieving sustainable development. A solid evidence base provides direction on why and how to intervene to improve nutrition, and has ignited action and strengthened coalitions dedicated to generating awareness, building commitments, and increasing accountability to reduce malnutrition (Box 1). Timor-Leste has endorsed the Sustainable Development Goals, with Target 2.2 focused on achieving the World Health Assembly targets for stunting, wasting, and addressing especially the needs of adolescent girls, women, and the elderly. This renewed international commitment to address malnutrition in all its forms can be leveraged to accelerate action to reduce malnutrition in Timor-Leste.

⁷ The Copenhagen Consensus brought together a panel of expert economists to address ten challenge areas in order to answer the question: *What are the best ways of advancing global welfare, and particularly the welfare of developing countries, illustrated by supposing that an additional US\$75.0 billion of resources were at their disposal over a four-year initial period?* Topping the list was the problem of Hunger and education, for which the panel recommended ‘bundled interventions to reduce undernutrition in pre-school children.’

BOX 1. Global Initiatives to Address Malnutrition

Sustainable Development Goals (SDGs)

Among the 17 Sustainable Development Goals (SDGs) adopted at the United Nations Sustainable Development Summit in September, 2015, SDG 2 “Zero Hunger” aims to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture.” Target 2.2 urges countries to, “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.”

The World Health Assembly (WHA) Global Nutrition Targets

In 2012, the 65th World Health Assembly endorsed six global nutrition targets (WHA Targets) to be reached by 2025. The WHA targets for stunting and wasting have been enshrined in the SDGs, and build upon the minimal aim of the MDGs (to reduce underweight as a measure of hunger). The WHA recommended that targets be set at the country level, and Timor-Leste was among the more than 110 countries to endorse this resolution.

World Health Assembly Targets
40 percent reduction in the global number of children under five who are stunted
50 percent reduction of anemia in women of reproductive aged
30 percent reduction of low birth weight
No increase in childhood overweight
Increase the rate of exclusive breastfeeding in the first six months up to at least 50 percent
Reduce and maintain childhood wasting to less than 5 percent

Source: WHO 2012a.

Scaling Up Nutrition (SUN)

Since its launch in 2010, 57 countries have joined the SUN movement and committed to engaging multiple stakeholders at multiple levels and scaling up action against malnutrition across sectors. SUN promotes increasing the coverage of evidence-based interventions with a proven impact on nutrition during the 1,000 days between conception and the child’s second birthday. Timor-Leste has not signed up to be a SUN country.

Zero Hunger Challenge

The Zero Hunger Challenge was launched in 2013 at the 69th session of the Economic and Social Commission of Asia and the Pacific (ESCAP). It is founded on five pillars of achievement: (1) zero stunted children, (2) 100% access to adequate food year round, (3) all food systems sustainable, (4) 100% increase in smallholder productivity and income, and (5) zero loss or waste of food. Although more food oriented than SUN, it proposes many overlapping outcomes: (i) the preparation of a National Action Plan through multi-stakeholder consultation; (ii) recognition of the 1,000-day window of opportunity; and (iii) the emphasis on sustainable nutrition-sensitive health care, water, sanitation, education and specific nutrition interventions that empower women.

Chapter 2. Nutrition Situation in Timor-Leste

CHAPTER 2 KEY MESSAGES

1. One in two Timorese children under the age of five is stunted, the third highest stunting prevalence in the world.
2. Stunting is a poorly understood concept and—due to very high prevalence—is largely invisible.
3. Micronutrient deficiencies are common among women and children. Nearly one in three (63.2%) children (6-59 months) and 2 in 5 women age 14-60 (39.5%) were anemic.
4. Child wasting declined from 18.6% in 2009-10 to 11% in 2013 and does not appear to be driven by poverty.
5. High undernutrition among women of reproductive age perpetuates an inter-generational cycle of malnutrition, with children at greater risk of low birth weight, anemia, and growth faltering.
6. A five-fold increase in overweight (Body-Mass Index (BMI) ≥ 25.0) among women was documented between the 2003 DHS and the 2014 STEPS survey.
7. Data gaps exist, particularly with respect to measurement of low birth weight, adolescent nutritional status, and overweight/obesity.

This section draws upon national nutrition data from a variety of nationally representative surveys (see Annex 1) to examine the nutrition situation in Timor-Leste, while also considering national trends over time and the country's status relative to global prevalence.⁸ Definitions of nutrition terminology are found in the glossary.

A. Anthropometry in infants and children (0-59 months of age)

According to WHO classifications, undernutrition in Timor-Leste is a critical public health problem (WHO 2012b). Table 3 shows the severity of stunting, wasting, and underweight by level of public health significance.

Table 3. Summary of national prevalence and public health significance of child (0-59 months of age) anthropometric status, Timor-Leste (2013)

Anthropometric Indicator	Prevalence	Public Health Significance ⁺
Stunting	50.2	Very High
Wasting	11.0	Serious
Underweight	37.7	High
Overweight	1.5	--

Source: TLFNS 2013. ⁺ Levels of public health significance as defined by WHO (2012b) cutoffs.

⁸ The main sources of data are the Demographic and Health Surveys from 2003 and 2009-10, as well as the 2013 Timor-Leste food and Nutrition Survey and the 2014 WHO STEPS survey. Anthropometric measures in the 2002 MICS and 2003 DHS reports are calculated against the CDC Growth Reference rather than the 2006 WHO Child Growth Standards. This report uses prevalence estimates from the UNICEF-WHO-World Bank Joint Malnutrition Estimates (JME), which have been recalculated against the WHO Growth Standards. Though the TLFNS was conducted in 2013, the official figures were not released in time for inclusion in the 2015 JME. In comparison tables and figures in this report, we use prevalence estimates from the 2013 TLFNS as the most recent available, rather than the 2009-10 estimates included in JME.

1. Stunting

Child stunting, an indicator of chronic undernutrition, is associated with significant adverse cognitive, development, and productivity consequences. Measured against international standards, stunting in Timor-Leste is a critical development challenge. Over half (50.2%) of all children under-five were stunted in 2013, well above the regional average of 11.3% for East Asia Pacific (UNICEF-WHO-The World Bank 2015). Furthermore, chronic undernutrition in Timor-Leste is among the highest in g7+ countries, despite having the highest GNI per capita (Table 4).

Table 4. Income and Undernutrition in g7+ Countries

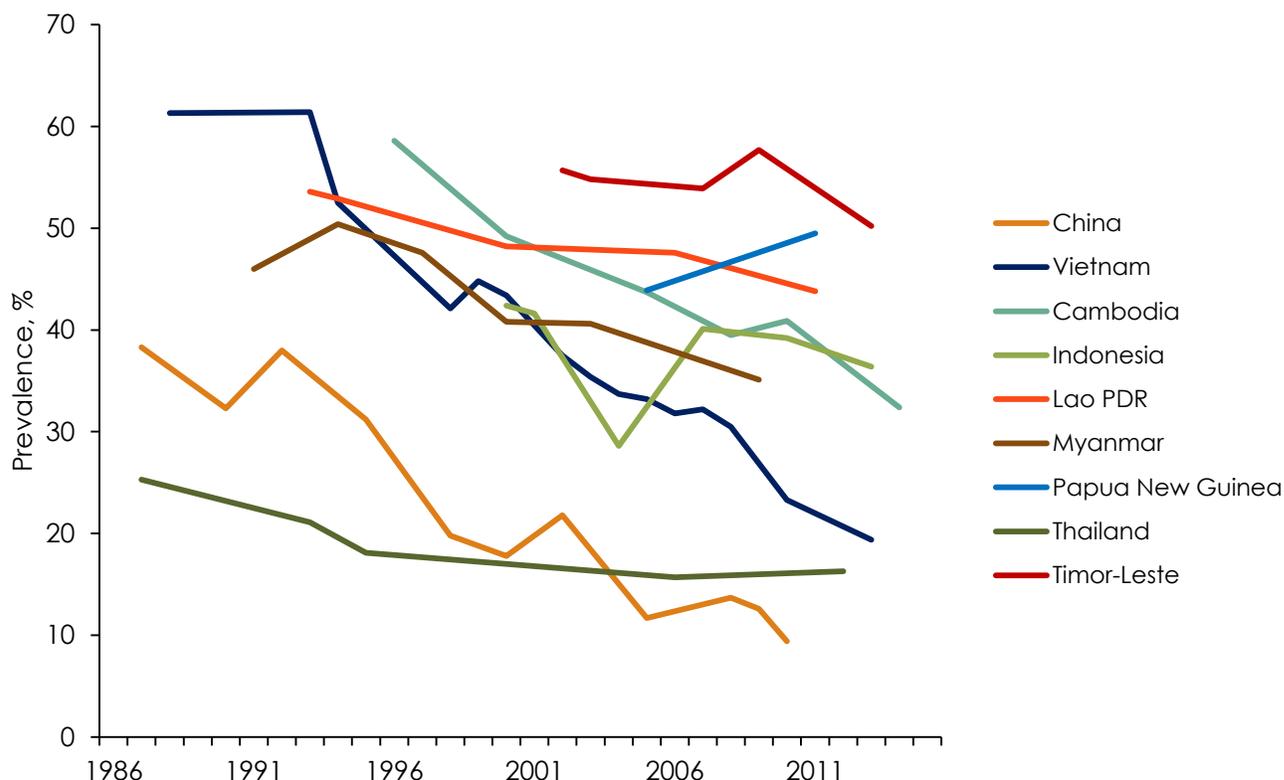
Country	GNI per capita (current US\$)	Stunting (%)	Wasting (%)
Timor-Leste	2680	50.2	11.0
Papua New Guinea	2240	49.5	14.3
Solomon Islands	1830	32.8	4.3
Sao Tome and Principe	1670	31.6	11.2
Cote d' Ivoire	1450	29.6	7.6
Yemen	1300	46.8	16.3
Chad	980	38.7	15.7
South Sudan	970	31.1	22.7
Haiti	820	21.9	5.2
Comoros	790	32.1	11.1
Sierra Leone	700	37.9	9.4
Afghanistan	680	40.9	9.5
Togo	570	27.5	6.7
Guinea-Bissau	550	27.6	6
Guinea	470	35.8	9.9
Democratic Republic of Congo	380	42.6	8.1
Liberia	370	32.1	5.6
Central African Republic	320	40.7	7.4
Burundi	270	57.5	6.1
Somalia		25.3	14.9

Notes: GNI=Gross national income per capita (Atlas method, current US\$) most recent for the period 2013-2014 from World Bank 2015a. Stunting and wasting among children under five from UNICEF-WHO-The World Bank 2015.

Timor-Leste has the highest prevalence of stunting in EAP (Figure 6) and, when the 2013 estimates are used, the third highest stunting prevalence globally (UNICEF-WHO-The World Bank 2015). Between 2002 and 2013, the average annual rate of reduction (AARR) in stunting was a mere 0.7%, less than half the current global average (2.1%).⁹ The global annual average rate of reduction in stunting was 2.1% per year between 1990 and 2011 and must accelerate to 3.9% in order to reach the WHO target of a 40% reduction in the number of children in the world who are stunted by 2025.

⁹ Authors' calculation based on WHO (2015a) methodology using 2002 as the baseline and 2013 as the endline. The AARR is used to monitor and evaluate the trend in stunting prevalence among children under five, to quantify the rate of change in prevalence from baseline to the current year.

Figure 6. Stunting among children under age 5, East Asia Pacific (1986-2014)

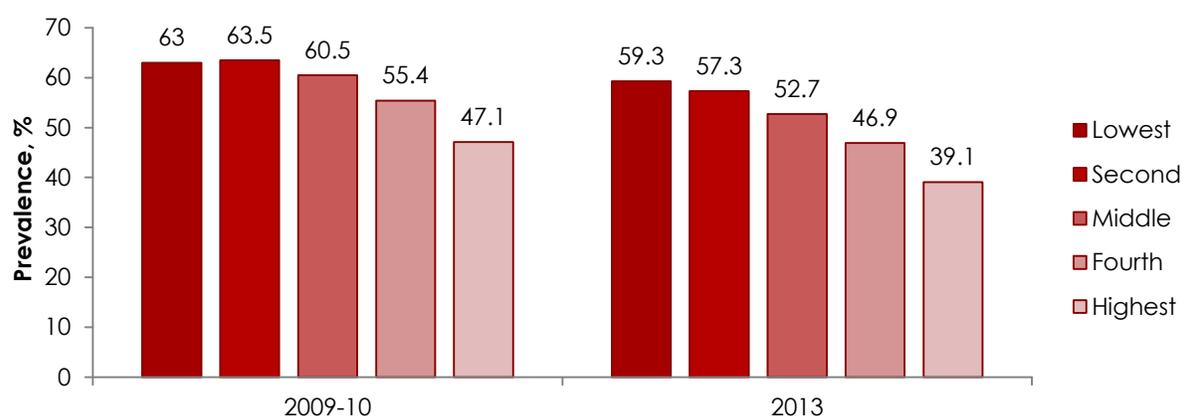


Source: World Bank 2015a with addition of TLFNS 2013 data for Timor-Leste.

Although some districts perform better than others, all districts have very high stunting prevalence according to WHO population cutoffs (See Annex 15). Stunting tends to be higher in those districts with higher poverty levels and a higher proportion of market orientation in agricultural production.

Impoverishment remains an underlying cause of stunting, with children from the wealthiest households experiencing the lowest stunting prevalence. The gap between the richest and the poorest has widened over time due to a greater reduction in stunting among the wealthiest households (Figure 7). However, poverty is only one of many contributing factors, as evidenced by nearly 40% stunting prevalence amongst the wealthiest households in 2013. Non-income determinants of stunting, including social, behavioral, and environmental factors contribute to the high prevalence of stunting among the wealthiest. Perhaps unsurprising given the concentration of rural poverty, stunting prevalence is higher in rural areas (54.5%) than urban (38.9%) (TLFNS 2013).

Figure 7. Child (<5) stunting in Timor-Leste by wealth quintile, 2009-10 and 2013



Source: DHS 2009-10; TLFNS 2013.

2. Underweight

Underweight was the MDG 1 indicator and, as an indicator, does not distinguish between children who are thin and children who are short with adequate weight (Gibson 2005). As such, underweight has been replaced by stunting as the main anthropometric indicator for children (Black et al. 2013). Nearly 38% of all children under-five were underweight. Underweight prevalence was slightly, but insignificantly, higher among boys (39.0%) than girls (36.3%) (TLFNS 2013).

3. Wasting

Wasting is an indicator of acute malnutrition and can be caused by insufficient food intake, infectious disease, or a combination of both factors. The WHO defines wasting as having a weight-for-height that is greater than two standard deviations below the growth reference for weight-for-height. Severe wasting, i.e. having a weight-for-height Z-score that is less than three or more times lower than the WHO growth reference, is one of three criteria¹⁰ used to diagnose severe acute malnutrition (SAM) in children. In addition to increased susceptibility to infections, moderately wasted children are 3 times, and severely wasted children are 11 times more likely to die than healthy children on average (Khara et al. 2014; McDonald et al. 2013).

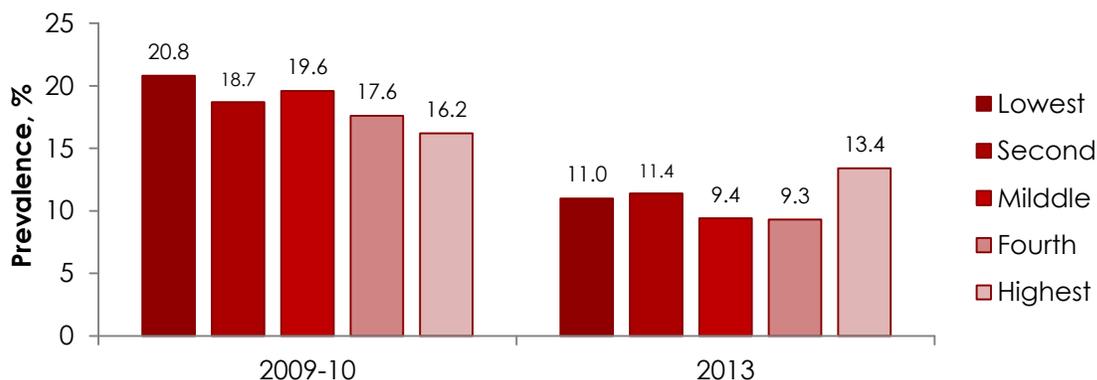
Among children age 0-59 months, total wasting prevalence (WHZ <-2) declined from 18.6% in 2009-10 to 11% in 2013 (Figure 8). Severe wasting declined considerably between 2010 and 2013, from 7.0% to 1.9%, while moderate wasting decreased from 18.6% to 9.1%.¹¹ Wasting was higher among urban children (14.3%) as compared to rural (9.8%) and elevated to levels seen in emergency conditions in Covalima (17.4%) and Oecusse (19.8%). Perhaps due to the concentration of wasting in urban areas, wasting was higher among wealthier children than among the poorest: 11.0% of children in the lowest wealth quintile were wasted as compared with 13.4% of children in the highest wealth quintile.¹² The absence of a strong association between wasting and poverty suggests that factors related to infant and young child feeding, hygiene, and caregiving (rather than poverty-driven food shortages) may be driving the prevalence of wasting.

¹⁰ The other criteria are: having a mid-upper arm circumference (MUAC) less than 115mm and or/bilateral pitting edema.

¹¹ SAM defined as WHZ <-3; MAM defined as -3 ≤ WHZ <-2.

¹² This was not, however, a statistically significant difference.

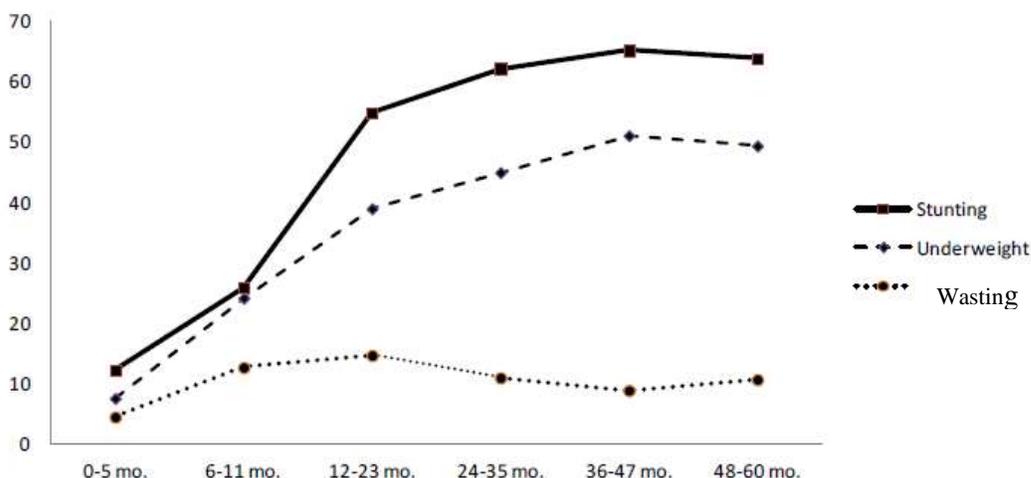
Figure 8. Child (<5) wasting in Timor-Leste by wealth quintile, 2009-10 and 2013



Source: DHS 2009-10. TLFNS 2013.

Growth faltering in length and weight generally accumulates across childhood, as suggested by rising prevalence of stunting among older age children (Figure 9). The greatest increase in stunting prevalence occurs between the 6-11 months age group and the 12-23 months age group as complementary foods are introduced and children begin to explore their environments. On the other hand, wasting prevalence is most common among children between one and two years of age and decreases in prevalence beyond this point (TLFNS 2013).

Figure 9. Prevalence of child (<5) stunting, wasting, and underweight in Timor-Leste by age group, 2013

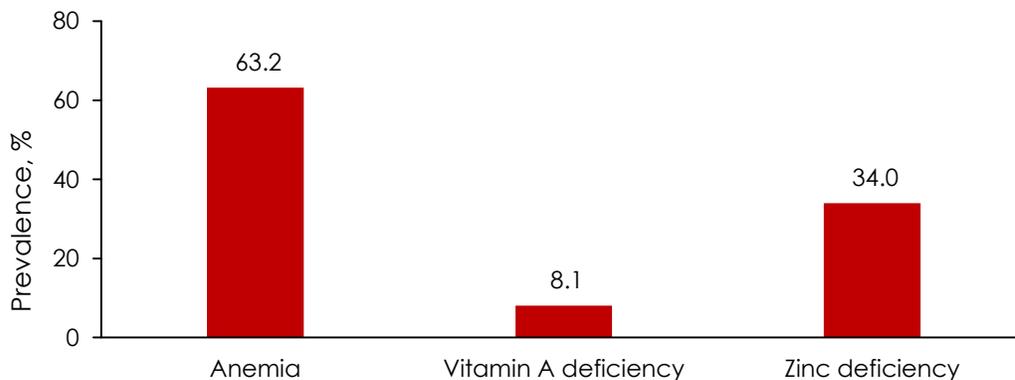


Source: TLFNS 2013

B. Micronutrient Status Infants and Children (6-59 months of age)

The biochemical analyses from the TLFNS 2013 provide the first nationally representative survey of zinc and iodine deficiencies and adds to the Timor-Leste literature for vitamin A deficiency and anemia¹³ among children. Figure 10 summarizes these results.

Figure 10. Summary of national prevalence of child (age 6-59 months) micronutrient status, Timor-Leste (2013)



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.

1. Vitamin A Deficiency

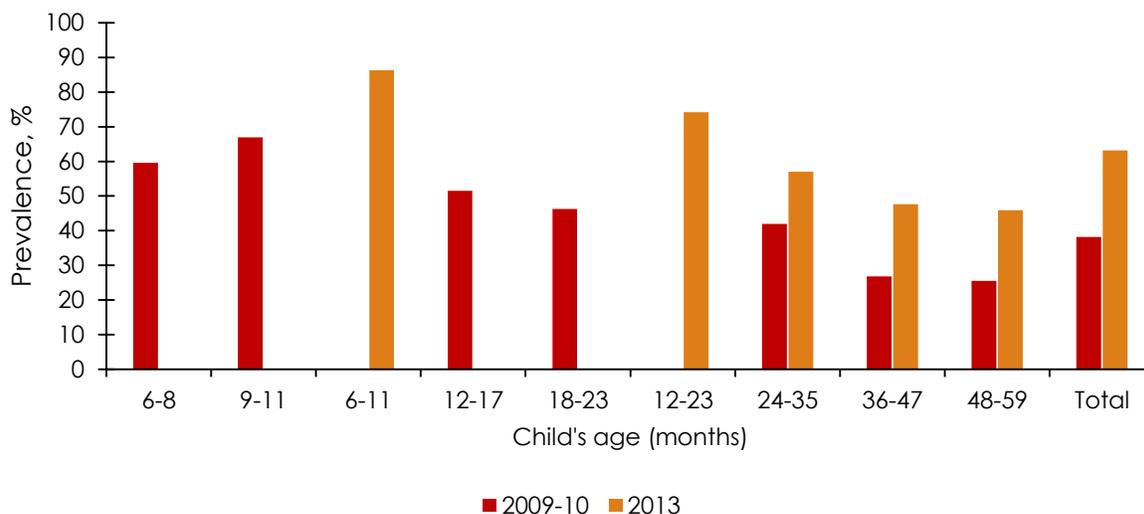
Vitamin A deficiency (VAD) results from insufficient dietary consumption of vitamin A-rich foods (flesh foods, liver, green leafy vegetables, etc.) and is often exacerbated by illness (WHO 2012b). VAD is significantly associated with child morbidity and mortality, poor eye health, and blindness (Black et al. 2008). VAD (serum retinol <0.70 umol/l) has receded from a *severe* to a *mild* public health problem according to WHO cutoffs (2012b). Prevalence declined from 45.8% in a sub-sample of the 2003 DHS to 8.1% in 2013 (DHS 2003; TLFNS 2013).

2. Anemia and Iron-Deficiency Anemia

Anemia is characterized by reduction in red blood cell volume and a decrease in the concentration of hemoglobin in the blood, resulting in decreased oxygen carrying capacity. Anemia has multiple causes, including congenital malformations, helminth and parasitic infections, co-existing micronutrient deficiencies (e.g. B-vitamins) as well as iron deficiency. Infants can be born with low iron stores due to low birth weight, preterm birth, or being born to anemic mothers (Scholl 2011). Whereas iron stores in healthy infants can typically last for six months, anemia can emerge as early as 3 months of age in infants born with low iron stores (Yip and Dallman 1996). Older infants and young children can also become anemic when they are not fed sufficient iron-rich complementary foods after six months. Globally, iron deficiency anemia tends to peak at 18 months of age and then decline as iron needs decrease (Black et al. 2008).

¹³ This paper reports the elevation-adjusted anemia data from the TLFNS 2013.

Figure 11. Prevalence of anemia in children (age 6-59 months), Timor-Leste



Source: DHS 2009-10; TLFNS 2013. Anemia defined as hemoglobin <110 g/L.

In Timor-Leste, there was a considerable increase in anemia among children (age 6-59 months) between 2009-2010 (38.2%) and 2013 (63.2%). There is no clear understanding of the cause of the rise in anemia prevalence between the two survey periods, though it is not currently attributed to methodological differences. Relative to other countries, anemia prevalence appears to peak at a younger age among children in Timor-Leste, with the highest prevalence among the 6-11 month age group (Figure 11) (TLFNS 2013). There are no significant differences in anemia among children based upon sex, area of residence, or household wealth. Malaria and helminth infections were not measured in the survey.

3. Zinc Deficiency

Zinc plays an important role in protein synthesis, cell function, and immunity. Consequently, deficiency is associated with morbidity, mortality, and a small negative effect on child linear growth (Black et al. 2013). In 2013, 34% of Timorese children were zinc deficient (TLFNS 2013).¹⁴

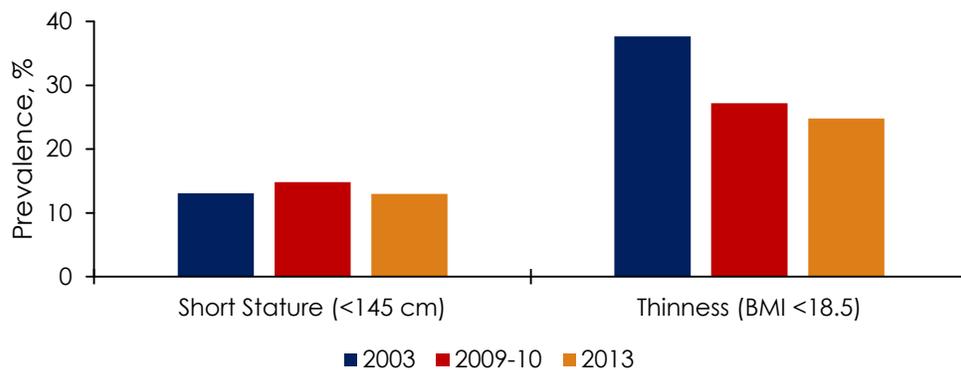
C. Undernutrition in Women

Maternal nutritional status is a critical determinant of a mother's own health as well as that of her offspring. Figure 12 summarizes trends in the anthropometric status of women of reproductive age (WRA).¹⁵ Short stature has remained unchanged over the past decade, whereas maternal underweight has seen a steady decline.

¹⁴ Zinc deficiency can be directly measured through serum concentration; however, serum zinc is not commonly measured and the WHO does not yet have cutoffs for population prevalence of zinc deficiency. However, the International Zinc Nutrition Consultative Group suggests a lower cutoff of <8.7 umol/L for serum zinc for non-fasting children under age 10 with afternoon sample collection (IZiNCG 2012).

¹⁵ Women of reproductive age defined 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.

Figure 12. Trends in anthropometric measurements among women of reproductive age* in Timor-Leste, 2003 to 2013



Source: DHS 2003; DHS 2009-10; TLFNS 2013. *Women of reproductive age defined 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. BMI: Body mass index.

1. Short stature (height <145 cm)

Short stature (<145 cm) among women results from both poor nourishment and environmental effects on growth (Black et al. 2013). Short stature among mothers increases risk of maternal death (Black et al. 2008) and of perpetuating the cycle of malnutrition through increased risk of low birth weight and infants being born too Small for their Gestational Age (SGA). There is no universal population cut-off for public health significance, however Timor-Leste has prevalence of maternal short stature (13.0%) comparable to many South Asian countries.

2. Underweight (Thinness)

Thinness, or low maternal BMI (BMI<18.5 kg/m²) among mothers also increases risk of LBW and SGA among offspring. In 2013, nearly one quarter (24.8%) of non-pregnant mothers in Timor-Leste were underweight (TLFNS 2013), representing *high* prevalence or a *serious situation* (WHO 2012b). Underweight was most pronounced among young mothers: 41.8% of mothers under age 20 were underweight, considered to be a *critical* situation among this sub-population.

3. Vitamin A Deficiency

VAD among women can cause night blindness, especially during pregnancy. The TLFNS did not ask women about clinical vitamin A deficiency (e.g. night blindness) but assessed sub-clinical VAD (serum retinol <1.05 umol/L). In Timor-Leste, 13.5% of women are vitamin A deficient.¹⁶

4. Anemia and Iron-Deficiency Anemia

Iron-deficiency anemia among adults is largely caused by low consumption of iron-rich foods and causes decreased productivity for both men and women. However, women have elevated risk of anemia due to their loss of blood during menstruation and the high iron demands of pregnancy (Black et al. 2013). Anemia during pregnancy increases the risk of maternal and perinatal mortality. Short inter-pregnancy intervals are

¹⁶ There are no population cutoffs to assess the public health significance of sub-clinical vitamin A deficiency among women.

associated with higher probability of anemia and stillbirths (Conde-Agudelo et al. 2012). It is suggested that anemia during pregnancy may increase the risk of low iron stores among the infant, independent of gestational age and birth weight (Scholl 2011). Anemia among WRA increased from 21.3% in 2009-10 to 39.5% in 2013 and is classified as a moderate public health problem (WHO 2012b). In 2013, anemia was highest (42.6%) among women in the 35-45 years age group and more pronounced among women living in urban (46.7%) as compared to rural (36.6%) areas. The greatest anemia prevalence was also seen among women in the highest wealth quintile (45.7%) (TLFNS 2013).

5. Iodine Deficiency

Iodine deficiency disorders (IDD) are a leading cause of preventable cognitive impairment globally. Maternal iodine deficiency, in particular, is a concern given its adverse consequences for fetal development and child intelligence quotient (IQ). Children born to iodine deficient mothers experience average deficits of 12.5-13.5 IQ points (Bleichrodt and Born 1994; Qian et al 2005). The TLFNS reports prevalence of iodine deficiency (urinary iodine excretion (UIE))¹⁷ <100 mcg/dL) among non-pregnant mothers of 26.7% and a median urinary iodine concentration of 170 ug/L among non-pregnant, non-lactating women.¹⁸

D. Overweight/Obesity in Children and Adults

Child overweight and obesity is a growing concern in the EAP region. Child overweight increases risk of overweight in adulthood and can trigger the early onset of NCDs. Though the prevalence has doubled since 2009-10, child overweight in Timor-Leste remains low (1.5%), and considerably below neighboring countries such as Papua New Guinea (13.8%) and Indonesia (11.5%) (UNICEF-WHO-World Bank 2015).

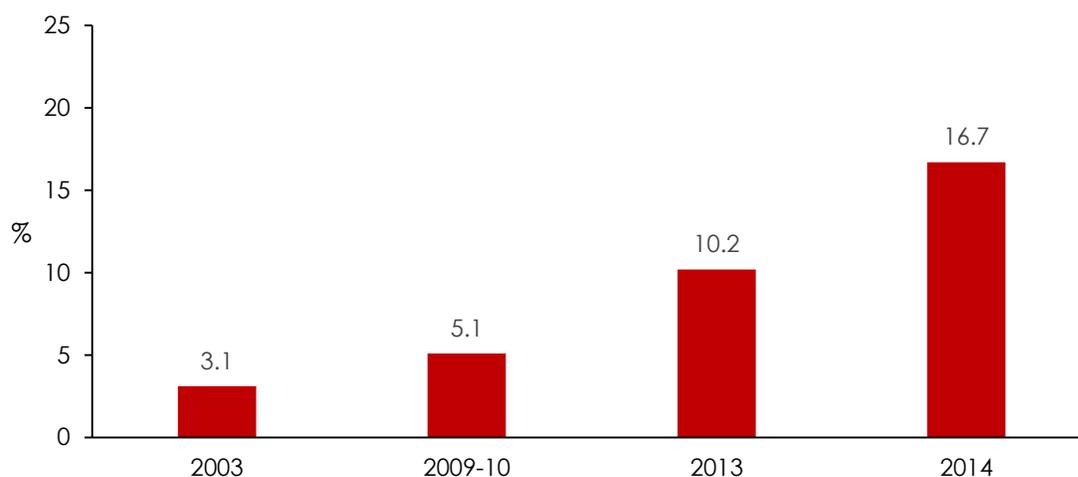
Overweight (BMI \geq 25.0) among adults is a growing concern globally as well as in Timor-Leste. In addition to increasing risk of diet-related NCDs diseases, obesity during pregnancy increases risk of gestational diabetes, maternal death and hemorrhage, birth asphyxia, and newborn mortality. In Timor-Leste, 11.2% of the adult population (18-69) was overweight with the prevalence higher in females (16.7%)¹⁹ than males (8.2%) (WHO 2015b). There was very little evidence of progression to obesity (0.9% prevalence) (WHO 2015). The overweight prevalence among mothers in Dili (19.8%) was nearly twice the national average (10.2%). The prevalence of overweight among women remains below neighboring Indonesia (25.3%) and Papua New Guinea (50.3%), yet the more than five-fold increase in overweight among women from 2003-2014 is concerning (Figure 13). It is possible that these rates of overweight are an underestimate of the true population risk of non-communicable disease. This is in part due to a WHO recommendation to lower public health action points for overweight/obesity among Asian populations given the higher percentage of body fat at lower BMIs (and thus higher risk of disease such as diabetes and heart disease) (WHO 2004).

¹⁷ UIE is an indicator of population status, and it should not be used to assess individual status.

¹⁸ The 'adequate' range for lactating women is urinary iodine \geq 100 ug/L (WHO 2013a).

¹⁹ The 2014 STEPs survey results demonstrate a large increase in overweight over the 2013 estimate in the TLFNS. This may in part due to survey inclusion criteria, with TLFNS sampling only mothers and including younger females.

Figure 13. Prevalence of overweight (body mass index >25.0) 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.

The STEPs survey reports high rates of other components of the *metabolic syndrome*: 28.0% of women and 45.3% of men have high blood pressure.²⁰ Nearly all (97.3%) of these individuals were not currently on medication for their elevated blood pressure. Furthermore, 21.0% of the adult population had elevated total cholesterol²¹, with the prevalence higher among women, while only 4.1% of the total population has impaired fasting glycaemia (WHO 2015b).²²

E. Discussion of Gaps and Opportunities

Despite experiencing rapid poverty reduction since 2007, Timor-Leste has one of the highest stunting rates in the world, and wasting, anemia, and iodine deficiency remain a concern. Acute malnutrition rates among children under five are similar to other countries experiencing conflict and emergency situations, but the burden of overweight among adults (especially females) is rapidly rising. Still, high malnutrition (underweight, anemia) among women contributes to low birth weight, anemia, and growth faltering among infants and young children and perpetuates an inter-generational cycle of malnutrition.

Stunting is arguably the most salient nutrition issue from a global public health nutrition perspective, though it remains a somewhat sensitive and poorly understood concept in Timor-Leste. Stunting is not commonly recognized as a form of malnutrition and is instead understood to be a genetic issue. There is very limited understanding of what optimal child growth ‘looks like,’ nor awareness of the WHO Multicenter Growth Reference Study’s (MGRS) pivotal finding that “when health and key environmental needs are met, the world’s children grow very similarly (de Onis 2006). Further confusion arises from the use of language: *krekas*, the common term for malnutrition in Timor-Leste, refers only to wasting. Stunting, on the other hand, does not translate well into Tetum: *badak* signifies general shortness; *isin kee* signifies small body.

²⁰ Raised blood pressure (BP) defined as (systolic BP \geq 140 and/or diastolic BP \geq 90 mmHg or currently on medication for raised BP.

²¹ Raised total cholesterol defined as total cholesterol \geq 5.0 mmol/L or \geq 190 mg/dl or currently on medication for raised cholesterol.

²² Impaired fasting glycaemia as defined below capillary whole blood value \geq 5.6 mmol/L (100 mg/dl) and $<$ 6.1 mmol/L (110 mg/dl).

The MOH has recently introduced the term *raes badak* to denote stunting, though this new term is not widely recognized among institutional partners and the general public, alike.

Through the review, several notable gaps emerged:

- Very few children are weighed at birth, and low birth weight is an indicator of the in utero origins of stunting.
- There is very limited evidence on adolescent nutrition in Timor-Leste. The TLFNS only collected data on women as young as age 14 *if* they were mothers, and as such there is a considerable gap in data availability on young, non-pregnant women of reproductive age. Moreover, there is no data on overweight among adolescents, as the overweight/obesity data is currently limited only to young child and adult samples from health and nutrition surveys.
- Despite the alarming increase in anemia prevalence between 2009 and 2013, there has not been a study to identify the etiology and potential causes of anemia in women and children.
- A limited number of indicators are collected for nutrition surveillance purposes through the MOH. However, these are of limited quality, and generally only include underweight and wasting (as identified mid-upper arm circumference) as indicators of child nutritional status. The revised growth card (LISIO) will monitor height and age, including other useful measurements.

Chapter 3. Determinants of Malnutrition in Timor-Leste

CHAPTER 3 KEY MESSAGES

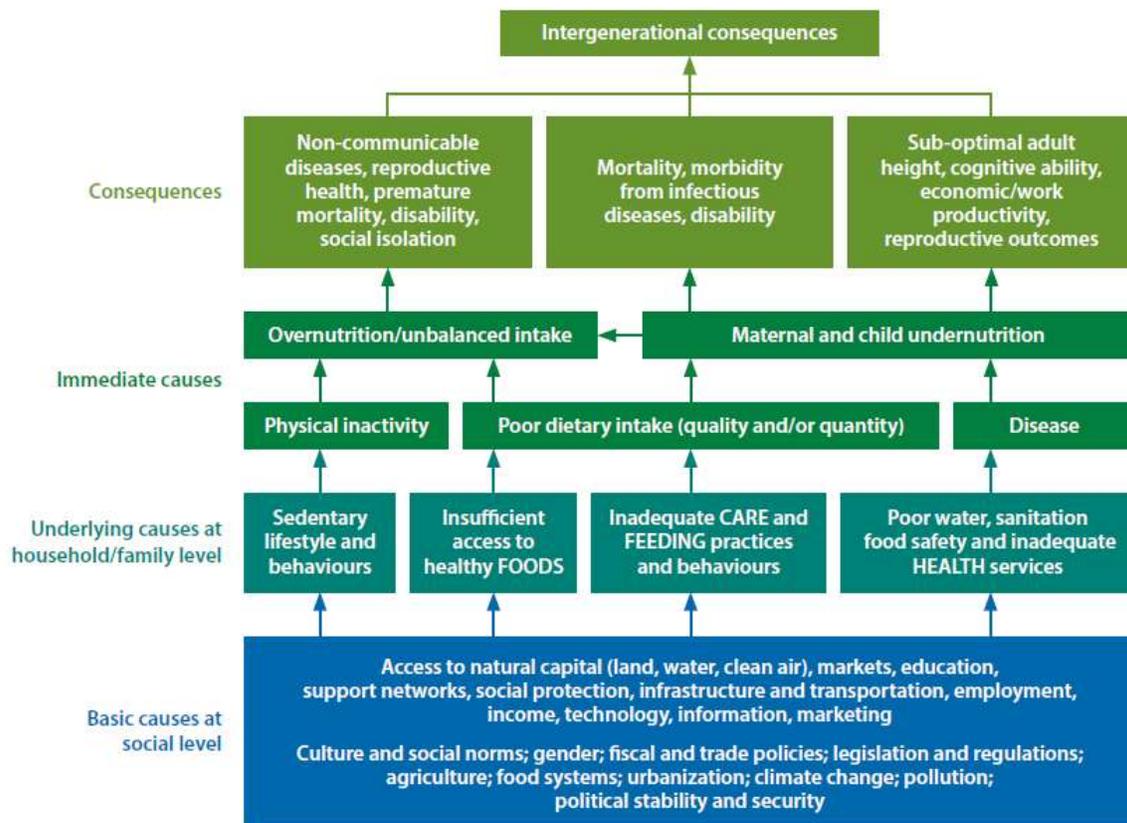
1. With very high prevalence of malnutrition, all immediate and underlying causes of malnutrition appear to be present and significantly associated with stunting in Timor-Leste.
2. There are no known quantitative surveys of dietary intake in the country.
3. Low continued breastfeeding (among children 6-23 months) and dietary diversity are key constraining factors in achieving acceptable diets for infants and young children.
4. Early age at first birth, low contraceptive prevalence, and high fertility are risk factors for anemia and low birth weight and perpetuate a cycle of malnutrition across generations.
5. Timorese women are exposed to multiple forms of disempowerment and toxic stress which can undermine nutrient absorption, impair mental health and caregiving practices, and stunt brain development (when also experienced by children).
6. Poor service delivery quality, intermittent facility readiness, and physical remoteness limit consumption of essential health and nutrition services, including vaccination, ante-/post-natal care, and contraception.
7. Open defecation and suboptimal hygiene practices increase exposure to infectious disease and may limit nutrient absorption and contribute to growth faltering.
8. Low demand, as well as limited production and market availability of animal source foods contributes to low consumption.
9. Households prioritize purchases of staple food (especially rice) and will sell nutrient-rich foods to be able to do so.
10. The very high prevalence of stunting makes Timor-Leste an outlier relative to other countries at similar levels of macroeconomic development.
11. Increasing consumption of packaged and processed convenience foods may be driving the rise in overweight and diet-related NCD risk factors.

A. Framework for Understanding Malnutrition in Timor-Leste

The United Nations Children's Fund (UNICEF) conceptual framework for maternal and child undernutrition is an internationally recognized framework describing the immediate, underlying, and basic determinants of malnutrition.²³ Recently, the framework has been updated to incorporate determinants of overweight/obesity (Figure 14). The following sections draw upon the UNICEF and Lancet (2013) frameworks (Figure 5, above) to review available data on the immediate, basic, and underlying determinants of undernutrition in Timor-Leste.

²³ Individually, each determining factor is necessary, but not sufficient, to ensure adequate nutrition at the individual level. Actions at each level are to be identified based on the given context through assessment and analysis of each country's unique situation. The framework is not intended to offer a pre-packaged set of technical interventions; rather it promotes a method for countries to assess and analyze their malnutrition situation and identify appropriate and realistic interventions, ordering them in a logical sequence reflecting the country-specific context.

Figure 14. Conceptual framework for the determinants of maternal and child undernutrition



Source: ASEAN/UNICEF/WHO 2016.

B. Determinants of Undernutrition

1. Immediate Causes: Nutrient Intake and Disease

Insufficient, or inappropriate nutrient intake is an immediate cause of child undernutrition.²⁴ A number of factors contribute to insufficient nutrient intake among Timorese children, including: low exclusive breastfeeding, low dietary diversity (particularly during the lean season and in rural areas), early weaning, and low meal frequency.

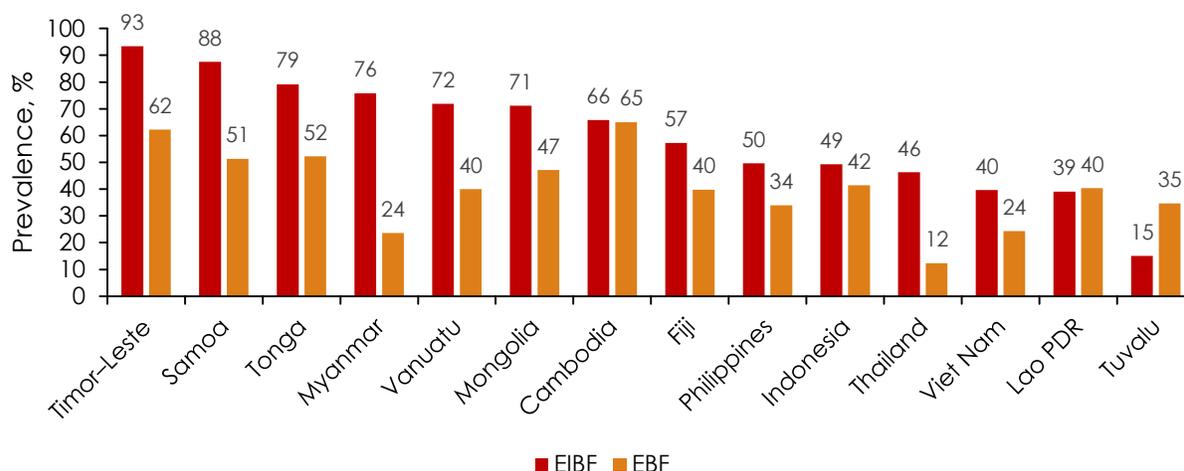
1.1. Breastfeeding

Breastfeeding forms the foundation of early life nutrition. The WHO recommends initiating breastfeeding within one hour of birth, followed by exclusive breastfeeding (EBF) through six months in order to reduce the risk of infection and ensure optimum nutrition (WHO 2013b). Rates of early initiation of breastfeeding (EIBF) and EBF have risen rapidly since 2003 (Table 5), with Timor-Leste having the highest prevalence

²⁴ As the literature review did not reveal any quantitative nutrient intake data for mothers, infants, or young children in Timor-Leste, here we consider maternal, infant, and young child dietary practices as a proxy for nutrient intake, focusing (not exclusively) on quantitative data from the TLFNS and DHS. Annex 2 summarizes additional qualitative data related to nutrition knowledge, attitudes, and practices.

of EIBF in EAP (Figure 15). EIBF is important as early skin-to-skin contact increases duration of breastfeeding and mother child bonding (Moore et al. 2009).

Figure 15. Early initiation of breastfeeding (EIBF) and exclusive breastfeeding among infants <6 months, East Asia and Pacific countries



Source: UNICEF 2015a.

Notes: EIBF=Early initiation of breastfeeding. EBF=Exclusive breastfeeding.

Timorese infants are often breastfed at least predominantly—if not exclusively—for the first three to four months (Table 5). There is considerable variability in EBF across districts, but there is little influence of household wealth on breastfeeding status (TLFNS 2013). The mean duration of EBF was 2.95 months, and 37.6% of 5-month old children were exclusively breastfed. Exclusive breastfeeding through six months is recommended to improve infant and maternal health, reducing the infant’s exposure to disease and gastrointestinal illness as well as suppressing the mother’s fertility (Kramer and Kakuma 2001). Women generally report consistent knowledge that infants should be exclusively breastfed without any solid food for the first six months, and that breastmilk was more nutritious and offered immunity to the baby (Ba Futuru and Rain Barrel Communications 2016).

Table 5. Indicators of breastfeeding practices, 2003-2013, Timor-Leste

	2003	2009-10	2013
Early Initiation of Breastfeeding*	46.9	81.7	93.4
Exclusive Breastfeeding (infants <6 months)	30.7	51.5	62.3
Received a pre-lacteal feed**	10.6	12.7	7.9
Continued breastfeeding (12-15 months)	--	70.6	73.9
Continued breastfeeding (20-23 months)	--	33.4	38.7

Sources: DHS 2003; DHS 2009-10; TLFNS 2013. Notes: *Defined as initiating breastfeeding within one hour of birth; ** The 2009-10 DHS refers to feeding a child anything other than breastmilk in the first three days (early neonatal feeding) rather than pre-lacteal feeding.

Providing food and liquids other than breastmilk during the first six months impedes optimal breastfeeding practices. Pre-lacteal and early neonatal feeding²⁵ are sometimes practiced in Timor-Leste, with roughly one in ten infants receiving anything other than breastmilk in the first three days of life. There are reports that colostrum is traditionally discarded and newborns may be fed sugar water while the first milk is expressed. Focus group discussions in five districts²⁶ revealed that immediate breastfeeding and feeding of colostrum are not traditional among many Timorese (TAIS and MOH 2007). However, health and nutrition education programs have focused on delivering messages around the importance of feeding the first milk, and there is evidence that this practice is changing (CRS and Monash University 2015). Barriers reported to feeding colostrum include: the belief that breastmilk does not start straight away, or may not come until the baby has a name suitable to the ancestors; and the belief that colostrum is dirty or bad for the baby (TAIS and MOH 2007).

Continued breastfeeding beyond six months promotes the health of both mother and child. Early weaning, on the other hand, contributes to poor dietary adequacy and nutrient intake among Timorese infants and young children. The 2009-10 DHS reported that one third (32.4%) of children age 12-17 months were not breastfeeding at all. Breastfeeding rates often decline as women go back to work. Women working in the informal sector do not have any maternity protection, though the National Labor Law includes paid maternity leave for 12 weeks for women working in the formal sector. However, there is no allowance for breaks or work site accommodation for breastfeeding women at work. For women working in the informal sector or rural areas, children are often left at home with the mother in-law or another caretaker.

Factors which contribute to early weaning include: perceptions of insufficient breastmilk production; the belief that breastfeeding during pregnancy and illness may harm the mother and the fetus; and that breastmilk can ‘go cold’ when mothers are away for a whole day. Mothers and grandmothers may believe that breastfeeding is not enough for the baby, and that a child is ‘old enough’ to stop breastfeeding by ten months of age (Osei et al. 2014; CRS and Monash University 2015). These and other perceptions can result in the early cessation of breastfeeding. Non-breastfed infants and young children do not commonly consume other milk feeds (infant formula, milk, or yogurt) twice per day (TLFNS 2013). Without additional milk consumption, early weaning is particularly detrimental to Infant Young Child (IYC) nutrient intake (Brewster 2014). There is increasing market penetration of Indonesian formula milk and mothers would purchase these products for their infants if they had more money (Osei et al 2014).

1.2. Complementary Feeding

According to the TLFNS, minimum acceptable diet²⁷ among children age 6-23 months is extremely low (17.6%) and particularly alarming among non-breastfed children: only 3.5% achieved the target minimum acceptable diet. Overall, low minimum acceptable diet is due less in part to meal frequency than low dietary diversity: only 27.5% of children 6-23 months consumed at least four groups from out of seven during the previous day, with staple foods and vitamin A rich fruits and vegetables being the most commonly consumed foods (Figure 16). A plain, watery rice porridge (*sosoro*) is often the first complementary food to be introduced and is rarely mixed with other ingredients (typically only vegetables). Despite having widespread knowledge of the health benefits of feeding children a variety of foods, over 60% of households

²⁵ See definitions in glossary

²⁶ Manatutu, Dili, Manufahi, Baucau, and Aileu

²⁷ *Minimum acceptable diet (MAD)* is a standard WHO (2010) indicator for Infant and Young Child Feeding. MAD has two components: minimum dietary diversity and minimum meal frequency. *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. *Minimum meal frequency* is the proportion of breastfed and non-breastfed children 6-23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more (where the number of times varies depending on the child’s age).

reported feeding children a meal with only a starch “every day” or “several times a week (Ba Futuru and Rain Barrel Communications 2016).

Animal source foods (eggs, milk and other dairy, flesh foods) are critical sources of essential fats, protein, vitamins, and minerals. Low consumption of meat, fish, and/or poultry is the main cause of iron-deficiency anemia, especially in poor people (Black et al. 2008; Bhargava et al. 2001). However, the 2009-10 DHS notes that only 29% of breastfed children 6-8 months old consume flesh foods or eggs (NSD and ICF Macro 2010). A number of factors drive the low consumption of animal source foods among infants and young children, including: (a) insufficient availability and affordability of these foods; (b) low demand for animal source foods, driven by poor knowledge of appropriate feeding for infants and young children, in general; and (c) cultural practices which result in sporadic consumption of animal source foods. Generally, financial resources are reserved for purchasing animal foods for consumption during cultural ceremonies -- the only time women may consume flesh foods during a given month is during their participation in these rituals. According to the TLFNS, almost 90% of households reported raising chickens, yet eggs and meat are not often given to children, and it is not uncommon for households to prioritize the sale—rather than home consumption—of these animal products.

Figure 16. Dietary diversity among Timorese infants and young children 6-23 months of age, 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

0-24% 25-49% 50-74% ≥75%

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.

1.3. Maternal Nutrient Intake

A woman's own nutritional status at the time of conception, throughout pregnancy, and during lactation can affect the intergenerational transfer of malnutrition. Immediate, *in utero* causes of undernutrition in offspring include inadequate maternal dietary intake of protein and micronutrients early in pregnancy. The Timorese diet is rich in starches and low in iron and protein-rich animal source foods; among the foods commonly consumed by mothers are: corn, peanuts, mung beans, rice, cassava, pumpkin leave, vegetables, rice porridge and ginger (TAIS and MOH 2007). In a modified, non-quantitative seven-day food frequency questionnaire, mothers of children under two reported consuming flesh foods fewer than one day per week, with eggs (1.1 days) and legumes (1.5 days) consumed slightly more frequently (CRS and Monash University 2015). In addition to poor micronutrient intake, there is concern of insufficient caloric intake among pregnant women, particularly as caloric requirements increase during the second and third trimesters.²⁸ Key factors underlying maternal insufficiency to meet the nutrient demands of pregnancy include: (i) competition for nutrients between mother and fetus in the case of adolescent pregnancy (WHO 2007); (ii) the high energy demands of women in agriculture; (iii) the general depletion of micro- and macronutrients stores in women due to the high number of pregnancies too closely spaced; and (iv) any concurrent infections during pregnancy.

1.4. Infectious Disease

Undernutrition and illness occur in a negative synergistic cycle: undernutrition suppresses the body's ability to fight infections while infections, reduce appetite, increase nutrient requirements, and impair nutrient absorption. Diarrhea decreases nutrient absorption, reduces appetite, increases risk of dehydration. It is therefore associated with both acute malnutrition and stunting. According to the 2013 TLFNS, nearly half of children age 0-59 months were reported to have experienced any sickness in the previous two weeks, with 16.7% reporting diarrhea. Sickness was more commonly reported among urban children (50.7%) than rural (46.5%), suggestive of a possible association between illness and wasting in urban areas.

Proper care and feeding during diarrhea contributes to recovery, while suboptimal feeding and treatment can result in increased severity and duration of diarrhea. According to the TLFNS, only 23.8% of children experiencing diarrhea in the two weeks prior to the survey received proper feeding during illness.²⁹ Furthermore, Timorese mothers sometimes interpret diarrhea as a normal part of childhood, thus limiting timely and appropriate care-seeking for diarrheal episodes (Mizumoto et al 2015). Only 50% of caregivers report that they would take their child to the clinic immediately if the child has diarrhea, compared to only 10% reporting the same if the child experienced bloody stool (Ba Futuru and Rain Barrel Communication 2016). Poor access to safe water and improved sanitation, as well as suboptimal hygiene practices (see Health Services and Health Environment, below) likely contribute to poor nutrient absorption and increased infectious disease.

Among women and children, malaria and helminth infections can contribute to elevated levels of anemia. Malaria transmission incidence is less than 1%, while there has been a 97% reduction in malaria cases and 93% reduction in malaria deaths between 2006 and 2012. According to the 2015 World Malaria Report, two thirds of the population live in low-transmission or malaria free zones (Table 6) (WHO 2015c). Malaria in pregnancy is associated with growth restriction *in utero* and increases risk of infant mortality.

²⁸ There has not been a quantitative survey to assess the caloric sufficiency of diets of Timorese women during pregnancy.

²⁹ Including maintenance of normal breastfeeding, additional fluids, and the same quantity of complementary foods.

Table 6. Epidemiological profile of malaria in Timor-Leste

Population	2014 Population (#)	%
High transmission (>1 case per 1000 population)	391 000	34
Low transmission (0-1 cases per 1000 population)	650 000	56
Malaria free (0 cases)	119 000	10
Total	1 160 000	

Source: WHO 2015c.

Soil-transmitted helminth (STH) infections, such as hookworm and roundworm contribute to undernutrition and increased risk of anemia due to blood-loss, impaired nutrient absorption, and decreased appetite. Though there are no national-level estimates of these parasitic infections, an on-going randomized community trial in Manufahi reveals endemic STH prevalence. Nearly three quarters (72%) of individuals had an STH infection. *N. Americanus* was the most common parasite, causing 62% of all infections (Campbell et al. *forthcoming*).

1.5. Aflatoxin Exposure

Aflatoxin exposure is very high in Timor-Leste and may be a contributing factor to stunted growth. Aflatoxin is a naturally occurring byproduct of the *Aspergillus* fungi which grows on commonly produced staple food commodities if not processed and stored properly, particularly maize and groundnuts (peanuts). While aflatoxin exposure is a known risk factor for liver cancer and can be lethal to humans in large doses, the impact of chronic, low-dose exposure over time is not well understood. It is hypothesized that long-term, low-dose aflatoxin exposure may suppress the immune system and increase infection or alter nutrient absorption, ultimately leading to growth faltering among young children (Smith et al 2012).³⁰ In 2013, detectable aflatoxin exposure levels³¹ in Timorese children (6-59 months of age) and non-pregnant mothers (age 14-60 years) were 83.0% and 81.4%, respectively. Significantly lower prevalence of aflatoxin exposure was seen among children living in urban areas (75.8%) when compared with children living in rural areas (87.1%), an unsurprising finding given the higher risk of aflatoxin exposure among members of subsistence households. The government has called for additional research to understand the levels of exposure in the population, causes, and potential mitigation strategies, but little additional attention has been paid to the issue.

2. Underlying Causes

2.1. Care for Women and Children

Care for women and children—along with access to the necessary caring resources—is a critical underlying determinant of optimum nutrition. Elements of care resources for women and children include: (a) women’s education and employment opportunities; (b) maternal physical and mental health; (c) women’s empowerment, social status, and control over resources; as well as (d) knowledge and beliefs. (Engel et al. 1999).

³⁰ Small observational studies have demonstrated associations between aflatoxin exposure and child growth (Gong et al 2002, Turner et al 2007), but there is not yet conclusive causal evidence of the association.

³¹ Detectable aflatoxin levels in children (age 6-59 months) defined in TLFNS 2013 as serum aflatoxin ≥ 0.20 pg/mg albumin.

2.1.1. Women's Education

Women's education is widely recognized as a determinant of optimal maternal and child care practices and has been a key driver of reductions in undernutrition over the past 40 years (Smith and Haddad 2014). Women's education is important not only for increasing health literacy, knowledge, and economic opportunity, but also for delaying the onset of pregnancy and childbirth (Table 7). Roughly 20% of 19 year olds had started childbearing, and adolescent pregnancy is higher among women with little or no education than among those with secondary or higher levels of education (NSD and ICF Macro 2010). Young girls who are not physically mature have elevated risk of entering pregnancy with anemia and other micronutrient deficiencies. Across Low and Middle Income Countries (LMICs), children of mothers with a young age at first pregnancy (<19 years old) are more likely to be born with low birth weight, preterm, and be stunted at age 2 years when compared with children whose mothers were 20-24 years old (Fall et al. 2015). If adolescent girls are still growing when they become pregnant, they can compete with their fetus in order to meet their own nutritional needs (Scholl and Hediger 1993).

There is considerable variation in female secondary school enrollment across districts: gross attendance ratios are 42% in Oecusse and 94% in Dili. Nationally, only 15.8% of women age 15-49 reported completing secondary school (SD and ICF Macro 2010). Interventions to increase secondary school completion can contribute to older age at marriage and first pregnancy, improving the chances that women enter pregnancy with adequate nutritional reserves.

Table 7. Key fertility indicators, by area of residence and level of women's education, 2009-10, Timor-Leste

Indicator	Total	Urban	Rural	No Education	Secondary Education
Total Fertility Rate	5.7	4.9	6.0	6.1	5.2
Median Age at First Marriage (women 25-49)	20.9	21.1	20.8	20.7	21.5
Median Age at First Birth (women 25-49)	22.4	22.7	22.3	22.2	23.0
Percent of women age 15-19 who have begun childbearing	7.2	3.7	8.4	13.2	3.8
Ideal Number of Children	5.0	4.4	5.2	5.8	4.4

Source: DHS 2009-10.

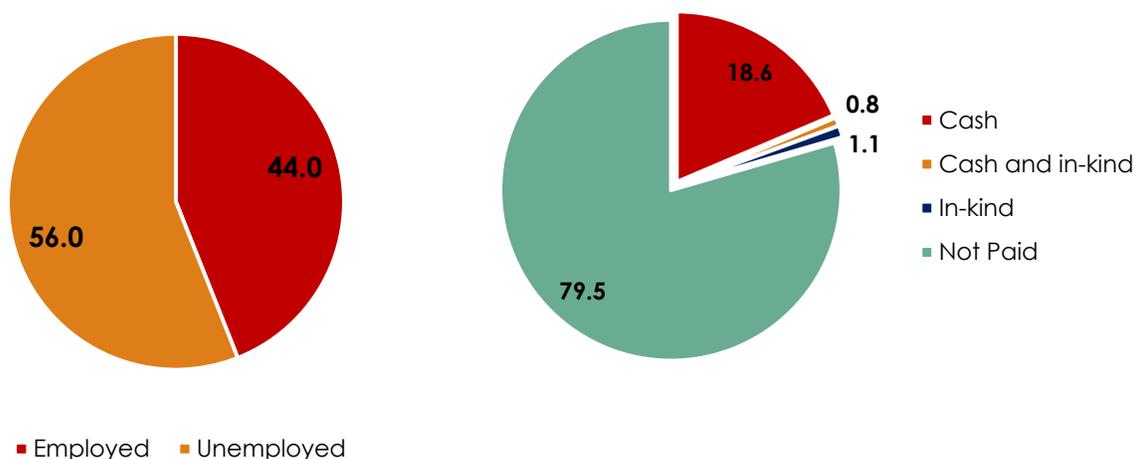
2.1.2. Women's Social Status and Employment

In rural subsistence communities in Timor-Leste, traditional gender roles, relationships, and norms are still adhered to: men are expected to be the *Chefe Familia* and stronger than women, while women are expected to be wise and loving (Niner et al. 2013). Women play important roles in the domestic and private sphere, yet they have limited opportunities for education, economic development, and political engagement. In a survey of 500 rural young men, nearly nine in ten (89%) agreed with women's equal rights to study, work, and respect. However, these perceptions do not often translate into changes in household behavior, and men still expect to be able to maintain power and control in relationships. Women who wish to work or study outside of the home must also meet expectations for care and domestic services in the household (Wigglesworth et al. 2015).

Improving women's status and increasing their control over productive resources is associated with improvements in children's education, health, and nutrition (Quisumbing 2003). There are indications of growing empowerment in women, particularly urban young women. According to the 2009-10 DHS almost half of women married women are employed, but most are not paid for their work (Figure 17). Though men also tend to go unpaid, the proportion of women who are unpaid is nearly double that of men. One quarter

(25.9%) of women report earning more cash than their husbands, and one third of women report having full control over their earnings (up from 12% in 2003).

Figure 17. Percent employed and type of earnings (among the employed), currently married women (age 15-49), Timor-Leste, 2009-2010



Source: DHS 2009-10.

As education increases, Timorese women become less likely to take their own decisions and more likely to make joint decisions. Though marital cooperation can be seen as a form of empowerment, it is also possible that joint decision-making is not truly reflective of women’s status. A recent study indicated that joint decision making is often dominated by men, and may actually serve as a means of mitigating the risk of domestic violence (Grenfell et al. 2015). For example, women are more likely than men to agree with justified wife beating, demonstrating profound cultural norms of inferiority which are deeply embedded in women’s psyche (NSD and ICF Macro 2010).³²

2.1.3. Stress, Violence, and Mental Health

Conflict, domestic violence, and marital control can increase exposure to chronic stress, undermining women’s physical health, nutrient absorption, mental health, and child caring abilities (Sapolsky 2004). Women and children in Timor-Leste are victimized by various forms of structural and cultural violence, including child marriages, corporal punishment in the home or schools, and domestic violence (including marital rape). Poverty intensifies the stress on women in these circumstances (Silove et al. 2015).

Ultimately, this stress and depression can result in child undernutrition due to poor maternal caring practices, including poor mother child bonding, and poor breastfeeding practices—a critical component of optimum child nutrition (Engle et al. 1999). A recent study published in *Lancet Psychiatry* found depression in 22% of the study population of pregnant and postpartum Timorese women, with 9% diagnosed with post-traumatic stress disorder (PTSD). Children of mothers with depression or depressive symptoms were more

³² For example, 64% of women and 44% of men believe a husband is justified in beating his wife if she argues with him; 72% of women and 65% of men believe a beating is justified if the wife goes out without telling him (NSD and ICF Macro 2010).

likely to be underweight or stunted (Surkan et al. 2011).³³ Even before birth, the elevated stress hormones in a mother abused in pregnancy can have an effect on the developing brain. Furthermore, studies in South Asia have demonstrated the risks to a women's own nutritional status, as women's acceptance of physical abuse is associated with anemia and underweight status in women (Atwood et al. 2014; Ackerson and Subramanian 2008).

The history of violence in Timor-Leste is cited for its contribution to ongoing violence against women. Meiksin et al. (2014) attribute the high prevalence of marital control and Gender-Based Violence (GBV) to: (i) the patriarchal society organized around strict gender roles and norms of male dominance and a lower status of women, (ii) the tradition of a bride price where the grooms family feels ownership over the woman after paying the price, (iii) cultural violence that validates the practice of wife-beating as a way to educate or control women, (iv) the history of violence in a society full of conflict. Throughout occupation, men and women were traumatized. According to one report, men who had survived detention and torture admitted to having "fallen into a pattern of violent behavior," (Meiksin et al. 2014).

Given the tendency for underreporting of violence against women, the expanded report on domestic violence in the 2009-2010 DHS paints a grim picture of the extent of physical violence, sexual violence, and marital control in Timor-Leste.³⁴ More than one-third (38%) of 15-49 year old Timorese women reported experiencing either physical and/or sexual violence by their present or most recent partner. Furthermore, 29% of women experienced physical violence often or sometimes in the past 12 months. Urban women are more likely to have ever experienced physical violence and the proportion of physically abused women is highest among those with secondary education (46%) and in the highest wealth quintile (45%). It is possible that these women are more at risk because they have deviated the most from the cultural norms of the patriarchal society, or alternatively, that their wealth and education make them more likely to report violence.

Sexual violence is not commonly reported due to cultural taboos and perceptions of sexual empowerment. A survey of young men found that 31% of young men do not think that forced sex is a form of violence, and 42% do not agree that women can refuse sex with their husbands (Wigglesworth et al. 2015). On the other hand 51% of women agreed with all three reasons for refusing sex³⁵, while one in five believed that these were not justifiable reasons. Refusing sex was most acceptable to urban women and those with higher education. The men most likely to accept these reasons were urban, educated and wealthy (NSD and ICF Macro 2010). Improving nutrition in the first 1,000 days of life will require a transformation of gender norms and practices which can reduce exposure to violence and stress and increase women's access to social and economic resources.

³³ Surkan et al. conducted a meta-analysis of 17 studies done in developing countries which included a total of 13,923 mother and child pairs from 11 countries. The analysis from three longitudinal studies showed an OR for underweight of 2.2 and for stunting 2.0.

³⁴ The report included a 23-page chapter on Domestic Violence reporting on the results of structured interviews with approximately 3000 women (one in three households were sampled). A sub-sample was selected for questions about sexual violence and violence during pregnancy. The final results offer the most current record of domestic violence in Timor-Leste. However, it should be noted that measuring the magnitude of domestic violence in any country is difficult for a variety of reasons, including: the private, sensitive nature of the issue; social stigma and cultural acceptability which inhibit reporting; and threats to the welfare of the reporters.

³⁵ Questions in the Timor-Leste DHS explored three reasons for not having sex: (i) he has a sexually transmitted infection, (ii) she knows he's had sex with other women, (iii) she is tired or not in the mood.

2.2. Health Services and Health Environment

Timor-Leste has improved access to health facilities and health services since independence. Over 70% of Timorese health facilities were destroyed in the war preceding independence and fewer than two dozen doctors remained in the country (Cabral et al. 2013). According to the Ministry of Health, there were 307 health facilities in 2011, and the number of health posts and health clinics continues to increase dramatically. Despite these improvements, physical inaccessibility—including road conditions and transportation availability/affordability—limits timely consumption of health services. Roughly one quarter of households resided more than 2 hours from their routine health provider (Deen et al. 2013) and distance was reported by over half (53.3%) of women as a problem when seeking health services (NSD and ICF Macro 2010).

Supply-side bottlenecks—including facility readiness and functionality, as well as low service delivery quality—limit the coverage of essential health services. The 2014 joint WHO-World Bank framework for monitoring progress towards UHC recommends a number of indicators to assess coverage of essential health services (WHO and World Bank 2014).³⁶ When compared to ASEAN countries, Timor-Leste has generally low coverage levels of essential health services (Table 8). Women report a high degree of ANC care-seeking but it is not always timely: two-thirds of women (62.3%) attended ANC during the first trimester of their most recent pregnancy (NSD and ICF Macro 2010).

Table 8. Coverage of essential health services, Timor-Leste and ASEAN countries

Country	Contraceptive Prevalence (% women age 15-49)	At least one antenatal care (% pregnant women)	Measles vaccination (% of children 12-23 months)	Access to improved sanitation facilities (% of population with access)	Skilled birth attendance (% of total births)	Tuberculosis case detection rate (%)
Timor-Leste	22.3	84.4	74	40.6	29.3	63
Brunei Darussalam			97			77
Cambodia			94	42.4	74	72
Indonesia	61.9	95.7	77	60.8	83.1	31
Lao PDR	49.8	54.2	87	70.9	41.5	34
Malaysia		96.5	94	96	98.7	78
Myanmar	46	83.1	86	79.6	70.6	70
Singapore			95	100		80
Thailand	79.3	98.1	99	93	99.6	99
Vietnam	77.8	93.7	97	78	92.9	77

Source: World Bank 2015a. Values are for most recent year in the period 2010-2015.

Demand-side constraints are an additional impediment to greater health care utilization. A recent review indicated that one in ten households did not seek health care during a family member's recent illness (Deen et al. 2013). Poor knowledge of danger signs of childhood illness may also lead to delayed care-seeking

³⁶ The Framework suggests 11 indicators: satisfaction of family planning needs; at least four antenatal care visits for pregnant women; measles vaccination in children; improved water source; adequate sanitation; nonuse of tobacco; skilled birth attendance during delivery; antiretroviral therapy; TB case detection and treatment success; hypertension treatment; and diabetes treatment. However, cross-country comparable data are not yet available for all indicators and, in some cases, are only available for a variation of the recommended indicator data.

and poorer outcomes (Ba Futuru and Rain Barrel Communications 2016). Repeated contacts with a health system offering sporadic service availability and service delivery readiness may discourage future care-seeking: 82.4% of women were concerned there would be no provider available during their next health care visit, and 86.6% were concerned there would be no drugs available when they sought health care (NSD and ICF Macro 2010).

2.2.1. Access to Maternal and Reproductive Health services

Reproductive health contributes to maternal micronutrient deficiencies and impaired fetal growth. A variety of factors influence the degree to which women utilize available reproductive and maternal health services, these include: women's degree of independence in decision making power, cultural closeness, religious values, and the desirability of children. The religious institutions may have a strong voice in the national family planning dialogue in Timor-Leste, but there is less conclusive evidence regarding the degree to which religion affects individual contraceptive decisions (Richards 2014; Wallace 2014). Roughly one quarter of women (22.3%) were using any form of contraception, a figure much lower than other ASEAN countries (NSD and ICF Macro 2010).

2.2.2. Access to Water, Sanitation, and Hygiene

Poor sanitation and access to drinking water, as well as poor hygiene practices, lead to infection and undernutrition. Exposure to fecal contamination in the environment (due to unsafe disposal of infant and child feces, open defecation, exposure to soil contaminated with human and animal feces, and poor hand hygiene practices) increases the diarrheal disease burden (Mara et al. 2010). Even when exposure to feces does not cause diarrhea, it can still impair nutrient absorption and lead to malnutrition (Humphrey 2009). Chronic exposure to pathogens may trigger a subclinical infection in the small intestine (known as *environmental enteropathy*) which results in inflammation and decreased surface area for nutrient absorption. Furthermore, human and animal fecal matter can contaminate drinking water and soil and lead to the transmission of bacterial, protozoa and helminth infections, decreased appetite, and anemia. In low-income countries, it is common for children to be exposed to feces and associated pathogens when feeding, exploring, and playing in their household environments.

In Timor-Leste, 64.4% and 50.6% of households had access to improved water sources and sanitation, respectively, while one third of households reported an absence of hand washing facilities (TLFNS 2013). The rate of sanitation improvement needs to accelerate to keep pace with population growth and MDG/NSDP goals of 55% rural sanitation by 2015 (100% by 2030) and 80% urban sanitation by 2015 (100% by 2030). Household environments, particularly in rural areas, tend to be fairly unhygienic. The TLFNS reports that 26.1% of households defecate in the bush/yard/forest, an improvement from 42.5% in the 2003 DHS. It is not common to pen animals: chickens, dogs, and pigs tend to roam freely.

WASH-related knowledge and practices can contribute to the spread of disease and ultimately, malnutrition. While the vast majority of households report that there are moments during the day when they think hands should be washed, there is not sufficient knowledge of all the key moments for handwashing. Three in four households report that hands should be washed after defecating and 80% before eating, compared to 35% before feeding an infant or baby, 50% before preparing food; 19% after changing a baby. Less than 2% of respondents report that hands should be cleaned to control health or prevent sickness. Most respondents (96%) agree that "washing my hands with soap or ashes is easy for me" but 69% report that there are times when they would like to wash their hands but are unable to. The most common reason (77%) is no water is available, followed by being too busy (50%) (Ba Futuru and Rain Barrel Communications 2016).

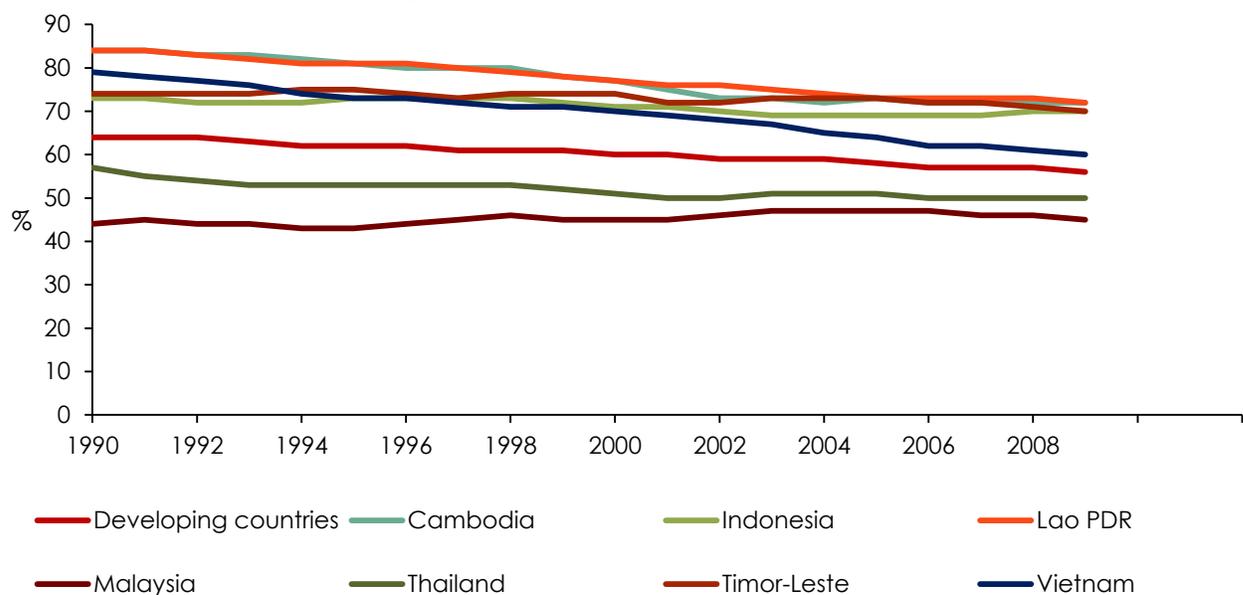
2.3. Food Insecurity

Food insecurity³⁷ has four dimensions: availability, access, utilization, and stability, all of which are a concern in Timor-Leste.

2.3.1. Food Availability

According to FAO, there is sufficient food available to meet the country's caloric needs³⁸ (FAO 2015). However, a large share of dietary energy comes from starchy staple foods, including cereals (rice, wheat, maize), roots, and tubers (Figure 18). These are calorie dense but do not provide significant levels of bioavailable protein and micronutrients. Over the past 40 years, 18% of global stunting reduction has been attributed to increasing the percent of dietary energy from non-staples³⁹ (Smith and Haddad 2014) but relatively modest improvements have been experienced in Timor-Leste.

Figure 18. Share of dietary energy supply from cereals, roots, and tubers



Source: FAO 2015.

2.3.2. Household Food Security: Accessibility and Affordability

With regard to total quantity of food available, household food security⁴⁰ is not reported as key constraint to optimum nutrition. According to the TLFNS, the majority of households reported an 'acceptable'

³⁷ The World Food Summit defines food security as "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO 1996).

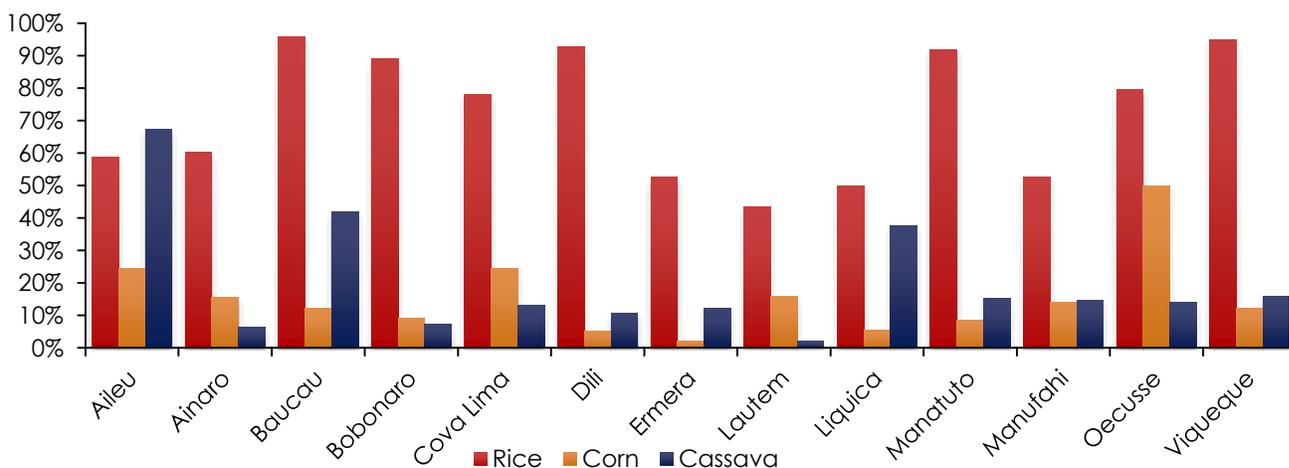
³⁸ Average dietary energy supply adequacy expresses the Dietary Energy Supply (kcal/capita/day) as a percentage of the Average Dietary Energy Requirement (ADER). Each country's or region's average supply of calories for food consumption is normalized by the average dietary energy requirement estimated for its population to provide an index of adequacy of the food supply in terms of calories. There has been small but steady increase to 104% for the period 2012-2014, though this figure remains well below the average for South East Asia (120%).

³⁹ The author's model the impacts of improvements in six underlying determinants of stunting on reduction achieved in 142 countries over the period 1970-2012. These include: access to safe water, access to sanitation, female secondary school enrollment, female-to-male life expectancy ratio, per capita energy dietary supply, and percent of dietary energy from non-staples.

⁴⁰ Household food security refers to the ability of households to secure, either from own production or purchase, adequate food to meet dietary needs of all household members.

household food consumption score (FCS),⁴¹ and only 10% of households had a ‘poor’ FCS. However, this perception of food security does not incorporate access to a nutritionally diverse diet. Factors contributing to household food insecurity include: (a) lack of income; (b) low crop production diversity; (c) lack of access to water for horticultural production; and (d) low market prices due to lack of demand. Households can acquire foods through own production or purchases. Roughly 70% of Timor-Leste’s population resides in rural areas; most farmers are smallholders and rely upon subsistence production (primarily of staples). However, rice is associated with wealth and has displaced maize as the main staple food (Figure 19). Only 25% of cropping households grow rice; therefore purchased, imported rice is needed to satisfy much of the country’s demand (Castro 2013; MAF and SOL 2013).

Figure 19. Percent of Timorese households consuming staples 7 days per week, by district, 2014



Source: World Bank 2015b.

There is limited market availability and affordability of the diverse, nutrient-dense foods which are promoted in complementary feeding recommendations and required to achieve optimum child growth. Formal rural markets (particularly for animal-source foods and horticultural products) are not well-functioning, constraining food purchase options for those relying on cash income. Though there is no quantitative evidence from Timor-Leste, a study in the neighboring Nusa Tenggara Timur (NTT) province of Indonesia demonstrated that only one in four households could afford to meet 100% of an infant’s nutrient requirements through locally available foods, compared to 80% of households in Surabaya (Baldi et al. 2013).⁴² A qualitative study of nutrition knowledge and practices revealed that households may commonly eat meals with only two food groups, and diet was dependent on cash flow -- availability of cash would allow the family to buy frozen chicken, else they would eat boiled maize or rice (Ba Futuru and Rain Barrel Communications 2016).

⁴¹ The Food Consumption Score was developed by the World Food Programme and is a composite score based on food frequency, dietary diversity and relative nutrition importance of different food groups. Dietary diversity is based on the number of individual foods or food groups consumed over the past 7 days. Source: WFP, 2011.

⁴² Affordability defined as food expenditure amounting to no more than 70% of household expenditure.

2.3.3. Food Utilization and Demand

In addition to availability and affordability, food preferences, taboos, convenience, and storage may limit the desirability⁴³ and utilization of available foods. In Timor-Leste, taboos are widespread but tend to be very specific: there are a large number of foods which *could* be taboo, but these are often limited to kin groups or lineages and cannot necessarily be generalized across households or even districts (Castro 2013).

While urban areas—particularly Dili—have seen increased demand for animal source foods, fruits, and vegetables, this same trend is not yet evident in rural areas. There is little demand for vegetable protein and animal source foods outside of the context of rituals and ceremonies. Unsurprisingly, the Market Development facility estimates the gap between demand and recommended consumption exceeds 50% for supplementary foods (soybeans, mung beans, and peanuts) and 10% for fresh foods (Australian Aid Market Development Facility 2013). This low demand contributes to the sluggish pace of rural market development (Inder et al. 2014), with livestock used as savings and bartered/sold for economic purposes rather than consumed. Convenience and marketing also shape consumer demand, and instant noodles are found to be very convenient and more attractive than other foods (Castro 2013). A relatively recent introduction to rural markets, instant noodles are desirable due to their taste, transportability, ease of preparation, and minimal requirements for cooking fuel but make little contribution to improving nutrition.

2.3.4. Stability

Transient food insecurity is triggered by seasonal changes, with Timorese households commonly experiencing a ‘hungry season’ between November and April (MAF and SOL 2013). Nationally, roughly two-thirds of farmers report facing a food shortage at some point during the year. However, during any given month there are always more farmers who report experiencing a ‘hunger season’ than there are farmers who report experiencing a ‘food shortage’ (MAF and SOL 2013). This may be perhaps due to the fact that Timorese may suggest that they ‘haven’t eaten’ or ‘are hungry’ when there is not sufficient rice available (although other non-rice staples may be available). The associations between the hungry and dry seasons, caloric deficit, low birth weight, and dietary diversity have not been well-explored in the Timorese context.

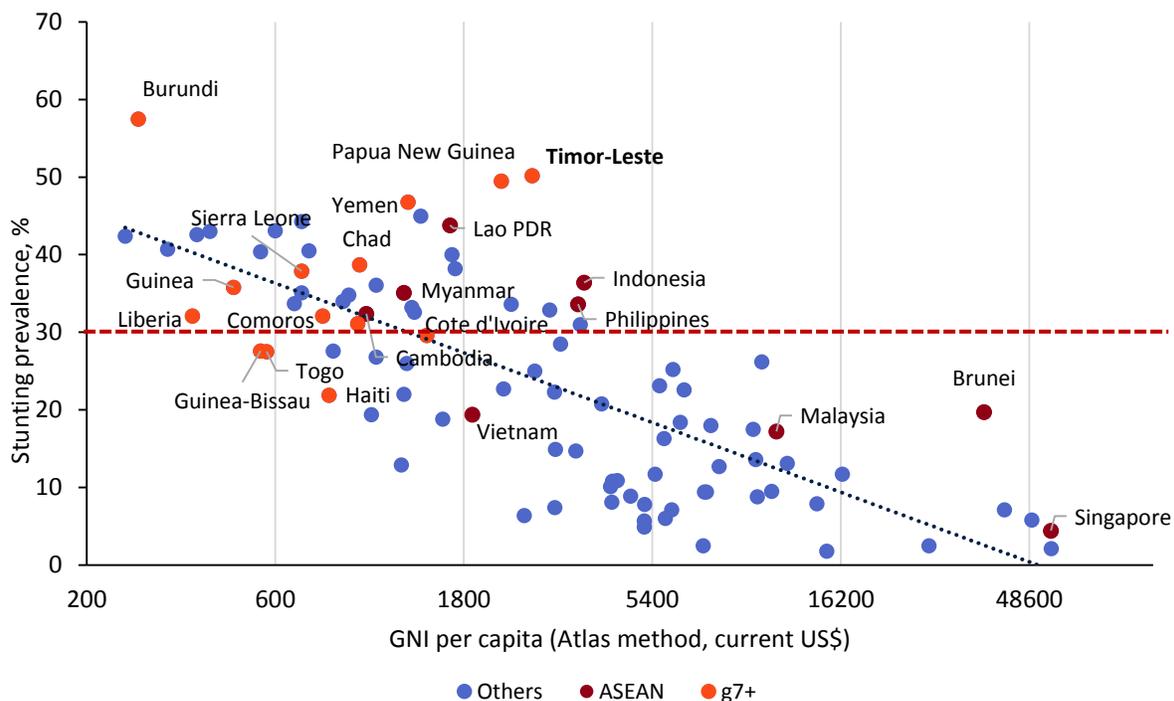
3. Basic Determinants: Economic Growth

Economic growth is associated with reductions in malnutrition but alone is not sufficient to resolve the problem. Economic growth has a strong, non-linear relationship with stunting, such that its impact weakens as GDP rises. Globally, a 10% increase in GDP per capita has been associated with a 6.2% reduction in stunting (Smith and Haddad 2015). However, economic growth has not been sufficient to reduce stunting in Timor-Leste, where stunting prevalence is significantly higher than that of other g7+ countries as well as its ASEAN neighbors (Figure 20). Admittedly, the comparison is confounded by the strong influence of oil wealth on macroeconomic growth.⁴⁴

⁴³ As described by Herforth and Ahmed (2015) desirability includes, but is not limited to, food quality.

⁴⁴ Which has been largely been diverted into the Petroleum Fund rather than invested in social development. However, the country would still have much higher stunting than expected using non-oil GDP per capita.

Figure 20. Prevalence of stunting by level of macroeconomic growth



Source: World Bank 2015a. Note: GNI=Gross National Income per capita for most recent available for the period 2012-2014. Stunting prevalence most recent for the period 2010-2014, except for Singapore (2000), Malaysia (2006), Brunei (2009). Dotted line at 30% indicates WHO cutoff for “high stunting” prevalence.

C. Analysis of Determinants of Stunting

In line with the UNICEF conceptual framework, maternal and child undernutrition in Timor-Leste arises from a variety of factors. Table 9 reports the results of the multivariate associations⁴⁵ between stunting and its determinants from the 2013 Timor-Leste Food and Nutrition Survey (TLFNS).⁴⁶ The results demonstrate that with very high stunting prevalence, there is no single factor which alone can remedy the problem of stunting. Even after controlling for a variety of factors, nearly all variables remain significantly associated with chronic undernutrition. The child’s age and sex, maternal nutritional status (vis a vis maternal height), the child’s dietary intake and disease status, maternal education, agricultural livelihoods, and household wealth are related to child stunting outcomes. Consequently, intervening to improve any single underlying factor will be insufficient to have a significant impact on stunting.

⁴⁵ The model for underlying determinants was constructed by first entering age and sex in the model. Then all variables for underlying determinants of stunting.

⁴⁶ For programming purposes, it is also useful to evaluate nutrition outcomes and determinants at a district level to inform geographic targeting decisions. Annex presents the distribution of immediate and underlying determinants of undernutrition by district.

Table 9. Results of multivariate analysis of the determinants of stunting in children (0-59 months), 2013 Timor-Leste Food and Nutrition Survey

FACTORS	IMMEDIATE DETERMINANTS (MODEL 1)			UNDERLYING DETERMINANTS (MODEL 2)			BASIC DETERMINANTS (MODEL 3)			ALL FACTORS (MODEL 4)		
	OR	95% CI	P-VALUE	OR	95% CI	P-VALUE	OR	95% CI	P-VALUE	OR	95% CI	P-VALUE
AGE GROUP												
24-59 MO.	3.22	(2.95-3.51)	<0.001	3.12	(2.87-3.4)	<0.001	3.22	(2.95-3.51)	<0.001	3.27	(2.99-3.57)	<0.001
0-23 MO. (REF)												
SEX												
MALE	1.34	(1.23-1.46)	<0.001	1.35	(1.24-1.47)	<0.001	1.37	(1.26-1.50)	<0.001	1.37	(1.25-1.50)	<0.001
FEMALE (REF)												
MOTHER'S HEIGHT												
<145 CM	1.96	(1.72-2.24)	<0.001							1.85	(1.62-2.12)	<0.001
>=145 CM (REF)												
DIETARY INTAKE												
NOT ADEQUATE ADEQUATE DISEASES	1.96	(1.72-2.24)	<0.001							1.3	(1.18-1.44)	<0.001
PNEUMONIA	1.25	(1.08-1.46)	0.004							1.2	(1.03-1.40)	0.023
FEVER	1.1	(1.00-1.22)	0.051							1.11	(1.00-1.23)	0.048
NOT SICK (REF)												
EDUCATION LEVEL												
NO SCHOOLING				1.46	(1.30-1.64)	<0.001				1.2	(1.05-1.37)	0.006
PRIMARY SCHOOL				1.17	(1.03-1.32)	0.012				0.98	(0.86-1.11)	0.736
JUNIOR HIGH SCHOOL				1.14	(1.00-1.30)	0.051				1.04	(0.91-1.20)	0.574
SENIOR HIGH SCHOOL (REF)												
TYPE OF LATRINE												
NOT IMPROVED IMPROVED (REF)				1.29	(1.18-1.41)	<0.001				1.03	(0.93-1.16)	0.55
LIVELIHOOD IN AGRICULTURE												
YES							1.19	(1.18-1.41)	<0.001	1.25	(1.13-1.39)	<0.001

FACTORS	IMMEDIATE DETERMINANTS (MODEL 1)			UNDERLYING DETERMINANTS (MODEL 2)			BASIC DETERMINANTS (MODEL 3)			ALL FACTORS (MODEL 4)		
	OR	95% CI	P-VALUE	OR	95% CI	P-VALUE	OR	95% CI	P-VALUE	OR	95% CI	P-VALUE
NO												
WEALTH QUINTILE												
FIRST							1.88	(1.63-2.18)	<0.001	1.59	(1.33-1.91)	<0.001
SECOND							1.71	(1.47-2.00)	<0.001	1.43	(1.20-1.70)	<0.001
THIRD							1.44	(1.25-1.65)	<0.001	1.35	(1.15-1.59)	<0.001
FOURTH							1.4	(1.22-1.61)	<0.001	1.34	(1.15-1.55)	<0.001
FIFTH												
NEGELKERKE R ²	0.131			0.112			0.129			0.15		

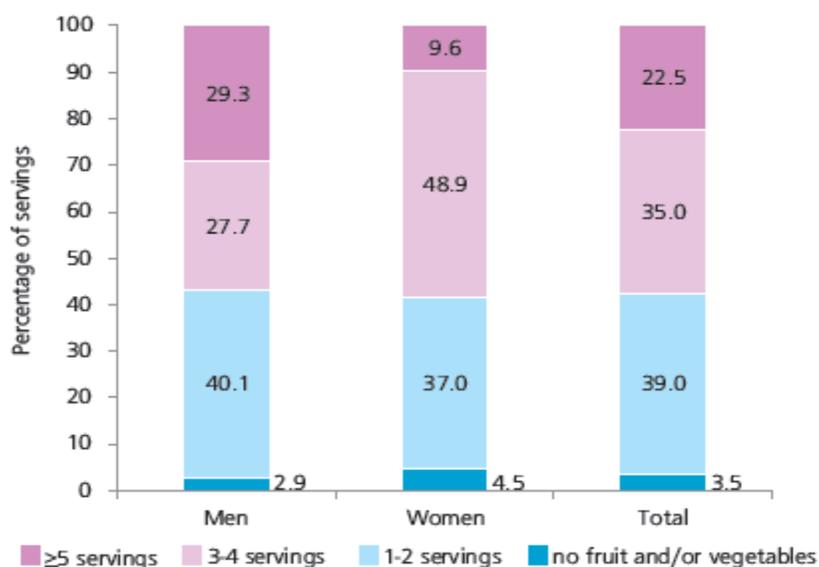
Source: RDTL 2013a. CI=Confidence Interval; OR=Odds Ratio; *Logistic regression using backward elimination method for variable selection. Variables inputted into the model for selection were variables found to be significant in the bivariate analysis for children 0-59 months shown in TLFNS Tables 5.37-5.42.

D. Determinants of Overweight/Obesity

1. Dietary Intake

Suboptimal dietary habits and physical inactivity are key risk factors for the development of overweight/obesity. The 2015 STEPs survey is the main source of data on these risk factors in Timor-Leste, albeit representative only at the national level. Adequate fruit and vegetable consumption reduces the risk of NCDs. In total, 77.5% of Timorese adults did not meet the recommendation to consume at least five servings of fruits and/or vegetables per day. Roughly 40% of both men and women consume two or fewer servings (Figure 21). Men and women do not commonly report eating processed foods high in salt (12.9%) or consuming meals outside of the home (WHO 2015b).

Figure 21. Number of fruit and vegetable servings consumed during the previous day, percent of population Timor-Leste, 2014



Source: WHO 2015b

2. Physical Activity

Routine physical activity is high among the Timorese and only 16.7% of the adult population did not meet the WHO recommendations for physical activity.⁴⁷ This percentage was higher among women (23.3%) than men (12.8%). Most physical activity is related to work, and only 8.4% of men and 16.7% of women had not completed any work-related physical activity in the previous week. Recreation-related physical activity is not common, particularly among women, 95% of whom had not participated in any leisure activity (WHO 2015b).

E. Discussion of Gaps

In Timor-Leste, a multitude of factors drive the high prevalence of malnutrition. When looking at multiple sources of information, a number of themes emerge as key considerations in assessing the magnitude of malnutrition in the Timorese context:

- **Poor nutrient intake and feeding practices persist for women, infants, and young children in the first 1,000 days:** Breastfeeding practices have improved but early weaning requires improvement. Complementary feeding, particularly dietary diversity, is very low for IYC. Rice is a highly valued commodity and regularly purchased, in contrast to animal-source foods (which are not regularly consumed aside from the context of traditional ceremonies and rituals). There is evidence of limited availability and affordability of an adequate diet for IYC and pregnant/lactating women. Thus, information and behavior change communication (BCC) alone (without provision of cash or other social transfer) would likely not be sufficient to realize significant improvements in nutrition security.
- **Behaviors play a critical role in improving child growth in Timor-Leste:** The poorest nutrition outcomes are found in the lowest wealth quintile, the prevalence of stunting, wasting, and anemia are still very high in the wealthiest households. This could be, in part, due to a skewed wealth distribution such that the richest wealth quintile includes those who are relatively poor. Alternatively, it is likely that social and cultural factors, rather than simply wealth alone, influence a number of care, hygiene, and food consumption behaviors which affect malnutrition. Given that there are strong enabling and inhibiting factors at play which affect IYCF practices, particularly with regard to culture, there is an important lack of formative research to understand the processes at play and the best approaches to improve practices.
- **Structural, social, and cultural factors, compounded by a history of cultural violence, disempower adolescent girls and women:** There are deeply entrenched sociocultural issues related to women's status. Timorese girls have not achieved parity in secondary school completion and women lack autonomy in decision-making (particularly for reproductive health, child health, and the household). Low decision making authority may contribute to lower household expenditures on child and social development. The post-conflict effects (PTSD, depression, and chronic stress) associated with historical violence contribute to high incidence of domestic violence and mental health issues which place care for women and children, and their nutritional status, at risk. Young men accept principles of gender equity but have been slow to embody these principles and change behaviors at the household level. This is perhaps unsurprising as men are not commonly engaged in nutrition, reproductive health, and gender empowerment efforts (despite their role as

⁴⁷ The WHO recommends ≥ 150 minutes of moderate-intensity physical activity per week, 75 minutes of vigorous physical activity per week, or an equivalent combination of the two.

gatekeepers for household resource allocation and health service consumption, and reproductive health decision-making).

- **High fertility and low birth spacing perpetuate an intergenerational cycle of malnutrition:** Young girls are at greatest risk of maternal underweight, and when they enter pregnancy undernourished, they will compete for nutrients with their fetus, making them more likely to give birth to small children. Short birth intervals contribute to maternal nutrient depletion. Strong sociocultural values around fertility and large family size result in high fertility, which may perpetuate poverty and malnutrition due to constrained options to affordably feed the family.
- **Low availability, accessibility, and affordability of nutrient-rich foods exacerbated by a hungry season:** When food security is defined not only with regard to sufficiency, but specifically the availability and affordability of the foods needed for optimum nutrition (particularly that of infants and young children), food insecurity emerges as a stronger driver of malnutrition. Furthermore, the STEP's survey shows that few adults consume the recommended number of fruits and vegetables required to decrease risk of overweight/obesity, cardiovascular disease, and cancers. There is evidence of a hungry season for staple foods, and during the dry season households are unlikely to produce vegetables.
- **Exposures to aflatoxins and fecal pathogens may contribute to poor nutrient absorption:** Infants and young children may experience impaired nutrient absorption due to repeated exposure to fecal matter (due to high levels of open defecation, poor hand hygiene, and absence of animal penning) and consumption of staple foods contaminated by aflatoxins.
- **The silent, rapidly rising burden of overweight will carry considerable health and economic costs if unmitigated.** Women have experienced a more than 5-fold increase in overweight prevalence since independence. This figure is likely an underestimate of the true NCD-risk associated with elevated weight in the Timorese population. Dietary patterns are changing and there are growing signs of the metabolic syndrome among the adult population.

Chapter 4. Commitment and Capacity to Address Malnutrition

CHAPTER 4 KEY MESSAGES

1. With the Honorable President and Prime Minister as champions, Timor-Leste has high level political commitment to address malnutrition.
2. The National Strategic Development Plan (2011-2030) highlights nutrition as essential to social and economic development.
3. The National Council for Food Security, Sovereignty, and Nutrition in Timor-Leste (KONSSANTIL) is a high-level coordinating body with stewardship functions for the National Action Plan for a Hunger and Malnutrition-Free Timor-Leste (PAN-HAM-TIL), but focuses largely on food production and food security rather than nutrition.
4. The PAN-HAM-TIL is a strong advocacy document but is too costly and broad in scope to serve as an effective implementation guide for key ministries.
5. The Ministry of Health is the technical home for nutrition, and the second National Nutrition Strategy (2014-2019) includes the nutrition-specific and nutrition-sensitive tasks of the MOH to improve nutrition. The strategies and action plans of KONSSANTIL ministries reflect the sectors' contributions to increased nutrition-sensitivity.
6. Organizational capacity constraints related to public financial management, human resource management, and limited collection and use of data limit the effectiveness of all services, including nutrition.
7. The large number of human resources in health and other sectors presents a considerable opportunity for the delivery of nutrition-related education and messages, but there is not as yet a strategic approach to building capacity of frontline professionals to enhance nutrition-aspects of service delivery.
8. Timor-Leste has a strong networks of civil society and community organizations. Most families belong to some type of group, providing platforms for increasing nutrition knowledge and behavior change at the community level.

Timorese leadership, laws, policies, and institutions form the “enabling environment” for improving nutrition. With the determinants of malnutrition spanning across sectors, there is need for a coordinated response which cannot be left to one sector alone. With Timor-Leste’s status as a fragile state, joint implementation (multiectoral action) is not recommended. Rather, with clear and specific roles and accountabilities, the approach can be to “think multiectorally, act sectorally,” with each sector implementing its own activities with coordinated planning and monitoring (World Bank 2013b). This chapter examines issues of leadership, policy and legal frameworks, institutional structures, and implementation/service delivery capacity to address malnutrition in Timor-Leste.

A. High Level Leadership

Globally, nutrition has been recognized as a “chosen issue” requiring national champions to keep the issue on the agenda. In Timor-Leste, the offices of both the Honorable President and Prime Minister have demonstrated support for nutrition. The Honorable Prime Minister and the Sixth Constitutional Government have renewed the focus on service delivery efficiency and effectiveness. The Program of the Sixth Constitutional Government cites “improving the access to and quality of nutrition services at health facilities and the community” as a priority for the area of health care (RDTL 2015a). The Unit for Monitoring and Evaluation of Social Affairs (UMAAS) was created in 2014 to monitor progress towards improved service delivery in the social sectors and includes essential nutrition services (vitamin A

supplementation) as a key performance indicator. The Office of the Prime Minister has also set up a unit for monitoring progress towards the SDGs and is identifying champions for each goal.

In 2014-2015, the Honorable President's Office established the President's Nutrition Awards (PNP) in order to "inspire good practice and leadership in nutrition." The PNP serves to (i) raise awareness of the nutrition situation in Timor-Leste; (ii) motivate, inspire, educate the population; and (iii) recognize achievements at the community level.⁴⁸ In 2015, the Honorable President also convened government stakeholders for a roundtable discussion on food security and nutrition to stimulate dialogue and identify opportunities to accelerate progress to reduce malnutrition and food insecurity.

B. Multi-Sectoral Coordination

Given the need for a multisectoral response to malnutrition, supra-ministerial coordinating bodies play a critical role in guiding a strong national response. The National Council for Food Security, Sovereignty and Nutrition in Timor-Leste⁴⁹ (KONSSANTIL) was formed in November, 2012, and is mandated to harmonize decision-making and resource allocation across member ministries to achieve improved food security, sovereignty, and nutrition in Timor-Leste (Table 10) (KONSSANTIL 2015).

KONSSANTIL's strength is in its cross-sectoral participation (Annex 4), providing the opportunity for high-level nutrition planning and coordination. According to the agreed structure, KONSSANTIL is to be chaired by the Honorable Prime Minister. However, this responsibility has been delegated to the Coordinating Minister for Economic Affairs (Minister of Agriculture). Consequently, the body has lost its supra-ministerial convening power and the group's focus tends to be on agriculture and food security. The Permanent Technical Secretariat (PTS) meets monthly and has responsibility to: (a) institutionalize KONSSANTIL and its governance structure; (b) discuss action plans and priorities; (c) monitor implementation, mobilize resources; and (d) provide technical support to and coordination with stakeholders. However, the Head of Nutrition Department does not participate in the PTS from the MOH side.

In an attempt to improve coordination and focus, KONSSANTIL ministerial membership was scaled back in 2015 (Table 10). However, the restructuring also limited participation of development partners (DPs); the PTS now includes only one development partner agency each from agriculture and nutrition, with two additional seats for UN agencies (UNRC and FAO).

⁴⁸ Awards of US\$10,000 are awarded to both a *suco* and to a women's association, group, or individual demonstrating promising practices to improve nutrition for *suco* members, women, and children. The achievements of the selected groups/individuals are documented and the experiences shared on social media, through promotional videos, and community site visits.

⁴⁹ Komisaun Nasional Seguransa Soberania Ai-han no Nutrisaun Timor-Leste in Tetum.

Table 10. Participants and organizational mandate of KONSSANTIL

Participating Ministries	Vision	Mission	Objectives	Principles
Ministry of Agriculture Ministry of Education Ministry of Health Ministry of Social Solidarity Ministry of Commerce, Industry, and Environment Ministry of Finance	Timorese human capital that is healthy, active and free from hunger and poverty.	<ul style="list-style-type: none"> • Define policy to achieve food security and nutrition. • To secure inter-ministerial coordination to synchronize activities through efficient and effective use of resources. 	<ul style="list-style-type: none"> •To strengthen the individual ministry’s role to implement food security and nutrition plans. •To consolidate existing resources to implement food security and nutrition plans. •To strengthen coordination of services between the ministries to be responsible according to their individual roles. 	<ul style="list-style-type: none"> •Establish and strengthen the legal framework. •Establish and strengthen the institutional framework. •Establish and strengthen public policies. •Establish and strengthen budget framework.

Source: KONSSANTIL 2014

In addition to national level coordination, deconcentration will raise the need for inter-ministerial coordination at the district level. The KONSSANTIL Terms of Reference specify the group’s role in enhancing decentralization, increasing participation at all levels, and involving multiple stakeholders in problem solving to reduce food insecurity and malnutrition via the creation of district-level KONSSANTIL groups. However, these groups have not been institutionalized across the 13 districts/municipalities.

C. Capacity to design and execute nutrition programs and policies

In the period since independence, development partners have provided support to strengthen the capacity of government institutions, including those responsible for nutrition policies and programs. However, capacity constraints remain. Limited capacity—simply defined as the ability to carry out objectives (Goodman et al. 1998)—has been identified as one of the critical barriers to the widespread scale up of nutrition programs (Heikens et al. 2008). Determining the ‘who’ and ‘how’ related to nutrition interventions is perhaps equally as important as identifying ‘what’ to do. This report uses the nutrition capacity assessment framework proposed by Shrimpton et al. (2013) which proposes four levels of capacity assessment: (i) system; (ii) organization; (iii) workforce; and (iv) community (see Annex 9) across key ministries.⁵⁰

1. System Capacity

System capacity includes the broad social, cultural, economic, legal environment and provides the foundation for the remaining three tiers, which more directly affect ability to act (Shrimpton et al. 2013).

⁵⁰ As the technical home for nutrition in Timor-Leste, emphasis is placed upon exploring capacities and constraints within the MOH, with additional information included across sectors as relevant.

The Government of Timor-Leste formally recognizes nutrition as a development priority. In 2005, the First Constitutional Government of Timor-Leste adopted the National Food Security Policy. In 2010, the Fourth Constitutional Government endorsed the Comoro Declaration, a joint commitment from seven line ministries to address nutrition the right to food. It also outlines the need for cross-sectoral collaboration and cooperation to improve nutrition (RDTL 2010a). In the five years following the Comoro Declaration, nutrition and food security has maintained an elevated political profile (Table 11).

Table 11. Milestones in the response to food insecurity and malnutrition in Timor-Leste

Date	Milestone
2005	Signing of the First Timor-Leste Food Security Policy
2010	Signing of the Comoro Declaration
2010	Launch of the Inter-Ministerial Food and Nutrition Security Task Force
2011	Signing of National Strategic Development Plan (SDP)
2012	Creation of KONSSANTIL
2012	Launch of Global Zero Hunger Challenge
2013	Launch of Asia Pacific Region Zero Hunger Challenge
2014	Timor-Leste launch of Zero Hunger Challenge
2014	Timor-Leste launch of Community of Portuguese Language Countries' "Together Against Hunger" Campaign (ESAN-CPLP)
2014	Timor-Leste release of National Action Plan for a Hunger and Malnutrition-Free Timor-Leste
2014	Signing of Timor-Leste National Nutrition Strategy (2014-2019)
2014	Establishment and presentation of first President's National Nutrition Leadership Award
2015	Establishment of President's National Healthy Families Nutrition Award
2015	Convening of President's Nutrition and Food Security Roundtable Discussion
2015	Timor-Leste hosts first extraordinary meeting of the Council for Food and Nutritional Security of the Community of Portuguese Language Countries (CONSAN-CPLP)

1.1 Policy Frameworks

1.1.1 The Timor-Leste National Strategic Development Plan (2011-2030)

Policy frameworks serve to coordinate the response to development challenges (including malnutrition); their absence can be a cause of fragmented, ineffective service delivery. The National Strategic Development Plan (SDP) (2011-2030) outlines the framework and actions needed to "transition Timor-Leste from a low income to upper middle income country, with a healthy, well-educated and safe population by 2030" (RDTL 2010). Though aligned with the Millennium Development Goals, the SDP aims to set a broader course for sustainable, inclusive development in Timor-Leste. The SDP is based upon four pillars: social capital, infrastructure development, economic development, and governance. Nutrition-relevant considerations are captured under each of the first three pillars. Optimum health and nutrition are highlighted as a necessary precursor of efforts to raise incomes, reduce poverty, and increase productivity.

The Pillar 1 health sector targets and activities are linked to nutrition through the immediate, underlying, and basic determinants of undernutrition, including: disease prevention, food security, improved water and sanitation access, education, social inclusion and women's empowerment, and economic development (RDTL 2010). Under Pillar 3 (Economic Development), agriculture (particularly livestock and aquaculture

"The children of Timor-Leste, in particular, deserve access to good health care, nutritious food, clean drinking water and good sanitation."
(RDTL 2010)

sub-sectors) is also recognized for its role in enabling the consumption of more diversified and nutritionally balanced diets. Targets include increasing dietary diversity through production of non-staple foods, including fruits, vegetables, meat, and fish products. Pillar 2 (Infrastructure) targets include the development of water and sanitation facilities, though targets are related to urban sanitation, rural water supply, and drainage; there are no targets related to rural sanitation, which is critically important for the improvement of nutritional status.

1.1.2 The Zero Hunger Challenge: National Action Plan for A Hunger and Malnutrition-Free Timor-Leste (PAN-HAM-TIL)

The National Action Plan for a Hunger and Malnutrition-Free Timor-Leste (PAN-HAM-TIL) is a cross-sectoral action plan “to reduce hunger and malnutrition to a state of insignificance.” PAN-HAM-TIL provides the framework for a multisectoral response to food insecurity and malnutrition in Timor-Leste. In 2013, KONSSANTIL, the President, Vice President, and UN Resident Coordinator launched the United Nations’ Zero Hunger Challenge. Shortly thereafter, Timor-Leste also signed on to the CPLP “Together against Hunger” campaign. KONSSANTIL developed the PAN-HAM-TIL to consolidate activities aligned with both the Zero Hunger Challenge and CPLP commitments.⁵¹ The Plan is divided into five pillars, with priority nutrition results included under Pillar 2 (though nutrition-sensitive sub-activities can be found across pillars) (Table 12).

⁵¹ The launch of the Zero Hunger Action Plan was accelerated such that the action plan was finalized even before the country had a supportive cross-sectoral policy and strategic framework in place. The country is now developing a policy framework aligned to the Zero Hunger architecture.

Table 12. Pillars of the Timor-Leste National Action Plan for a Hunger and Malnutrition Free Timor-Leste

Pillar 1: 100% Equitable access to adequate, nutritious and affordable food all year round	Pillar 2: Zero stunted children less than 2 years of age	Pillar 3: All food systems are sustainable	Pillar 4: 100% increase in smallholder productivity and income	Pillar 5: Zero loss or waste of food
<p>Outcome 1.1: Poor and marginalized people have more diverse and more secure entitlements to food.</p> <p>Outcome 1.2: Impact of excessive food price volatility reduced through open, fair, and well-functioning markets and trade policies at local, regional and international levels.</p>	<p>Outcome 2.1: Improved nutrient intake (macro and micronutrients) for mothers, children under five, and adolescent girls.</p> <p>Outcome 2.2: Improved access to maternal, newborn, and child health services.</p> <p>Outcome 2.3: Improved nutritious food utilization at household, community and national levels.</p> <p>Outcome 2.4: Improved access to water and sanitation facilities and hygiene intervention.</p> <p>Outcome 2.5: Families' nutrition behavior and practices improved.</p>	<p>Outcome 3.1: Standards for sustainability established for all farmers (including pastoralists and fisherfolk), agribusiness, cooperatives, governments, farmer unions, and civil society.</p> <p>Outcome 3.2: Sustainable and climate resilient agriculture practices.</p> <p>Outcome 3.3: Cross-sectoral policy coherence (encompassing inter-alia food security, industry, trade policy, tourism, energy, land use, water and climate change) pursued</p>	<p>Outcome 4.1: Productivity of various agricultural products of smallholder farmers—including youth and women farmers—increased.</p> <p>Outcome 4.2: Income of smallholder farmers, pastoralists and fisherfolk—including women and youth—increased through access to financial services, home industry, and eco-agro tourism.</p>	<p>Outcome 5.1: Food losses and waste during harvesting, storage, transport, processing, retailing, and consumption of food minimized.</p>

Source: KONSSANTIL 2014

The PAN-HAM-TIL has served as a successful advocacy tool and raised the profile of food insecurity and nutrition issues. In addition to covering many areas of food security, the Action Plan addresses key

immediate and underlying determinants of undernutrition. However, there is a tradeoff between comprehensiveness and pragmatism: there are 47 outputs and 170 activities under the five pillars. With the number of included activities, it is not surprising that the cost to implement the action plan is enormous, averaging \$176 million per year over 10 years. The plan has yet to be operationalized; there is neither a results framework nor accountability mechanism.

In addition to the overarching strategic frameworks and coordinating mechanisms described above, there are a large number of sectoral policies and strategies which are relevant to nutrition action in Timor-Leste (Table 13). To a large extent, these strategies and policies highlight the link between nutrition outcomes and the underlying determinants.

Table 13. Policies, Strategies, and Laws Critical to Timor-Leste’s Response to Malnutrition

Code (Policy / Strategy / Law)	Status
National Health Sector Strategic Plan (2011-2030)	Approved (2011)
Primary Health Care Guidelines	Approved (2015)
National Nutrition Strategy (2014-2019)	Approved (2014)
National Strategy for Prevention and Control of Noncommunicable Diseases (NCDs), Injuries, Disabilities, and Care of the Elderly	Approved (2016)
National Strategy on Reproductive, Maternal, Newborn, Child and Adolescent Health (2015-2019)	Approved (2015)
Public Service Law (Maternity entitlements)	Approved (2009)
Timor-Leste Labour Law (Maternity entitlements)	Approved (2012)
Food Based Dietary Guidelines for Timor-Leste (2015-2020)	Approved (2015)
National Action Plan on Gender-Based Violence (2012-2014)	Approved (2012)
Ministry of Social Solidarity Long-Term Strategic Plan, 2011-2030	Approved (2009)
National Education Strategic Plan (2011-2030)	Approved (2011)
Agriculture Sector Strategic Plan (2014-2020)	Approved (2013)
National Agriculture Extension Strategy for Timor-Leste	Approved (2010)
National Law Against Domestic Violence	Approved (2010)
Convention on the Elimination of Discrimination Against Women	Approved 2003
Basic Sanitation Policy	Approved (2012)
National Water Supply Policy	Draft
Health Promotion Strategy (2011-2015)	Lapsed
Timor-Leste Breastfeeding Promotion Policy	Draft
National Food and Nutrition Security Policy	Draft
International Code for Marketing of Breast Milk Substitutes	Draft
Timor-Leste National Salt Law	Draft
Land Law	Draft
National Institute of Health (INS) Strategic Plan	Draft

1.1.3. Sector-Specific Strategies, Policies, Laws

1.1.3.1. Ministry of Health

1.1.3.1.1. The National Health Sector Strategic Plan

The Timorese Constitution enshrines the right to universal healthcare under article 57 stating, “All Timorese citizens are entitled to health care and the State has a duty to promote and protect this right free of charge, in accordance with its capabilities and in conformity with the law” (RDTL 2002). As such, the provision of universal, free, and high quality health care is a central focus of the health sector. Within the National

Health Sector Strategic Plan – NHSSP (2011-2030), the Ministry of Health outlines its vision for achieving “A healthy East Timorese people in a healthy East Timor,” (Ministry of Health 2011). Improving service delivery for women and children is identified in the NHSSP objectives, resulting in a strong focus on maternal and child undernutrition and its underlying causes (Annex 5). Though diet-related NCDs appears in the results framework, there is no mention of overweight/obesity as an emerging potential health concern for Timor-Leste. Neither adolescents nor men are considered as a priority population for health services, with the NHSSP referring to adolescents only under “nutrition” and “maternal health” sections.

1.3.1.2. National Nutrition Strategy

The first National Nutrition Strategy (2004-2010) for Timor-Leste focused on two primary areas: maternal and child nutrition and food security (MOH 2004). To accelerate progress toward achieving nutrition results and build off of renewed global nutrition landscape, the MOH signed an updated nutrition strategy in 2014 (MOH 2014b). The Timor-Leste National Nutrition Strategy (2014-2019) (NNS) was prepared with financial support from DFAT and technical support from UNICEF.⁵² The NNS aligns with the targets in SDP and has been framed by some as the operationalization of the MOH approach to Pillar 2 of Zero Hunger Challenge. The NNS (2014-2019) emphasizes direct, nutrition-specific interventions while also highlighting the importance of nutrition-sensitive approaches and the enabling environment (Box 2).

There are number of challenges which may inhibit the success of the NNS. Most importantly, the strategy is a health sector strategy and the relevant activities only extends to the support MOH must provide to other sectors as they implement sectoral activities. However, the achievement of Outcome 2 depends largely upon buy-in from non-health sectors. Because these ministries do not have a mandate or incentive to collaborate, and because there is not yet a dialogue regarding how to do so, cross-sectoral buy-in will likely be limited. Additionally, there is some operational risk as key strategies and laws that could motivate the NNS actions are lacking. The WHO Global Strategy for Infant and Young Child Feeding (2003) calls on Member States to develop comprehensive, context-specific policies to ‘protect, promote, and support’ appropriate IYCF practices, but these have not been prepared for Timor-Leste. Consequently, efforts in these areas may be prone to fragmentation due to a lack of strategic vision.

⁵² A number of stakeholders within and outside the Nutrition Working Group were consulted in the NNS development process, yet nutrition stakeholders expressed concern over the inclusivity of the strategy development process.

BOX 2. KEY FEATURES OF TIMOR-LESTE’S NATIONAL NUTRITION STRATEGY (2014-2019)

Vision: The vision of the Timor-Leste National Nutrition Strategy (TL-NNS) 2014-2019 is to contribute to sustainable achievement of national socioeconomic and human development goals by improving the quality and productivity of its human capital.

Goal: The goal of the TL-NNS 2014-2019 is to improve the nutritional status of Timorese population.

Purpose: To accelerate reduction of maternal and child undernutrition through implementation of nutrition specific and nutrition sensitive interventions.

Objective: To reduce malnutrition and micronutrient deficiency among children and women.

Strategic Priorities:

1. Improved nutrient intake by mothers, children and adolescent girls.
2. Improved care for mothers and children.
3. Improved food security at household, community, and national levels.
4. Improved hygiene and access to water and sanitation.
5. Optimal nutrition behavior and practices promoted at all levels.
6. Improved policies and capacity for multisectoral nutrition action.

Planned Outcomes:

1. Increased coverage of nutrition-specific interventions.
2. Increased coverage of nutrition-sensitive interventions.
3. Enabling national policies, programmes and coordination mechanism.

Expected Impact: Improved nutritional status (reduced stunting, reduced micronutrient deficiencies).

1.1.3.2. Ministry of Agriculture and Fisheries (MAF)

The Ministry of Agriculture and Fisheries Strategic Plan (MAFSP) (2014-2020) has the stated objective of increasing production and productivity of crops, livestock and fisheries, which are each intended to improve the quality of food intake and household nutrition. The Strategic Plan also explicitly links agriculture and nutrition, highlighting that agricultural and rural development for small scale farmers is necessary to improve market access and “reduce poverty, ensure food and nutrition security, and promote economic growth in rural areas, and thus, across the nation” (Box 3) (MAF 2013a). The strategy maintains that “targeted investments around staple food crop production and marketing will deliver improved nutrition at the household level.” Not only is agriculture essential for economic development and livelihoods, but also has a role to play in promoting peace and stability. Specifically, the MAFSP notes the importance of “providing food for a growing population at an affordable price” to ensure food security and political stability. Nutrition components of the MAFSP fall primarily under Development Objective 1. However, programs aimed at improving market access for rural farmers producing nutrient-rich foods, and strengthening opportunities for value addition may also be nutrition-sensitive.

BOX 3. DEVELOPMENT OBJECTIVES OF THE MINISTRY OF AGRICULTURE AND FISHERIES STRATEGIC PLAN (2014-2020)

Development Objectives

1. Improve rural incomes and livelihoods, and reduce poverty;
2. Improve household food and nutrition security;
3. Support the transition from subsistence farming to commercial farming; and
4. Promote environmental sustainability and the conservation of natural resources.

Source: MAF 2013a

1.1.3.3. Ministry of Social Solidarity (MSS)

As defined by the Organic Law of Sixth Constitutional Government, MSS is responsible for the design, execution, coordination and policy for the areas of social assistance, social security, natural disaster management, issues of veterans' affairs, and the social protection of the most vulnerable people in society. The MSS Strategic Plan 2014-2017 does not mention nutrition explicitly, though nutrition-relevant considerations are included under the themes of social reinsertion and social assistance and cohesion (Table 14). MSS plays a critical role in reducing poverty among nutritionally vulnerable households and promoting nutrition and food security in emergencies. The MSS strategy is unique among the strategic plans of KONSSANTIL ministries in that it explicitly mentions participation in KONSSANTIL as a means to improve the intra-agency response to social and humanitarian needs, including food security and emergency response (MSS 2014a).

1.1.3.4. Ministry of Education

The Ministry of Education National Education Strategic Plan (2011-2030) is aligned with the priority of achieving the Millennium Development Goals, not limited to the education goals, but also including the poverty/hunger, maternal health, and child health goals. The Constitution of the Democratic Republic of Timor-Leste enshrines the right to education and espouses the creation of a universal, compulsive, and free (to the extent possible) system of education. The guiding sector policy is the National Education Policy, approved by the Council of Ministers in 2008 (MOE 2011).

The National Education Strategic Plan includes twelve priority programs, with the Early Childhood Education and Social Inclusion programs having greatest relevance for nutrition. The Early Childhood Education program is focused on achieving universal pre-school education by 2030. The Social Inclusion Program supports the removal of barriers to education for girls and women and those who are disadvantaged, prioritizing gender parity, particularly in the areas of secondary and higher education. The school feeding program (SFP) is also included under social inclusion and framed as a policy tool to 'ensure enrolment and retention' rather than a nutrition intervention. The SFP is intended to be complemented by other programs, such as Conditional Cash Transfers (CCTs) for girls in secondary school and transportation solutions.

Table 14. Nutrition-relevant objectives from Ministry of Social Solidarity Strategic Plan (2014-2017)

Theme	Goal	Objectives
SOCIAL REINSERTION	Children at risk are protected	<ul style="list-style-type: none"> To strengthen basic services for child protection and guarantee the welfare of the child in the family. To increase community awareness of child rights and so contribute to the eradication of practices that violate the rights of the child. To reinforce the institutional and legal framework for child protection, including finalizing the Child Protection Law, finalizing the Child and Family Welfare System Policy, developing a law on regulation of institutions caring for children, and operationalizing the Juvenile Justice Law and the Law on the Care and Adoption Orphans and the Adoption of Children in Specific Situations.
	Women victims of gender-based violence (GBV) and domestic violence (DV) are protected and reintegrated	<ul style="list-style-type: none"> To strengthen the legal framework and expand services for victims of gender-based violence (GBV) and domestic violence (DV), including those with special needs. To increase the capacity of the referral network (Rede Referral) to improve the quality of service provision to GBV and DV victims.
	Families in vulnerable social situations become more resilient and attend to the education and health of their children	<ul style="list-style-type: none"> To promote access of vulnerable families to the Bolsa da Mae/Bolsa Familia Conditional Cash Transfer (CCT) program. To improve and consolidate the processes for selecting Bolsa da Mae/Bolsa Familia beneficiaries, making and monitoring payments, monitoring compliance with conditionalities, and responding to complaints. To further develop the Bolsa da Mae/Bolsa Familia program to have a greater impact on poverty alleviation.
SOCIAL ASSISTANCE AND COHESION	Vulnerable groups receive humanitarian and social assistance	<ul style="list-style-type: none"> To strengthen base level humanitarian and social assistance processes. To establish clear guidelines on criteria for food and non-food assistance. To reduce the difficulties of meeting the food needs of children in social solidarity institutions, families or groups in conditions of food insecurity, victims of natural disasters, and other beneficiaries where justified.

Source: MSS 2014a.

1.1.3.5. Additional RDTL State Agencies with Activities Supportive of Nutrition

Other Ministries which support nutrition include: The Ministry of Commerce, Industry, and Environment; Ministry of Public Works; Secretariat of State for the Support and Socio-Economic Promotion of Women; Secretariat of State for Youth and Sport (Table 15).

Table 15. Additional Timorese State Agencies with Activities Supportive of Nutrition

Ministry	Activities
Ministry of Commerce, Industry, and Environment (MCIE)	Promotes local industries, subsidies, microfinance, and small and micro-enterprises. The National Logistics Centre (CLN) -- a state enterprise under the indirect administration of MCIE -- consists of an integrated system of warehouses and trucks and is responsible for maintaining stocks to deliver essential goods to the population. CLN is responsible not only for food logistics (rice, maize, mung beans, and peanuts) but also construction supplies and materials. CLN has responsibility for food price subsidies and procurement of rice for school feeding and emergencies.
Office of Prime Minister	The Unit for Monitoring and Evaluation of Social Affairs (UMAAS) facilitates improvements in service delivery to achieve SDP objectives in social sector, particularly education and health and monitoring improvements in quality of school attendance and feeding, vitamin A provision, and early childhood development.
Secretariat of State for the Support and Socio-Economical Promotion of Women (SEM).	Supports implementation of the National Domestic Violence Law.
Secretariat of State for Youth and Sports	Supports 13 youth centers, competitions, youth exchange, training, and youth-led initiatives.
Ministry of Public Works, Transport and Communications (MoPWTC)	Lead responsibility for rural and urban water supply and sanitation through Directorates of Water Supply (DNSA) and Basic Sanitation (DNSB).
Ministry of Justice	Responsible for laws: Labor Law, National Domestic Violence Law, Salt Iodization (draft).
Ministry of Planning and Strategic Investment	Manages programs for decentralized district and community development (PNDS, PDD, PDID).

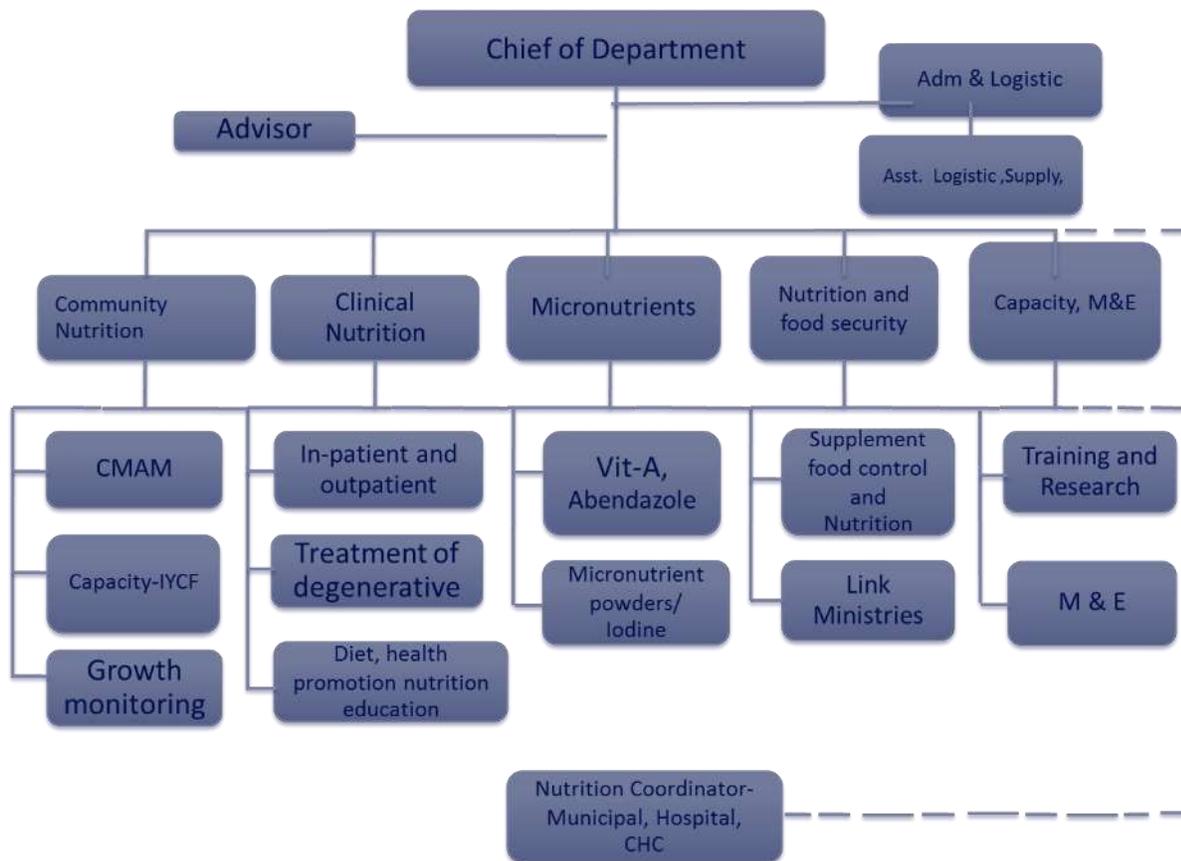
1.2 Institutional Arrangements

Nutrition functions and responsibilities are found across a variety of agencies. Within the MOH, the NHSSP defines an institutional at the central level, which was most recently updated in 2015 (See Annex 6). Development partners such as WHO, DFAT, EU, UNICEF, WFP, USAID, Menzies School of Health Research and World Bank have provided support for institutional strengthening at the central level which have direct or indirect effects for nutrition, including financial and technical support for the development of policies, strategies, and guidelines within MOH directorates.

The Nutrition Department is one of seven departments in the National Directorate of Public Health (DNSP). The Nutrition Department provides technical, strategic, and M&E support for the nutrition program but is

not responsible for implementation (Figure 22). Nutrition-related responsibilities are also found within the Departments of Maternal and Child Health, Health Promotion, and Environmental Health. The DNSP reports that human resources and transportation constraints limit the ability of the Nutrition Department to perform routine monitoring and evaluation of the nutrition program at the district level.

Figure 22. Structure of Nutrition Department, Directorate of Public Health, Ministry of Health



Source: MOH 2015

Each of the 13 districts has its own National Directorate of District Health Services (DHS) which maintains responsibility for nutrition service delivery. DHS provides health services at the following levels:

1. Community
2. Health Post
3. Community Health Center at sub-district level
4. Community Health Center (with inpatient)
5. District level referral hospitals (only in 5 districts)

While nutrition is intended to be mainstreamed through the new Primary Health Care (PHC) model, operationalization of the PHC guidelines--released in 2015 -- has been slow. DHS continues to structure

their services as vertical programs.⁵³ Supervisory visits from the central level to district level, and district level to CHC level have been found to be insufficient in general, and for the nutrition program, specifically (MOH 2015a). Because monitoring and evaluation (in the Nutrition Department) remains institutionally siloed from service delivery (in the DHS), there is little accountability or incentive mechanisms to promote coordination, improve quality, and availability of nutrition services.

2. Organizational Capacity

Organizational capacity refers to the nature and factors of organizations working in nutrition-related areas which develop, support, and enable an effective workforce. A number of organizational constraints are common across ministries responsible for the delivery of nutrition-specific and nutrition-sensitive programs.

2.1. Public Financial Management

Timor-Leste's ministries face public financial management challenges, including disconnected planning and budgeting processes, unreliable and insufficient budgets, and the absence of accountability structures. Budget disbursement to districts is commonly delayed beyond the first quarter, severely limiting the availability and quality of service delivery. With development partner support, MOH has instituted the detailed implementation plan (DIP) preparation process for bottom-up district-level planning. However, this exercise is disconnected from the budget process. The ongoing national Budget Performance Reform will introduce a system of Program-Based Budgeting and provide an opportunity to budget for nutrition. However, the reform's success rests upon strengthened PFM capacity at central and sub-national levels.

2.2. Data, Monitoring, and Evaluation

Receiving consistent, reliable data and information is often a challenge in Timor-Leste. MOH has relatively advanced system of reporting from the districts to Dili, and with plans to roll out DHIS-2, a digital reporting system. On the other hand, MAF does not have a sector-wide M&E system to collect and analyze data. In MSS, information systems are not well-established, undermining the effectiveness of targeting, payment, monitoring and controls (World Bank 2013). The lack of reliable data results in conflicting reports between the Ministries, Development Partners, and National Surveys that can create confusion and difficulty in program planning. Furthermore, without reliable monitoring and evaluation data, ministries are not able to demonstrate their results and advocate for greater budgetary allocations.

2.3. Human Resource Management

Civil service capacity constraints are not necessarily rooted in numbers and distribution of employees, but instead in the lack of structural support, management and oversight for improved workforce performance. Job descriptions and terms of reference tend to be vague and may be written for an individual rather than for the qualifications and competencies necessary to perform job functions. Disconnects between staff skills, experience and responsibilities are not uncommon. In general, public sector workers, even at the technical level, are regularly rotated through the civil service. Efforts to build organizational capacity and institutional knowledge need to be regularly repeated due to high turnover. The MOH and DHS have increased their attention to supportive supervision, including regular monitoring visits by DHS to health facilities in order to monitor the availability of human resources, supplies, and medicines as well as the general facility environment, with the ultimate goal of improving the quality of service delivery. However, the frequency of visits may be constrained due to a lack of operational budget for transportation and fuel. Repeated retraining is necessary as individuals shift roles within and across ministries. The Sixth

⁵³ Previously, the nutrition program was synonymous with the distribution of supplementary food.

Constitutional Government is currently leading Public Administration Reform, which has the potential to improve many of the aforementioned challenges.

2.4. Number and Distribution of Workforce

The Government of Timor-Leste has dramatically increased the number of civil service staff in recent years. As such, numbers and distribution of workforce has become less of an issue (though some constraints remain), while performance and efficiency of the current workforce has surfaced.

2.4.1. Ministry of Health

At the central level, the Nutrition Department has expressed a concern over the small number of staff relative to the workload required to deliver MOH and partner-supported programs. Within District Health Services, a District Public Health Officer is employed to oversee the Nutrition Program. Some DPHOs work solely on nutrition, while others are responsible for multiple programs. Though the Nutrition Program is typically regarded as the responsibility of a nutritionist, nearly all cadres of health professionals play a role in delivering nutrition interventions in Timor-Leste. However, these nutrition-related functions are not included in the job description of health professionals (Annex 10).

A number of health cadres are available to deliver frontline nutrition services (Table 16). The PHC Guidelines call for the deployment of 1 doctor, 1 nurse and 1 midwife to each Health Post, to be expanded to 7 workers over time (MOH 2015b). A review of the health workforce indicated a service delivery staff numbering 2,439 workers in 2014, an estimated health worker density in Timor-Leste of 1 service delivery staff per 469 people⁵⁴ (World Bank 2016a). The Cuban Medical Brigade⁵⁵ has provided medical training to roughly 1000 Timorese doctors, resulting in an excess of doctors relative to the WHO ‘Threshold’ model. (World Bank 2016a). On the other hand, there is a shortage of midwives: 42% of health posts were without midwives, and the current workforce stands at roughly 50% relative to the WHO threshold requirements (World Bank 2016a). From a nutrition perspective, doctors tend to have responsibility for fewer critical nutrition functions relative to midwives and would require that their job descriptions be revised in order to promote effective use of the workforce for nutrition.

Most CHCs at district level had 1-2 nutritionists who were responsible for the nutrition program. The PHC Guidelines call for an additional Public Health Technician for Nutrition to staff the CHC at sub-district level. Over the past year, UNICEF has supported the deployment of sub-district nutrition focal points⁵⁶ to 16 CHCs in 3 districts.

Table 16. Cadres available for nutrition in the health sector

Cadre	Distribution	Nutrition Responsibilities
Doctor	<ul style="list-style-type: none"> • Health Post • CHC Sub-District • CHC with beds • Referral 	<ul style="list-style-type: none"> • Integrated management of childhood illness. • Identification, management, and treatment of severe acute malnutrition.
Nurse	<ul style="list-style-type: none"> • Health Post 	<ul style="list-style-type: none"> • Integrated management of childhood illness

⁵⁴ Which is below the WHO threshold of 1 service delivery staff per 439 people.

⁵⁵ The Cuban Medical Brigade (CMB) trains (either in Cuba or in Timor-Leste) the majority of doctors serving in the country. Students enrolled in or after 2008 are trained in Timor-Leste by the CMB in collaboration with the National University of Timor-Leste (UNTL). The training includes a five years of medical schooling and a one-year field internship.

⁵⁶ The focal point for nutrition at the CHC level is referred to as “Public Health Technician for Nutrition”, though the current terms of reference use the title “Sub-District Nutrition Focal Point”.

	<ul style="list-style-type: none"> • CHC Sub-District • CHC with beds • Referral 	<ul style="list-style-type: none"> • Identification, management, and treatment of severe acute malnutrition. • Growth monitoring and promotion.
Midwife	<ul style="list-style-type: none"> • Health Post • CHC Sub-District • CHC with Beds • Referral 	<ul style="list-style-type: none"> • Nutrition counseling for pregnant/lactating/young women. • Weigh and measure infant. • Initiation, exclusive, and continued BF support and counseling. • Promote optimum IYCF. • Provision of Iron Folic-Acid (IFA) to pregnant women. • Growth monitoring and promotion.
Public Health Technician for Nutrition	<ul style="list-style-type: none"> • CHC at Sub-District Level 	<ul style="list-style-type: none"> • Growth monitoring and promotion. • Provision of vitamin A, deworming. • Identification, referral, enrollment of acutely malnourished children in treatment. • Counsel on appropriate IYCF. • Enroll in MNP. • Supportive supervision for nutrition to health post level.
Family Health Volunteers (Promotor Saude Familia)	<ul style="list-style-type: none"> • Community 	<ul style="list-style-type: none"> • Growth monitoring and promotion. • Provision of vitamin A, deworming. • Hygiene promotion.

Notes: IYCF: Infant and young child feeding; BF: Breastfeeding; MNP: Micronutrient Powder; CHC: Community Health Center

2.4.2. Workforce Available for Nutrition Outside of the Health Sector

Non-health staff are also deployed throughout the country (Table 17) and can be leveraged for the delivery of nutrition-specific and nutrition-sensitive interventions.

Table 17. Cadres available for nutrition in the non-health sector

Ministry	Cadre	Distribution	Description
MAF	<i>Suco</i> Extension Officers (SEO)	1 per <i>suco</i>	<ul style="list-style-type: none"> • Lack clear roles and responsibilities and training. • RDP IV provided support to MAF to strengthen the quality of extension services, including enhancing the ability to promote good agricultural practices for nutrient-rich crop varieties. • Local NGO HIAM Health has a memorandum of understanding with MAF to provide two-week nutrition-sensitive agricultural extension training to all SEOs.
MSS	Social Animators	1 per sub-district	<ul style="list-style-type: none"> • Described as “social workers” though there is no formal accreditation (see job description in Annex).

			<ul style="list-style-type: none"> • Have an average ratio of 1:16,251 population. Social Welfare Workforce Assessment (2014) included a capacity assessment which highlighted the need to revisit the functions and responsibilities.
--	--	--	---

Note: RDP IV: Fourth Rural Development Program, EU-funded and implemented by GIZ and Camoes in partnership with MAF.

2.5 Supply Chain Management

The Ministry of Health continues to receive training on commodity procurement and supply chain management for SAMES (the national autonomous medical stores). With EU support, UNICEF procures all vitamin A, deworming, and therapeutic feeding commodities for MOH. In order to ensure adequate supply, WFP procures commodities for supplementary feeding and uses its own supply chain to deliver these to the CHC level.

3. Workforce Capacity

Workforce capacity refers to the knowledge, skills and attitudes required to perform the competencies required to carry out nutrition-related work, as well as the materials and job aids needed. A number of constraints are common across ministries. Performance incentives are non-existent in the civil service, and there are few disincentives for poor performance. Strong mentorship is needed to support individuals responsible for community-level service delivery who are often tasked with engaging in community facilitation and building knowledge, adapting processes, and changing behaviors.

3.1. Ministry of Health

At the central level, there is and a critical absence of staff with public health nutrition qualifications and expertise. At the health facility level, doctors, nurses, midwives, and nutritionists each play a role in the delivery of nutrition-specific interventions (Table 16, above).

Pre-service and in-service training have generally not prepared the health workforce to deliver the full package of nutrition interventions. Pre-service training in nutrition in Timor-Leste is limited to the Bachelor of Science level.⁵⁷ The National University of Timor-Leste (UNTL) has launched a Diploma 3 course (BSc-level) in Nutrition and Dietetics, with Community Health/Public Health Identified as a track. Unlike other health professionals trained at UNTL, graduates of the Nutrition and Dietetics program are not guaranteed entry into the civil service (and so it is unclear where the graduates will be placed). Doctors, nurses, and midwives have components of the nutrition package included in their pre-service training, but without accreditation standards, there are no formally required nutrition competencies.⁵⁸

The National Institute of Health (INS) is responsible for in-service training in Timor-Leste. The EU-funded Integrated Nutrition Project, UNICEF/WFP supported the Ministry of Health to develop in-service training on the Specific Nutrition Intervention Package (SNIP) for all health service providers. Fifteen master

⁵⁷ Given the small number of Master's level positions which would potentially be available in the country, the development of a Master of in public health nutrition is not warranted. However, it may be necessary for an individual in the Nutrition Department to receive this training abroad.

⁵⁸ Core competencies are being developed for nurses at the National Hospital, but nutrition is not included as a required clinical skill.

trainers have been trained with and district level training provided in Ermera, Ainaro, and Bobonaro. Additionally, INS has a nutrition and food security training supported by Menzies University and DFAT which covers the theory and practice behind key nutrition-specific and nutrition-sensitive interventions. MOH and INS have not yet developed a comprehensive, competency-based training plan for health professionals. In-service trainings provided by INS are often ad-hoc and provided to meet the programmatic requirements of DPs. For example, half of nurses and midwives reported participating in three or more short-term trainings in the previous three years, while 25% reported not attending any (World Bank 2015c).

In addition to the absence of a country capacity building plan, there is no country-wide protocol for follow-up after training (FUAT) or supportive supervision for nutrition. Engaging in strong FUAT, perhaps through the Learning Lab approach (Box 4) can build confidence and competencies provide nutrition-specific interventions, especially IYCF promotion, community-based management of acute malnutrition, and nutrition counseling during pregnancy. USAID had previously supported the development of nutrition supportive supervision tools, but these have been replaced with new programmatic guidelines and job aids aligned with SNIP.

BOX 4. BUILDING PROVIDER COMPETENCIES AND CONFIDENCE THROUGH THE LEARNING LAB APPROACH

Even after receiving training, health providers have demonstrated limited improvements in job performance and attainment of competencies. To address this issue, the INGO Health Alliance International collaborated with the National Institute of Health (INS) and MOH to develop the Learning Lab approach to follow up after training on Essential Newborn Care.

A Learning Lab is a 2-3 hour session provided once per month for six months after national in-service training. Labs are structured learning within the facility setting rather than a classroom. HAI conducted a comparison evaluation of the approach, which demonstrated that the skills, competencies, and confidence of midwives who participated in Learning Labs were substantially and consistently higher than non-participants (Kerrison 2014). Qualitative interviews with the midwives, DHS staff, and INS staff revealed high acceptability of the approach, and support for applying the approach to other services.

4. Community Capacity

Community capacity is essential to ensure that services meet the needs and priorities of beneficiaries. Timor-Leste's strong coalition of civil society organizations and social networks can be leveraged contribute to effective community participation in achieving better health and nutrition outcomes. Village structures (i.e. *suco* councils) provide the platforms for bringing communities together to promote behavior change. Most families belong to community or thematic groups, be it religious, farming, savings, social, health organizations, etc. These groups provide a platform for community mobilization and awareness raising. Social auditing has recently been introduced to Timor-Leste and offers the opportunity for communities engage in participatory governance and transparent, effective development.

However, in order to engage communities in improving the delivery of nutrition services, knowledge of optimum nutrition practices needs strengthening. There is a commonly reported lack of ability for communities to identify stunting and to engage in optimum infant and young child feeding behaviors. A recent report prepared for FAO suggests that a combination of advocacy, social mobilization, and behavior change communication is necessary to improve community-level practices (Lantican 2015). Community mobilizers and facilitators are needed who have an understanding of the importance and contributions of

immediate and underlying determinants of malnutrition and can negotiate with communities. These mobilizers can leverage traditional values of family and strong intentions to take the best care of children in order to promote action on behavior change.

F. Leadership and Capacity Gaps and Opportunities

Timor-Leste has the necessary foundation for a strong national response to malnutrition, including: high level political commitments, recognition of nutrition as a foundation of development, and a cross-sectoral framework for action. However, gaps and opportunities identified include the following:

- The existence of a high-level coordinating institution is a critical asset. However, MAF chairmanship contributes to a narrow focus on food security and food security sovereignty and an inability to hold KONSSANTIL member ministries accountable for results.
- The Zero Hunger Challenge/PAN-HAM-TIL is a strong advocacy tool but is a weak guide for implementation. PAN-HAM-TIL lacks a common results framework and is in need of prioritization.
- The plan is food-centric, and embeds stunting within a plan focused on achieving food security. Combined with KONSSANTIL (chaired by Ministry of Agriculture) focus on food security, this may contribute to the lack of ownership by non-agriculture line ministries.
- There is a need for greater harmonization and consistency between the PAN-HAM-TIL and NNS.
- Policies, strategies, and laws needed for a coordinated response to malnutrition (e.g. IYCF Strategy, BCC Strategy, Code of Marketing of Breast Milk Substitutes, Salt Iodization Law, Food Fortification Strategy) are not in place.
- The MAFSP takes a narrow view on improving food security, highlighting production and productivity of staple crops as key to delivering improved nutrition.
- Central level departmental staff need greater ownership, coordination and collaboration of policies and strategies to align implementation with sectoral directives. Strong involvement of development partners in the policy making and strategy development processes contributes to a lack of ownership of implementation, particularly at lower levels within central ministries.
- Deconcentration will present a critical challenge across ministries, as the processes of planning, budgeting will shift to the district level. While development partners have traditionally provided central level agencies with technical assistance for systems strengthening, management capacity in district agencies is lacking.
- An integrated approach to malnutrition has not been realized. Nutrition still operates as a vertical program with an emphasis on diagnosis, management, and treatment of acute malnutrition; there is less understanding of MOH role in preventing stunting, low birth weight, and overweight.
- Capacity-building efforts within MOH to address malnutrition have tended to focus on the medium- to long-term organizational and system. There is no systematic, strategic approach to building nutrition capacity of the frontline health professionals to scale up and enhance quality of nutrition services. In-service trainings are driven by DP needs. Relatively few efforts have been made to build nutrition capacity of non-health civil servants.

- There is a strong civil society network in Timor-Leste, yet community capacity for bottom up management to achieve better nutrition outcomes remains weak. Communities need access to high quality information along with community mobilizers capable of negotiating the disconnect between food sufficiency, nutrition, and IYCF and traditional practices. The emphasis on social auditing can be seen as an opportunity for nutrition. Additional efforts are required to educate communities on services that should be available to them so they are able to provide feedback on service delivery.

Chapter 5. Nutrition-Specific Interventions and Approaches

CHAPTER 5 KEY MESSAGES

1. The Ministry of Health has defined a Specific Nutrition Intervention Package (SNIP) to be delivered as part of the package of Primary Healthcare (PHC) services.
2. Due to remoteness and low care-seeking, community outreach is a key component of nutrition service delivery in Timor-Leste. The SISCa program and *Saude na Familia* programs are not fully implemented with quality and at scale.
3. Coverage of SNIP supplementation interventions remains low: in 2013, vitamin A supplementation was 53%; 32% of women consumed >90 iron-folic acid tablets during their previous pregnancy; 33% of children received zinc for the treatment of diarrhea.
4. Not all health providers have been trained in infant and young child feeding promotion. NGO-supported cooking demonstrations and mothers support groups are the primary platforms for mothers to receive information on IYCF and do not operate at national scale.
5. Nine districts are without any intervention to address the very high prevalence of anemia among children and there is no program for anemia reduction in non-pregnant women.
6. Donor support has focused on supporting the Integrated Management of Acute Malnutrition, including targeted supplementary feeding for treatment of moderate acute malnutrition. However, with low compliance, it is unclear whether the approach is sustainable and should be scaled.
7. Nutrition still operates as a vertical program, with aspects of supply procurement, distribution, monitoring and evaluation, and supervision operating outside of mainstream Primary Healthcare.
8. There is no food fortification policy, legislation, or program. The Salt Law has been in draft for many years and only 43% of households have adequately iodized salt.
9. Interventions for prevention and diagnosis of non-communicable diseases, including dietary counselling and blood pressure measurement, are not common.

Scaling up a package of evidence-based, nutrition-specific interventions (Annex 11) targeted at the first 1,000 days window of opportunity is a cost effective manner of avoiding lifelong consequences of malnutrition. This section reviews delivery platforms and coverage of for evidence-based nutrition-specific interventions and alignment with the burden of malnutrition in Timor-Leste.

A. Primary Health Care (PHC) Package

Nutrition-specific interventions are intended to be mainstreamed through the Primary Health Care (PHC) Package. The Constitution Republic Democratic Timor-Leste, in Article 57, provides for a universal, free health care system (RDTL 2002). In 2015, the Honorable Prime Minister officially launched the PHC Programme. The package of services provided under PHC are intended to achieve more equitable, efficient, and low cost health care while accelerating improvements in health status (RDTL 2015b). PHC includes six packages⁵⁹ which provide all Timorese women and children to guaranteed access to essential nutrition-

⁵⁹ The packages include those to: reduce maternal mortality ratio; reduce infant mortality rates; reduce maternal and child malnutrition; control and prevent communicable diseases; control and prevent non-communicable disease; and control environmental health (MOH 2015).

specific interventions. These interventions are to be delivered through both health facility and community delivery channels.

In 2015, under joint EU/UNICEF support, the MOH initiated the development of guidelines and training modules for the Specific Nutrition Intervention Package (SNIP)⁶⁰. Using as its foundation the direct nutrition interventions, MOH defined a package of interventions which are known to be effective and cost-effective globally (Box 5). UNICEF/WFP provided technical support to the Nutrition Department to ensure that the SNIP interventions (as well as supplies, staffing, human resource functions, and reporting) were integrated into the PHC package and essential medicines list.

BOX 5. Timor-Leste Specific Nutrition Intervention Package (SNIP)

1. Infant and young child feeding and care practices including stimulation, growth and development monitoring and promotion, multiple micronutrient supplementation as part of complementary feeding practices promotion, and feeding during and after childhood illnesses.
2. Supplementation of IFA in pregnancy and in adolescent girls.
3. Use of Zinc (and ORS) for treatment of diarrhea.
4. Vitamin A supplementation.
5. Integrated Management of Acute Malnutrition (I-MAM)
6. Iodine deficiency prevention, control and elimination.
7. Deworming of children, deworming during pregnancy and helminth control in population.
8. Nutrition in emergencies.
9. Nutrition program monitoring and evaluation.
10. Nutrition program management and supportive supervision.

B. Outreach

Community-based strategies are particularly critical for delivering health, nutrition, and hygiene interventions, especially those which require household and individual behavior change. Because coverage is low for promotive interventions delivered only through health facilities, community-based platforms will be essential to increase nutrition intervention coverage in Timor-Leste.

1. Servisu Integradu da Saude Comunitaria (SISCa)

The *Servisu Integradu da Saude Comunitaria* (SISCa) (Integrated Community Health Services) program has served as Timor-Leste's platform for nutrition outreach. SISCa services include: growth monitoring, hygiene promotion, and provision of Ante-Natal Care (ANC) services (see Annex 13 for details). SISCa is intended to be implemented monthly through collaboration between CHC staff, community leaders/members, and Volunteers (PSFs). However, the future of SISCa is unclear and questions have been

⁶⁰ The MOH-proposed package of nutrition specific interventions was initially referred to as “high impact nutrition interventions” (HINI). This terminology was used in the development of the National Nutrition Strategy and Primary Health Care Guidelines, but has since been updated to SNIP. This report will use the acronym SNIP unless quoting from a pre-existing MOH document.

raised regarding the efficiency of investing in building PSF capacity and SISCa quality given the deployment of health professionals to the *suco* level and growing emphasis on home visits.⁶¹

2. Saude na Familia/Domicilliary Visits

The *Saude na Familia* (SnF) visits are a new addition to health service delivery outlined in the 2015 PHC Guidelines. Based on the Brazilian model of home visits, the SnF program intends to deploy the HP team to conduct data gathering and health risk assessments for all Timorese households in 2016. The first visit will consist of mapping and stratifying households based upon burden of disease and disease risk. Subsequent SnF visits are carried out to conduct health promotion and disease prevention and monitor the family's health status. Though the SnF program will ensure that each household has access to health services, there are significant risks to achieving the program objectives, including: (a) the lack of resources (human and transportation⁶²) required to conduct the visits; (b) the high supervision requirements; and (c) the need to provide continued training to up-skill medical professionals to serve the population's health needs, particularly nutrition-related diagnosis, counseling, and treatment.

C. Infant and Young Child Nutrition

1. Infant and Young Child Feeding (IYCF) Promotion

There is strong support for optimum infant and young child feeding within international organizations such as UNICEF, WHO, FAO, and WFP, and local NGOs (especially the Alola Foundation). However, delivery of IYCF promotion through government programs is minimal. Despite the large number of players, only recently has the IYCF guidelines been incorporated into the SNIP guide, yet a behavior change communication (BCC) strategy is lacking for IYCF, creating duplicity and lack of harmonization in approaches and in the development of information, education, and communication materials.

1.1. Breastfeeding

Breastfeeding promotion is delivered through a variety of channels. Skilled antenatal care offers a contact point for breastfeeding promotion. Most (86%) of women go for at least one antenatal care visit with a skilled provider, though dropout of ANC is high (NSD and ICF Macro 2010). Midwives are trained in breastfeeding promotion, which is included in PHC and should be provided by midwives at all facility levels. However, as noted above, because of the critical shortage of midwives, women may not receive these services when reporting for ANC.

1.2. Complementary Feeding Promotion

There is currently limited capacity to deliver complementary feeding promotion. During field visits, the health professional staff did not mention complementary feeding promotion as a key nutrition activity. PSFs were often mentioned as the cadre to deliver these messages, but training is not adequate nor is time sufficient for one-on-one behavior change counseling with mothers (5-15 minutes recommended) (Griffiths, Dickin, and Favin 1996). The *Haburas Nutrisaun* flipcharts were developed by MOH and include the nine key practices for appropriate complementary feeding, including essential hygiene actions.

⁶¹ Under PHC, MOH is scaling up the deployment of health professionals to the *suco*/HP level. The short-term intention is to employ one doctor, one nurse, and one midwife at each HP, with the PHC Guidelines proposing an increase to a total of 7 health staff per HP (MOH 2015c). Because of the considerable financial implications of this plan (World Bank 2016a) a more efficient use of resources may be to strengthen health promotion capacity of the HP team.

⁶² Even prior to the institution of SnF, 50% of health workers reported lack of transportation to see patients as a significant challenge (World Bank 2015c).

EU/UNICEF/WFP/KOICA are providing support to MOH to develop a package of IEC materials to support the implementation of SNIP interventions.

1.3. Mother Support Groups (MSGs)

The PHC package includes reference to community-based Mother Support Groups (MSGs), though these have not yet been scaled up by the government. NGO-run MSGs are operational in all 13 districts, though they do not cover 100% of *sucos*. Groups typically consist of 10-20 women who are led in regular peer-to-peer information sharing sessions. Though they have “mother” in the name, these groups may be open to adolescent girls, grandmothers, and husbands. Sessions cover integrated maternal and child health, and address a number of nutrition issues, including: breastfeeding promotion, IYCF promotion, newborn care, community management of acute malnutrition. The NNS proposes the national scale up of MSGs using the Alola model. However, there has not been an evaluation of the approach to identify the quality of messages provided and extent to which MSGs are effective in addressing context-specific barriers to optimum IYCF.

1.4. Cooking Demonstrations

Cooking demonstrations are one of the most commonly cited interventions for IYCF promotion. NGOs/INGOs commonly utilize cooking demonstrations as a means of transferring knowledge and awareness around IYCF. A leader will prepare a nutritious meal based upon locally available foods in order to build women’s self-efficacy with regard to preparing proper foods for IYCF. Cooking demonstrations have provided a platform for the preparation of recipes using Timor-Vita (locally available fortified supplementary food, described below), indigenous crops, and other nutrient-dense foods. The MOH has distributed a recipe book which promotes the preparation of culturally acceptable, improved complementary foods using local ingredients.⁶³ However, cooking demonstrations can be costly and there is no evidence of impact on improving complementary feeding behavior. Demo leaders report facing challenges in obtaining the appropriate mix of diverse, nutrient-rich foods in the market. Consequently demonstrations may not model optimum behavior, but rather reinforce the current feeding practices including limited quantity of nutrient-rich foods.

1.5. Growth Monitoring and Promotion

The PHC package includes monthly growth monitoring (at SISCa or health facility) for children under 24 months and every trimester for children from 2-5 years. Capacity to deliver growth promotion is limited. PSF training is not rigorously standardized and not all volunteers have been trained in growth monitoring. It is commonly reported that weight measurements are taken but not recorded on the LISIO (See Annex 14) by PSFs. Not all facilities have the scales/height boards needed to take anthropometric measurements.⁶⁴ Survey estimates of growth monitoring activities are not available.

1.6. Micronutrient Powders

SNIP includes the provision of micronutrient powders (MNPs) to IYC (6-23 months of age) at the introduction of food and to be consumed every other day. Currently, UNICEF supports the procurement and distribution of MNPs to four districts: Aileu, Ainaro, Bobonaro, Ermera. At the time of the 2013 TLFNS when MNPs were being piloted in Aileu district, 72% of children age 6-23 months had received the MNPs, with 84% of these children consuming their sachets (RD TL 2013a).

⁶³ EU/WFP are planning a revision of the book and accompanying posters.

⁶⁴ UNICEF supplied length/height boards, scales, and weighing trousers at all health facilities to Health Post level in Ainaro, Bobonaro, and Ermera in 2015 and intends to roll out nationwide in 2016.

2. Vitamin A

The SNIP guidelines support the provision of vitamin A supplementation (VAS) to children ages 6-59 months twice annually. Vitamin A is delivered through semi-annual campaigns and through routine service delivery at all facilities down to the health post level. Despite the use of campaigns, vitamin A supplementation coverage among children age 6-59 months is low by international standards, and roughly half of children age 6-59 months receive VAS. There was a marginal increase in coverage from 2009-10 (51%) to 2013 (53%). Vitamin A supplementation coverage ranged from 62.4% in Aileu to 44.7% in Lautem.

3. Therapeutic Zinc

Providing zinc supplements with oral rehydration salt (ORS) for children under 5 years of age with diarrhea can reduce the duration and severity of diarrheal episodes. In 2013, one third (33%) of all children experiencing diarrhea in the past two weeks had received zinc, while 29% received ORS plus zinc. This is an increase from 2009-10, when only 5.8% of children with diarrhea received zinc.

4. Deworming

The SNIP guidelines support the delivery of deworming tablets for children 1-5 years of age and school children ages 6-11 years of age. Deworming tablets are provided at both health facilities and through school-based platforms. In 2013, 43% of primary schools reported providing deworming treatments during 2012 (World Bank 2013a), while in the 2013 TLFNS, 39% of children had received deworming tablets in the previous 6 months (RDTL 2013a).

5. Integrated Management of Acute Malnutrition

The SNIP guidelines include the Integrated Management of Acute Malnutrition (JMAK) to be fully integrated into PHC.⁶⁵ JMAK is based on four components (Table 18). MOH receives off-budget support from the EU, channeled to UNICEF and WFP to scale up JMAK. UNICEF supports the procurement of F-75, F-100, and ready-use therapeutic food (RUTF) for outpatient treatment (OTP) and in-patient treatment (ITP) for severe acute malnutrition (SAM) nationwide. WFP supports the Targeted Supplementary Feeding Programme (TSFP) for treatment of moderate acute malnutrition (MAM) in six districts. MOH had agreed to fund the scale-up of JMAK in the districts without development partner support, to date this commitment has not been realized.

An independent mid-term evaluation found that although the interventions were aligned with the NNS, geographic and temporal alignment of the two components remained a gap.⁶⁶ In addition to community-based treatment, the quality of in-patient treatment of SAM needs to be strengthened. At the National Hospital, stock-outs of therapeutic milks are common and there is difficulty ensuring that admitted children are adequately fed when and as needed.

⁶⁵ In 2015, HIAM Health—the only organization providing dedicated in-patient therapeutic feeding—closed. Inpatient management of acute malnutrition occurs only at CHCs with inpatient facilities, referral hospitals, the national hospital, and private clinics.

⁶⁶ UNICEF was funded for 2014-2017 to cover all districts with SAM treatment and CHC Nutrition Focal Point in Bobonaro, Ermera, and Ainaro. These CHC Focal points have received one week additional training in JMAK. WFP was funded for 2014-2016 to support supplementary feeding in six districts. WFP phased in implementation, beginning in Bobonaro, Covalima, and Oecussi, to be followed by Ermera, Ainaro, and Dili. Only Bobonaro has Sub-District CHC Focal Point + SAM + TSFP.

Table 18. Components of the Integrated Management of Acute Malnutrition in Timor-Leste

Component	Description	Where	Who
Community outreach	Aims to detect cases early and maximise coverage through community sensitisation, active case finding and follow-up.	Community.	PSFs work together with community leaders and health workers.
TSFP	Treatment of children 6-59 months with Moderate Acute Malnutrition (MAM) and pregnant and lactating women with acute malnutrition are provided take-home rations every month.	The old program dispensed through SISCa points (though no longer since 2014), and current modified program only through CHCs and health posts.	Health workers.
OTP	Treatment of children 6-59 months with Severe Acute Malnutrition (SAM) WITH appetite and WITHOUT medical complications. Treatment of infants with SAM who are gaining weight, effectively feeding and have no medical complications.	SISCa points, CHCs and health posts.	Health workers.
In-patient care	Treatment of severe acutely malnourished children WITHOUT appetite and/or WITH medical complications are treated as inpatients until stabilised. Infants < 6 months with SAM who are not gaining weight, ineffectively feeding and have medical complications are managed in in-patient care. Neonates should be treated on the paediatric ward due to the need for specialized care.	CHC with inpatient facilities or at a referral hospital.	Nurses with assistance from medical doctors as necessary.

Source: Ministry of Health 2015d

Previously, there had not been strong evidence of effectiveness in delivering MAM treatment to children under 5 in Timor-Leste.⁶⁷ The target population for the TSFP was 8,600 children with MAM over the course of one year, or 719 children per month. WFP estimated that about 30% of children with MAM in the catchment area enrolled in 2015. Main challenges faced in implementation have been the identification of fewer cases of malnutrition than expected and a high rate of default among enrolled children. Poor community sensitization was cited as a key contributor to the high default rate. For commodities provided to children, field visit carried out under this study indicate that mothers preferred receiving the fortified corn-soy blend over the ready-use supplementary food (RUSF), in part because the blended food could be shared with all family members. To that end, nearly 100% of underweight pregnant and lactating women have been enrolled and receive Timor-Vita. WFP reports indicate that in 2016, with the access to Timor-Vita for women and additional community mobilization, coverage rates of 65% for children are being maintained.

D. Pre-pregnancy and Maternal Nutrition

1. Adolescent Nutrition

The NHSSP, the Reproductive, Maternal, Newborn and Child Health (RMNCH) strategy, and NNS propose to target adolescent girls with nutrition messages and services. PHC guidelines support the strategic targeting of adolescent girls (10-18 years) with iron-folic acid supplementation (MOH 2015c), and the NNS proposes a feasibility study of scaling up weekly IFA and semi-annual deworming for school-going and non-school going adolescent girls in three districts (MOH 2014b). WHO recommends intermittent IFA supplementation for menstruating women due to the high prevalence of anemia (WHO 2011). However, in Timor-Leste there are currently no formal programs targeted at improving nutrient intake and behaviors for adolescent girls, and their nutritional status is not monitored.

2. Maternal Nutrition

2.1. Micronutrient Supplementation and Anemia Prevention

Iron-folic acid supplementation is a core component of ANC services in Timor-Leste. The WHO recommends daily iron supplementation during pregnancy as a standard of care in populations at risk of iron deficiency (WHO 2012c). IFA coverage is increasing over time (59% of women took IFA during the first trimester and 32% took more than 90 tablets) (RDTL 2013a). Quality of ANC is a concern: MOH data indicate that 41% of health posts and 27% of CHCs had stockouts of IFA tablets (MOH 2015b). A baseline program survey conducted among 570 women in Ainaro and Manufahi revealed that although 88% of women received iron tablets, only 55% took more than 90 tablets. There is evidence that this may be due to rationing at the health facilities, as women reported receiving only 7-12 tablets per ANC visit (HAI 2012). Through interviews with key informants, a number of programmatic constraints to IFA supplementation were identified, including: low consumption of antenatal care services; late presentation to ANC and foregone protective effects of folic acid; and low maternal awareness of benefits of IFA.

⁶⁷ An independent evaluation of the previous WFP country portfolio (Mokoro 2013) found that the provision of supplementary food was effective in increasing access to health services (at SISCA, the distribution site) but there was less evidence of achieving primary objective of improving nutritional status of beneficiaries. Consequently, the evaluation recommended discontinuing supplementary feeding for children 24-59 months to focus only on 6-23 months and pregnant and lactating women. However, targeted feeding for MAM in children 6-59 months continues. With the change of product for children to a Ready-to-Use Supplementary Food, nutrition results have been improved with a cure rate of over 60% (2015/2016).

Deworming of pregnant women was fairly uncommon, with fewer than one in five (19.3%) of women receiving deworming tablets during ANC visits (RDTL 2013b). Use of insecticide treated bed nets during pregnancy can also contribute to malaria prevention and risk reduction for anemia and low birth weight. The Global Fund supports distribution of ITNs across Timor-Leste and has reported 58% coverage among pregnant women. Maternal micronutrient supplementation has also been shown to have significant effects on reducing LBW, SGA, and preterm birth (Haider and Bhutta 2012), but neither the NNS or PHC Guidelines mention the potential to scale up this intervention in Timor-Leste.

2.2. Dietary Supplementation

The importance of balanced protein-energy supplementation for underweight pregnant women was highlighted in the 2013 *Lancet* series. As a part of its Maternal and Child Health and Nutrition Program, WFP supports the distribution of fortified blended food (FBF) to underweight pregnant and lactating mothers in its intervention districts. In the 2013 TLFNS, nearly half (45%) of mothers reported receiving FBF during their last pregnancy (RDTL 2013b). This figure is perhaps higher than anticipated, given the prevalence of maternal underweight of around 25% in both the 2009-10 DHS and the 2013 TLFNS.

2.3. Information and Communication Technology for Optimum Maternal Nutrition

USAID, DFAT, Catalpa, and Health Alliance International are piloting a mobile messaging service *Liga Inan* to promote healthy birth outcomes in Manufahi, Liquica, and Aileu. Midwives register pregnant women to receive regular text (SMS) messages with health information relevant to their stage of pregnancy, continuing through 6 weeks after birth. Messages related to optimal maternal nutrition (including consumption of iron pills, use of insecticide treated bed nets, diet during pregnancy and lactation, consumption of iodized salt, deworming, as well as early initiation of breastfeeding) are included in the package of text messages. Over 5,000 women have been enrolled in the program, which has increased demand for maternal health services at health facilities.

E. Food Fortification

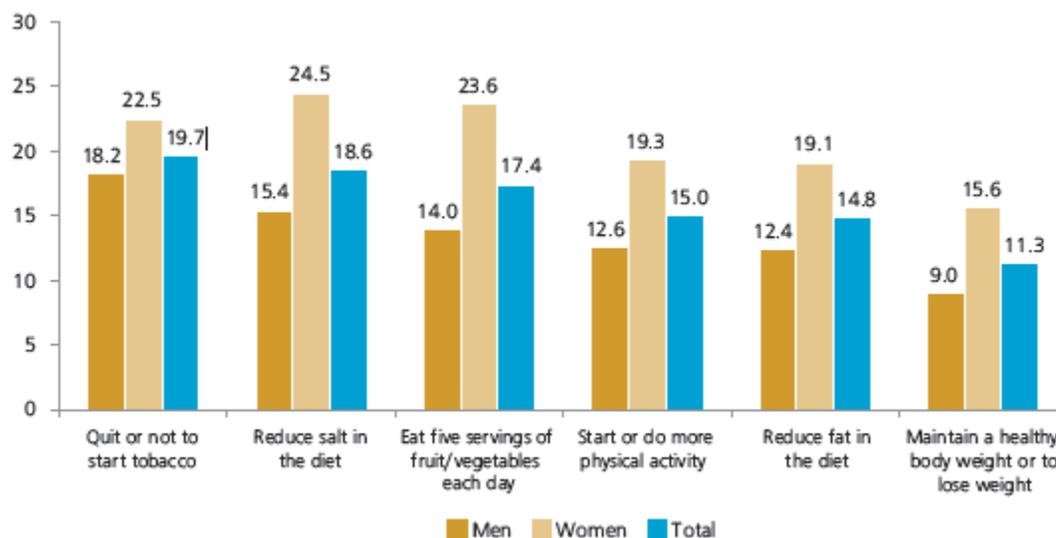
Food fortification has been identified as one of the most cost-effective strategies of increasing population access to essential micronutrients. However, in Timor-Leste, strategic and legal frameworks for salt iodization and staple food fortification do not exist. The National Salt Law was drafted in 2004 but has not been signed. About 40% of salt in Timor-Leste is locally produced, with current iodization efforts cover roughly 15% of local salt production. In the 2013 TLFNS, 57.3% of households consumed iodized salt, and a total of 43% of households had adequately iodized salt. There was a vast disparity in iodized salt availability across districts: 87% of households in Viqueque and 11% of households in Oecusse had adequately iodized salt.

Given the high reliance on imported foods, Timor-Leste could benefit from strengthened regulations mandating fortification of imported staple foods (especially rice) and oil. However, there is not yet a program for mandatory food fortification. Since 2010, WFP has supported the private sector firm Timor Global in the development, and domestic production of a FBF (maize) product known as Timor Vita. Though local production was intended to improve efficiency, improve program sustainability, and increase government ownership, there are challenges to consistent production. In 2012, Timor Vita constituted only 22% of the FSB provided by WFP; the remainder imported corn-soy blend (Mokoro 2013). Production at Timor Global was suspended in 2014 due to concerns over high levels of aflatoxin in the locally sourced maize and has only recently resumed. However, there remains opportunity to expand the scope of distribution to the private sector if appropriate market channels are developed.

F. Non-Communicable Disease (NCD) Service Delivery

The WHO STEPs survey indicates low NCD health care coverage. According to the WHO STEPs survey, few Timorese receive health promotion advice from their health care providers. Less than 20% of adults had received advice from their healthcare providers to reduce dietary and physical activity NCD risk factors (Figure 23); 87.3% had never had their blood pressure taken.

Figure 23. Percent of adults (age 18-65) who have been advised by a doctor or health worker to change their lifestyle



Source: WHO 2015b.

F. Discussion of Gaps and Opportunities in Nutrition-Specific Programs

The Specific Nutrition Intervention Package (SNIP) included in the PHC guidelines covers many of evidence-based nutrition interventions. While the horizontal integration of nutrition-specific interventions into PHC increases the likelihood of long-term sustainability (assuming adequate government financing), in the near-term, low intervention coverage is likely to persist given the current capacity of the health system and health professionals to deliver these interventions. The coverage of the package is not sufficient to reduce stunting. EU/UNICEF support the procurement of a number of nutrition commodities for nationwide distribution but several nutrition-specific interventions are available only in EU/KOICA supported districts. There is a critical need to rapidly scale up direct nutrition interventions for adolescents, women, and young children.

1. Infant and Young Child Nutrition

There is no known effective treatment for stunting, and prevention is needed to prevent rapid growth faltering in early childhood. Challenges remain to mobilize community demand for services and ensure quality service delivery that is aligned with the standard of care. Specific gaps include:

- High micronutrient deficiencies but absence of scaled-up interventions. Anemia exceeds the WHO threshold for daily iron supplementation to infants and children (WHO 2016) but MNPs are provided in only four districts; the majority of districts are without micronutrient interventions for

infants and young children. Coverage of therapeutic zinc supplementation (with oral rehydration solution) for the treatment of diarrhea and vitamin A supplementation is low.

- Peer-to-peer knowledge sharing is the primary modality of IYCF promotion but there is no evidence of effectiveness. Husbands and mothers-in-law are key influencers of IYC practices but are not targeted with IYCF information and messages. Moreover, recent experience in Bangladesh demonstrated that in resource constrained environments, IYCF messaging alone achieved improvements in knowledge but little impact on behavior (Mbuya and Ahsan n.d.) Accelerations in stunting reduction can be achieved by combining strong BCC with a cash transfer.
- Current quality of growth monitoring is not sufficient for early identification of faltering growth. Quality growth promotion is nearly inexistent. Length/height of children under five is not traditionally been measured, and health providers do not plot growth on growth charts.
- MAM prevalence has fallen rapidly and progress has been made towards reducing acute malnutrition. The government does not have resources to scale up supplementary feeding, but rather than developing an exit strategy, supplementary feeding was integrated into national guidelines. There is no clear international decision criteria to determine whether or not the supplementary feeding program is necessary, but high default combined with limited evidence of cost-effectiveness, warrant a review of the guidelines.

2. Adolescent and Maternal Nutrition

Specific gaps in the delivery of nutrition-interventions for adolescent girls and women include:

- Lack of nutrition programs specifically targeting adolescents results in their inclusion in programs for women without considering the strong social, cultural, and behavioral factors which may affect the openness of girls to address issues of reproductive health, nutrition in front of elders.
- Anemia is high in pregnant women but there is low coverage and quality of nutrition interventions delivered through ANC and PNC due to delayed care seeking, commodity stockouts, and low provider capacity for nutrition and IYCF counseling.
- Absence of interventions to reduce anemia in non-pregnant women of reproductive age. There is no iron fortification of staple foods, post-partum IFA supplementation, intermittent IFA supplementation or MNP provision.

3. Food Fortification

- There is no overarching strategy for food fortification. Technical assistance is needed to develop quality standards for locally produced and imported fortified foods.
- Greater collaboration is needed between MOH and MCIE to advocate for finalization of the Salt Law which would provide the foundation for universal salt iodization and allow for regulation of salt iodization levels.

Chapter 6. Nutrition-Sensitive Programs and Approaches Address Underlying Determinants of Malnutrition

CHAPTER 6 KEY MESSAGES

1. Neither agricultural production nor homestead food production is sufficient for the exclusive adoption of food-based strategies to reduce stunting and micronutrient deficiencies. Agriculture investments are biased towards increasing the production and productivity of staple grains (especially rice) and income generation. Some agricultural programs supported by development partners are now focusing on areas related to the production of animal products (though still insufficient) and the development of rural markets for these items.
2. The school feeding program is not properly targeted to have impact on stunting and faces implementation challenges.
3. Increasing women's involvement in local leadership and government, group structures, and local development processes is a critical step for all programs striving to be nutrition sensitive.
4. Bolsa da Mae has the potential to be an integrated anti-poverty and nutrition program but does not currently have sufficient capacity, administrative systems, or fiscal space to scale up provision of a reliable, adequate-sized benefit to beneficiaries.
5. Challenges remain in achieving high coverage and quality of health services delivered at the facility level. Community-level service delivery under the PHC model needs to be defined.
6. Reproductive health and family planning is a critical but under-recognized contributor to malnutrition in Timor-Leste. Reproductive health and family planning support is not provided in all districts, and services for men and adolescents are particularly lacking.
7. PAKSI, the locally-adapted community-led total sanitation program, provides a platform to reinforce the links between malnutrition, hygiene, and sanitation but this is not done explicitly and consistently.
8. Community-driven development programs (PNDS/PDID) exist at national scale and can utilize design elements to address constraints toward optimum nutrition.

The global evidence and Timor-Leste's strategies acknowledge the importance of addressing the underlying causes of undernutrition (Figure 13). This section reviews RDTL and development partner support for these interventions. Some meet the criteria for nutrition-sensitive programs, while others have the potential to improve their nutrition sensitivity through the incorporation of explicit nutrition goals and actions (Box 6).

BOX 6. NUTRITION-SENSITIVE INTERVENTIONS AND PROGRAMMES

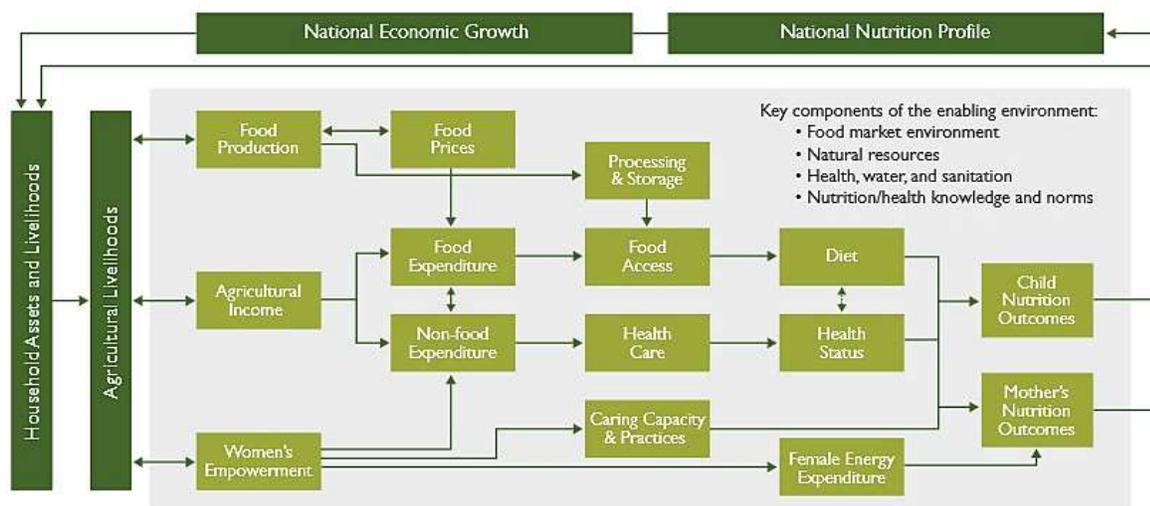
- Interventions or programmes that address the underlying determinants of fetal and child nutrition and development -- food security; adequate caregiving resources at the maternal, household and community levels; and access to health services and a safe and hygienic environment -- ***and incorporate specific nutrition goals and actions.***
- Nutrition-sensitive programmes can serve as delivery platforms for nutrition-specific interventions, potentially increasing their scale, coverage, and effectiveness.
- Examples: agriculture and food security; social safety nets; early child development; maternal mental health; women's empowerment; child protection; schooling; water, sanitation, and hygiene; health and family planning services.

Source: Ruel et al. 2013

A. Agriculture and Food Security

The linkages between agriculture production, food security, and nutrition are hypothesized to operate through three main pathways: food production, agricultural income, and women’s empowerment (Figure 24). Programs from the MAF Strategic Plan addressing these areas are described below.

Figure 24. Pathways from Agriculture to Nutrition



Adapted for Feed the Future by Anna Herforth, Jody Harris, and SPRING, from Gillespie, Harris, and Kadiyala (2012) and Headey, Chiu, and Kadiyala (2011).

Source: Herforth and Harris 2014

1. Increasing Agricultural Production and Productivity

MAF proposes to increase production and productivity of smallholder producers through a number of programs: intensification of horticultural production; animal vaccination; increasing cattle population and beef production; smallholder dairy development and introducing new breeds of goats and pigs (MAF 2013b). Current activities in the agriculture sector include: (a) improved seed production and distribution; (b) strengthening the agriculture extension service; (c) farmer training and farmer field schools; and (d) aquaculture development.

The Directorate General of Livestock and Veterinary participates in the Livestock Working Group, organized jointly with development partners and the private sector. MAF itself does not have programs in this area, but has identified that the availability and quality of meat remains an issue in the country. Private sector companies (including banks and supermarkets) are playing a key role in the livestock sub-sector, supported by development partners such as the ACIAR, DFAT, GIZ, and ILO.

MAF’s main programmatic engagement in agriculture is the *Centro Desenvolvimento Comunidade Agricola* (CDCA) program aimed at building centers of learning, training, problem solving, production, and farmer business in select villages for specific commodities (many of which were identified through MAF’s *Suku Ida Produto Ida* program to focus suco production on specific market-oriented commodities). The CDCA program was implemented in 40 *sucos* from 12 districts in 2014 and 20 villages from 11 districts in 2015.

A number of development partners (World Vision, Care, MercyCorps, Catholic Relief Services) support rural smallholders to implement homestead food production. Agencies commonly support the preparation of small kitchen gardens for vegetable production, with a smaller number promoting homestead fish ponds, and poultry raising. These programs have faced sustainability challenges, particularly with regard to ensuring the supply of necessary inputs and technical support beyond the project completion. Because MAF has experienced tightened fiscal space for agriculture programs (due to a reduction of the overall budgetary envelope and pressures from increased human resources and wages/salaries) these and other programs are essential forms of programmatic support to farmers.

2. Increasing Agricultural Income

USAID has funded commercial-oriented agriculture projects in its last two country programs. The first, Developing Agricultural Communities (DAC) was oriented towards improving the commercial viability of horticultural production in Timor-Leste. DAC provided farmers with training in harvest, production, and drip irrigation techniques and facilitated market linkages with supermarkets in Dili. DAC helped supermarkets to develop contract agreements with farmers, helping to reduce the reliance upon imported produce in the national market. These linkages have continued beyond the program's horizon, with a number of Dili supermarkets maintaining their direct provision of inputs, extension, credit, and transportation to contracted farmers to build national markets. The current USAID project, *Avansa Agricultura*, is working to develop the agriculture sector's capacity for export-oriented production.

3. Women's Empowerment in Agriculture

UN Women is supporting gender mainstreaming in MAF. At the project level, many agriculture projects include women's groups⁶⁸ as a primary target population. However, the extent to which increasing women's knowledge and capacity can yield improved nutrition needs to be measured. After leaving the group sessions, women return to their family plots to implement improved practices. Men traditionally maintain control over the income from these holdings, and as such there may be little impact on women's overall access to and control of resources. On the other hand, there could be positive effects on maternal and child nutrition outcomes if the practices can improve women's time allocation. No studies or evaluations were identified examining the impact of agricultural interventions on women's income or time in the country.

4. Food Quality and Food Safety

The agriculture sector plays an important role in controlling aflatoxin exposure which—through improved processing and storage—can improve food security and nutrition. IFAD supported the distribution of improved maize storage drums between 2009 and 2013. Though the project proved effective, it was not taken over by MAF. Since that time, Seeds of Life (SOL) has been supporting MAF to assess aflatoxin levels in food and seed with the aim of strengthen the evidence on aflatoxin contamination in food. In 2015, MAF received training and technology to perform the Aflatoxin Quick Test to measure aflatoxin levels in maize, peanut, and cassava. There has been no close coordination between MOH and MAF on the issue of aflatoxin control; KONSSANTIL has raised the issue but cross-sectoral collaboration has not moved forward.

⁶⁸ Due to widespread geographic dispersion, many agriculture projects target farmers groups. Roughly 10-20 farmers will join together and meet at a central location in order to receive training on a specific topic, technique, etc.

5. School Feeding

The School Feeding Program (SFP) provides for the free daily provision of a school meal to all children in grades 1- 6 and is framed as component of the Social Inclusion Policy. In the 2012 Education Survey, 95% of school directors reported providing school feeding, but 21% of primary school students reported not receiving food the previous day (World Bank 2013a). Ultimately, the program is not properly targeted to have impact on stunting or designed to improve nutrition. Globally, small improvements in weight and BMI -- but not height -- have been achieved through daily feeding of primary school children (Kristjansson et al 2007), but there has not been a review of nutritional impact in Timor-Leste's program.

MCIE procures imported, unfortified rice for the SFP and schools receive funds from District Education Services to purchase vegetables and protein-rich foods as outlined in the SFP Manual (RDTL 2013b). The volunteer mothers face difficulty in procuring the quantity and quality of foods outlined in the menus with the limited budget allotted. The manual also promotes the use of locally produced products to the extent possible, but the adoption of a 'homegrown school feeding' approach⁶⁹ has amplified implementation challenges. In addition to limited availability of vegetables and prohibitive costs of locally produced protein sources, there are food safety concerns associated with the use of locally sourced animal products. Outbreaks of foodborne illness due to the SFP have been reported.

6. Gaps and Opportunities in Food Security and Agriculture Programs

Timor-Leste's agriculture programs aimed at rice self-sufficiency do not address the key nutrition issue of low dietary diversity. Agricultural production is not sufficient to exclusively adopt food-based strategies to reduce malnutrition. Agriculture investments are biased towards increasing the production and productivity of staple grains (especially rice), undermining the potential of agriculture to deliver the diverse foods needed to reduce micronutrient deficiency and stunting.

The country seems to have fallen into the 'cereals fundamentalism' policy trap, whereby increased staple food production is the near-exclusive goal of policies, programs, research, technology development, infrastructure investment, and sector subsidies. This phenomenon is not unique to Timor-Leste: countries across Southeast Asia and the Pacific seem to have adopted similar policy frameworks. Traditionally, food security in many EAP countries has been defined in terms of self-sufficiency in staple grains (primarily rice) (World Bank 2015d). In Timor-Leste, the government has actively sought to manage the availability and price of rice in domestic markets and through international trade. Even within the rice sector, the government's own import policy aimed at decreasing rice price volatility is at odds with efforts to incentivize domestic rice production through subsidized inputs. Investments in domestic staple food production have been costly (e.g. expenditure on rice irrigation at over the past five years) but not resulted in significant improvements in domestic production. Over time, credits, price support, and subsidies of rice and other staple foods have the effect of crowding out production of non-staples, distorting supply, and tending to drive the increase in price of micronutrient-rich non-staples relative to staples (Pingali 2015). This policy environment is not only detrimental to staple food production within the country, but is further misaligned with shifting food demand and need to produce greater quantities of nutrient-rich foods, including meats, fruits, and vegetables. Rice-centric policies have failed to fully address the environmental, natural resources, nutrition, food safety, food consumption considerations inherent in feeding and providing adequate nutrition to growing and increasingly urbanized populations.

⁶⁹ Homegrown school feeding refers to the concept of linking school feeding programs with local agricultural production, an emerging trend globally.

- Agriculture is commonly viewed through an income-generating lens, with activities focused on improving livelihoods through commercial agriculture production.
- Markets for produce and animal-source foods are not well-functioning, with scarce opportunities to purchase nutrient-rich diets.
- Homestead food production is not sufficient to meet nutrient needs of women, infants, and young children. Homestead food production focuses on leafy green vegetables, with few programs incorporating animal-source food production. Households producing these high-value crops as eggs, livestock, fish, and certain vegetables tend to sell these for income generation rather than preserving them for own consumption. Low water resource availability means produce is not available year-round.
- The SFP is positioned as a food security and nutrition intervention but it is not targeted to age groups most at risk of malnutrition, is not accompanied by strong nutrition education. There has not been a comprehensive evaluation of the SFP and its impact on dietary diversity for children.
- Aflatoxin exposure remains widespread and there is no collaboration between MAF, MCIE, and MOH on aflatoxin control.
- Many projects claim to promote “nutrition-sensitive agriculture” but there are not strong linkages between agriculture and improved nutrition.

B. Care for Women and Children

MSS is responsible prevention of poverty and promotion of child welfare, and the MSS Strategic Plan moves beyond the first-generation programmatic focus on stability (World Bank 2013c). The plan places a strong emphasis on targeting vulnerable populations, which include priority populations for nutrition interventions. These investments in child and social protection and poverty reduction—along with complementary efforts to improve parenting and women’s empowerment—are critical for breaking the intergenerational cycle of malnutrition.

1. Education of Women and Girls

The Ministry of Education’s Social Inclusion program prioritizes gender parity in education, particularly in the areas of secondary and higher education. The MOE has developed a comprehensive plan for gender equality in education. However, Timor-Leste has neither (i) innovative programs (such as cash transfers) to stimulate enrollment of girls in secondary school (as proposed in the National Education Strategic Plan 2011-2030); nor (ii) an official re-entry policy which would allow for the re-enrollment of girls who drop out of secondary school for reasons such as unplanned pregnancy.

Absenteeism, especially among secondary school girls, remains a cause for concern. The Ministry of Education’s *Eskola Foun* (or child-friendly schools) approach incorporates the installation of water supply and latrines that are child-friendly, inclusive, and gender sensitive. WASH in School guidelines are currently under preparation with the approach supported by UNICEF. According to the 2012 Education Survey, one third of primary schools did not have a toilet (World Bank 2013a). A 2011 survey of schools in Dili found that even when toilets exist in schools they are often too large for the youngest students; are not disaggregated by sex; and are often claimed by teachers (World Bank 2011b).

2. Domestic Violence

The Popular Organization of Timorese Women (OPMT – FRETILIN’s women’s wing) – was instrumental in pushing for Timor-Leste’s ratification of the Convention for the Elimination of All forms of

Discrimination Against Women (CEDAW) in 2003. Women's groups⁷⁰ and NGOs succeeded in lobbying for the passage of the *Law Against Domestic Violence (LADV)* in May 2010 making Domestic Violence (DV) a punishable crime. The LADV includes marital rape and has been disseminated in all districts, targeting local authorities, village chiefs, traditional leaders, and communities (UN 2014). The government has committed to: (i) train police on the protection and assistance of DV victims; (ii) increase counseling, health, and human services to protect victims; and (iii) expand access to support centers to victims of DV. However, local systems of justice and leadership—as well as common laws and practices—continue to play a critical role in gender identity and equality in Timor-Leste. Customary leaders (*Chefe Suco*, *Chefe Aldeia*) maintain their authority within communities and are legitimized by the elections within the local population. These laws, processes, and values may not recognize the equal status of women but are observed within local populations (Wigglesworth 2013).

Nevertheless, gender equality and domestic violence feature as key areas of the Sixth Constitutional Government. The PHC Guidelines include women's mental health and a National Mental Health Strategy has been drafted to strengthen the MOH response to mental health disorders in the country. However, these services are not widely available. PRADET, a national NGO was formed in 2002 and offers support for women, men, children, and families who suffer from severe mental trauma, violence, and severe social problems due to extreme violence.⁷¹ PRADET supports INS in the training of health professionals to develop competencies in forensic medical examination as well as to build awareness among health professionals in referral hospitals regarding the referral pathways for victims of DV. A costing exercise is underway to identify the financial resources required to deliver a package of essential services to respond to DV and advocate for the required budgetary allocations.

3. Gender Empowerment

The SEM and UN Women support gender mainstreaming, analysis of Gender Responsive Budgeting, trainings for women's participation in politics, and technical and advocacy role in developing gender-sensitive policies and programs. Women hold 38% of seats in Parliament (the highest in the Asia-Pacific region) but have less influence in local level governance, where roughly 2% of *Chefe Sucos* are women. NGOs and INGOs provide training and support for women's economic empowerment and political participation.

4. Bolsa da Mae

Targeted social transfers play an important role in lifting poor households out of intergenerational poverty trap, and—when properly designed and targeted—have the potential to improve maternal and child nutrition. Conditional cash transfer programs can improve nutrition by targeting nutritionally vulnerable groups, providing regular additions to household finances, and stimulating the demand for health, nutrition, and human development services. Despite persistent high poverty in Timor-Leste, many of the poor and vulnerable, especially those in the bottom 20% of the population, are not reached by any form of social assistance (World Bank 2013c). Specifically, 56% of households in the lowest wealth quintile were not beneficiaries of any cash transfer program.

⁷⁰ Including the Office of the Secretariat of State for the Promotion of Equality (SEPI, now SEM), UNFPA, UN Women, the Women's Parliamentarians Caucus, and Rede Feto.

⁷¹ See <http://www.uclg-cisd.org/en/observatory/pradet---psychosocial-recovery-and-development-east-timor>, accessed 5 December 2015.

The MSS administers Bolsa da Mae (BdM), a conditional cash transfer (CCT) program. BdM had over 55,000 beneficiary households in 2014 and was the only social transfer program targeting poor and vulnerable households with children (World Bank 2015e). However, the coverage and benefit of the BdM program were found to be too low to impact household welfare and overall national poverty rates. The average BdM benefit is equivalent to roughly only 3% of the average household budget, much smaller than the international benefit standard of 10-15% of household expenditure (World Bank 2013c). Poor banking infrastructure and low benefit amounts often result in a disbursement of a once-annual, lump sum benefit, which yields little effect on smoothing consumption (World Bank 2013c). Because of the unreliable quality and availability of essential health and nutrition services, the decision has been taken to make use of soft conditions.

MSS is currently working with UNICEF and the local NGO Ba Futuru to pilot a Framework for Family Development. The package may potentially be delivered alongside BdM, including family development sessions for BdM participants, media campaigns, and home visiting/peer-to-peer contact. These parenting development sessions have the potential to build community capacity and promote attitudes aligned with optimum care and nutrition practices for IYC. However, the implementation capacity within MSS must continue to be strengthened and coverage/benefit levels increased before BdM can become efficient, large-scale nutrition sensitive program.

5. Early Childhood Development

Interventions in early childhood (before the child enters primary school) have the greatest potential to offset the negative impacts of poor nutrition on learning and cognitive outcomes. Early stimulation, early learning, and pre-primary education interventions (community or facility based) are highly cost-effective (Heckman 2006) and a means of improving analytical, language, and socioemotional skills (Schonkoff et al. 2012). The Government of Timor-Leste has prioritized pre-school education using a child-friendly school approach, and established the National Directorate for Pre-School Education. Though Early Childhood Education has primarily focused on pre-school education, MOE, MECAS, and UNICEF convened a stakeholder workshop in 2015 to discuss the establishment of a Holistic Early Childhood Development Strategy and the development of a legal framework, cross-sectoral coordination mechanism, and integrated programming. This process is still in an early phase but momentum is building to cultivate stronger linkages between MSS, MOE, MOH and MECAS in the areas of early nutrition, stimulation, and learning. The National Directorate of Primary Education, with the support of UNICEF and New Zealand, has piloted an alternative, community-based preschool approach in two districts. This initiative reflects a shift in the approach to early childhood development.

6. School Gardens and School Health

The Basic Education Curriculum Reform included the preparation of School Garden and School Health curricula. With the support of the local NGO PERMATIL⁷², a curriculum was developed for classes 1-6 to integrate gardening with basic science, math, and cultural skills. It is envisaged that once developed, a School Garden may serve as a cultural learning center and also providing vegetables to the school feeding program. Areas requiring further clarification relate to water and human resources required for cultivation.

Basic and Secondary School curricula also include School Health, with a formal reproductive health curriculum introduced at Grade 4. The School Health unit of the Health Promotion Department is intended to coordinate activities with MOE to train teachers on “Focusing Resources on Effective School Health.”

⁷² Permaculture Timor-Leste.

However, the program had not been implemented since 2010. District Public Health Officers maintain responsibility for implementing School Health activities in cooperation with the Ministry of Education, though these activities are not delivered on a routine basis (Ministry of Health 2015a).

7. Gaps and Opportunities in Care for Women and Children

There are evidence-based linkages between women’s empowerment and improvement of nutrition indicators. Increasing women’s involvement in local leadership and government, group structures, and local development processes is a critical step for all programs striving to be nutrition sensitive. However, operationalizing “women’s empowerment” in Timor-Leste will require careful consideration, including the timing, location, and structure of formal meetings which can enhance women’s participation.

- Additional opportunities are needed to include women’s voice and participation. Agriculture programs which target ‘women’s groups’ may include women in training, yet traditional patterns of income distribution prevent them from seeing the economic impacts of their improved knowledge. Similarly, projects like the *Programa Nasional Dezenvolvimentu Suco* (PNDS) have tried to strengthen women’s participation in decision making through program protocols; however women rarely voiced opinions in broader meetings, did not participate in women’s only meetings, and did not adhere to female-only voting requirements (World Bank 2015b).
- Participatory community education on gender-based violence, gender roles/norms, and parenting is needed to build community capacity on the rights, responsibilities, and care for women and children.
- Bolsa da Mae has the potential to be an integrated anti-poverty program but does not currently have sufficient capacity, administrative systems, or fiscal space to scale up provision of a reliable, adequate-sized benefit to beneficiaries. Identification, targeting, verification, and enrollment systems remain weak. The Framework for Family Development has the potential to improve community knowledge and attitudes related to optimum care and nutrition.
- There are not yet clear linkages between health, nutrition, early learning/stimulation interventions to provide a complete package of holistic early childhood development services.

C. Health Services and Health Environment

1. Reproductive, Maternal, Neonatal, Child, and Adolescent Health and Family Planning

Timor-Leste has an Expanded Programme on Immunization but has faced challenges in achieving high, routine vaccination coverage. The TLFNS reported that 74.3% of children age 12-23 months were fully immunized according to the national vaccination schedule. Measles coverage remains low, at 70%, while TT2 was 81% (MOH 2016). Due to low routine coverage, a vaccination campaign for polio/measles was carried out in 2015. Bottlenecks include low community mobilization, and insufficient cold chain, vaccine logistics, and program management.

The RMNCH Strategy identifies the importance of reducing fertility and increasing birth spacing in order to achieve national goals for human and economic development outlined in the SDP (RDTL 2010). Bhutta et al. (2013) highlight that the linkages between fertility, repeated pregnancy, and the effects on maternal and fetal nutrition are not made frequently enough. This is true in Timor-Leste, where nutrition is commonly positioned with respect to food and food security; high fertility and low birth spacing are rarely introduced into the discussions of nutrition interventions.

Family planning has a significant influence on achieving key nutrition outcomes for both women and children. By helping women and couples have the number of children they want at the healthiest times in

life, family planning can benefit mothers, infants, and children. Well-spaced births allow women's bodies to recuperate and replenish essential nutrients and lead to better nutritional outcomes, such as healthy birth weight for their infants. Family planning can also have an indirect impact on nutrition by reducing unintended pregnancies among adolescents, allowing them to stay in school and complete more years of education. Research shows that greater education among women leads to greater productivity, empowerment, and control of resources—allowing them to make better choices that ultimately benefit the health and nutrition of children and families (Naik et al, 2015).

Family planning and contraceptive services are available through the public and private sectors, but contraceptive coverage remains low. The PHC package includes family planning services, including counseling, a range of natural methods of contraception, condoms, oral contraceptives, intramuscular injections, intrauterine devices, tubal ligations at HNGV and implants (MOH 2015c). Marie Stopes Timor-Leste (MSTL) is the only INGO working specifically on the issue of family planning, providing provider capacity building to MOH staff and family planning counseling and services (emphasizing birth spacing and appropriate methods for the family's needs) in eleven districts. The Catholic Church officially endorses the Billings method (periodic abstinence during periods of high fertility), but midwives are able to promote all methods of family planning; the Church encourages husbands and wives to make the decision together (Richards 2014). One quarter (24.2%) of women with secondary education report currently using modern contraception compared to 14.7% of those with no education (NSD and ICF Macro 2010). Roughly one third (30.8%) of women have an unmet need for family planning, indicating a need to expand services and/or change behavior related to contraceptive decision making at the household level.

Adolescents have insufficient access to sexual and reproductive health information, education, and services. A 2014 review found that no budget had been provided since 2012 for training for district level health professionals and teachers on adolescent reproductive health; thus central level staff in the Adolescent Reproductive Health unit (Maternal and Child Health Department) were not able to carry out these activities (MOH 2015a). The Ministry of Education has developed a comprehensive curriculum on adolescent sexual and reproductive health, yet knowledge levels are thought to remain insufficient; pervasive taboos around sexuality, combined with provider biases and the tendency towards privacy, prevent youth from seeking reproductive health services. The only intervention for adolescent reproductive health is the MSTL national youth hotline, *Lina Foin Sae*, manned by youth counselors who provide callers with reliable information on adolescent reproductive health, puberty, and relationships. MSI reported over 65,000 calls since its launch in 2011 (MSTL 2016).

There is low availability of reproductive health counseling and services for men and youth (Belton et al. 2009), with little progress over the past six years. “Men” are completely absent from the PHC Guidelines, and there are no government-sponsored health services or awareness raising activities specifically targeting men. The private company Cooperative Café Timor (CCT) runs private clinics for its staff. CCT has received support from Family Planning Australia and DFAT to develop and implement the first Men's Health program in Timor-Leste. In the program's baseline survey, 48% of respondent men (age 16-65) had not received any health information or education in the past year, and only 24% could name two or more methods of family planning (CCT et al. 2013). The curriculum is currently under revision and will include messages on nutrition.

2. WASH

The PHC includes a package to control environmental health. During SnF visits, health professionals are intended to complete the KUBASA (*Kategoriasaun Uma Baseia ba Saude Ambiental*) or “Home Classification Based on Environmental Health” form. The KUBASA includes information on latrine availability in villages, education on cleanliness, washing hand before and after toileting, and hygienic

households and surroundings.⁷³ Hygiene and sanitation information is also provided at SISCa by PSFs and with NGO volunteers (see Annex 13).

The community led total sanitation (CLTS) has been locally adapted (called PAKSI) and was rolled out in 2012. The MOH has little WASH implementation capacity, and non-state agencies, including WaterAid, UNICEF, Plan International, World Vision, Child Fund, Red Cross (CVTL), and Care play a major role in supporting the implementation of PAKSI. Reducing open defecation (OD) is a key goal within the WASH sector. Subsidies for household toilets have largely been phased out. Programs are aimed at achieving open defecation-free (ODF) *sucos* status with the goal of achieving national ODF status by 2017 (WSP 2015). Though the PAKSI program currently covers all districts, it does not yet reach all *sucos* or *aldeias*. PAKSI includes ‘software’ of sanitation promotion and behavior change triggering, and common, MOH-endorsed BCC materials are available for all partners to use.

The DFAT-funded project *Bee, Saneamentu no Ijiene iha Komunidade* (BESIK) supports Timor-Leste’s rural water supply, sanitation, and hygiene sector and is ongoing between 2007 and 2020. DFAT is currently the sole bilateral donor supporting rural sanitation and hygiene in Timor-Leste. Its role in service delivery ceased in 2014 and the focus is now on institutional strengthening at the national and district levels (Box 7). The ADB is the major funder of urban water supply, while JICA provides grant aid for rural and urban water supply. MSS is currently developing a Program of Assistance for Basic Sanitation to provide subsidized support for vulnerable households to improve sanitation.

BOX 7. THE BOBONARO PAKSI SECRETARIAT

In Bobonaro, BESIK has piloted the implementation of the PAKSI Secretariat. Launched in 2015, the Secretariat serves as a coordinating group housed in the District Administrative Office. BESIK provides technical and management support to a cross-sectoral team from MOPW, MOH, and MOE to guide coordinated implementation of the PAKSI program. BESIK supported institutional triggering (targeting district officials and *chefe sucos*) and experienced great success in building high-level institutional support. Through this district-level coordination mechanism, relatively rapid progress has been made in building sub-national institutional capacity, though community mobilization has remained a challenge.

3. Programa Nasional Dezenvolvimentu Suco (PNDS)

Traditional community-driven development (CDD) programs provide grants to communities to address problems identified by the community. Timor-Leste created a national CDD program, the National Program for Village Development (*Programa Nasional Dezenvolvimentu Suco*) in 2013 to build community capacity and development leadership. The initial phase of the program will involve an investment of US\$300.0 million dollars over eight years. The PNDS aims to contribute to rural development by funding the ‘missing link’ to services (e.g. basic village infrastructure) and provide jobs and training. *Sucos* receive an annual grant of between US\$50,000-US\$75,000 directly from the government to plan, construct and manage their own small-scale community infrastructure projects (which may include shared community toilets and water resources). Though the infrastructure developed through these programs cannot contribute to household sanitation targets, they can, however, promote improved water and sanitation in communities. Since its launch in 2013, over 600 village infrastructure projects have been constructed or are nearing completion.

⁷³ KUBASA forms had previously been completed by PSFs through outreach, and a number of districts reported publicly posting the KUBASA scores to promote community accountability. At the time of writing, there was a demand for KUBASA forms in the districts, yet there was a national stock out due to lack of funding for reprinting.

Though traditional CDD provides financing to communities based upon the existence of a plan, CDD platforms have the potential to incentivize results for nutrition (World Bank 2016b). As was done in Indonesia with the PNPM Generasi program, there is the potential to shift the design of CDD to provide community financing based upon the achievement of priority human development results (including nutrition). This may require additional awareness raising for communities to recognize and prioritize the problem of malnutrition, but can also stimulate collective action and ownership in addressing the problem.

4. Overall Gaps and Opportunities in Health Services and Health Environment

- Challenges remain in achieving high coverage of health services delivered at the facility level. There is not a clear definition of how services will be delivered at the community level under the PHC model but reducing illness and improving ANC, skilled birth attendance, and PNC are important to improving nutrition.
- Reproductive health and family planning is a critical but under-recognized contributor to malnutrition in Timor-Leste. There is insufficient coverage of reproductive health and family planning in general, but especially for men and adolescents.
- The PAKSI Secretariat provides a strong example of progress which can be realized through close mentoring at the sub-district level.
- Social mobilizers involved in the PAKSI triggering process provide an opportunity to reinforce nutrition messages and the links between malnutrition, hygiene, and sanitation but these are not yet explicitly linked.
- PNDS offers a potential platform to incentivize community investments in nutrition outcomes through projects outside of infrastructure. Infrastructure projects are easy to implement but have less impact on the development of human capital in local communities. Strong facilitation and support for community prioritization processes will be needed.

Chapter 7. Development Partner Coordination and Support for Nutrition

CHAPTER 7 KEY MESSAGES

1. Many development partners are engaged in the financing and/or delivery of nutrition-specific and nutrition-sensitive programs.
2. Stronger government leadership and coordination is needed in the sector in order to harmonize efforts and development partner response.
3. UN agencies and bilaterals play a key role in the development of an enabling environment for nutrition and the financing and delivery of nutrition specific interventions.
4. The agriculture/food security sub-sector has the greatest number and reach of nutrition-sensitive projects.
5. Limited attention has been paid to converge projects at the district and *suco* levels and ensure that donor resources are distributed proportionately to the burden of malnutrition.

With growing global momentum to address malnutrition, development partners have greater funding opportunities for nutrition-specific and nutrition-sensitive programs in interventions in Timor-Leste. Consequently, there has been a proliferation of projects and players addressing this issue. As a founding member of the g7+, Timor-Leste has positioned itself as a leader in driving the agenda of the New Deal for Engagement in Conflict and Fragile States, necessitating country leadership and ownership in defining a development agenda.

However, there have been difficulties in operationalizing this approach to government leadership and building ownership. Despite calls from development partners, the Government is yet to take a lead in defining priorities and stimulating a coordinated response to malnutrition. Strategic plans (especially PAN-HAM-TIL) are sufficiently broad and allow partner agencies, often in competition with one another, to pursue their institutional agendas. A 2011 OECD-led review in Timor-Leste suggested that at the sector level, advisers, donors, and NGOs supporting policy development and program implementation tend to be influenced by the biases and systems of their agency and home country rather than the particular context of Timor-Leste (OECD 2011). This finding is relevant for the nutrition community in Timor-Leste, which is currently fragmented and operating as if in an emergency context. The bilaterals and multilaterals have carved out spheres of influence which may not respond to government identified needs. Development partners themselves have recognized the degree of discoordination in the sector and have called on the government to take a stronger lead.

Although RDTL is the largest financier of national development, donors continue to play a significant role in filling gaps to implement nutrition-related programs in the absence of sufficient government goods and services budgets (see Chapter 8). Limited public financial management capacity has resulted in only tentative approaches to provide budget support at this time, yielding a significant portion of nutrition financing delivered through off-budget support to non-government actors. Australia, EU, USAID, Japan, KOICA, and New Zealand, are the main bilaterals operating in the nutrition sector, with Australia the largest contributor of total ODA in the country.

A. Nutrition-Specific Partners

At the central level in MOH, the UN agencies (WHO, UNICEF, WFP) and bilaterals (DFAT, EU, USAID) have provided support for systems strengthening for the development of policies, programs, guidelines, as well as monitoring and evaluation tools. DFAT financed the 2013 TLFNS and the National Nutrition

Strategy, while more recently the EU has prioritized the financing of evidence-based, nutrition-specific interventions through the Integrated Nutrition Program. EU support, channeled through WFP and UNICEF, has contributed to strengthening the “nutrition system” and improving the delivery of nutrition-specific interventions in the project districts. In addition to building the enabling environment for nutrition, the funds have also supported the procurement of nutrition commodities and the provision of supplementary and therapeutic foods for treatment of acute malnutrition, which KOICA has also started to support (see Chapter 5). However, there are concerns over the degree to which the project activities have truly been “integrated” into the MOH and PHC systems and limited inclusivity in the nutrition policy making and systems strengthening dialogue for nutrition.

INGOs and NGOs provide support for IYCF promotion (see Chapter 5), community mobilization, and social/behavior change communication at the community level. The Alola Foundation developed the preeminent Timorese model for Mother Support Groups, which has been replicated to varying degrees by agencies such as World Vision, Child Fund, CVTL (Red Cross Timor-Leste), Catholic Relief Services, and Care International. However, in the absence of an overarching strategy and MOH-endorsed IEC/training materials, organizations continue to pursue their activities in an ad-hoc, project-specific manner. A recent social and behavior change communication assessment highlighted redundancies and lack of harmonization in the approach to social and behavior change communication (SBCC). This was attributed, in part, due to the absence of a central repository for nutrition-related IEC and training materials (Lantican 2015).

B. Nutrition-Sensitive Partners

A large number of development partners are involved in the following nutrition-sensitive areas: (a) agriculture and food security; (b) reproductive health and family planning; (c) WASH; (d) maternal, neonatal and child health; (e) early childhood development/protection/education; and (f) women’s empowerment. Agriculture and food security is by far the largest and most active nutrition-sensitive sub-sector: the MAF DP Working Group reported over 45 projects and development partner support totaling roughly US\$28.0 million in 2016.

C. Development Partner Coordination

With the restructuring of KONSSANTIL, there is no forum for regularly convening DPs working across sectors on nutrition. Thus, development partner coordination for nutrition is divided between nutrition-specific partners and nutrition-sensitive partners. The MOH invites DPs to semi-annual review of the health sector. However, MOH has not held regular meetings with DPs, though the DPs meet monthly as a Health DP working group. This group—which includes EU, DFAT, USAID, World Bank, UNICEF, WFP, WHO and a number of INGOs—serves as a platform for DPs to share information and strengthen their own coordination. The MOH convenes a Nutrition Working Group, though attendance is largely limited to MOH nutrition staff and the DPs working on nutrition-specific interventions; the DPs working to address the underlying determinants of malnutrition meet in their own thematic groups rather than attending the Nutrition Working Group meetings. MAF convenes regular Agriculture Development Partners meetings with EU and DFAT serving as co-chairs. The MAF DP working group brings together partners working on nutrition-sensitive agriculture and has been subdivided into a number of thematic working group.

D. Geographic Convergence

Chapter 3 highlighted the multiple underlying determinants of malnutrition in Timor-Leste. As no sector or program alone will be capable of reducing malnutrition and multisectoral implementation is not necessarily feasible, it is critical to enhance the geographic convergence of programs addressing the determinants of

malnutrition. Targeting the same beneficiaries with a package of services/programs can serve to reinforce messages and address multiple underlying drivers.

Districts are a frequently utilized unit of geographic targeting. The greatest concentration and convergence of DP support is in the horticultural belt and the west of the country. Bobonaro and Ermera receive the greatest share of nutrition-specific and nutrition-sensitive support, while Liquica, Viqueque, and Manatuto receiving the least support (Figure 25 and Figure 26). Agriculture and livelihoods interventions are greatest in number, with fewer interventions in reproductive health and family planning and WASH. Districts with the highest stunting prevalence are receiving the greatest support, yet there are districts such as Manatuto where need remains high but relatively few DPs are present. Geographic disparities in financial and programmatic support have the potential to incite conflict if not appropriately monitored. Rethinking geographic targeting is critically important to reducing fragmentation and building stability in the country.

Figure 25. Map of development partner support for nutrition, Timor-Leste, 2015

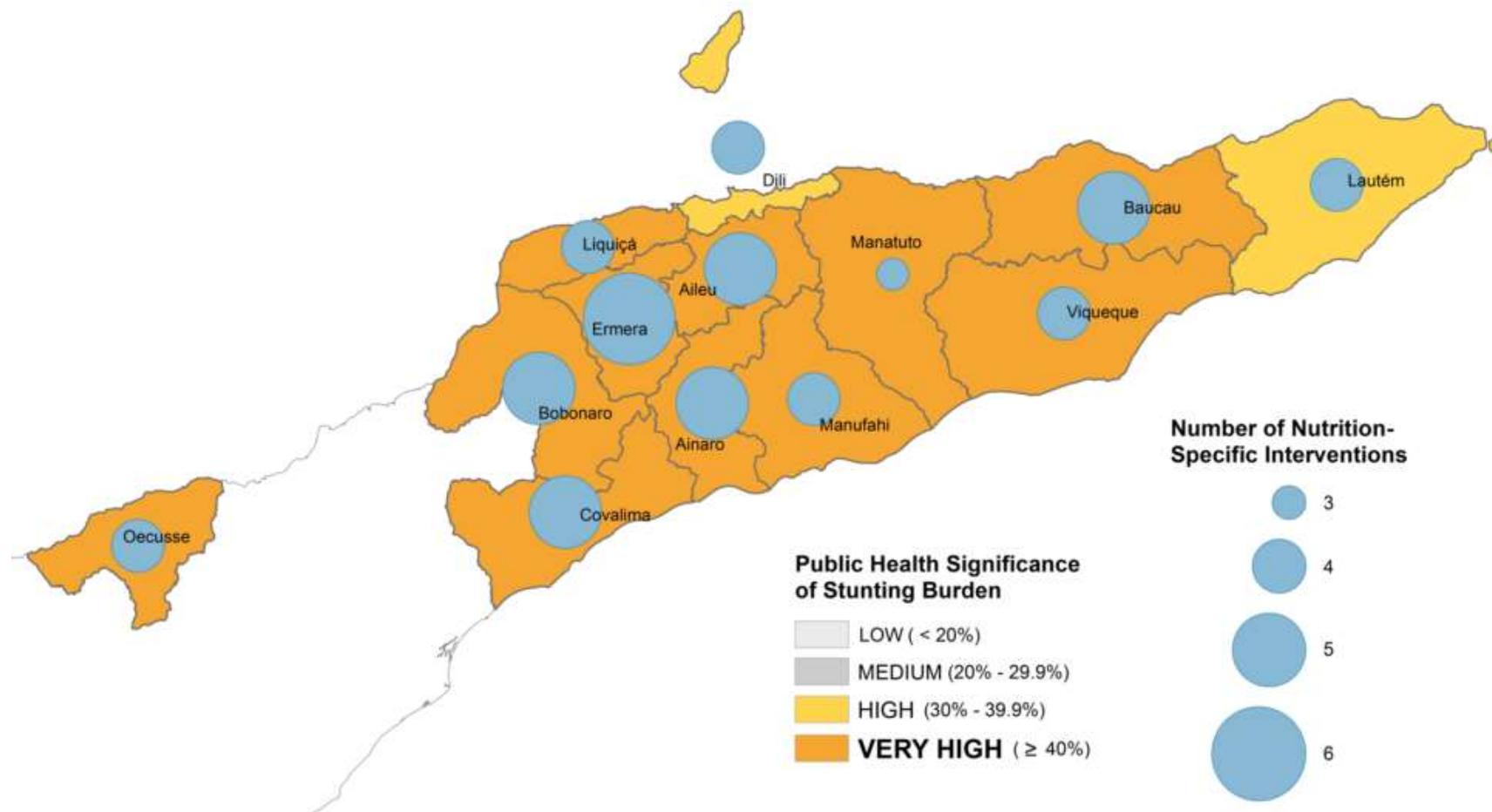
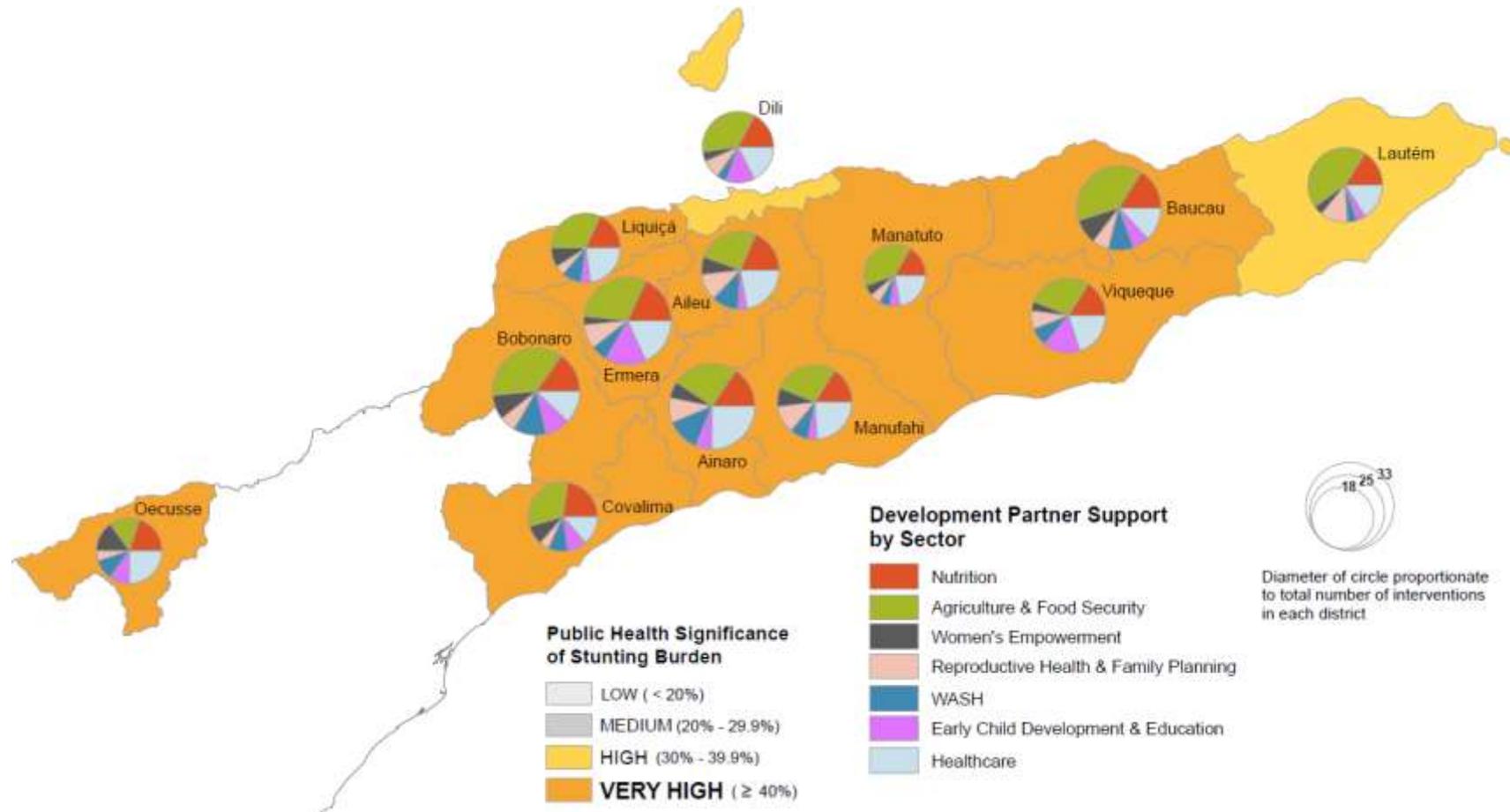
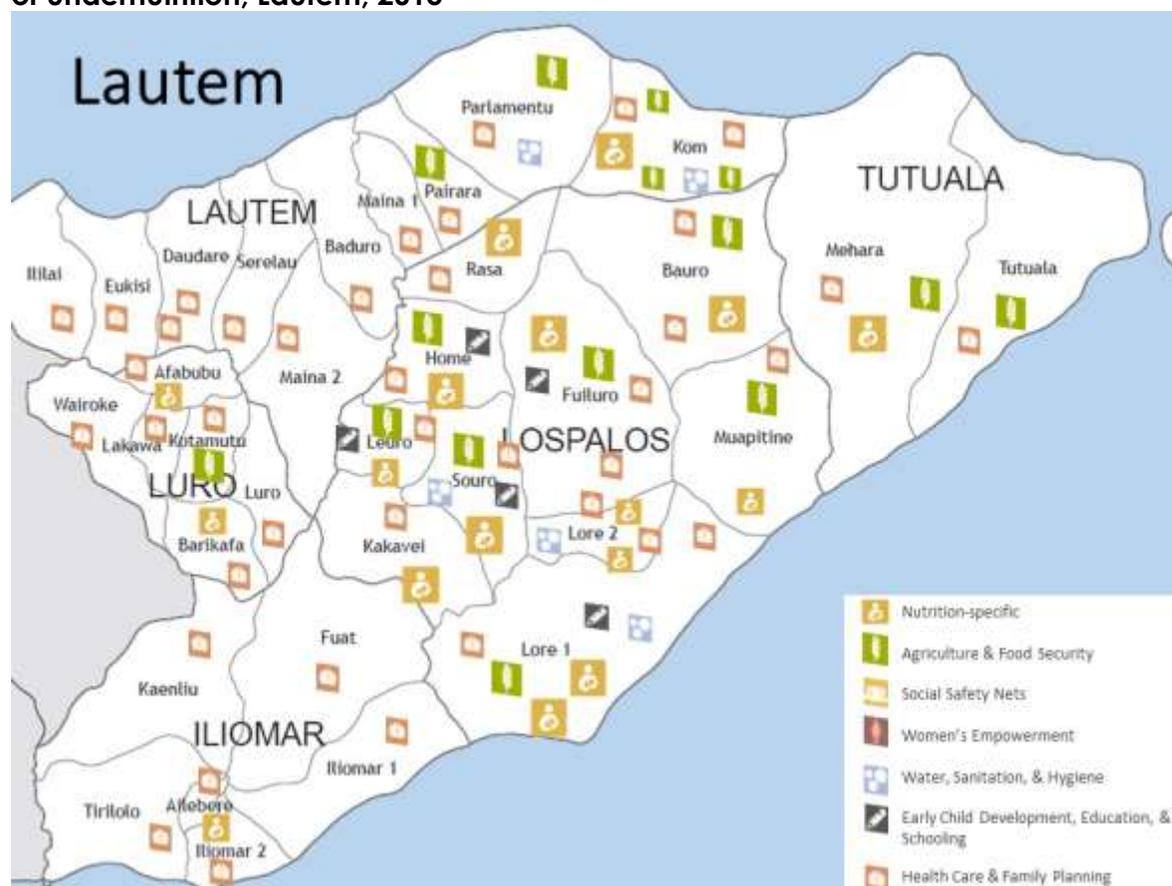


Figure 26. Map of development partner support for immediate and underlying determinants of nutrition, Timor-Leste, 2015



Convergence of programs at the *suco* is critically important but difficult to achieve. Partners often report only district level coverage, but rarely support 100% of *sucos* in a given district. As a consequence, there is considerable variability in the degree to which *sucos* receive DP assistance. Due to issues of accessibility, DP support within a district tends to concentrate around the district capital. Taken as an example, in Lautem, partner interventions are concentrated around Lospalos sub-district, with fewer interventions in remote areas. (Figure 27). Because there is no repository of project data that includes coverage at the *suco* level, collecting information at this level of granularity is remarkably resource-intensive.

Figure 27. Convergence of interventions addressing immediate and underlying drivers of undernutrition, Lautem, 2015



There are some notable DP efforts aimed at encouraging convergence and coordination to achieve nutrition outcomes. DFAT is piloting the Nutrition Collective Impact project in the Holarua *suco* of Manufahi in order to evaluate the impact of converging programs in reproductive health, nutrition, agriculture, WASH, and community development. Similarly, UNICEF has targeted its WASH, nutrition, and child health activities in overlapping geographies in order to promote additive effects. World Vision has adopted a convergence approach such that *sucos* selected for support benefit from maternal and child health and nutrition, agriculture and livelihoods, and early childhood development programs. Strong monitoring and evaluation will help to understand the benefits and challenges of such an approach in Timor-Leste.

E. Research, Monitoring, and Evaluation

There have been limited investments in research (formative and quantitative) and program evaluations to identify ‘what works’ and ‘how’ to deliver nutrition interventions in Timor-Leste. Partners often call for

the use of evidence-based interventions and approaches, but there is not routine support to build the Timor-Leste-specific evidence base. In addition to understanding behaviors and drivers of malnutrition, there is also further opportunity to evaluate effectiveness of interventions and delivery platforms. Research questions to be answered include: What are the key barriers to optimum IYCF in Timor-Leste? Do frequently utilized approaches (mother support groups, cooking demos, kitchen gardens) help families to overcome these barriers? Why (not)?

As nutrition-sensitive interventions expand in scope, there is a need to strengthen their technical design, actively integrate indicators along the pathways between agriculture and nutrition, and address the socio-cultural, economic, and environmental constraints which may inhibit the achievement of results. Nutrition objectives tend to be folded into maternal and child health, food security and livelihoods, or early child development programs but there is a need to integrate appropriate output and outcome indicators to monitor and evaluate impact on nutrition.

F. Gaps and Opportunities in Development Partner Support for Nutrition

- Strong, directive government leadership has not yet emerged in the ‘nutrition sector’.
- Disorganization is in part attributed to the lack of a common results framework and a cross-sectoral platform to convene multiple stakeholders (DPs, civil society, private sector, and government) working on nutrition-specific and nutrition-sensitive areas. DPs have made efforts to coordinate themselves and align activities with national strategies, but they remain driven by their institutional priorities.
- There has been no standardized approach to nutrition behavior change communication, or common training/education materials, and incentive or mandate for organizations to share their materials, perpetuating duplication of efforts (though recent efforts are being made).
- More evidence is needed to understand *how* to reduce malnutrition in Timor-Leste. Building the Timor-Leste-specific evidence base could garner a broader set of champions for greater nutrition investments.
- Little attention is paid to the convergence of nutrition-specific and nutrition-sensitive programs. Communities need to receive a comprehensive package of nutrition-specific and nutrition-sensitive interventions in order to address the multiple causes of malnutrition, yet little is mapped about which programs are underway and where (particularly at the *suco* level).
- Given the push towards deconcentration and the importance of local level convergence for nutrition, there is an opportunity to strengthen engagement at the sub-national level to accelerate reductions in malnutrition.

Chapter 8. Costing and Financing for Nutrition

CHAPTER 8 KEY MESSAGES

1. Implementing the Zero Hunger Challenge will require US\$34.00 per capita per year while the National Nutrition Strategy, focusing on high impact nutrition interventions will cost US\$7.00 per capita per year.
2. The National Nutrition Strategy has a financing gap of roughly 50% over five years, but obtaining an additional US\$4.00 per person per year is not unfeasible.
3. Analysis of fiscal space for nutrition can identify opportunities to sustainably secure additional resources for nutrition.
4. Improved prioritization of evidence-based nutrition programs and greater efficiency of nutrition spending present the greatest opportunities for increasing fiscal space for nutrition.
5. Greater quality and quantity of public financing is needed to build human capital and sustain economic growth.

Ultimately, budgets are more important than policies, and investments in nutrition necessary to accelerate improvements in health, social, and economic development. This section reviews the projected costs of scaling up nutrition interventions in Timor-Leste.⁷⁴ Second, we draw upon available data on government and non-government spending in key sectors for nutrition service delivery to identify bottlenecks and opportunities in the availability of nutrition financing.

A. Estimated Costs of Scaling Up Nutrition

Due to the multisectoral causes of malnutrition, scaling up nutrition-specific and nutrition-sensitive interventions carries a considerable cost. Costing exercises have been completed for both the PAN-HAM-TIL and the National Nutrition Strategy (NNS). Scaling up the 51 activities under Pillar 2 (Zero stunted children under two years of age) of PAN-HAM-TIL is estimated to cost US\$396.0 million over 10 years, roughly US\$34.00 per capita per year. The MOH Costed NNS Operational Plan (C-NNS-OP) estimates are significantly lower than PAN-HAM-TIL (US\$38.8 million for the period 2015-2019), or roughly US\$7.00 per capita per year (MOH 2016e).⁷⁵ Cost: benefit analyses have not been completed, so the return on this level of investment is unclear.

Availability of Financing for the NNS

The financing needed to implement the NNS is described in the C-NNS-OP (Table 20). This MOH review concludes that only US\$3.00 per capita per year (of a required US\$7.00 per capita per year) is available through 2017, with the share of the plan financed decreasing from 2017. The C-NNS-OP demonstrates strong reliance on donor support in the nutrition sub-sector of health, with DP contributions far exceeding

⁷⁴ Costing exercises were completed for the Zero Hunger Action Plan and the National Nutrition Strategy. We have not duplicated this process and our estimates reflect the assumptions and estimates generated through these processes.

⁷⁵ The NNS is a MOH strategy. Consequently, the C-NNS-OP costs three of eight nutrition-sensitive outputs. It is assumed that the remaining five outputs were/will be costed under the strategies and plans of different departments of the MOH and other relevant ministries. The nutrition-sensitive outputs not costed include: (a) coverage of maternal, newborn, and child health services; (b) improved access to hygiene and sanitation practices; (c) increased access to improved source of drinking water (WASH strategy); (d) increased coverage of intervention promoting income generation by women of the poorest wealth quintile; and (e) improved food production, storage and use at household level. As such, a multi-sectoral nutrition strategy has not been fully costed.

those of MOH.⁷⁶ Current financing has not achieved national coverage, and there has not been a discussion of *how* to close the financing gap while scaling up and maximizing benefits.

Table 20. Financing availability and gap for implementation of the National Nutrition Strategy (2015-2019)

	2015	2016	2017	2018	2019	Total
Requirements	6,023,315	7,051,495	9,554,459	7,058,204	9,183,577	38,871,049
Funds available						
Nutrition Department, MOH	42,000	42,000	42,000	42,000	42,000	210,000
European Development Fund (2015-2017)	1,400,000	1,400,000	1,400,000			4,200,000
European Development Fund (2014-2020)	1,428,571	1,428,571	1,428,571	1,428,571	1,428,571	7,142,857
Japan Social Development Fund	700,000	700,000	700,000	700,000		2,800,000
KOICA	1,800,000	1,800,000				3,600,000
UNICEF	50,000	50,000	50,000	50,000	50,000	250,000
WHO	20,000	20,000				40,000
WFP	100,000	100,000				200,000
Total Available	5,540,571	5,540,571	3,620,571	2,220,571	1,520,571	18,442,855
Gap (Requirements - Total Available)	482,744	1,510,924	5,933,888	4,837,633	7,663,005	20,428,194

Source: MOH 2015e.

B. Fiscal Space for Nutrition⁷⁷

The previous chapters highlighted malnutrition as the greatest risk factor for premature death and disability and as an underlying driver of persistent poverty and economic losses. However, coverage of key nutrition-specific interventions is low and government financing accounts for just over 1% of all resources for nutrition (see Table 20). The disproportionate reliance upon donor financing for essential nutrition services raises questions related to the ability of government to meet its priorities and sustainability of nutrition financing. An assessment of fiscal space for nutrition should be undertaken to identify from where resources can be obtained to finance the scale up of priority interventions, reach national goals, and achieve the SDG targets.

Aligned with previous definitions of fiscal space for health (Tandon and Cashin 2010), we define ‘*fiscal space for nutrition*’ as the ability of governments to increase spending for the nutrition sector without jeopardizing the government’s long-term solvency or crowding out expenditure in other sectors needed to

⁷⁶ The C-NNS-OP includes only Nutrition Department funds. The MOH invests considerable resources in the human resources needed to deliver nutrition services, but, as outlined in the C-NNS-OP assumptions, it was agreed not to include these human resource costs in the C-NNS-OP. Commodity costs and financing are included in the C-NNS-OP (essential nutrition commodities procured by UNICEF and WFP with EU and KOICA funds) though the recurrent costs associated with these interventions are not included.

⁷⁷ This section draws heavily upon a recent review of health expenditures in Timor-Leste (World Bank 2016).

achieve other development objectives. This section seeks to answer the question: given the need for additional financing for the scale up of nutrition interventions, what are the prospects for increasing government spending for nutrition in the short-to-medium term? To answer this question, we review the following five areas⁷⁸ which have the potential to generate additional fiscal space for nutrition:

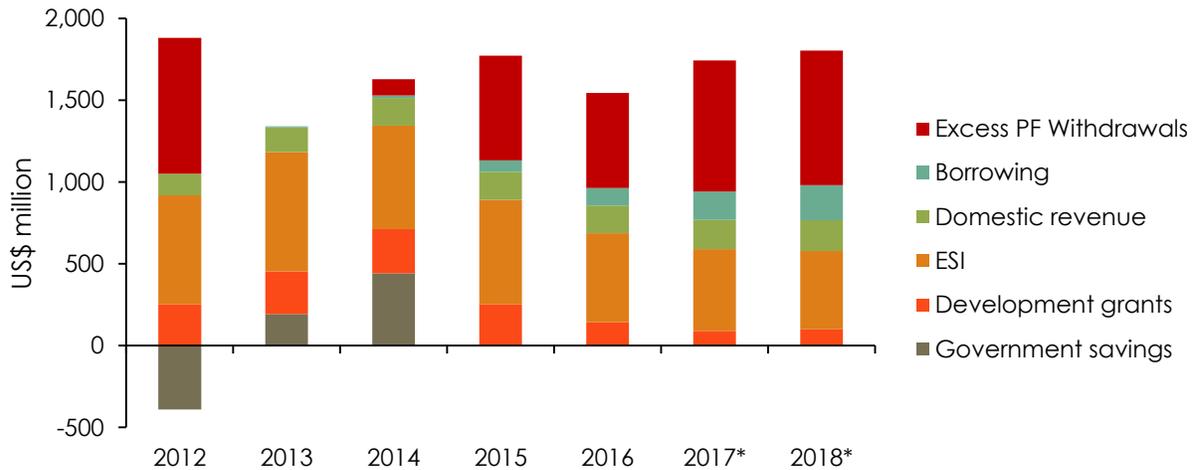
1. **Conducive macroeconomic conditions** such as economic growth and increases in overall government revenue which could lead to increases in government spending for nutrition;
2. **Reprioritization of nutrition** within the government budget;
3. An increase in **nutrition-sector specific resources** (e.g. through earmarked taxation);
4. Nutrition sector-specific grants and foreign aid; and
5. An increase in the **efficiency** of existing government nutrition outlays.

1. Conducive Macroeconomic Trends

Timor-Leste is one of the most oil dependent countries in the world and has suffered over the past two to three years due to the collapse in global oil prices. Overall GDP (including oil production) fell from US\$6.8 billion in 2013 to projected US\$2.6 billion in 2015, with government oil revenue declining from US\$3.9 billion to US\$0.96 billion over the same time period. Consequently, overall economic growth was estimated at just over 4% in 2015, a slowdown from the decade of double-digit growth following independence. The finite petroleum wealth provides a window of opportunity to build the non-oil economy and public system foundations for improved growth prospects in the future, but the government faces the challenge of balancing the current economic need with ensuring the sustainability of the Petroleum Fund (PF). Government is financing development by drawing double the estimated sustainable income (ESI) from the PF, as domestic revenue has held constant over the period 2010-2016 (Figure 28). Consequently, the overall budget balance has fallen from a surplus of 53% of GDP in 2013 to a deficit of 6.6% in 2015 (World Bank 2016c).

⁷⁸ Due to the strong evidence for the key nutrition-specific interventions which can be delivered through the health sector, the analysis focuses on the Ministry of Health. The current structure of the General State Budget uses only economic expenditure categories which creates difficult to identify levels of expenditure on nutrition. Consequently, at some points expenditure on health is used as a proxy for expenditure on nutrition-specific interventions under the assumption that nutrition accounts for a constant share of the total health budget over time. Where data are available and as appropriate, we incorporate data from non-health sectors to identify fiscal space for nutrition related to nutrition-sensitive interventions.

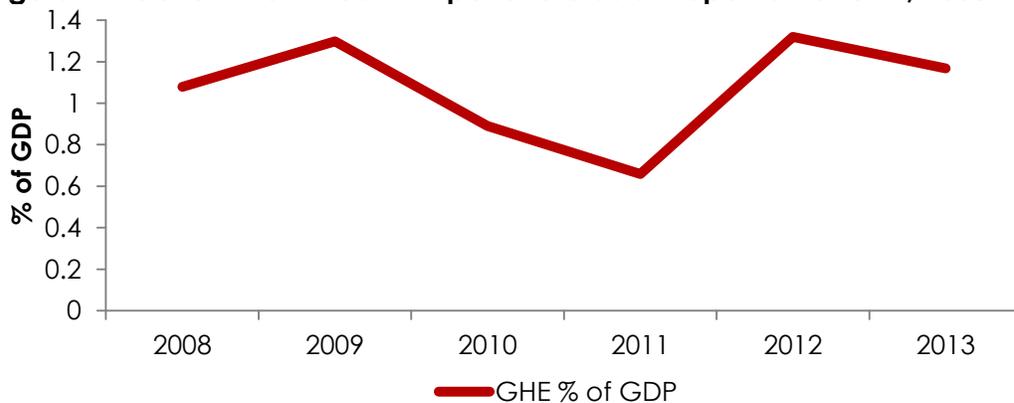
Figure 28. Sources of financing for the General State Budget, Timor-Leste, 2012-2018 (projected)



Note: *Projected figures. PF: Petroleum Fund. ESI: Estimated sustainable income which can be withdrawn from Petroleum Fund. Government savings is defined as the change in government cash balances. In 2012 the government over-financed the budget by US\$390.0 million, and used savings in government accounts to finance part of the budget for 2013 and 2014. Estimates of development grants beyond 2016 should be interpreted cautiously. The decline may be due, in part, to the manner of data collection.

Steady macroeconomic growth in recent years has allowed for large increases in actual government health expenditure over last decade from approximately US\$27.6 million in 2008 to US\$60.2 million in 2014 (47.7% growth in real terms and an average annual real growth of about 6.8%) (World Bank 2016c). The result has been a growth of per capita health expenditure in real terms. However, there has been little change in the share of government health expenditure as a proportion of GDP over the same time period (Figure 29), and at 1.3%, Timor-Leste is among the lowest in the world. Assuming that nutrition as a share of health expenditure has remained constant over the same period, it can be inferred that any nominal increases in per capita expenditures on nutrition were derived primarily from macroeconomic growth. With conservative economic projections for the short- to medium-term, it is unlikely that additional fiscal space for nutrition will be achieved through economic growth.

Figure 29. Government Health Expenditure as a Proportion of GDP, 2008-2015



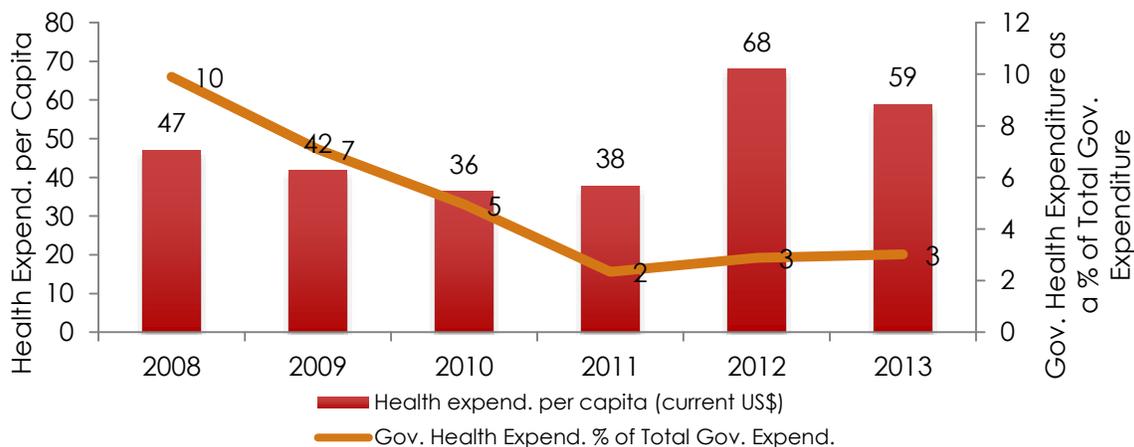
Source: World Bank 2015a. Note: GHE-Government Health Expenditure; GDP: Gross domestic product.

2. Reprioritizing Nutrition: Trends in Government Spending for Key Sectors

The share of government expenditures on nutrition (and health) signal government commitment to the issues. With a subdued growth outlook for the Timorese economy, a second source of fiscal space for nutrition would be from re-prioritization of nutrition within the overall budget. The government has controlled total spending, setting the overall budget ceiling in 2016 at US\$1.56 billion. Thus, augmented fiscal space for nutrition would result from contracting fiscal space for other sectors.

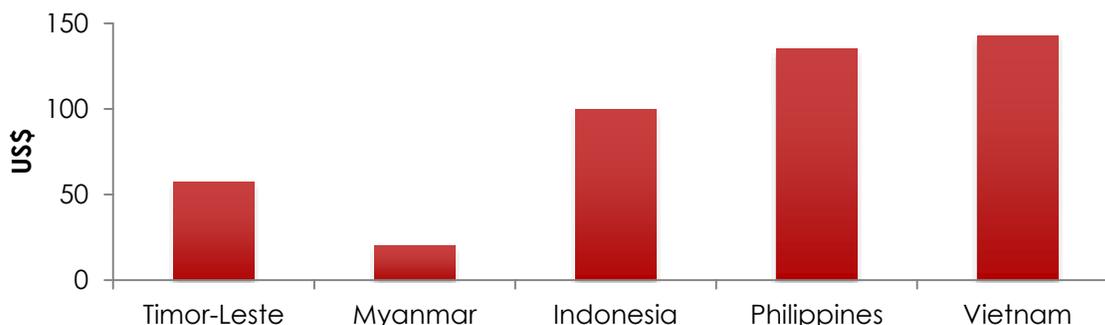
Richer countries will generally spend more on health, nutrition, and human development due to greater political will to prioritize human capital. At 2.4% of total government expenditure, Timor-Leste's public expenditure on health is among the lowest in the world and lower than the EAP average of 9-11%. Timor-Leste has committed less public funding to health care than similar low- and middle-income countries (LMICs). Over the period 2008-2013, public health expenditure as a share of total government expenditure averaged 5% (Figure 30), declining significantly between 2008 and 2011 and hovering around 2-3% in the years thereafter. Per capita government health expenditure was estimated at US\$57.00 annually (World Bank 2015a), relatively low for the EAP region, especially when compared to countries making strong progress towards UHC (Figure 30).

Figure 30. Government health expenditure per capita and as a share of total government expenditure, 2008-2015



Source: World Bank 2016a

Figure 31. Per capita expenditure on health (current US\$), 2014



Source: World Bank 2015a.

When comparing health to other sectors, infrastructure receives a large share of budgetary allocations: the 2016 General State Budget (GSB) includes an increased physical infrastructure budget financed through contractions in the health, education, and agriculture budgets (Table 18). In 2016, the both the health and agriculture resource envelopes declined by 18%.⁷⁹ It is believed that this is due, in part, to low budget execution and inefficient spending in these sectors. Timor-Leste has among the highest levels of social assistance spending in the world, as reflected in the large budget for Ministry of Social Solidarity. However, these funds are not targeted towards poverty reduction or nutrition. Fiscal prioritization of Bolsa da Mae program could be one way of securing additional nutrition resources.

Table 18. General State Budget (GSB) allocations (in US\$ million), KONSSANTIL Ministries and Infrastructure Fund, 2014-2016

Ministry	Share of budget 2014	Allocation, US\$ US\$ (millions) 2014	Share of budget 2015	Allocation, US\$ (millions) 2015	Share of budget 2016	Allocation, US\$ (millions) 2016
MAF	2%	27.6	2%	27.2	1%	22.3
MOE	8%	116.4	7%	103.0	6%	100.6
MOH*	4%	67.0	4%	67.5	3%	42.4
MSS	10%	146.7	13%	196.6	10%	160.0
MCIE**	1%	20.7	1%	21.6	1%	12.7
Infrastructure Fund	25%	368.5	16%	247.3	18%	286.0

Source: MOF 2016b. *Due to restructuring of the GSB in 2016, the MOH budget excludes US\$5.9 million for SAMES, US\$6.3 million for National Hospital Guido Valadares, and US\$0.5 million each for the National Laboratory and INS. When added to the MOH budget, the total health resource envelope in 2016 is US\$55.6 million. **Commerce, Industry, and Environment

Due to line item budgeting, it is not possible to track budget allocations or expenditures for nutrition programs, resulting in little data on the extent to which nutrition is prioritized within sectors budgets. However, the 2016 GSB narrative outlines a number of related investments (Table 19). At US\$13.4 million, the school feeding program receives the largest goods and services allocation of all nutrition-sensitive programs, while the 2016 allocation for social transfers (US\$144.1 million) accounts is comprised primarily of transfers for the Veteran’s Pension program.

Table 19. Nutrition-relevant Goods and Services and Public Transfers from the 2016 General State Budget

Goods and Services	Public Transfers
<ul style="list-style-type: none"> US\$13.4 million allocation to the Ministry of Education for the SFP. US\$4.5 million for MAF towards the purchase of agricultural material and for the <i>Suco</i> Ida Produutu Ida/Centro Dezenvolvimentu Comunidade Agricola program. This agricultural material includes seeds, fertilizers, feed, and animal 	<ul style="list-style-type: none"> US\$10 million to the Ministry of State Administration for supporting the National Program for Village Development (PNDS). US\$144.1 million to the Ministry of Social Solidarity towards social programs, including the veterans’, old age and disability pension schemes, Bolsa de Mae,

⁷⁹ Though the Infrastructure Fund and Human Capital Development Fund supplement sectoral budgets, the Consolidated Fund remains the source of goods and services budgets necessary to improve delivery of service to the Timorese citizens.

<p>medicine. This will contribute to the development of agriculture and food security.</p> <ul style="list-style-type: none"> US\$3.1 million to MCIE for rice imports and the support of local products. This will support the local rice market, contribute to the School Feeding and Disaster Relief programs and ensure the basic access to food for the population. 	<p>victims of natural disasters, and for the medical treatment of veterans.</p> <ul style="list-style-type: none"> US\$7.6 million to the Ministry of Health for treatments abroad, a new cardiovascular center, strengthening of laboratory services, subsidies to private clinics, support to public health activities and the SISCa.*
---	---

Source: MOF 2016b. *Support to SISCa is included in the MOH transfer, but overseas medical transfers have accounted for the largest portion of non-salary recurrent spending (World Bank 2016), making it likely that transfers to SISCa will account for a small share of the US\$7.6 million.

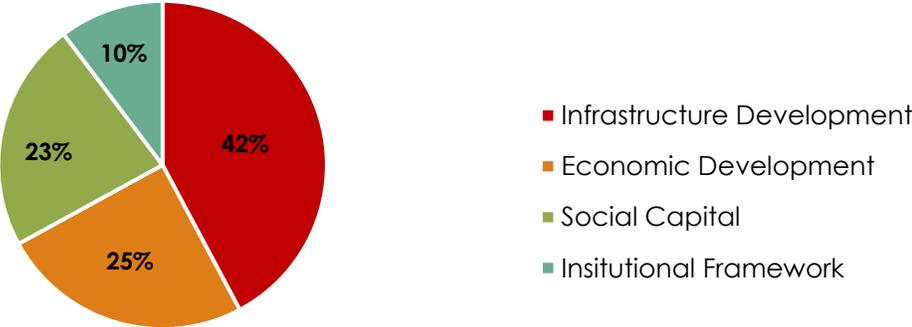
3. Nutrition-Sector Specific Resources

In the EAP region, taxes on tobacco, alcohol products, or sugar-sweetened beverages (SSBs) earmarked for health have been discussed as a means of generating sector-specific resources. In theory, there is potential that these could be further earmarked for delivery of nutrition education and interventions, but this is not under discussion in Timor-Leste at this time.

4. Nutrition Grants and Foreign Aid

In general, donor support to the RDTL is aligned with Government’s own budgetary priorities (Figure 32). Over the period 2013-2016, infrastructure development received the greatest share of DP support, with social capital receiving roughly half the level of support as infrastructure.

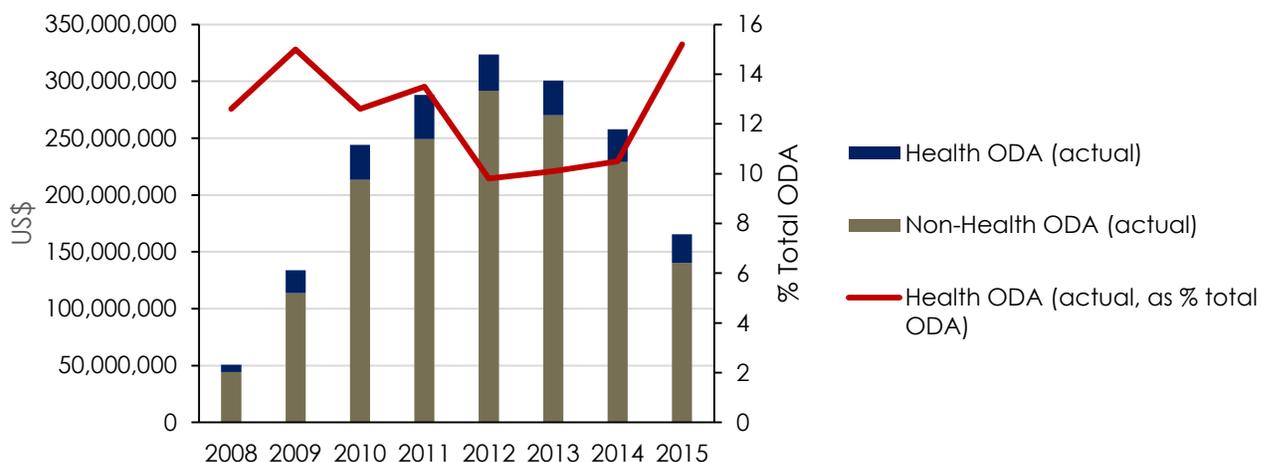
Figure 32. Development partner support relative to Timor-Leste National Strategic Development Plan Pillars, 2013-2016



Source: MOF 2016a. Figures represent share of actual commitments for the period 2013-2016 across all sectors.

Total ODA in Timor-Leste rose steadily over the period 2008-2011 before beginning a strong progressive decline (Figure 33). Health has accounted for an average of 12% of total ODA over the period 2008-2014, but has contributed on average 38% of total health expenditure. At US\$35.00 per person in 2011, per capita donor health spending in Timor-Leste is low relative to the burden of disease, compared with Sri Lanka (US\$54.00), Fiji (US\$58.00) and Cambodia (US\$38.00) in the same year. Based on planned donor spending, it is possible that donor funding may continue to decrease (World Bank 2016a).

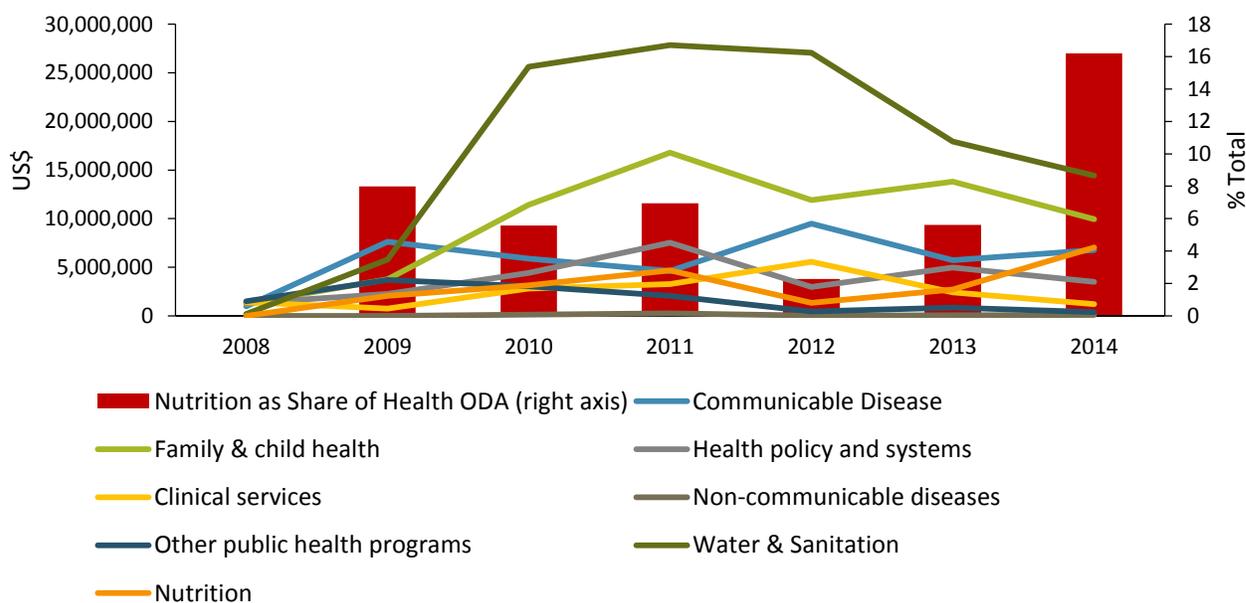
Figure 33. Trends in Official Development Assistance (ODA) and Health ODA, Timor-Leste, 2008-2015



Source: World Bank 2016a based on Timor-Leste Aid Transparency Portal Data.

Disaggregated by sub-sector, water and sanitation accounts for the greatest share of health ODA, followed by Family and Child Health and Communicable Disease. Between 2011 and 2014 total value of health ODA declined, but basic nutrition increased as a share of health ODA (Figure 34). Non-communicable diseases receive a marginal share of ODA.

Figure 34. Trends in Official Development Assistance (ODA) by health sub-sector and nutrition as share of health ODA, Timor-Leste, 2008-2014



Source: MOF 2016a. Accessed March 2015.

The nutrition sector is currently heavily dependent on donor assistance, raising issues for the sustainability of nutrition financing. Timor-Leste is now a lower-middle income country and is expected to see reduced donor aid due to the favorable macroeconomic growth. When including both nutrition-specific and

nutrition-sensitive interventions, donors play a significant role in: (a) financing and procuring essential nutrition commodities, all family planning commodities, and share of immunization supplies; (b) supporting delivery of WASH software and hardware; and (c) financing nutrition-sensitive agriculture programs. While the SDGs may draw additional, continued donor support for nutrition in the short- to medium-term, strategic planning is needed to ensure the continuity of nutrition service delivery across sectors in light of declining donor assistance.

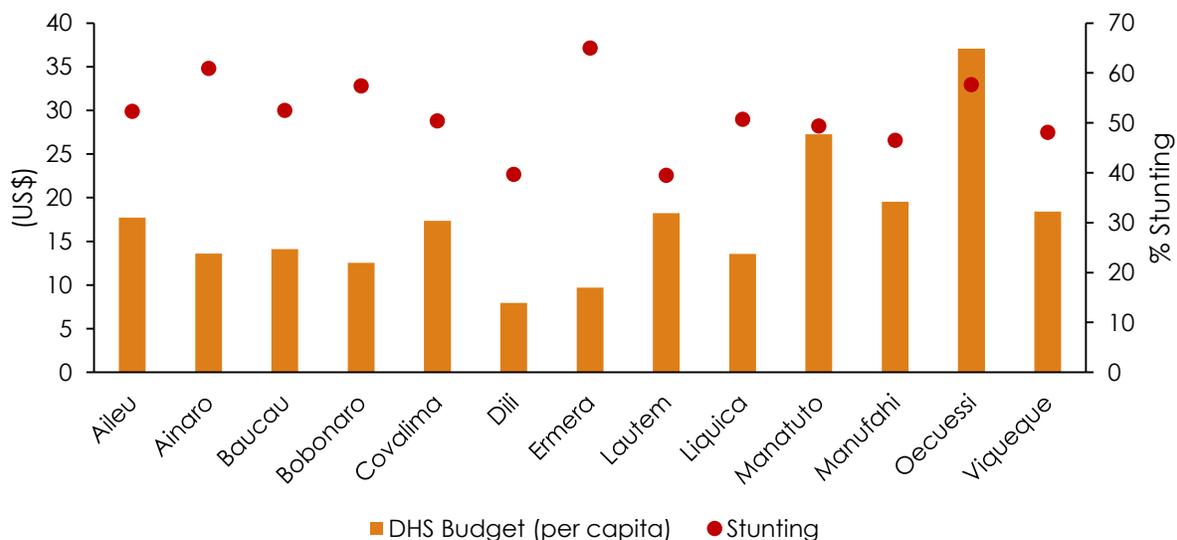
5. Efficiency in Nutrition Spending

Increasing efficiency of government spending for nutrition will require that inputs such as staff, supplies, equipment, and buildings are utilized to achieve the optimum mix of services to address the burden of malnutrition. The following parameters are utilized to assess the efficiency of spending on nutrition: (a) alignment of the geographic allocation of resources with the burden of malnutrition; (b) distribution of spending across government and facility levels; (c) distribution of expenditures on inputs; and (d) efficient use of public sector workers.

5.1 Geographic Targeting of Resources Aligned with Burden of Malnutrition

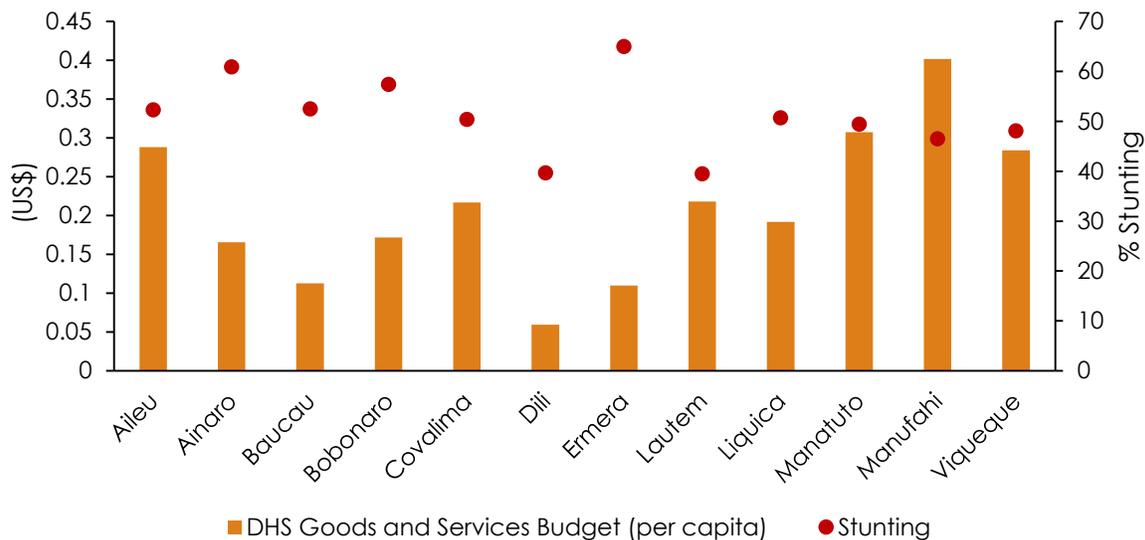
Nutrition services are mainly preventive and promotive and are financed primarily through District Health Services (DHS) budgets. Across the districts, there is considerable variability in total District Health Services budget allocations. In the 2016 GSB, total DHS budgets (calculated on a per capita basis) ranged from about US\$9.75 to US\$37.00. DHS goods and services budgets, in particular, have seen massive reductions since 2013, ranging US\$0.06-US\$17.81 in 2016 (down from a range of US\$1.25-US\$6.00 in 2013). From a nutrition perspective, efficient resource allocation would align district health spending -- both total and goods and services -- with the burden of stunting, but this is not the case (Figures 35-36). A 2014 World Bank review attributed the misalignment to the system of setting line item budgets incrementally or arbitrarily, rather than taking into account district needs or activities (Nixon and Bredenkamp 2014).

Figure 35. Total District Health Services (DHS) budget (2016) on a per capita basis and prevalence of child stunting (2013), by district



Source: MOF 2016a; RDTL 2013a

Figure 36. District Health Services (DHS) goods and services budget (2016) on a per capita basis and prevalence of child stunting (2013), by district

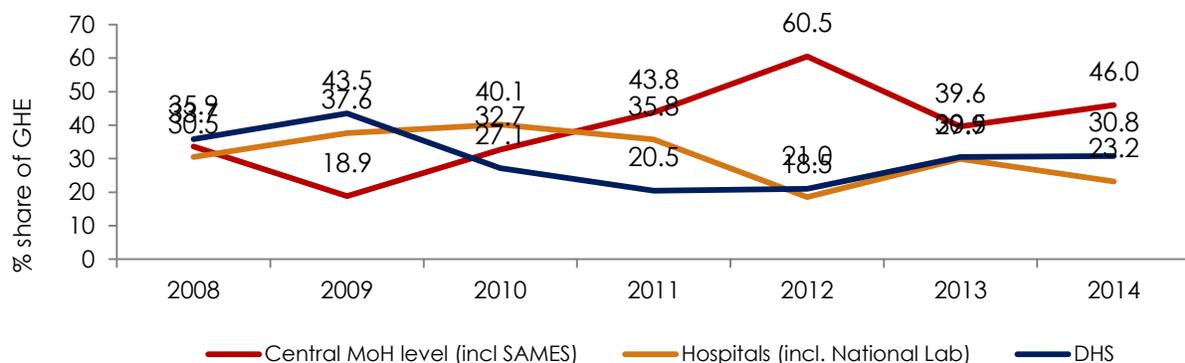


Source: MOF 2016a; RDTL 2013a. *Note:* Oecusse omitted as an outlier, with US\$17.81 in per capita goods and services expenditure.

5.2 Distribution of Spending Across Government and Facility Levels

When resources are distributed efficiently for nutrition, we would expect the expenditures to be concentrated at the level of greatest need. Health-related government spending is divided between the Central, Hospital, and District levels, and the same can be said for nutrition. At the Central level, the Nutrition Department is financed through the budget of the National Directorate of Public Health, which covers the costs of training, program development, advocacy, materials, monitoring, and evaluation for nutrition. Nutrition service delivery expenditures will fall primarily under District Health Services (with hospital budgets covering a small minority of expenditures for the in-patient treatment of acute malnutrition and ANC/PNC/IMCI visits at hospital level). However, within the Ministry of Health, the greatest share of health expenditure (46%) is at the Central level (Figure 37). A World Bank (2016) review found that the extremely high expenditures at central level are placing severe pressure on the health budget. The C-NNS-OP estimates that 10% of total nutrition costs will be borne at the national level, while 4% is shared between national/municipality; 21% shared between national/municipality/administrative post; and 3% between national/municipality/administrative post/community. Even assuming that the national budget would cover, rather than share, joint expenses, central level government expenditure on nutrition would still exceed the level of need.

Figure 37. Percentage Share of Government Health Spending by Levels of Expenditure, 2008-2014

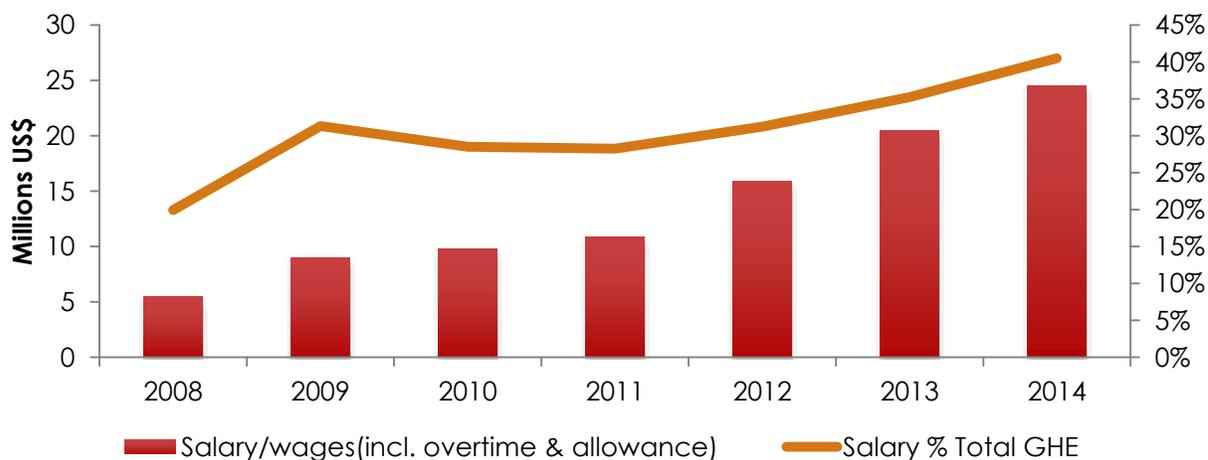


Source: World Bank 2016a based on Timor-Leste Transparency Portal (Government Budget). Accessed July 2015. *Note:* GHE = Government Health Expenditure. DHS = District Health Service.

5.3 Allocation of Input Expenditures

In large part due to the growing cadre of medical doctors, MOH has experienced rapidly rising expenditures on wages/salaries. Between 2008 and 2014 the MOH salary/wage expenditures increased from US\$5.5 million to US\$24.4 million (Figure 38). As a proportion of total government health expenditure, the salary expenditure grew from 20% of total government expenditure in 2008 to 40.5% in 2014. The increase in salary/wages has been offset by decreases 2008. The MOH budget declined by 18% between 2015 and 2016. These high levels of recurrent wage expenditures necessitated a 51% cut to goods and services budget (reflected in Figure 36) to accommodate spending on salaries (MOF 2016a). Consequently, donors are relied upon to finance a growing share of goods and services in the health sector, particularly at the district level.

Figure 38. Actual Salary and Wage Expenditures in Health and Share of Total Government Health Expenditure (2008-2014)



Source: World Bank 2016a using data from Timor-Leste Transparency Portal.

High levels of government expenditures on the salaries of doctors is inefficient from a nutrition perspective. Most interventions in the SNIP can and are provided by lower levels of health professionals at the frontline,

including community health volunteers, nurses, and midwives. Doctors rarely provide nutrition-specific interventions (aside from the treatment of acute malnutrition), a finding corroborated by a 2015 health workforce study which found that only 19 of doctors had been trained in community health and 75% required training in the Integrated Management of acute malnutrition (World Bank 2015).

6. Gaps and Opportunities in Nutrition Financing

Significant financing gaps remain to scale up implementation of the activities described under the NNS, which has a five-year financing gap of 63%. However, in real terms this only requires an increase of US\$4.00 per capita. An assessment of fiscal space for nutrition can provide insights into the options for closing the nutrition financing gap. Table 20 summarizes the prospect for creating fiscal space for nutrition in Timor-Leste using each of the five pillars. Among the available options, improving prioritization and increasing efficiency of nutrition services have the greatest potential to accelerate results for nutrition in Timor-Leste.

Given the magnitude of malnutrition in Timor-Leste, the investments in nutrition are disproportionate to the level of need. Though the SDP provides a foundation for investing in nutrition and human capital, infrastructure remains a priority,⁸⁰ with the Ministries of Health, Education, Social Welfare, and Agriculture experiencing declining budgets as infrastructure expenditures rise. The SDP argues that infrastructure is necessary to achieve social development goals in health and education as well as drive economic growth, but global evidence has shown that the investments in economic development are slow to trickle down and improve nutrition. At the same time, the issue of absorptive capacity cannot be ignored. Relevant ministries must demonstrate the ability to spend resources efficiently.⁸¹

Table 20. At A Glance: Fiscal space for nutrition in Timor-Leste

Fiscal Space Source	Key Information	Prospects for Fiscal Space
Macroeconomic Conditions	GDP growth rates have declined due to decreased oil prices and domestic oil output. Revenues are projected to remain constant.	Limited
Re-prioritization of nutrition in the government budget	Potential to increase expenditures on nutrition, health, agriculture, education, and social welfare as a share of total government expenditure, but political economy constraints to doing so. Large ability to reprioritize national directorates delivering evidence-based nutrition interventions.	Moderate
Nutrition sector-specific resources	Currently no proposals for increasing revenue earmarked for nutrition.	Poor

⁸⁰ Infrastructure spending peaked at US\$543.0 million in 2011, equivalent to nearly half of total expenditure and one of the highest rates of infrastructure spending in the world (MOF and World Bank 2015). The government intends to “front-load” infrastructure finance to stimulate economic and social development.

⁸¹ As reported in the MOF Budget Transparency Portal, total budget execution in 2015 for KONSSANTIL Ministries was as follows: MAF: 70.8%; MOH: 89.4%; MSS: 94%; MOE: 98.5%; MCIE 94.2%.

Nutrition sector-specific grants and foreign aid	Trends in ODA indicate declining foreign aid across sectors. International interest in reducing malnutrition may contribute to increased donor resources in short- to medium-term.	Moderate
Efficiency gains	53% of MOH budget allocated for salaries, which constrains goods and services expenditure but can be better utilized. Geographic misalignment of DHS budgets and burden of malnutrition. Low levels of expenditure for preventive and promotive nutrition services through DHS. Low prioritization of cost-effective nutrition interventions.	Good

On the whole, government investments in Timor-Leste are not well aligned to meet the SDP objectives related to the reduction of malnutrition and development of human capital. Specific gaps in financing for nutrition include the following:

- The current PAN-HAM-TIL and NNS have large financing gaps and no indication of increased availability of funds for nutrition in the short- and medium-term. Improving nutrition outcomes will be largely dependent upon a discussion of *how* best to increase fiscal space for nutrition.
- Decreased prioritization and budgetary allocations from the Consolidated Fund affects the service delivery and implementation of nutrition-specific and nutrition-sensitive programs in Health, Agriculture, and Social Solidarity.
- Key KONSSANTIL ministries lack the absorptive capacity to deliver on additional programs, even if financing is provided.
- Within the Ministries of Health and Agriculture, donors provide a large share of service delivery financing; government investment in nutrition-relevant activities is limited, which poses sustainability challenges as donors reduce their support to Timor-Leste.
- There are opportunities for increasing the likelihood of greater nutrition results even within the current budget envelopes for the KONSSANTIL ministries including MAF, MOE, MSS, MOH, MCIE, and Ministry of State Administration. Increasing the nutrition-sensitivity of current budgetary expenditures requires both (i) a technical discussion of program design and delivery; and (ii) budgetary allocation to programs which have nutrition-related objectives.
- Increasing the technical and allocative efficiencies of currently available resources is a strong option for increasing fiscal space for nutrition. Shifting resources to the scale up of interventions targeting the first 1,000 days can accelerate reductions in malnutrition. However, country-specific cost:benefit analyses are not available which could identify estimates on returns to spending and inform an evidence-based discussion of priorities in each line ministry, and KONSSANTIL has not convened a cross-sectoral discussion of prioritization, planning, and budgeting.
- Nutrition investments span a number of sectors and DP agencies, and there is currently no mechanism to track total spending for nutrition-sensitive and nutrition-specific programs.

Chapter 9. Conclusions and Recommendations

Timor-Leste has made remarkable progress in scaling up the coverage and quality of essential services and transitioning out of conflict since independence. Malnutrition is perhaps one of the greatest development challenges facing Timor-Leste but its impact remains largely under-recognized. With one in two children experiencing chronic undernutrition, stunting is an impediment to maximizing on the human potential in the country. Stunting is highest among the poor, but very high stunting prevalence is found even among the wealthiest households, pointing to behavioral and non-economic determinants of stunting in the country. With a high number of malnourished women, there is strong evidence that malnutrition will continue to be passed across generations if not directly, comprehensively, and immediately addressed.

High level political leadership and commitments to the Zero Hunger Challenge and Sustainable Development Goals (SDGs) provide the necessary strategic and institutional foundations to improve nutrition. The key challenge is to build awareness among a broad-based constituency and focus on the scale up of high impact interventions. Ultimately, this scale up will only be possible if quantity and quality of implementation and financing is elevated to levels necessary to achieve the targets in ambitious national commitments.

Adequate nutrition in the first 1,000 days of life will set the foundation for building the human capital required to compete in the global knowledge economy; the stakes are too high to rely solely on macroeconomic growth. National investments over the past decade have focused on achieving stability and building infrastructure as the basis for non-oil growth (e.g. MSS veteran's benefits, MOE school feeding, and MCIE rice subsidies).⁸² The strong political will for these initiatives, combined with low budget execution and results orientation in health and agriculture spending, has yielded the budgetary deprioritization of ministries responsible for human development and poverty reduction. However, the losses to human capital only accumulate with every year investments in the early years are forgone. Strengthening access to health, nutrition, education, and agricultural services will not only be fundamental to improving the nutrition situation in Timor-Leste, but also to ensuring the development of a sustainable, inclusive economy and vibrant Timor-Leste.

Recommendations

This section provides recommendations to address the gaps and opportunities identified throughout this report. The recommendations are divided into actions at five levels, building from the grassroots family/community to cross-sectoral coordination and financing of institutions at the highest levels. Specific recommended short-term (1-2 years), medium-term (2-5 years), and long-term (5 or more years) actions—applicable to government and non-state stakeholders—are included at each level. To maximize impact and accelerate progress, it is critical that actions are initiated at each level and leverage the comparative advantages of the various players working in this space.

1. Family/Community

Recommendation 1: Empower families and communities with the knowledge and resources necessary to demand optimum nutrition and growth for their children.

⁸² It is important to note that conflict can arise from a host of complex and non-linear factors, including hunger, community, livelihoods, and basic welfare (World Bank 2011).

Families and their communities form the backbone of Timorese society. Widespread improvements in nutritional status will be difficult in the absence of strong families and community engagement. Communities require support to reduce the normalcy of stunting, build knowledge of malnutrition, and define solutions, building off of community assets and institutions. Appropriately crafted messages must reach communities through a variety of channels, supported by a cadre of motivated frontline workers and para-professionals who can facilitate the process of defining barriers and solutions. Development partners, in particular, should invest in the high quality formative research and expand the technical content of behavior change messages to include nutrition, health, hygiene, reproductive health, parenting, food production/consumption, household decision making, and self-esteem, respect, and gender roles (especially for youth). The audiences must also be broadened to include new groups, such as: adolescents (boys and girls), mothers-in-law, husbands, and community leaders.

Key Recommendations and Supportive Actions	Timeline for Implementation
Deliver a mass media campaign focusing on optimum child growth and nutrition in the first 1,000 days, expanding common definition of ‘malnutrition’ to include stunting and micronutrient deficiencies.	Short
Expand target audiences to youth, mothers-in-law, men, and community leaders.	Short/Medium
Expand messages to include health, hygiene, reproductive health, parenting, food production/consumption, and self-esteem, respect, and gender roles (especially for youth).	Medium
Establish a national social and behavior change (SBCC) strategy, working group, and messages related to nutrition; scale up use of multiple SBCC channels.	Medium
Enlist youth as agents of behavior change in their communities.	Medium/Long
Create platforms and incentives for community knowledge sharing.	Medium/Long
Build women’s voice and agency through programming, policies, laws, and law enforcement.	Medium/Long
Strengthen nutrition knowledge of civil society organizations and use community structures to disseminate nutrition behavior change.	Ongoing

2. Services

Recommendation 2: Scale up the delivery of a package of evidence-based nutrition-specific and key nutrition-sensitive interventions focused on the first 1,000 days.

Substantial progress has been made in developing the policies and guidelines for an integrated approach to nutrition. However, the package of nutrition-specific interventions needs to become a fully integrated component of Primary Health Care and delivered nationally. Specifically, the Ministry of Health needs to: (a) focus on achieving higher coverage of deworming; (b) vitamin A, iron-folic acid, and therapeutic zinc supplementation; and (c) infant and young child feeding promotion delivered skilled professional/para-professional channels. Strengthening the community-based delivery platforms for these interventions can accelerate attainment of higher coverage. To address anemia, supplementation and fortification interventions can address anemia and micronutrient deficiencies for children, women and adolescent girls. Where new delivery platforms are needed (e.g. targeting non-pregnant women and adolescent girls with IFA) these should be rapidly pilot-tested and scaled. Wasting remains a serious issue (especially in specific geographic pockets), requiring prevention and treatment for children with acute malnutrition. However, there is not yet clear evidence of adherence and effectiveness for the costly supplementary feeding for the treatment of moderate acute malnutrition in Timor-Leste. A program evaluation is needed to determine

cost-effectiveness and the return on investment expected from targeted supplementary feeding before continuing to scale up this component of SNIP.

Key Recommendations and Supportive Actions to Scale Up Nutrition Specific Interventions	Timeline for Implementation
Expand the Specific Nutrition Intervention Package to all <i>sucos</i> and focus on increasing coverage of IYCF promotion and supplementation of deworming, therapeutic zinc, iron-folic acid for pregnant and lactating women, and vitamin A supplementation.	Short
Scale up supplementation to address anemia in children and women of reproductive age.	Short
Review implementation of targeted supplementary feeding for treatment of moderate acute malnutrition to determine effectiveness, cost-benefit, and appropriate scale.	Short
Define and strengthen the community-based platform for delivery of nutrition services through PHC, focusing especially on infant and young child feeding promotion and growth promotion.	Short/Medium
Pilot and scale up delivery of supplementation and counselling to address anemia in adolescent girls.	Medium
Scale up universal salt iodization: adopt Salt Law, improve production and quality assurance, establish partnerships between MCIE, MOH, and private sector.	Medium/Long
Introduce mandatory food fortification: develop partnerships with MCIE, private sector, and development partners to develop policy and legislation and develop programs for market-based fortification of oil, staple foods and/or complementary foods.	Medium/Long

Evidence-based nutrition-sensitive services also need to be scaled up to address the underlying determinants of early life malnutrition. Delivery platforms for these interventions should be leveraged for the delivery of nutrition-relevant messages. In order to increase likelihood of impact, these programs should prioritize targeting towards nutritionally vulnerable women and children, but also need to be available to adolescents (the next generation of parents) and support systems (husbands, mothers-in-law, community leaders). The pathways from intervention to nutritional outcome need to be clearly defined, the inherent assumptions addressed in the program, and effectiveness assessed through the collection of appropriate indicators of diet and nutritional status.

Health Sector

Health inputs such as facilities and workforce have improved over the past decade, but coverage of essential health services remains low. Demand generation and outreach are necessary to stimulate consumption of health services, while additional incentives and performance-based management can help improve service delivery quality. Specific recommendations include: (a) scale up the delivery of reproductive health and family planning services to ensure universal coverage; (b) improve delivery of essential NCD services through PHC; (c) revive the KUBASA to be implemented through SnF visits; and (d) strengthen provision of messages linking hygiene, sanitation, and nutrition through the PAKSI program.

Key Recommendations and Supportive Actions in the Health Sector	Timeline for Implementation
Expand access to reproductive health and family planning services and counselling.	Short
Provide support for appropriate hygiene and sanitation behaviors through revived use of KUBASA forms and hygiene.	Short
Develop and pilot platforms for delivery of nutrition and reproductive health information and services for youth (in partnership with Ministry of Youth and Sport, Ministry of Education, and others).	Medium
Adapt and deliver the package of essential NCD services to support prevention and early identification of nutrition-related chronic diseases, including promotion of physical activity and food-based dietary guidelines.	Medium
Scale up the PAKSI program to universal coverage.	Medium

Agriculture Sector

In the agriculture sector, the focus should be on increasing women's empowerment and improving dietary quality through increased demand for and production, productivity and market availability of nutrient-rich foods (especially fortified and animal-source foods). There is a need to rethink how price, income, and other agricultural supports can shift from producing ever more staple grains and instead promote nutrition-sensitive and climate smart agriculture aimed at eradicating poverty and food insecurity (World Bank 2015). Specifically, there is a need for programs which focus on the production and productivity of pulses, poultry and poultry products, livestock, and aquaculture. For these programs to be successful, complementary activities are needed to: (a) increase access to irrigation for smallholders; (b) expand and improve the quality of the veterinary service to promote livestock and poultry health; (c) build the capacity of agricultural extensionists to provide information to farmers who produce these products; and (d) build the rural markets for these products. Increasing agricultural income will not be effective in improving nutrition if nutrient rich foods are neither available in rural markets nor affordable. Additional activities to improve post-harvest handling and storage can help improve food security and decrease exposure to aflatoxins. In the design of agriculture programs, stronger linkages between agriculture activities and nutrition outcomes need to be measured, as well as intermediate outcomes related to food group consumption, dietary diversity, household expenditures, and women's empowerment.

Key Recommendations and Supportive Actions in the Agriculture Sector	Timeline for Implementation
Deliver integrated messages on household resource allocation, women's empowerment and dietary diversity to stimulate demand for nutritious foods and increase household consumption of own production.	Short
Increase focus on smallholder animal-source food production.	Short
Reorient agriculture policies, subsidies, and research to support horticultural, livestock, and fisheries production.	Medium
Increase irrigation access for smallholder farmers.	Medium
Strengthen extension and veterinary services to support livestock and fisheries production.	Medium
Target women with inputs and access to productive resources, promoting labor-saving devices, and encouraging their participation in post-harvest processing and value addition activities where they can earn income.	Medium

Increase market-oriented production of animal source foods, legumes, fruits, and vegetables.	Medium/Long
Build value chains and increase market availability of nutrient-rich foods (legumes, dairy, flesh foods) in rural areas.	Medium/Long

Education Sector

The role of the education sector in improving nutrition is two-fold: (1) provide programs and services which can improve health status of children and adolescents; and (2) provide skills, knowledge, and tools which will enable children and youth to effectively prevent malnutrition as parents of the next generation.

The education services which can be nutrition-sensitive span from pre-primary through secondary education (tertiary addressed as a part of capacity building). In the area of early childhood development, the focus should remain on identifying effective community-based platforms for parenting education (including early stimulation and nutrition) and early learning. In primary school, a rigorous evaluation of the school feeding program is needed to provide a better understanding of the effectiveness and cost-effectiveness, not only from a food security and social inclusion perspective, but also to identify the impact of the SFP as a nutrition intervention. This evidence on effectiveness can inform budgeting and technical design decisions of school feeding (Bundy et al 2009). In the short-term, the provision of fortified rice through the program will improve the nutritional impact of the program. Beyond the school feeding program, services which meet the needs of the growing youth population are severely lacking (SSYS 2014). School-based deworming can and should be rapidly scaled up, along with access to WASH in schools and supplementation. In the medium- to long-term, programs should be explored which can incentivize girls' secondary school completion.

The education interventions to build nutrition knowledge and skills will not provide immediate impact on reducing early childhood stunting, but are necessary nonetheless. Health and nutrition promotion activities using school- and non-school delivery platforms (including delivery of these topics into vocational/technical training and second-chance education curricula) need to be scaled up. While curricula exist on paper, teacher training and supervision are needed to ensure that the materials are delivered according to guidelines. Youth need to be targeted with appropriate information regarding sexual and reproductive health and basic anatomical knowledge. Peer-to-peer sharing groups via extra-curricular channels may be an effective method of knowledge transfer, particularly for the sensitive topic of sexual health.

Key Recommendations and Supportive Actions in the Education Sector	Timeline for Implementation
Review school feeding program for nutritional impact.	Short
Pilot delivery of holistic early childhood development and parenting program.	Short/Medium
Expand delivery and quality of school gardening, nutrition, and reproductive health curricula.	Medium
Incentivize girls' secondary school completion, especially through re-entry opportunities.	Medium
Establish a cross-sectoral coordinating body with MSS and MOH for holistic early childhood development.	Medium/Long

Commerce, Industry, and Environment / Private Sector

The Ministry of Commerce, Industry, and Environment (MCIE) plays a key role in the interface between the public and private sectors as related to nutrition in Timor-Leste. In the short-term, MCIE can increase access to fortified staple foods through mandatory fortification of all products delivered through the school

feeding programme and other safety net programs. In the medium- to long- term, MCIE should take a leadership role in facilitating the coordination with MAF and MOH needed to accelerate progress on salt iodization, food fortification, and aflatoxin control. Furthermore, MCIE involvement will be critical in developing food policies, standards, and regulations which can help mitigate the development of overweight/obesity.

Key Recommendations and Supportive Actions in MCIE/Private Sector	Timeline for Implementation
Introduce use of fortified foods in social safety net programs.	Short
Establish partnership with MAF and MOH on testing and control of aflatoxins.	Short
Strengthen public-private partnerships for food fortification and salt iodization.	Medium/Long
Develop policies, standards, and regulations for food labelling, marketing, and taxation.	Medium/Long

Social Welfare and Community Development

The Ministries of Social Solidarity and State Administration implement programs which can address constraints to nutrition at the community and household levels. Timor-Leste’s community-driven development programs (PNDS and PDID) offer publicly financed platforms to respond to the community needs and constraints to improved nutrition (Recommendation 1). Timor-Leste can implement a pilot of nutrition-sensitive CDD with strong facilitation and community capacity building and incentivize locally-identified solutions to malnutrition. The Ministry of Social Solidarity has the responsibility for providing social safety nets and protective measures for the most nutritionally vulnerable. MSS should continue to pilot and refine its use of strong parenting and nutrition accompanying measures and look to scale up the coverage of the Bolsa da Mae program.

Key Recommendations and Supportive Actions in MCIE/Private Sector	Timeline for Implementation
Pilot and refine integration of accompanying measures in Bolsa da Mae.	Short
Pilot integration of nutrition in community-driven development (PNDS/PDID).	Medium
Provide safety nets and health/nutrition demand-generation activities for all poor women and children.	Medium-Long

3. Institutions

Recommendation 3: Build capacity and strengthen institutions to promote efficient, quality service delivery.

Institutional strengthening will be fundamental to achieving quality nutrition-specific and nutrition-sensitive services delivered at scale. Many of these actions are ongoing and should continue.

Massive public investments have been made to build the civil service. Nutrition training and capacity building for frontline service providers is necessary to maximize this investment in the public sector, beginning with health providers and expanding to agriculture extensionists, social animators, teachers, and community mobilizers. The skills and ambitions of trained professionals need to be supported by stronger human resource management and supportive supervision, especially at lower levels. Civil service reform will help ensure that individuals have security to remain in the positions for which they have been trained.

Supply chain constraints impede the availability of nutrition supplies and commodities. These items are included on the essential medicines list and nutrition should be integrated into existing efforts to strengthen the independent medical stores (SAMES) forecasting, management, and delivery functions. Improved public financial management will support ministries to better plan and budget for essential nutrition-related programs. This includes requesting goods and services budgets which are sufficient to cover the operational costs associated with community-based outreach. Strong monitoring and evaluation, supported by appropriate data collection, will allow ministries to undertake evidence-informed decision making and provide the basis for monitoring progress against a common results framework. In addition to these activities, development partners -- in particular -- should increase their focus on implementing nutrition research and conducting rigorous program evaluations to improve service delivery in the Timorese context.

Key Recommendations and Supportive Actions to Strengthen the Response to Malnutrition in State Institutions	Timeline for Implementation
3.1 Capacity building for service providers: Provide nutrition training and capacity building for frontline service providers to maximize investments in the public sector workforce	
Conduct SNIP in-service training for all frontline health service providers.	Short
Revise job descriptions for doctors, nurses, and midwives to include key nutrition functions.	Short
Ensure adequacy of nutrition content in pre-service training for health professionals.	Short
Scale up nutrition-sensitive training for all agriculture extensionists, social animators, teachers, and community mobilizers.	Short
Integrate ICT tools and job aids to improve quality of service delivery.	Medium/Long
3.2 Human Resources: Strengthen human resource management and supportive supervision functions, especially at lower levels	
Implement the use of supportive supervision tools for nutrition at all health facility levels nationally.	Short
Develop a competency-based capacity building strategy for frontline health workers, incorporating nutrition-specific and nutrition-sensitive components.	Medium
Implement performance-based management and utilize incentives to improve quality of services.	Medium
3.3 Public Financial Management	
Strengthen PFM (especially planning and budgeting functions) to increase efficiency and absorptive capacity of KONSSANTIL ministries, focusing on sub-national levels.	Medium
3.4 Monitoring and Evaluation: Improve collection and strategic use of data for evidence-informed decision making	
Expand collection of indicators for nutrition surveillance to include height-for-age, birth weight measurement, and adolescent nutrition.	Short
Implement nutritional epidemiology surveys to better understand malnutrition in Timor-Leste, including: etiology of anemia; maternal, infant and young child dietary intake and nutrient gaps; and adolescent nutrition, as well as qualitative and knowledge, attitudes, practices studies.	Short/Medium
3.5 Supply chain management: Ensure that nutrition commodities reach and remain stocked at health facility level	
Fully integrate nutrition commodities/supplies/ supply chain management and development of SAMES (independent medical store).	Medium

4. Leadership and Coordination

Recommendation 4: Strengthen coordination and accountability mechanisms for a multisectoral response to malnutrition.

Timor-Leste has many strategic frameworks and high level champions to motivate a strong response to reducing malnutrition. However, stronger and sustained leadership and coordination is needed to move the nutrition agenda forward in Timor-Leste. Improving nutrition must become a central priority for KONSSANTIL and member ministries, and can be evidenced through leadership commitment, prioritization of PAN-HAM-TIL activities based on cost:benefit analyses, and creation of a common results framework with sectors responsible for appropriate nutrition-related indicators.

The strong global and domestic momentum to address malnutrition has contributed to a proliferation of projects and stakeholders involved in addressing the immediate and underlying determinants of malnutrition. However, the nutrition community is fragmented and lacks focus; in the absence of strong government leadership and coordination, the stakeholders supporting policy development and program implementation tend to be driven by their institutional priorities. A multi-stakeholder coordination platform for nutrition should be created with strong government leadership. This platform should involve the public sector, donors and development partners, and private sector. Such a platform could facilitate mapping down to the *suco* level and promote improved convergence at national and sub-national levels.

Key Recommendations and Supportive Actions for Leadership and Coordination	Timeline for Implementation
Elevate KONSSANTIL to supra-ministerial level and strengthen nutrition participation and capacity in the body.	Short
Conduct exercise to prioritize PAN-HAM-TIL based on intervention effectiveness and cost:benefit analyses and supported by a common results framework.	Short
Establish platform for multi-stakeholder collaboration with strong government leadership.	Short
Implement suco-level mapping to identify opportunities for convergence of programs across sectors.	Short
Develop platform for district level coordination across sectors (e.g. district KONSSANTIL).	Medium/Long

5. Financing

Recommendation 5: Secure domestic and donor financing needed to deliver the package of nutrition programs at scale.

Increased quality and quantity of nutrition investments are necessary to achieve national economic and human development goals; the current level and utilization of resources will not be sufficient to improve nutrition in Timor-Leste. Development partners provide the greatest share of nutrition-specific and a large share of nutrition-sensitive financing (particularly related to agriculture/food security and reproductive health), yet national coverage has not been achieved for many of these programs. Despite nutrition's elevated public profile, it appears little has changed with regard to investment priorities. Economic growth alone is not enough to improve nutrition. It is imperative that sufficient domestic, donor, and private sector financing is available and efficiently used, prioritizing those interventions and programs with greatest evidence of effectiveness.

The first step is to build awareness of the magnitude of the challenge and the benefits to be reaped from prioritizing investments in evidence-based programs. Advocacy with the Prime Minister, Parliamentarians, and Ministry of Finance throughout the budget cycle is needed to expand knowledge and awareness of all forms of malnutrition and its consequences. The definition of “malnourished” must be expanded beyond hunger acute malnutrition, raising stunting as a health and development issue in a sensitive manner, while also improving the understanding of anemia and low-birth weight.

Increased political awareness must be matched by greater total financing for nutrition, as well as improved efficiency of nutrition spending. Actions to support this effort will include the development of a system for monitoring nutrition budget allocations and expenditures (through program based budgeting) against the common results framework, moving towards results-based financing for nutrition as appropriate. With development partner support expected to decline in the medium-term, there is need for a critical assessment of the sustainability of nutrition financing and the development of a nutrition financing strategy for the country.

Key Recommendations and Supportive Actions for Nutrition Financing	Timeline for Implementation
Advocate for nutrition with Prime Minister, Parliamentarians, and Ministry of Finance throughout the budget cycle.	Short
Review program-based budgeting to ensure that nutrition budget allocations can be identified and evidence-based interventions are included.	Short
Increase efficiency of nutrition budget allocations: prioritize financing of programs which have greatest evidence of impact; allocate budgets proportionate to nutrition need; integrate and cost out the Primary Health Care Package.	Medium
Develop a financing strategy for nutrition.	Medium
Establish a system for monitoring nutrition budget allocations and expenditures.	Medium
Utilize results-based financing for nutrition.	Medium/Long

References

- Ackerson LK, Subramanian S. 2008. Domestic violence and chronic malnutrition among women and children in India. *American Journal of Epidemiology*;167: 1188-96.
- ASEAN/WUNICEF/WHO. 2016. Regional report on nutrition security in ASEAN, Volume 2. Bangkok: UNICEF.
- Atwood SJ, Nagpal S, Mbuya NV, Laviolette L. 2014. Nutrition in Bhutan: Situational Analysis and Policy Recommendations. Washington, DC: The World Bank.
- Asante AD, Martins M, Otim ME, Dewdney J. 2014. Retaining doctors in rural Timor-Leste: a critical appraisal of the opportunities and challenges. *Bulletin of the World Health Organization*; 92: 277-282.
- Australian Aid Market Development Facility. 2013. Sector Assessment Report and Sector Growth Strategy for Agribusiness, Processing and Rural Distribution. Timor-Leste Country Team, Working Document Version 1. July, 2013.
- Ba Futuru and Rain Barrel Communications. 2016. Research Report: Study of Knowledge, Attitudes, and Practices Towards Ten Key Focus Areas of Parenting in Timor-Leste. Dili: UNICEF.
- Baldi G, Martini E, Catharina M, et al. 2013. Cost of diet (CoD) tool: first results from Indonesia and applications for policy discussions on food and nutrition security. *Food and Nutrition Bulletin*;34S: S35-S42.
- Barker DJ. 1995. Fetal origins of coronary heart disease. *BMJ*; 31: 171-4.
- Belton S, Whittaker A, Barclay L. 2009. Maternal mortality, unplanned pregnancy and unsafe abortion in Timor-Leste: a situational analysis. Dili: Alola and UNFPA.
- Bhargava A, Bouis H, Scrimshaw N. 2001. Dietary intakes and socioeconomic factors are associated with the hemoglobin concentration of Bangladeshi women. *Journal of Nutrition*;131:758-64.
- Bhutta Z, Ahmed T, Black RE et al for the Maternal and Child Undernutrition Study Group. 2008. What works? Interventions for maternal and child undernutrition and survival. *Lancet*;371:417-40.
- Bhutta ZA Das JK, Rizvi A, et al. for the Maternal and Child Nutrition Study Group. 2013. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet* 382:452-77.
- Black RE, Allen LH, Bhutta ZA, et al for the Maternal and Child Undernutrition Group. Maternal and child undernutrition: global and regional exposures and health consequences. *Lancet*, 2008;371:243-60.
- Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M, Ezzati M, Grantham-Mcgregor S, Katz J, Martorell R, Uauy R, and the Maternal and Child Nutrition Study Group. 2013. Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet* 382: 427–51.
- Bleichrodt N, Born MP. 1994. A meta-analysis of research on iodine and its relationship to cognitive development. In: Stanbury JB, ed. The damaged brain of iodine deficiency. New York, NY: Cognizant Communication, 195–200.

- Brewster DR. 2014. Prelacteal versus early infant feeding and morbidity in Timor-Leste. *Journal of Pediatric Gastroenterology and Nutrition*;59:2014.
- Cabral J, Dussault G, Buchan J, Ferrinho P. 2013. Scaling up the medical workforce in Timor-Leste: challenges of a great leap forward. *Social Science & Medicine*; 96:285-289.
- Campbell SJ, Nery SV, D'Este CA et al. *Forthcoming*. Water, sanitation and hygiene related risk factors for soil-transmitted helminth and *giardia duodenalis* infections in rural communities in Timor-Leste. *International Journal of Parasitology*.
- Castro AF. 2013. An approach to the food habits of three communities in Timor-Leste. Final Report. Dili: Care International in Timor Leste.
- Catholic Relief Services (CRS) and Monash University. 2015. Community-driven nutrition improvement program (CDNIP): baseline study final report.
- Conde-Agudelo A, Rosas-Bermudz A, Castano F, Norton MH. 2012. Effects of birth spacing on maternal, perinatal, infant and child health: a systematic review of causal mechanisms. *Stud Family Planning*;43:93-114.
- Copenhagen Consensus Center. 2012. Copenhagen Consensus 2012: Expert Panel Findings. Denmark: Copenhagen Business School.
- Darnton-Hill I, Nishida C, WPT James. 2004. A life course approach to diet, nutrition, and the prevention of chronic diseases. *Public Health Nutrition*;7:101-21.
- Democratic Republic of Timor-Leste. (RDTL). 2002. Timor-Leste Constitution, Dili, 20 May 2002.
- Democratic Republic of Timor-Leste. (RDTL). 2010a. Comoro Declaration: Putting an end to hunger and malnutrition, Inter-Ministerial Declaration, Dili, Timor-Leste, 18th October 2010.
- Democratic Republic of Timor-Leste. (RDTL). 2010. From Conflict to Prosperity: Timor-Leste's Strategic Development Plan 2011–2030, Office of the Prime Minister, Dili, Timor-Leste.
- Democratic Republic of Timor-Leste. (RDTL). 2011. *CEDAW Specific Report on Education and Health Sector*. Dili: Secretary of State for the Promotion of Equality (SEPI).
- Democratic Republic of Timor-Leste. (RDTL). 2012. *Timor-Leste National Basic Sanitation Policy*, approved by the Council of Ministers in January 2012.
- Democratic Republic of Timor-Leste. (RDTL). 2013a. Timor-Leste Food and Nutrition Survey, Ministry of Health. Final Report 2015. Dili.
- Democratic Republic of Timor-Leste. (RDTL). 2013b. Manual of the Programme of School Feeding, National Directorate of Action Social School, Dili, May 2013.
- Democratic Republic of Timor-Leste. (RDTL) 2015a. The Programme of the Sixth Constitutional Government, 2015-2017 Legislature, Presidency of the Council of Ministers. Dili.

- Democratic Republic of Timor-Leste (RDTL). 2015b. First 100 Days: 16 February to 26 May 2015. VI Constitutional Government. 'Working with Rigour and Responsibility'. Dili: Office of the Prime Minister.
- de Onis M. 2006. Assessment of differences in linear growth among populations in the WHO Multicentre Growth Reference Study. *Acta Paediatrica* 95(S450): 56-65.
- Dobbing J. 1974. The later growth of the brain and its vulnerability. *Pediatric*; 53:2-6.
- Dookhan-Khan. 2015. Process evaluation report on the Integrated Community Health Services (SISCa) Delivery System. Dili: Ministry of Health.
- Engle PL, Menon P, Haddad L. 1999. Care and nutrition: concepts and measurement. *World Development*; 27: 1309-37.
- Fall CHD, Sachdev H, Osmond C et al. 2015. Association between maternal age at childbirth and child and adult outcomes in the offspring: a prospective study in five low-income and middle-income countries (COHORTS collaboration). *Lancet Global Health*;3:e366-77.
- Food and Agriculture Organization of the United Nations (FAO). 2015. FAOSTAT: Food and Agricultural Price Statistics. Available from: <http://faostat.fao.org> (accessed 5 June 2015).
- Gibson RS. 2005. Principles of Nutritional Assessment. Second Edition. Oxford, UK: Oxford University Press.
- Gong YY, Cardwell K, Hounsa A, et al. 2002. Dietary aflatoxin exposure and impaired growth in young children from Benin and Togo: cross sectional study. *BMJ*;325:20-21.
- Goodman RM, Speers MA, McLeray K et al. 1998. Identifying and defining the dimensions of community capacity to provide to provide a basis for measurement. *Health Education and Behavior*: 25; 258–278.
- Griffiths M, Dickin K, Favin M. 1996. "Promoting the Growth of Children: What Works." Washington, DC: Development Department, World Bank.
- Haider BA, Bhutta ZA. 2012. Multiple-micronutrient supplementation for women during pregnancy. *Cochrane Database Syst Rev*;11: CD004905.
- Health Alliance International (HAI). 2012. Maternal and Newborn Health and Mobile Phone Utilization in Manufahi and Ainaro Districts: A baseline knowledge, practices and coverage survey for the Mobile Moms/Liga Inan Program. Extended Report. Dili: Health Alliance International.
- Heckman J. 2006. Skill formation and the economics of investing in disadvantaged children. *Science*;312:1900-2.
- Heikens GT, Amadi BC, Manary M et al. 2008. Nutrition interventions need improved operational capacity. *Lancet*;371:181–182.
- Herforth A, Ahmed S. 2015. The food environment, its defects on dietary diversity, and potential for measurement with agriculture-nutrition interventions. *Food Security*;7:505-520.

- Herforth A, Harris J. 2014. Understanding and applying primary pathways and principles. Brief #1. Improving nutrition through agriculture technical brief series. Arlington, VA: USAID/Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) Project.
- Horton S, Hoddinot J. 2014. Benefits and costs of the food and nutrition targets for the post-2015 development agenda: post-2015 consensus. Food security and nutrition perspective paper. Copenhagen Consensus Center.
- Humphrey, JH. 2009. Child undernutrition, tropical enteropathy, toilets, and handwashing. *Lancet*;374:1032-35.
- Inder B, Brown A, Datt G. Poverty and the agricultural household in Timor-Leste: some patterns and puzzles. Monash Center for Development Economics and Sustainability, Research Paper Series on Timor-Leste, PR-TL1. Melbourne: Monash University.
- International Crisis Group (ICG). 2013. Timor-Leste: stability at what cost? Asia Report No. 246, 8 May 2013. Dili/Jakarta/Brussels: International Crisis Group.
- Institute for Health Metrics and Evaluation (IHME). 2015. GBD Compare. Seattle, WA: IHME, University of Washington. Available from <http://vizhub.healthdata.org/gbd-compare>. (Accessed [March 30, 2016])
- Institute for Health Metrics and Evaluation, Human Development Network, The World Bank. 2013. The Global Burden of Disease: Generating Evidence, Guiding Policy – East Asia and Pacific Regional Edition. Seattle: IHME.
- International Monetary Fund (IMF). 2013. Democratic Republic of Timor-Leste: 2013 Article IV Consultation. IMF Country Report No. 13/388. December 2013. Washington, DC: International Monetary Fund.
- International Zinc Nutrition Consultative Group (IZiNCG). 2012. Assessing population zinc status with serum zinc concentration. Technical brief no.2, 2nd edition. Oakland, CA: IZiNCG Secretariat.
- The National Council for Food Security, Sovereignty and Nutrition in Timor-Leste (KONSSANTIL). 2015. KONSSANTIL Statute. Dili: Timor-Leste.
- Kerrison J. 2014. Evaluation of the essential newborn care learning lab demonstration project Timor-Leste. Dili: Health Alliance International.
- Khara T, Dolan C. 2014. Technical briefing paper: Associations between wasting and stunting, policy, programming and research implications. Oxford: Emergency Nutrition Network [Accessed at <http://www.enonline.net/waststuntreview2014>]
- Kramer MS, Kakuma R. 2001. The optimal duration of exclusive breastfeeding; a systematic review. Geneva: WHO.
- Kristjansson B, Robinson V, Petticrew M, et al. 2009. School feeding for improving the physical and psychosocial health of disadvantaged students (review). The Cochrane Library.
- Lantican C. 2015. Capacity assessment of social and behavior change communication for nutrition in Timor-Leste. Dili: FAO Timor-Leste.

To address anemia, supplementation and fortification interventions McDonald CM, Olofin I, Flaxman S, Fawzi WW, Spiegelman D, Caulfield LE et al. 2013. Nutrition Impact Model Study. The effect of multiple anthropometric deficits on child mortality: meta-analysis of individual data in 10 prospective studies from developing countries. *Am J Clin Nutr.* 2013;97(4):896–901. doi:10.3945/ajcn.112.047639.

Mara D, Lane J, Scott B, Trouba D. 2010. Sanitation and health. *PLoS Medicine*;7: 1359.

Marie Stopes International Timor-Leste. (MSITL). 2015. Annual Report 2014. Dili: Marie Stopes International Timor-Leste.

Mbuya NV, Ahsan KZ. The National Nutrition Program Survey: Better, But Not Enough. An assessment of area based community nutrition (ABCN) services in Bangladesh.

Meiksin R, Meekers D, Thompson S, Hagopian A, Mercer MA. 2014. Domestic violence, marital control, and family planning, maternal, and birth outcomes in Timor-Leste. *Maternal and child health journal*: 1-10.

Ministry of Agriculture and Fisheries (MAF). 2008. Policy Framework for Agricultural Extension in Timor-Leste. Dili: Ministry of Agriculture and Fisheries.

Ministry of Agriculture and Fisheries (MAF). 2010. National Agricultural Extension Strategy for Timor-Leste. Dili: Ministry of Agriculture and Fisheries.

Ministry of Agriculture and Fisheries (MAF). 2013a. Agriculture Sector Strategic Plan, 2014-2020, National Directorate of Policy and Planning, Ministry of Agriculture and Fisheries, Dili, September 2012.

Ministry of Agriculture and Fisheries (MAF). 2013. Agriculture Sector Development Medium Term Operational Plan, 2014-2018, National Directorate of Policy and Planning, Ministry of Agriculture and Fisheries, Dili, May 2013.

Ministry of Agriculture and Fisheries (MAF) and Seeds of Life (SOL). 2013. Seeds of Life 3: Mid-Term Survey. Dili: Ministry of Agriculture and Fisheries.

Ministry of Education (MOE), Timor-Leste. 2011. National Education Strategic Plan 2011-2030. Dili: Ministry of Education.

Ministry of Finance (MOF) and World Bank. 2015. Timor-Leste Public Expenditure Review: Infrastructure. Dili: Ministry of Finance.

Ministry of Finance. (MOF). 2016a. Transparency Portal. Accessed 1 April 2016 at <https://www.mof.gov.tl/budget-spending/budget-transparency-portal/?lang=en>

Ministry of Finance (MOF). 2016b. General State Budget 2016. Livuru 1. Dili: Timor-Leste.

Ministry of Health and National Statistics Office, Timor-Leste and University of Newcastle, the Australian National University, and ACIL Australia Pty Ltd. 2004. *Timor-Leste 2003 Demographic and Health Survey*. Newcastle, Australia: University of Newcastle.

Ministry of Health. (MOH). 2004. National Nutrition Strategy (2004-2010). Dili: Ministry of Health.

Ministry of Health. (MOH). 2008. Strengthen Communities in the area of Health through SISCa. Dili: Ministry of Health.

Ministry of Health. (MOH). 2011. National Health Sector Strategic Plan 2011-2030 “Towards a Healthy East Timorese People in a Healthy East Timor.” Dili: Ministry of Health.

Ministry of Health. (MOH). 2013. Monitoring and Evaluation Guidelines. Dili: Ministry of Health

Ministry of Health. (MOH). 2014a. The Economic Consequences of Undernutrition in Timor-Leste. Dili: Ministry of Health.

Ministry of Health. (MOH). 2014b. National Nutrition Strategy (2014-2019). Dili: Ministry of Health.

Ministry of Health. (MOH). 2015a. National Health Sector Strategic Plan Support Project: End of assignment report. Presented by Andre Cote, Human Resources Specialist. Dili: May 2015.

Ministry of Health. (MOH). 2015b. Supportive supervision data. Presentation at the Ministry of Health Semestral Review Meeting. 28 September, 2015. Dili: Ministry of Health.

Ministry of Health. (MOH). 2015c. National Primary Health Care Program Timor-Leste. National Directorate of Public Health, Ministry of Health. Dili: Timor-Leste.

Ministry of Health. (MOH). 2015d (draft). Guidelines for the Integrated Management of Acute Malnutrition. Dili: Ministry of Health.

Ministry of Health. (MOH). 2015e. Cost of the Operational Plan for Timor-Leste National Nutrition Strategy (2015-2019). Dili: Ministry of Health.

Ministry of Health. (MOH). 2016. A Comprehensive Multi-Year Plan 2016-2020: The national immunization program in Timor-Leste.

Ministry of Social Solidarity. (MSS). 2009. Ministry of Social Solidarity Long-Term Strategy Plan, 2011-2030, July 2009.

Ministry of Social Solidarity. (MSS). 2014a. Ministry of Social Solidarity Strategic Plan 2014-2017. Dili: Ministry of Social Solidarity.

Mizumoto K, Takahashi T, Kinoshita Y, Higuchi M, Bachroen C, da Silva V. 2015. A qualitative study of risk factors related to child malnutrition in Aileu district, Timor-Leste. *Asia-Pacific Journal of Public Health*;27:1398-1408.

Mokoro Limited. 2013. Country Portfolio Evaluation. Timor-Leste: An evaluation of WFP’s Portfolio (2008-2012). Rome: World Food Programme.

Molyneux N, Da Cruz GR, Williams RL, Andersen R, Turner NC. 2012. Climate change and population growth in Timor Leste: implications for food security. *Ambio*; 41: 823-40.

Moore ER, Anderson GC, Bergman N. 2009. Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database of Systematic Reviews*; (3):CD003519.

Naik, R. and R. Smith. 2015. Linkages Between Family Planning and Nutrition. *Washington, DC: Futures Group, Health Policy Project.*

National Statistics Directorate (NSD), Ministry of Finance, Timor-Leste. 2008. Final Statistical Abstract: Timor-Leste Survey of Living Standards 2007. Dili.

National Statistics Directorate (NSD) [Timor-Leste], Ministry of Finance [Timor-Leste], and ICF Macro. 2010. *Timor-Leste Demographic and Health Survey 2009-10*. Dili, Timor-Leste: NSD [Timor-Leste] and ICF Macro.

National Statistics Directorate (NSD), Ministry of Finance, Timor-Leste. 2011. Population and Housing Census 2010: Final Report. Dili: Government of Timor-Leste.

National Statistics Directorate (NSD), Ministry of Finance, Timor-Leste. 2012. Timor-Leste Household Income and Expenditure Survey. Dili.

National Statistics Directorate (NSD), Ministry of Finance, Timor-Leste. 2015. Population and Housing Census 2015: Preliminary Results. Dili: Government of Timor-Leste.

National Statistics Directorate (NSD), Ministry of Finance, Timor-Leste. 2016. Final Statistical Abstract: Third Timor-Leste Survey of Living Standards 2014. Dili: Timor-Leste.

Niner S, Wigglesworth A, dos Santos AB, Tilman M. 2013 Baseline study on attitudes and perceptions of gender and masculinities of youth in Timor-Leste: Final Report. Dili: Paz y Desarrollo, UNTL, and Cooperatcion Espanola.

Nixon H, Bredenkamp C. 2014. Timor-Leste Health Resource Tracking Study: Policy Note on Main Findings, Recommendations and Cross-Cutting Issues. Washington, DC: World Bank.

Osei A, Septiari A, Suryantan J, Hossain MM, Chilwile F, Sari M, Pinto P, Soares D, Faillace Si. 2014. Using formative research to inform the design of a home fortification with micronutrient powders (MNP) program in Aileu District, Timor-Leste. *Food and Nutrition Bulletin*;35:68-82.

Pingali P. 2015. Agricultural policy and nutrition outcomes—getting beyond the preoccupation with staple grains. *Food Security*;7:583-591.

Qian M, Wang D, Watkins WE, et al. 2005 The effects of iodine on intelligence in children: a meta-analysis of studies conducted in China. *Asia Pacific Journal of Clinical Nutrition* 14:32–42.

Quisumbing A. (Ed.) 2003. Household decisions, gender, and development: a synthesis of recent research. Washington, DC: IFPRI. Available at: <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/129647>

Richards E. 2014. The Catholic Church and reproductive health and rights in Timor-Leste: contestation, negotiation and cooperation. *Culture, Health and Sexuality*;17:343-58.

Ruel MT, Alderman H, and the Maternal and Child Study Group. 2013. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *The Lancet*;382:536-51.

Sapolsky RM. *Why Zebras Don't Get Ulcers*. New York, NY: Henry Holt and Company; 2004.

- Scholl TO. 2011. Maternal iron status: relation to fetal growth, length of gestation and the neonate's iron endowment. *Nutr Rev*;69:S23-29.
- Scholl TO, Hediger ML. 1993. A review of the epidemiology of nutrition and adolescent pregnancy: maternal growth during pregnancy and its effect on the fetus. *Journal of the American College of Nutrition*; 12: 101-7.
- Schonkoff JP, Richter L, van der Gaag J, Bhutta ZA. 2012. An integrated scientific framework for child survival and early childhood development. *Pediatrics*;129:1-13.
- Secretariat of State for Youth and Sports (SSYS), Democratic Republic of Timor-Leste. 2014. Youth Situation Review Report. Dili: SSYS.
- Shekar M, Heaver R, Lee Y-K. 2006. Repositioning nutrition as central to development: A strategy for large scale action. Washington, DC: World Bank.
- Shonkoff JP, Garner AS, Siegel BS, et al. 2012. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*; 129: e232-e46.
- Shrimpton R, Victora CG, de Onis M, Lima RC, Blossner M, Clugston G. 2001. Worldwide timing of growth faltering: implications for nutritional interventions. *Pediatrics* 2001; 107: E75.
- Shrimpton R, Rokx C. 2012. The double burden of malnutrition: lessons and evidence for a multisectoral response. Washington, DC: World Bank.
- Shrimpton R, Hughes R, Recine E et al. 2013. Nutrition capacity development: a practice framework. *Public Health Nutrition*;17:682-688.
- Smith LE, Stoltzfus RJ, Prendergast A. 2012. Food chain mycotoxin exposure, gut health, and impaired growth: a conceptual framework. *Advances in Nutrition*;3:526-531.
- Smith L, Haddad L. 2015. Reducing child undernutrition: past drivers and priorities for the post-MDG era. *World Development*;180-204.
- Silove D, Rees S, Tay AK, et al. 2015. Pathways to perinatal depressive symptoms after mass conflict in Timor-Leste: a modelling analysis using cross-sectional data. *The Lancet Psychiatry*; 2: 161-7.
- Stiles MM. 2002. Witnessing domestic violence: the effect on children. *American Family Physician*;66: 2052, 5-6, 8 passim.
- Surkan PJ, Kennedy CE, Hurley KM, Black MM. 2011. Maternal depression and early childhood growth in developing countries: systematic review and meta-analysis. *Bulletin of the World Health Organization*; 89: 607-15.
- Tandon A, Cashin C. 2010. Assessing public expenditure on health from a fiscal space perspective. HNP Discussion Paper. Washington, DC: World Bank.
- Timor-Leste Asistencia Integrada Saude (TAIS) and Ministry of Health (MOH). 2007. "Community Consultation" on Child Health Practices in Timor-Leste. Dili: USAID.

Turner PC, Collinson AC, Cheung YB, Gong Y, Hall AJ, Prentice AM, Wild CP. 2007. Aflatoxin exposure in utero causes growth faltering in Gambian infants. *International Journal of Epidemiology*;36:1119-25.

UNDP. 2014. Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience: Timor Leste. New York, NY: United Nations Development Programme.

UNDP. 2015. United Nations Human Development Report. New York, NY: United Nations Development Programme.

United Nations (UN). 2014. Consideration of reports submitted by States parties under article 18 of the Convention: Second and third periodic reports of States parties due in 2013. Timor-Leste. (CEDAW/C/TLS/2-3). 22 January 2014.

UNICEF-WHO-The World Bank. 2015. Levels and trends in child malnutrition: UNICEF-WHO-The World Bank joint child malnutrition estimates. New York: UNICEF.

UNICEF. 2015. UNICEF Global Database on Infant and Young Child Feeding (updated March, 2015). Accessed 10 January 2016 at <http://data.unicef.org/nutrition/iycf.html>.

United States Census Bureau. n.d.

<https://www.census.gov/population/international/data/idb/informationGateway.php>

Victora CG, Adair L, Fall C, et al. for the Maternal and Child Undernutrition Study Group. 2008. Maternal and child undernutrition: consequences for adult health and human capital. *Lancet* 2008; 371: 340-57.

Victora CG, de Onis M, Hallal PC, Blössner M, Shrimpton R. 2010. Worldwide timing of growth faltering: revisiting implications for interventions. *Pediatrics*; 125: e473-e80.

Wallace H. 2014. Perceptions of family planning in Viqueque and Dili (Timor-Leste): A collaborative qualitative research project between Marie Stopes International-Timor-Leste & Menzies School of Health Research, Darwin, Australia.

WFP, EU, and MOH. 2015. Mother and Child Health and Nutrition-Targeted Supplementary Feeding Program (MCHN-TSFP) Monthly Progress Report-April 2015. Dili: WFP, EU, and MOH.

WHO. 2003. Global strategy for infant and young child feeding. Geneva: World Health Organization.

WHO. 2004. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *Lancet*;363:157-63.

WHO. 2007. Adolescent pregnancy-Unmet needs and undone deeds: A review of the literature and programmes. Issues in Adolescent Health and Development. 2007."Accessed 10 January 2016 at http://apps.who.int/iris/bitstream/10665/43702/1/9789241595650_eng.pdf.

WHO. 2010. Indicators for assessing infant and young child feeding practices part 2: measurement. Geneva: World Health Organization.

WHO. 2011. Guideline: Intermittent iron and folic acid supplementation in menstruating women. Geneva: World Health Organization. Accessed 5 April 2016 at http://apps.who.int/iris/bitstream/10665/44649/1/9789241502023_eng.pdf?ua=1

WHO. 2012a. “Global Targets 2025.” Accessed 1 December 2015. http://www.who.int/nutrition/topics/nutrition_globaltargets2025/en/.

WHO. 2012b. Nutrition landscape information system (NLIS) country profile indicators: interpretation guide. Geneva: World Health Organization.

WHO. 2012c. Guideline: daily iron and folic acid supplementation in pregnant women. Geneva: World Health Organization.

WHO. 2013a. Urinary iodine concentrations for determining iodine status in populations. World Health Organization Vitamin and Mineral Nutrition Information System. Accessed 10 December 2015: http://www.who.int/nutrition/vmnis/indicators/urinary_iodine.

WHO. 2013b. Essential Nutrition Actions: improving maternal, newborn, infant and young child health and nutrition. Geneva: World Health Organization.

WHO. 2013. Comprehensive implementation plan on maternal, infant, and young child nutrition. Geneva: World Health Organization.

WHO. 2015a. Tracking Tool – Glossary and Technical Notes. Accessed 1 December 2015. www.who.int/nutrition/gtt_glossary.pdf.

WHO. 2015b. National Survey for Non-Communicable Disease Risk Factors and Injuries: Using WHO STEPS approach in Timor-Leste – 2014. New Delhi: World Health Organization Regional Office for South-East Asia.

WHO. 2015c. World Malaria Report 2015. Geneva: WHO.

WHO and World Bank. 2014. Monitoring progress towards universal health coverage at country and global levels: framework, measures and targets. May, 2014. Geneva: WHO.

Wigglesworth A. 2013. Community Leadership and Gender Equality: Experiences of Representation in Local Governance in Timor-Leste. *Asian Politics & Policy*; 5: 567-84.

Withrow D, Alter DA. 2011. The economic burden of obesity worldwide: a systematic review of the direct costs of obesity. *Obesity Reviews*;12:131-41.

Wigglesworth A, Niner S, Arunachalam D, dos Santos AB, Tilman M. 2015. Attitudes and perceptions of young men towards gender equality and violence in Timor-Leste. *Journal of International Women's Studies*;16:311-329.

World Bank. 2011a. 2011 World Development Report. Washington, DC: World Bank.

World Bank. 2011b. Dili Drainage and Sanitation Master Plan: School Survey Report & Recommendations. Dili: World Bank.

World Bank. 2013a. Building Evidence, Shaping Policy: Findings of the 2012 Timor-Leste Education Survey. Dili: World Bank.

World Bank. 2013b. Improving nutrition through multisectoral approaches. Washington, DC: World Bank.

World Bank. 2013c. Timor-Leste Social Assistance Public Expenditure and Program Performance Report. Dili: World Bank.

World Bank. 2014. Health Equity and Financial Protection Report -- Timor Leste. Washington, DC: World Bank.

World Bank. 2015a. World Development Indicators. Available from: <http://data.worldbank.org/data-catalog/world-development-indicators>.

World Bank. 2015b. Programa Nasional Dezenvolvimentu Suku Research and Evaluation Program: Omnibus Baseline Survey and Monitoring Report.

World Bank. 2015c. Democratic Republic of Timor-Leste Human Resources for Health: Health Worker Survey. Dili: World Bank.

World Bank. 2015d. East Asia Pacific Economic Update, Fall 2015. Staying the Course. Washington, DC: World Bank.

World Bank. 2015e. Addressing the *Bolsa da Mae* benefit structure: a preliminary analysis. Dili: World Bank.

World Bank. 2016a. Timor-Leste Medium Term Expenditure Pressure Study. Dili: World Bank.

World Bank. 2016b. Incentive Mechanisms to Accelerate Improved Nutrition Outcomes. Washington, DC: World Bank.

World Bank. 2016c. East Asia Pacific Economic Update, April 2016: Growing Challenges. Washington, DC: World Bank.

WSP. 2015. Water Supply and Sanitation in Timor-Leste: Turning Finance into Services for the Future.

Yip R, Dallman PR. 1996. Iron. In: Ziegler EE, Filer LJ, eds. *Present Knowledge of Nutrition*. 7th ed. Washington, DC: ILSI Press; 277–292.

Annexes:

Annex 1: Sources of Data in the Report

Survey data sources included in this report:

- Preliminary Findings, Timor-Leste Housing and Population Census (2015)
- STEPS Survey Timor-Leste (2014)
- Programa Nasional Dezenvolvimentu *Suco* Baseline Survey (2014)
- Seeds of Life III: Baseline Report (2012)
- Timor-Leste Food and Nutrition Survey (2013)
- Timor-Leste Household Income and Expenditure Survey (2011)
- Timor-Leste Housing and Population Census (2010)
- Timor-Leste Demographic and Health Survey (2009-10)
- Timor-Leste Survey of Living Standards (2007)
- Timor-Leste Demographic and Health Survey (2003)

The 2013 Timor-Leste Food and Nutrition Survey (TLFNS) provides the most up-to-date source of information on maternal and child nutrition, and was administered in May-September, 2013 and launched by the Timor-Leste Ministry of Health in October, 2015. The TLFNS collected data from infants and young children (age 0-59 months) and their non-pregnant mothers (age 14-60 years).⁸³ The quantitative household and anthropometric survey is representative at the national *and* district levels, whereas the biochemical survey of micronutrient status and aflatoxin exposure is representative *only* at the national level.

The most recent available overweight/obesity data for children are found in the TLFNS. Adult (male and female) overweight data come from the 2014 STEPS survey of non-communicable disease risk factors. The STEPS was conducted in collaboration with the WHO and Universidade Nacional Timor Leste (UNTL) in 2014 and included socio-demographic and behavioral information, height, weight, blood pressure measurements, and biochemical indicators. The sample included 2609 adults age 18-69 and is representative at the national level.

⁸³ The inclusion criteria for women in TLFNS varies from that of the DHS. TLFNS reports findings from non-pregnant mothers age 14-60. DHS reports findings for all women (pregnant and non-pregnant) age 15-49. For simplicity, “WRA” will be used to denote women of reproductive age throughout this report, but interpretation should be based upon the inclusion criteria of the particular survey.

Annex 2: Nutrition and Maternal, Infant, and Young Child Feeding-Related Knowledge, Attitudes, and Practices

Study	Location	Behavior	Findings
TAIS and MOH 2007	Baucau, Aileu, Manatutu, Manufahi, and Dili	Maternal diet during pregnancy	<ul style="list-style-type: none"> No evidence of food taboos during pregnancy. Mothers like iron tablets from ANC because they believe it will help the baby grow bigger.
TAIS and MOH 2007	Baucau, Aileu, Manatutu, Manufahi, and Dili	Maternal Postpartum Diet	<ul style="list-style-type: none"> Diets generally limited to what is in season; in parts of Bobonaro there is a post-partum corn taboo because it makes breast milk dry up; alternatively corn may be seen as essential for breastmilk production. High consumption of (hot) water for breast milk production. May be limitations on diet diversity to rice porridge, ginger, and salt for up to one month, then increase diet diversity. Localized fish taboo because fish makes the baby itchy and bad for the mother.
Osei et al. 2014	3 <i>sucos</i> in Laulara sub-district, Aileu	Breastfeeding	<ul style="list-style-type: none"> Mothers are aware that breastfeeding should continue through two years of age. Colostrum (<i>susuben kinor</i>) washes the baby's stomach and offers protection against illness. Breastfeeding within one hour of birth is not common because: neonates are too weak to suckle immediately, the newborn baby and mother need to be cleaned with hot water, and the mother needs to drink hot water, eat rice porridge, and apply hot compresses to her breasts before initiating breastfeeding. Limited breastmilk production is a sickness and reason to discontinue breastfeeding, begin formula. Breastfeeding is not appropriate during pregnancy. A sick mother can transfer sickness to baby if she breastfeeds while sick.
Osei et al. 2014	3 <i>sucos</i> in Laulara sub-district, Aileu	Infant and young child feeding	<ul style="list-style-type: none"> Mothers would purchase formula milk if they had the money. Complementary foods are introduced at 6 months.

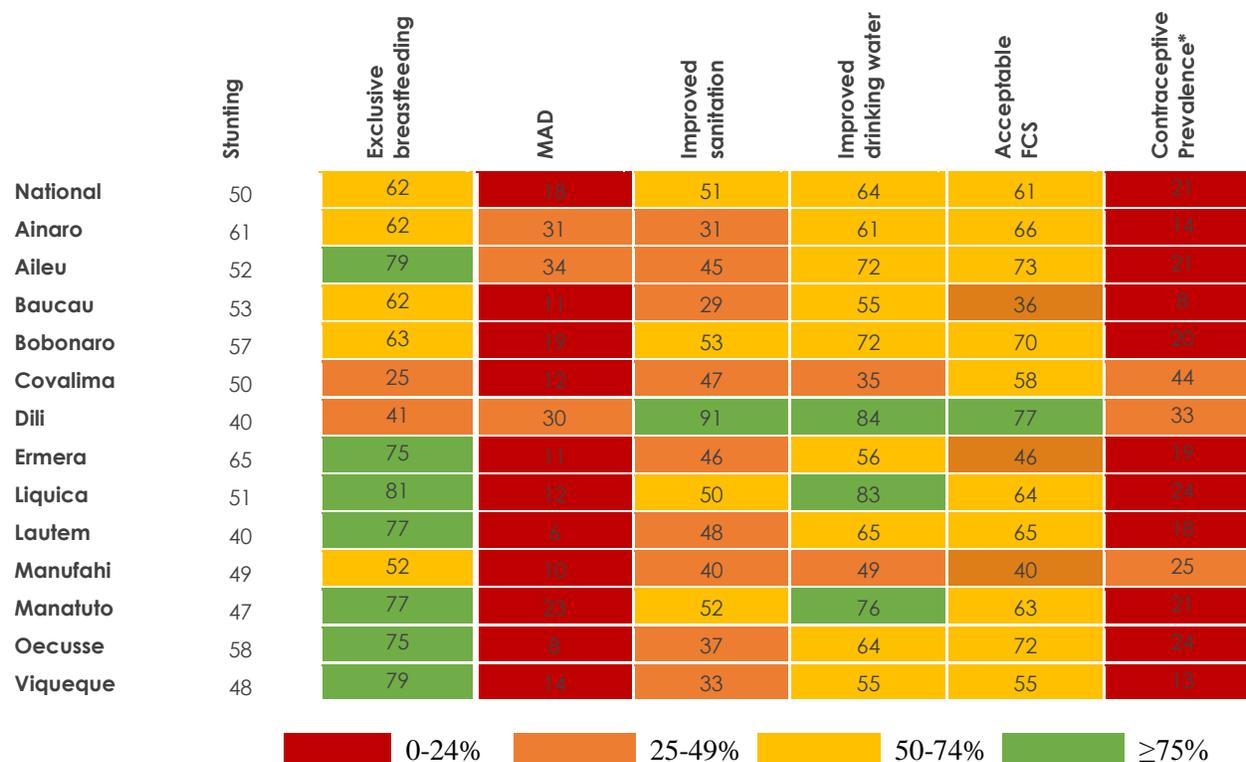
Study	Location	Behavior	Findings
			<ul style="list-style-type: none"> • Porridge from rice is commonly fed, though maize and cassava porridge may also be given. • Masako, a seasoning powder, often added to porridge to improve flavor. • Developmental milestones are used to determine introduction of CF. • Infants under 12 months cannot consume “hard foods”, including: unmashed cassava, sweet potato, unripe banana and papaya. • “Cold foods” such as fish and prawns will cause diarrhea, cough, and itching. • Children cannot be fed beef, liver, animal heads and brains, dog meat, and <i>kotomoruk</i> because they will cause sickness, weight loss and death.
Castro 2013	2 <i>sucos</i> in Liquica and 1 <i>suco</i> in Ermera	Diet for lactating women*	<ul style="list-style-type: none"> • Boiled maize if not smashed and not too boiled gives strength and increases milk production.
Castro 2013	2 <i>sucos</i> in Liquica and 1 <i>suco</i> in Ermera	Infant and young child feeding	<ul style="list-style-type: none"> • Weaning occurs between 11 months and 18 months. • Undernutrition seems to coincide with the period of complete dependence on caregivers for food resources (11 months to 5 years). • <i>Modo</i> (vegetables such as carrot, spinach, or mustard leaves) may be added to <i>sosoro</i> (porridge) but depending on household income.
Mizumoto et al. 2015	5 SISCa sites in Aileu	Breastfeeding	<ul style="list-style-type: none"> • Varied degrees of knowledge of colostrum. • Some evidence of discarding colostrum. • Early weaning, beginning at 3 months of age.
Mizumoto et al. 2015	5 SISCa sites in Aileu	Food Safety	<ul style="list-style-type: none"> • Children do not wash their hands before eating. • Dogs and hens roam freely around yards and homes.
Mizumoto et al. 2015	5 SISCa sites in Aileu	Food security	<ul style="list-style-type: none"> • Household members consume meat once per month. • Children consume food 3-4 times per day. • Rice purchases prioritized even when other staples available.
CRS and Monash University 2015		Prepregnancy Diet	<ul style="list-style-type: none"> • Pineapple (esp. unripe) and chili can cause miscarriage.
CRS and Monash University 2015		Infant and young child feeding	<ul style="list-style-type: none"> • Taboos for infants and young children expire around 12 months of age • IYC should not be fed ‘hard’ foods.

Study	Location	Behavior	Findings
Ba Futuru and Rain Barrel Communications (2016)	44 in-depth interviews; 12 focus group discussions; and 995 quantitative surveys with Bolsa da Mae recipient families in Ermera, Lautem, Liquica, and Viqueque	Infant and young child feeding	<ul style="list-style-type: none"> • Parents are generally aware of benefits of breastfeeding, approximate duration of exclusive breastfeeding, and timely introduction of complementary foods. • Rice, maize, potatoes, cassava, bananas, papaya leaves and yams are most common nutritious foods fed to infants. • Families loan food to neighbors/relatives who face food shortages. • 39% of families report the best food for children age 1-2 years old is plain porridge compared to 7% each reporting mashed or small pieces of meat/fish. • Families commonly consume two food groups: rice and a vegetable. • 66% of households include dairy (milk or butter) in meals for children (age 18 or under) once per month or less. • 31% of households report that every day their child is fed a meal with only a starch. • 24% of households include an egg in a meal for the child several times a week. • 97% of households agree that eating a variety of foods is healthy for children.
Ba Futuru and Rain Barrel Communication (2016)	44 in-depth interviews; 12 focus group discussions; and 995 quantitative surveys with Bolsa da Mae recipient families in Ermera, Lautem, Liquica, and Viqueque	WASH behaviors	<ul style="list-style-type: none"> • 95% of respondents report that there are moments during the day when they think hands should be washed. • 76% report that hands should be washed after defecating; 80% before eating; 35% before feeding an infant or baby; 50% before preparing food; 19% after changing a baby. • Less than 2% of respondents report that hands should be cleaned to control health or prevent sickness. • Most respondents (96%) agree that “washing my hands with soap or ashes is easy for me” but 69% report that there are times when they would like to wash their hands but are unable to. The most common reason (77%) is no water is available, followed by being too busy (50%).

*Constraints only documented if reported by >1 woman. WASH: water, sanitation and hygiene

Annex 3. Immediate and Underlying Causes of Stunting by District

Figure. Nutrition indicators and underlying determinants of maternal and child undernutrition by district, Timor-Leste 2013

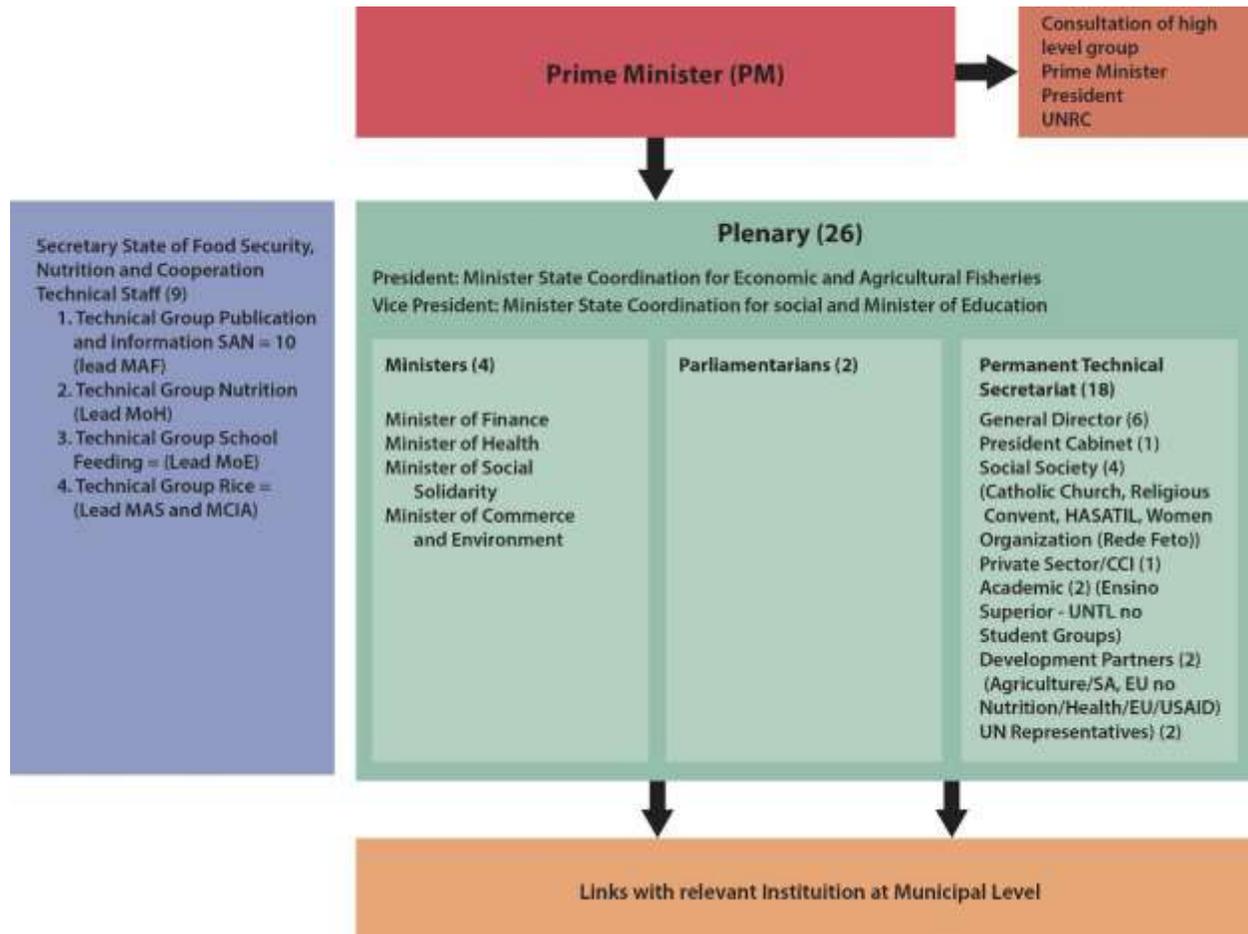


MAD: Minimum acceptable diet. FCS: Food consumption score

Source: RDTL/DFAT/World Bank 2015 using TLFNS 2013 unless noted. *DHS(2009-10)

There are not distinct trends between the prevalence of stunting and its determinants at the district level (Figure), which indicate that the various districts will have context-specific drivers of stunting. Looking across the multiple immediate and underlying causes, a determination can be made regarding whether or not nutrition interventions need to be national (for instance, increasing knowledge and use of reproductive and family planning services; improving access and use of sanitation facilities) and where others will be appropriate in smaller geographic areas or during certain seasons (improving income generation opportunities; improving food affordability).

Annex 4. KONSSANTIL Structure



Annex 5. Nutrition-relevant considerations in the National Health Sector Strategic Plan

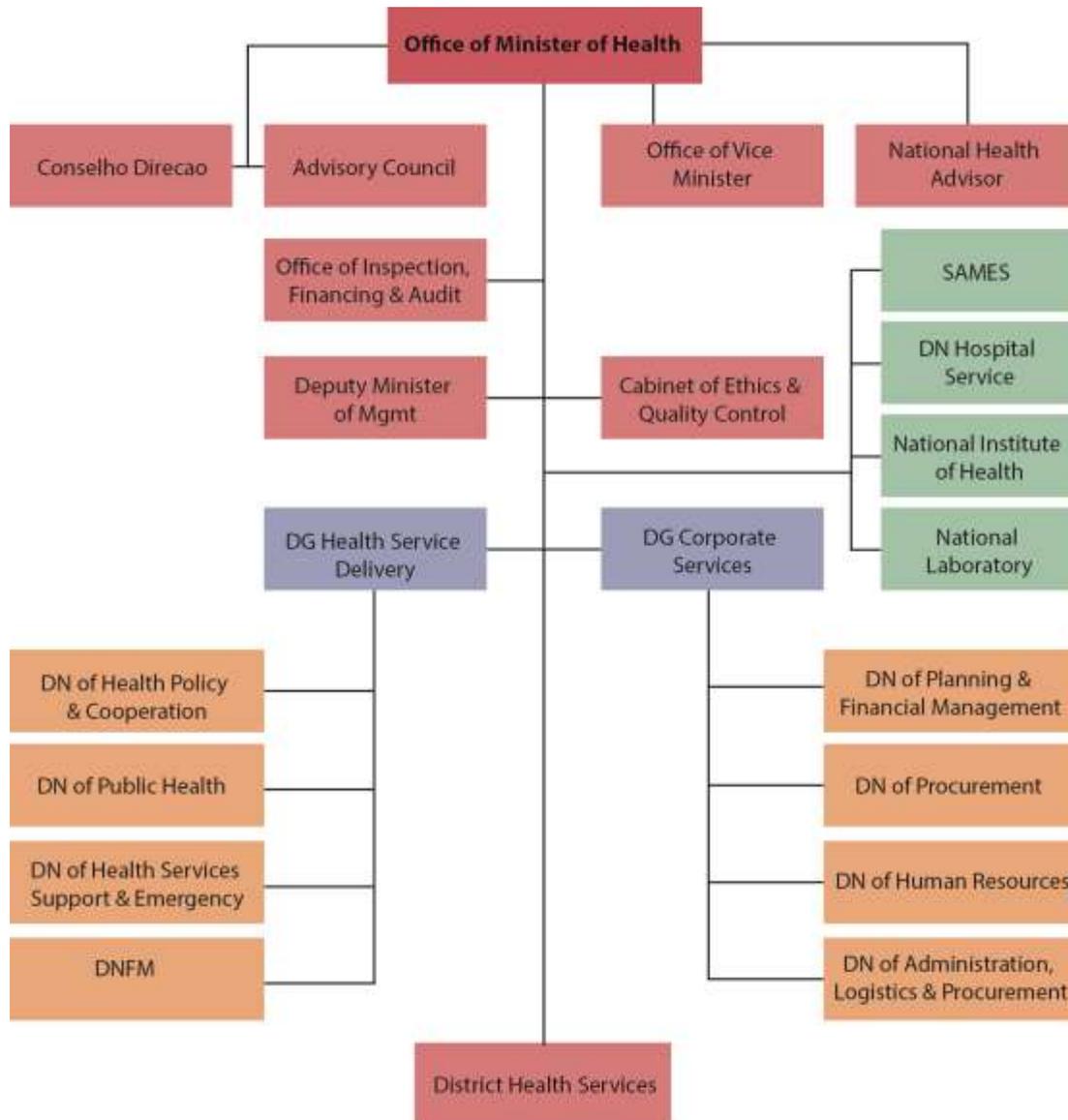
Table. Objectives, strategies, and key results relevant for nutrition in the priority health programs under NHSSP

Area	Objective	Strategy	Key Results
Maternal Health	Improve maternal, ENC, and newborn health through affordable, equitable and high quality continuum of care services, as well as to avoid illness and diseases related to sexuality and reproduction.	<ul style="list-style-type: none"> • Increase access and demand to high quality continuum of care through pregnancy, ANC, delivery, postnatal as well as family planning health services, including hard to reach population. • Empower individual, families and community to contribute to the improvement of maternal care and reproductive health services. • Strengthen Adolescent Reproductive Health services by providing youth friendly services. 	<ul style="list-style-type: none"> • 70% of pregnant women recurring to ANC and post-natal care at least four times by 2015. • Teenage pregnancies reduced by 30% by 2015.
Child Health	To improve, expand, and maintain the quality and coverage of preventive and curative services to newborns, infants and children in order to reduce infant and child mortality.	<ul style="list-style-type: none"> • Improve the capacity of the health system to support the delivery of integrative preventive, IMCI, essential newborn care, and Community Case Management. • Increase access and quality of immunization services. • Improve referral system in order to respond to child health specific needs. 	<ul style="list-style-type: none"> • 100% of hospitals provide quality pediatric services. • 90% of immunization coverage maintained for BCG-POLIO-DPT-Hep B-Measles by 2015. • Infant and under five mortality rates reduced significantly.

Area	Objective	Strategy	Key Results
Nutrition	To reduce the incidence and prevalence of macro- and micro-nutrient deficiencies.	<ul style="list-style-type: none"> Promote diversity and consumption of locally produced food. Improving mother and child nutrition care practice. Improve access and quality of nutrition services at facility and community levels for all live cohorts. Promote advocacy, social mobilization and communication to ensure .mainstream behavior change in nutrition Strengthen nutrition information management system and surveillance. 	<ul style="list-style-type: none"> National strategy for nutrition behavior change developed and implementation began by 2012. 60% of children under 6 months old are exclusively breastfed and at least 50% of under 1 year old receives appropriate complementary foods in addition to breastfeeding by 2015. At least 50% of schools are implementing recommended feeding programmes by 2015. Community engagement in nutrition and food security programs increased by 30%.
Other emerging diseases	To strengthen and improve the provision of chronic health care services and programs in Timor-Leste.	<ul style="list-style-type: none"> Increase access and quality of age-friendly and old-age specific health services, with a focus on improving the skills of primary health care providers and introducing strengthening community models, such as home care programs. Increase skills of health staff to manage chronic diseases. 	<ul style="list-style-type: none"> 100% of targeted population receiving home visits by 2020. 100% of health facilities fully equipped and staffed for management of chronic diseases by 2020.
Environmental Health	To have improved quality of the environment in order to enhance wellbeing and reduce the risk of illness, injury and/or death.	<ul style="list-style-type: none"> Develop effective policy and planning system in the area of environmental health. Improve resources and support system. Improve environmental health service delivery. Promote community involvement, gender and ensure social equality in the area of environmental health. 	<ul style="list-style-type: none"> 100% of policies designed and applied for sanitation, water quality, vector control, food safety and waste management by 2015. 60% of population have access to basic sanitation and clean water by 2030. 40% of household reach category B of healthy house standard (Based on KUBASA) by 2030.

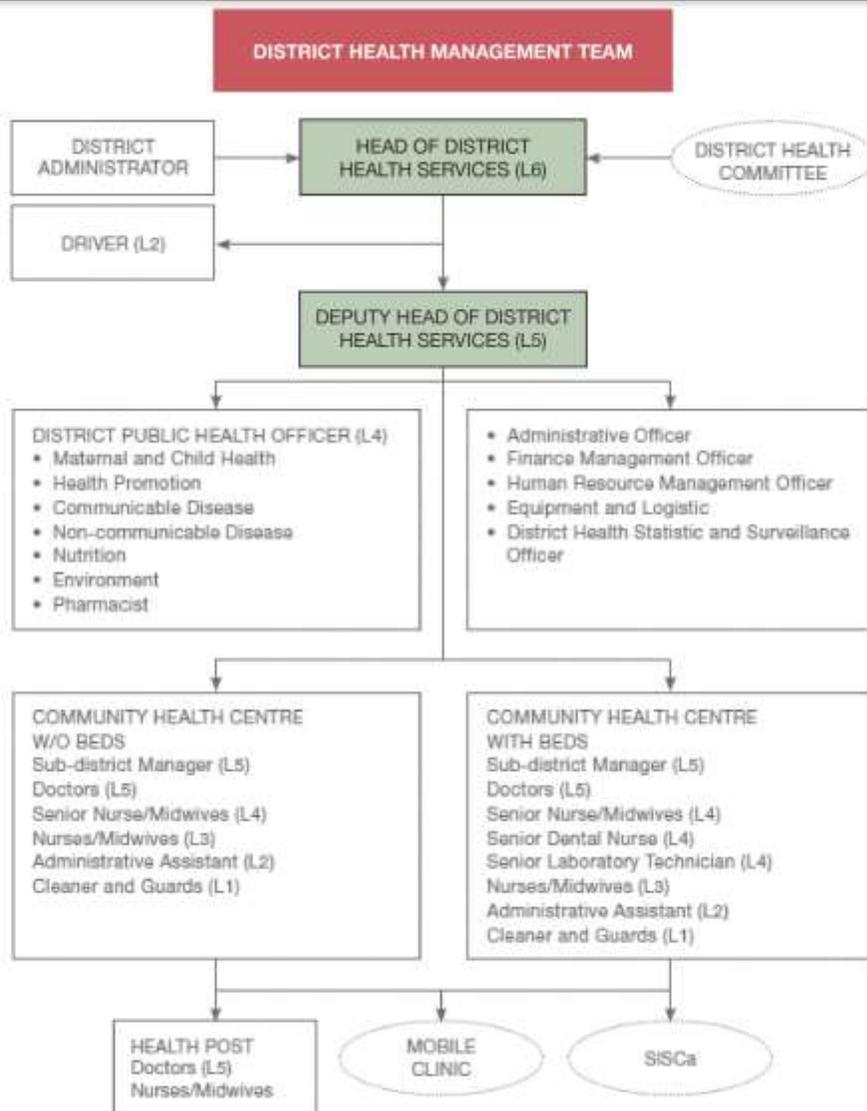
Area	Objective	Strategy	Key Results
Health Promotion	To improve the capacity of individuals, families and communities to live a healthy life and to create a healthy environment that is conducive to practicing healthy behaviors, for improving the status of the population of Timor-Leste.	<ul style="list-style-type: none"> • Revise and update the current national Strategy for Health Promotion. • Empower the community, by placing the people as partners and actors able to help each other in solving their own health problems and adopt healthy behaviors. • Strengthen partnerships to create a supportive environment for behavior change. • Integrate the health promotion approach into health programs. • Build the capacity of all health promotion personnel at all levels. 	<ul style="list-style-type: none"> • National Health Promotion Strategy updated and adoption of key healthy behaviors adopted by 50% by 2015. • 90% of schools have a school health focal point, a handbook, and curriculum by 2020. • 90% of health personnel trained in health promotion (including BCC).

Annex 6. Ministry of Health Organizational Structure



DG = Directorate General
 DN = National Director

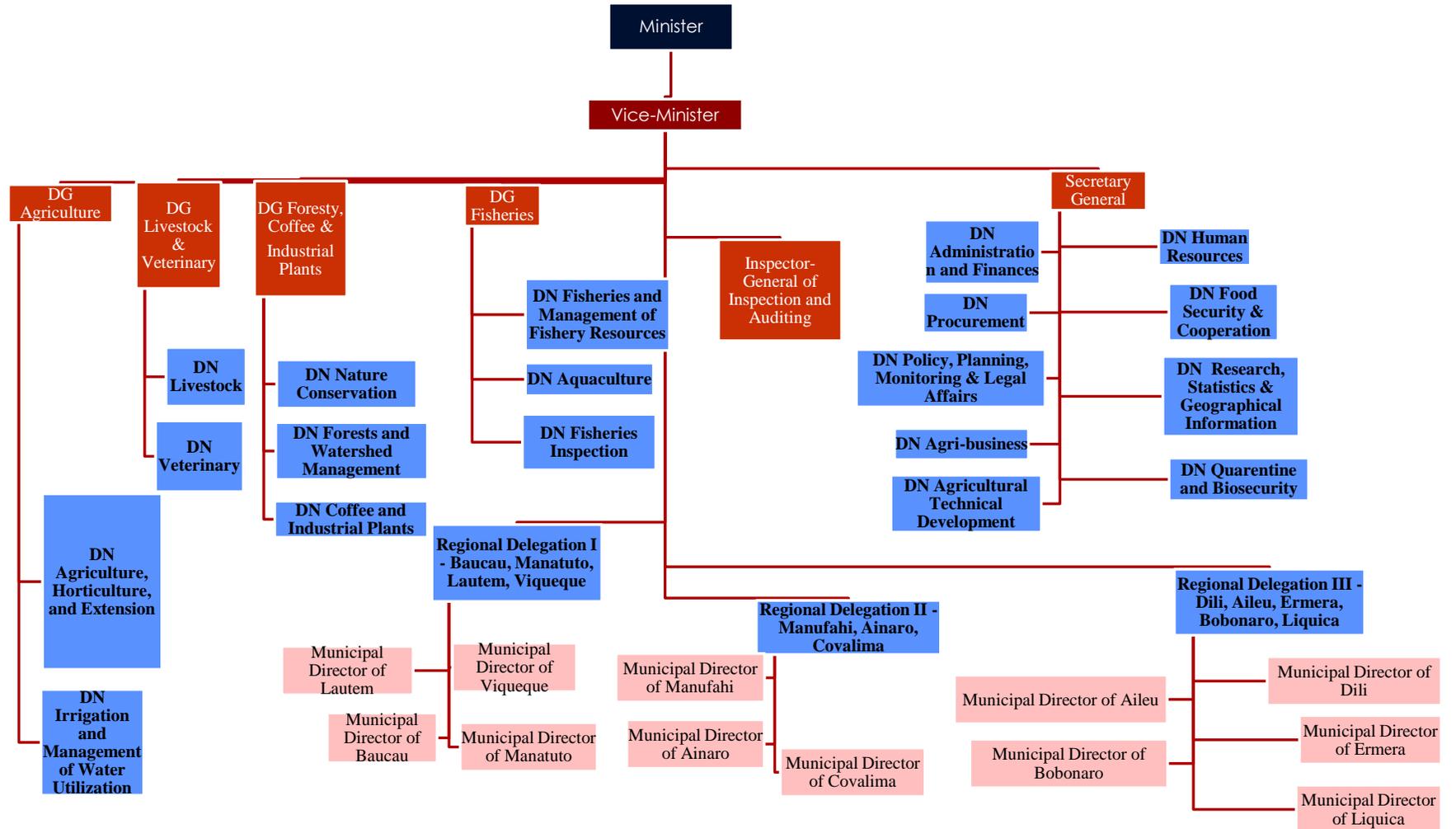
Annex 7. Structure of District Health Services



One CHC with beds per district, One CHC without beds per sub-district

SOURCE: MoH, Timor-Leste.

Annex 8. Ministry of Agriculture and Fisheries Organizational Structure



Annex 9: Nutrition Capacity Assessment Framework

Level	Description	Examples
System	The broad social, cultural, economic and political ‘environment’ that influences how nutrition capacity develops and has its operational effects, including legal frameworks and supporting policies.	<ul style="list-style-type: none"> • Human rights instruments. • National action plans for nutrition. • Health system structure and funding. • Health targets and priorities. • Workforce quality assurance systems (registration systems). • Agricultural and export policies and practices. • Educational System.
Organizational	The nature and factors of organizations working in nutrition-related areas which develop, support and enable the workforce to be effective, including: workforce size, structure, and organization; access to information systems; tertiary education institutions; and workplace culture.	<ul style="list-style-type: none"> • University nutrition departments. • Number of nutrition personnel relative to population/need, location, distribution, management support and co-location with other disciplines. • Availability of public health intelligence infrastructure and information.
Workforce	The knowledge, skills and attitudes required to perform the required work (competencies) of those involved in carrying out nutrition-related work, as well as the materials and job aids needed, and workforce preparation.	<ul style="list-style-type: none"> • Different workforce tiers: nutritionists and non-nutritionists. • Continued professional development. • Performance review and evaluations. • Professional standards and networks. • Training pathways, system.
Community	The engagement and participation of communities in improving nutrition, including community organizations, social capital, and leadership.	<ul style="list-style-type: none"> • Community-led health services or nutrition programs. • Social networks and community organizations. • Facilitation and mobilization.

Source: Shrimpton et al 2013.

Annex 10. Job Description for RDTL Workforce with Potential to Improve Nutrition

Job Descriptions: CHC-Level Health Professionals in Lautem

REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE
 MINISTÉRIO DA SAÚDE
 SERVIÇO SAÚDE MUNICÍPIO LOSPALOS

Job Description

Description of function

Name	
No. Payroll	
No. PMIS	
Category	Junior A1. Technic Professional
Position	Chief of CHC Lospalos
Minister/Sec.	Health
Working place	CHC Lospalos

Detailed of job description

<ol style="list-style-type: none"> 1. Prepare annual plan 2. Manage and controlling activity at CHC and HP 3. Manage and responsible for human resources 4. Supervision and individual development 5. Do request and manage budget from GSB 6. Do other task request by supervisor 7. Coordination internal and external 8. Did supportive and supervision 9. General evaluation

REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE
 MINISTÉRIO DA SAÚDE
 SERVIÇO SAÚDE MUNICÍPIO LOSPALOS

Job Description

Description of function

Name	
No. Payroll	
No. PMIS	
Category	C./Technic provisional
Position	Doctor
Minister/Sec.	Health
Working place	CHC Lospalos

Detailed of job description

<ol style="list-style-type: none"> 1. General consultation 2. Home visit 3. Emergency assistant 4. Maternity assistant 5. Weekly report and monthly report 6. Attend sexual transmitted infection treatment

REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE
 MINISTÉRIO DA SAÚDE
 SERVISU SAUDE MUNICIPIO LOSPALOS

Job Description

Description of function

Name	
No. Payroll	
No. PMIS	
Category	Junior B1.Technic Professional
Position	Midwife
Minister/Sec.	Health
Working place	CHC Lospalos

Detailed of job description

<ol style="list-style-type: none"> 1. Attend for pregnant mother and lactating mother 2. Attend delivery and after delivery 3. Immunization for new born and mother 4. Attend on family planning and reproductive ages 5. Do IMCI 6. Attended on SISCa activity based on schedule 7. Counseling for new delivery mother 8. Education and promotion for mother at SISCa posts
--

REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE
 MINISTÉRIO DA SAÚDE
 SERVISU SAUDE MUNICIPIO LOSPALOS

Job Description

Description of function

Name	
No. Payroll	
No. PMIS	
Category	Junior A1.Technic Professional
Position	Nurse
Minister/Sec.	Health
Working place	CHC Lospalos

Detailed of job description

<ol style="list-style-type: none"> 1. General consultation 2. Attended SISCa and mobile clinic activity 3. Emergency assistant 4. Maternity assistant 5. Home visit 6. Medicine distribution 7. Other task delegated by supervisor

REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE
MINISTÉRIO DA SAÚDE
SERVISU SAUDE MUNICIPIO LOSPALOS

Job Description

Description of function

Name	
No. Payroll	
No. PMIS	
Category	
Position	Nutritionist
Minister/Sec.	Health
Working place	CHC Lospalos

Detailed of job description

<ol style="list-style-type: none">1. Plan for nutrition program2. On the job training for on nutrition program for health workers3. Monitoring activity4. Evaluation on program activity5. Weekly report6. Administration activity7. Conduct training8. Follow up for malnourished children9. Other task delegated by supervisor
--

Job Description: Community Health Centre (CHC) Sub-District Nutrition Focal Point

Position: CHC Nutrition Focal Point

Category: Professional technical

Salary:

No of Ref:

Report to: Head of Community Health Centre

Role Purpose:

In line with the Ministry of Health commitment and strategic priorities, the CHC Nutrition Focal Point will be responsible to improve the quality of nutrition services in sub-districts level.

Scope of Roles:

Support the planning and implementation of appropriate nutrition program and nutrition supply plan, including monitoring and supportive supervision:

- Develop and implement the nutrition program based on the Ministry of Health existing nutrition strategy, district annual work plan, guidelines and protocol, e.g. National Nutrition Strategy, High Impact Nutrition Intervention (HINI) guidelines, MAM guidelines and protocols
- Develop nutrition supply and equipment plan including distribution, forecasting, supply management and reporting (e.g. RUTF, Timor-Vita, RUSF, Vit. A, MNP, deworming, F-100, F-75, scale weight, MUAC, etc.)
- Conduct regular monitoring and supportive supervision of nutrition program implementation in Health Post, SISCa's and community level through house to house visit
- Improve the quality and coverage of nutrition services at CHC and HP level through the implementation of quarterly plan.

Support the capacity building initiatives to improve the knowledge, skills and sense of responsibility and ownership of the programs

- Develop training plan, organize and facilitate the training on HINI for other health staff and community volunteers to implement High Impact Nutrition Interventions
- Support Nutrition Focal Point in Health Post level and *sucos* to establish the Health Community Volunteers or Mother Support Group to enable their active participation in implementation and monitoring of nutrition program

Ensure appropriate coordination between DHS, CHC, HP, SISCa's (community outreach) and other partners as well as local authorities

- Coordinate and organize of nutrition event (meeting/workshop/campaign, etc.)
- Proactive and consistent participation in meetings/discussions and activities
- Coordinate programming and information sharing with health partners
- Close collaboration between HP and other partners to ensure the complementarities of the nutrition program
- Provide regular feedback and updates on nutrition activities

Collect and consolidate reports submitted by Health Post and partners and ensure their timely submission to DHS level

- Communicate regularly with Nutrition DPHO and relevant partners on nutrition activities
- As a focal point for nutrition in CHC level, provide accurate and timely submitted reports to DPHO Nutrition in DHS level
- Support on collecting data, compile, cross check, analyze trends established based on the nutrition indicators established and provide the report every months, quarterly, semester, and annually
- Provide the report of nutrition implementation activities and budget (quarterly, mid-year and end year) to DPHO Nutrition and Nutrition Department

- Support on DHIS-2 implementation
- As an information focal point at sub-district level to collect the data and entry into DHIS-2 system
- Transmit the key identified indicator through SMS

Qualification:

Minimum Diploma III on Nutrition, Public Health

Experience:

- Minimum 3 years experience working with Ministry of Health or NGOs
- Able to use computer (Microsoft Word, Excel, PowerPoint)
- Able to communicate with Tetum or Bahasa Indonesia
- Prefer people from (Ainaro, Bobonaro, and Ermera districts)
- Can drive motorcycle (have driver license)

Job Description: Suco Extension Officer



REPÚBLICA DEMOCRÁTICA DE TIMOR LESTE
 STÉRIO AGRICULTURA E PESCAS
 OS SERVIÇOS AGRICULTURA MUNICIPIO DE LAUTEM



DADUS NO DESCRIÇÃO DE SERVISU FUNCIONARIU DSA MUNICIPIO DE LAUTEM

4. Departamentu Estensaun Agricola

Naran Completo	
Numeru Payrol	
Numeru PMIS	
Categoria	
Possisaun	
Ministerio	
Local de Serviso	
JOB DESCRIPTION	
<ol style="list-style-type: none"> 1. Supervise the extension 2. Together with extensions prepared weekly plan, monthly plan, quarterly plan and annual 3. Represent teams for attend meeting in Municipality 4. Perform coordination, monitoring and evaluation at Municipality level 5. Monitoring material at department 6. Capacity building for extension 7. Inventory data for potential agro system, agriculture groups, agriculture production, as base for intervention. 8. Identify problems, and find solution for solving those problem that are faced by farmers and their families. 9. Help to make plan based on needs identified by groups 10. Help extension for implementing good program 11. Create trust from farmers to agriculture program 12. Help agriculture to find access to equipment's, production and access to market. 13. Increased knowledge of agriculture for implementing any other production, technology for harvest, economic, and social marketing. 14. Prepared draft for extension Agricola, specified role for develop and increasing knowledge human resources as dynamic factor for improving better Agricola 15. Accompanied the implementation of integrate for cultivation 	

Job Description: Ministry of Social Solidarity Social Animators

Functions

- Monitoring and reporting, and analysis – sub-district level
- Services and help promotion
- Service provision and help (accompaniment, support)
- Services coordination – sub-district level
- Planning and managing within sub-district
- Institutional coordination – sub-district level.

Responsibilities

- Record information received in communities on problems faced by families, children and women and the ways the problems are addressed; collect data on the cases that supported within the community.

- Regularly aggregate data; and analyze the child and family welfare situation in each sub-district and transmit the information to the CFWO.
- Establish partnerships and coordinate with local leaders (*suco* chief, *suco* council representatives, aldeia chiefs, lian nains and other community leaders) around child and family welfare matters.
- Accompany local leaders in supporting families (or children, women and individuals) in the problems they meet, and learn the way communities and families are dealing with the problems.
- Support local leaders in finding and considering more options and additional opportunities to resolve problems within families.
- Provide support to individual people seeking help, through the collaboration with the local leaders and natural helpers.
- Promote the reintegration of children through the collaboration with local leaders and helpers.
- Alert and involve the CFWO in the research of a solution at the community level, with additional service provision, in collaboration with local leaders and helpers.
- Provide information about services and support available at the district level.
- Develop and support initiatives and networks of civil society organizations, community representatives, children and young people in leading promotional activities, community dialogues, reflection on child and family welfare (including child protection, gender-based violence) and promotion of community values.
- Support the implementation of the Bolsa de Mae program in collaboration with the district focal point and the local administration.⁸⁴
- Cooperate with focal points of the National Division of Social Security, National Division of Social Services, National Division of the National Liberty Combatants and the National Division of Disaster Management.⁸⁵
- Plan and manage activities within the sub-district in coordination with the district officers and the CFWO, ensuring maximum time spent in communities.

Source: MSS Human Resources Strategic Plan

⁸⁴ This assumes that the data collection and verification of potential beneficiaries in the Bolsa de Mae programme is reconsidered and the workload shared between the district level, the subdistrict and the local administration.

⁸⁵ This assumes coordination at the district level, willingness to have the focal point do more work and less daily reliance of the focal point on the social animator.

Annex 11: Comparison of international, national priority actions & interventions for mitigation of Mother and Child Undernutrition

WHO (2013) Essential Nutrition Actions	Lancet (2013) Package of Nutrition-Specific Interventions	Timor-Leste Specific Nutrition Intervention Package (2015)
<ul style="list-style-type: none"> • Exclusive breastfeeding for 6 months. • Adequate complementary feeding starting at 6 months with continued breastfeeding for 2 years. • Appropriate nutritional care of sick and malnourished children. • Adequate intake of vitamin A for women and children. • Adequate intake of iron for women and children. • Adequate intake of iodine by all members of the household. 	<ul style="list-style-type: none"> • Breastfeeding promotion. • Complementary feeding education. • Complementary food supplementation. • SAM management. • Vitamin A supplementation in childhood. • Preventive zinc supplementation in childhood. • Maternal micronutrient supplementation in pregnancy (includes iron-folate). • Calcium supplementation in pregnancy. • Energy-protein supplementation in pregnancy. • Universal salt iodization. 	<ul style="list-style-type: none"> • Breastfeeding promotion. • Complementary feeding promotion and early stimulation. • Growth monitoring and promotion. • Micronutrient Powder. • Appropriate feeding during childhood illness, including therapeutic zinc supplementation + ORS. • Targeted supplementary feeding for SAM. • In-patient/Out-patient treatment of MAM. • Vitamin A supplementation for children 6-59 months. • Deworming of children. • IFA supplementation in pregnancy and for adolescent girls. • Deworming during pregnancy. • Targeted supplementary feeding for underweight pregnant women. • Nutrition in emergencies. • Iodine deficiency prevention, control and elimination. • Helminth control of population.

Annex 12. Summary of Nutrition-relevant components of Primary Health Care Service Package in Timor-Leste

	Health Post 2	Health Post I	CHC-SD	CHC-District
<i>Documents</i>				
Guidelines for integrated treatment for pregnant women and during childbirth	Yes	Yes	Yes	Yes
Register of Guidelines for Family Planning	Yes	Yes	Yes	Yes
National guidelines for health provision for young people	Yes	Yes	Yes	Yes
IMCI Protocol	Yes	Yes	Yes	Yes
Guidelines for High Impact Nutrition Interventions	Yes	Yes	Yes	Yes
Family History	Yes	Yes	Yes	Yes
Infant and Young Child Feeding Guidelines	Yes	Yes	Yes	Yes
Guidelines on Postnatal home visit	Yes	Yes	Yes	Yes
Guideline for JMAK	Yes	Yes	Yes	Yes
Guideline to control NTDS (LF, (yaws), STH, zoonoses)	Yes	Yes	Yes	Yes
Register book for HINI package	Yes	Yes	Yes	Yes
Monitoring form for HINI	No	No	Yes	Yes
Communication materials and counseling (materials on IYCF, IEC, and HINI)	Yes	Yes	Yes	Yes
Guideline on how to use instruments for nutrition monitoring (MUAC, weight, meter)	Yes	Yes	Yes	Yes
<i>Health Promotion Activities</i>				
Promote healthy food and nutrition in family	Yes	Yes	Yes	Yes
Health promotion on antenatal, neonatal, and postnatal care	Yes	Yes	Yes	Yes
Information on family planning and its importance	Yes	Yes	Yes	Yes
Practical demonstrations to mothers to utilize local food	Yes	Yes	Yes	Yes
Promote understanding on baby vaccinations during first 6 months	Yes	Yes	Yes	Yes
Food orientation to children during first year	Yes	Yes	Yes	Yes
Mother support group with breastfeeding and complementary feeding	Yes	Yes	Yes	Yes
Support nutrition to HIV patient	Yes	Yes	Yes	Yes
KUBASA counselling & education	Yes	Yes	Yes	Yes
Inspection of places preparing and producing food and storing, education on food safety, taking food samples for analysis	No	No	Yes	Yes
<i>Activities on Prevention of Risks</i>				
Give iron-folic acid to pregnant women and women who are breastfeeding	Yes	Yes	Yes	Yes
Give vitamin supplements to pregnant women	Yes	Yes	Yes	Yes
Deworming for pregnant women	Yes	Yes	Yes	Yes
Distribution of mosquito nets	Yes	Yes	Yes	Yes
MUAC screening for pregnant and lactating women	Yes	Yes	Yes	Yes

	Health Post 2	Health Post I	CHC-SD	CHC-District
MUAC screening and growth monitoring for children under 5	Yes	Yes	Yes	Yes
Daily Immunization service	Yes	Yes	Yes	Yes
Specific care to children with malnutrition	Yes	Yes	Yes	Yes
Vitamin A supplementation to children 6-59 months every 6 months	Yes	Yes	Yes	Yes
Supplement with multiple micronutrient for children age 6-23 months	Yes	Yes	Yes	Yes
Deworming with albendazole for children 5-15 semi-annually	Yes	Yes	Yes	Yes
Growth monitoring every month for children under 24 months and every trimester for children from 2-5 years	Yes	Yes	Yes	Yes
Identification and segmentation for children with malnutrition and risks to have malnutrition	Yes	Yes	Yes	Yes
Health promotion and health education on exclusive breastfeeding for baby until 6 months old and continued breastfeeding to 2 years and beyond	Yes	Yes	Yes	Yes
Education on complementary food for children with age from 6-23 months	Yes	Yes	Yes	Yes
Deworming with albendazol for children 6-59 months every 6 months	Yes	Yes	Yes	Yes
Supplement folic acid and iron/ferro for adolescent girls (10-18 years)	Yes	Yes	Yes	Yes
Supplement zinc sulfate and ORS for children under 5 with diarrhea	Yes	Yes	Yes	Yes
Increase individual, family and community responsibility for health to promote hygienic habits and diet with healthy and proper physical activity	Yes	Yes	Yes	Yes
Assistance				
Monitoring high risk women including weight gain monitoring during pregnancy	Yes	Yes	Yes	Yes
Identified the examination such: Hb, VDRL, HIV, HbSAg	Yes	Yes	Yes	Yes
Lab work for Hb exam	No	No	Yes	Yes
Malaria screening for pregnant women using rapid test	Yes	Yes	Yes	Yes
Treatment of uncomplicated cases of malaria positive pregnant women	Yes	Yes	Yes	Yes
Family planning (condoms, oral contraceptives, IM injections, IUD, implant)	Yes	Yes	Yes	Yes
Postnatal care	Yes	Yes	Yes	Yes
Provide essential newborn care	Yes	Yes	Yes	Yes
Provide treatment of children with severe acute malnutrition without complications.	Yes	Yes	Yes	Yes
Refer children with severe acute malnutrition with any complications which need secondary care	Yes	Yes	Yes	Yes

	Health Post 2	Health Post I	CHC-SD	CHC-District
Treatment of children with SAM with any complicated illness which need secondary care.	Yes	Yes	Yes	Yes
Programme for periodic consultation (according to stratification) for patient with risk or with non-communicable chronic diseases (diabetes, cardiovascular, and chronic respiratory disease and cancer)	Yes	Yes	Yes	Yes
Provide curative treatment and rehabilitation with community based for patients with non-communicable chronic diseases	Yes	Yes	Yes	Yes
Provide integrated and comprehensive medical assistance for patients with non-communicable chronic diseases who have been isolated or admitted	No	No	No	Yes
Technical orientation for Health Staff and Health Volunteers on Strategy and service package for non-communicable diseases	No	No	Yes	Yes

Source: MOH 2015c

Annex 13. The SISCa Program

SISCa is based upon the principal of “from, with, and to the community” and provides integrated of health promotion, prevention, and treatment at the community level (MOH 2008). Health workers and volunteers from NGOs—including World Vision, CVTL, and CARE—are often utilized to fill gaps in the public health system and provide the health promotion and health education along with doctors and nurses. SISCa is the site for a number of health promotion and nutrition activities (Box A13.1). In the districts, there is a high regard for SISCa as a platform for increasing access to health services. SISCa is often recognized as the primary site for women and children to receive nutrition interventions, particularly with regard to growth monitoring. In focus group discussion, men and women have expressed a high degree of satisfaction with the types and access to services that SISCa provides (Dookhan-Khan 2015). However, there are many challenges faced in the implementation of SISCa at the community level which constrain the coverage and quality of nutrition-related services:

BOX A13.1 The SISCa Program

The six table system is the foundation of the SISCa program. Services are delivered as follows:

Table 1: Registration - Volunteers (PSFs) register all participants in SISCa register as well as in LISIO (mother-child book). health map of suco.

Table 2: Nutrition Assistance - PSFs provide growth monitoring (weight and MUAC) on all children under 5 and pregnant mothers. Identify children and pregnant women with malnutrition, and arrangements made between health workers, volunteers, and *suco chefe* for home visits.

Table 3. Health Assistance for Pregnant Mothers and Children

- a. *LISIO*: Complete, review, and explain growth chart (to mother and/or husband).
- b. *Antenatal care*: Counselling, monitoring for anemia, blood pressure, weight and height, physical exam, distribution of IFA, and provision of tetanus toxoid injection. High risk pregnancies are identified and referred to CHC/referral hospital.
- c. *Postnatal care* for recently delivered infants.
- d. *Care for sick children under 5 (IMCI)*: Provide ORS, education on danger signs.
- e. *Family planning*: Provide counselling on natural and modern methods; provide injections, pills, condoms, and refer to CHC for others.
- f. *Immunization*: Provide all routine immunizations for children under 5.

Table 4. Personal Hygiene and Sanitation - PSFs deliver information on personal hygiene, sanitation, and healthy home environment. Also clip fingernails.

Table 5. Health Assistance - Health workers provide treatment for diseases based on MoH protocols. Includes deworming.

Table 6. Health Promotion and Education - Volunteers and/or health workers use adult participatory methods to provide information on infectious disease prevention and treatment, non-infectious disease prevention and engage in cooking demonstrations, film screenings, games, songs, and/or simulation.

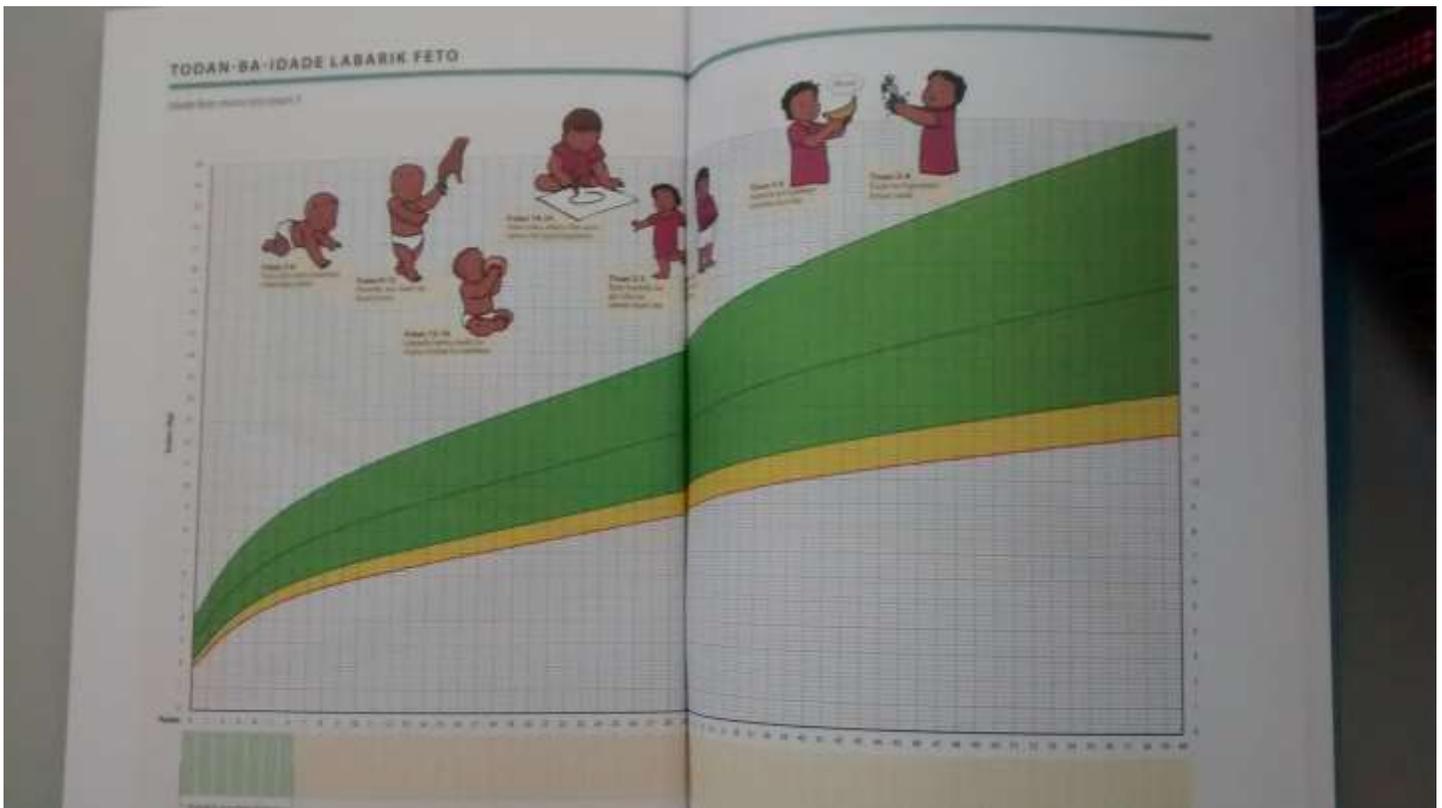
Source: MOH 2007

Coverage: Community participation can be low due to both poor community mobilization on behalf of the PSFs and community leaders as well as low incentives for participation. One DPHO indicated that community members will not participate without receiving an incentive, a finding reflected in women’s discontent with the decision to discontinue providing supplementary food through SISCa (Dookhan-Khan 2015). Furthermore, though SISCa services were intended to penetrate the entire community, a recent process evaluation in Bobonaro revealed that “those who live in remote areas (far from SISCa) have not been covered and have not shown a significant change [in behavior]” (Dookhan-Khan 2015). SISCa participants are usually those who live closer, and those living more remote don’t attend. Adolescents are hypothetically eligible to attend SISCa but don’t, for the most practical reason that SISCa is often held during school hours.

Quality service delivery: There are limitations in the capacity to delivery high quality services through SISCa. These stem from low human resources capacity (especially for PSFs) as well as insufficient availability of necessary supplies and materials. It is rare that all six tables are set up and utilized according to the guidelines. Supervision is not consistent, in part due to limited access to transportation for DHS staff, who struggle to supervise all 50 *suco* activities per month without regular access to vehicles and fuel.

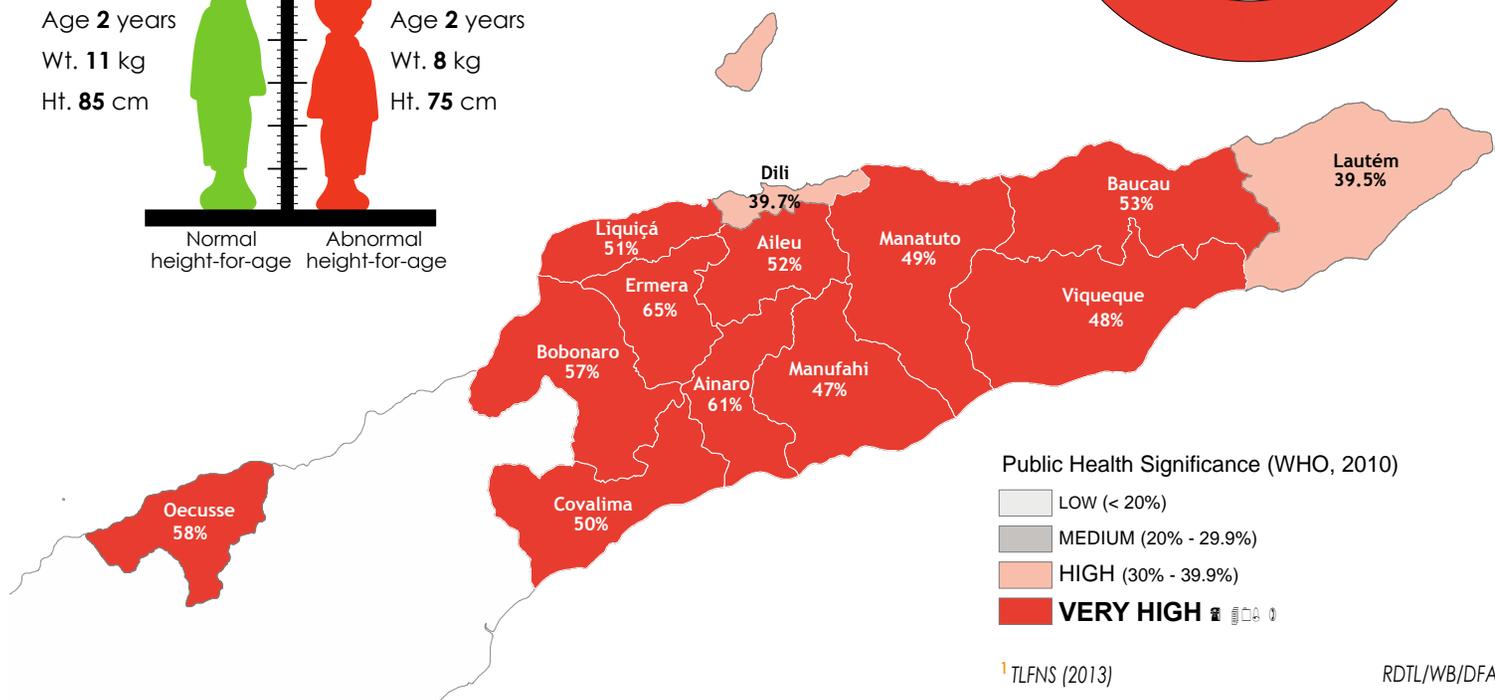
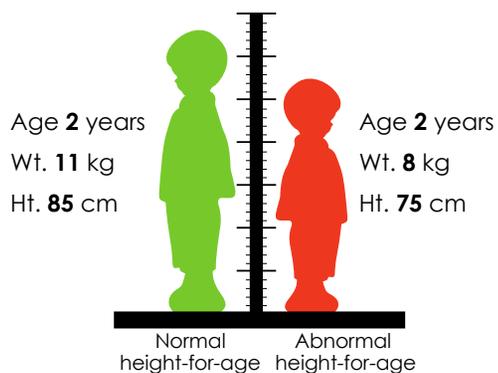
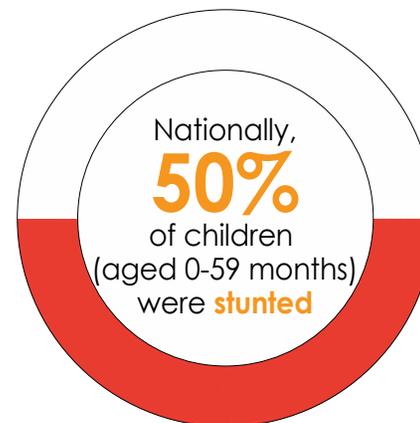
Through the EU-funded Integrated Nutrition Program, UNICEF intended to provide support to MOH to improve the quality of nutrition services through SISCa. However, these activities have been delayed as MOH has not provided a clear statement on the future role of SISCa. The World Bank trust-funded National Health Sector Support Program had funded operational costs for the SISCa program into calendar year 2015. Interviews with key health stakeholders demonstrated a lack of clarity amongst government and non-government stakeholders regarding the continuation of SISCa. In some districts, it was reported that SISCa remained operational and PSFs continued to report for duty, while in others the back pay was beginning to prevent PSFs from turning up.

Annex 14. The LISIO Card

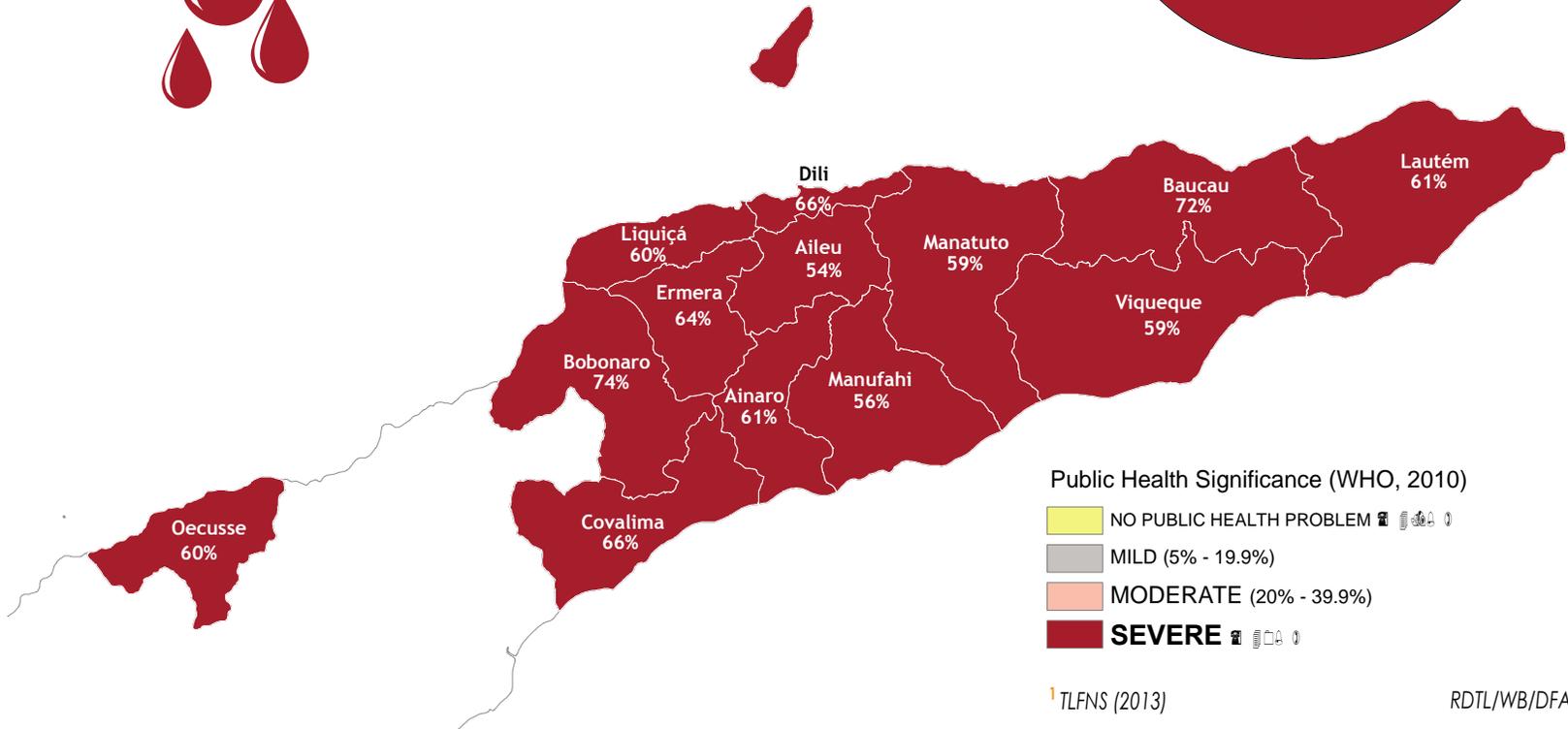
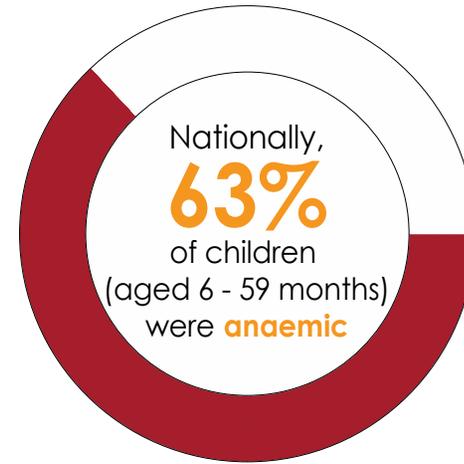


Annex 15. Maps of the distribution of malnutrition, immediate, and underlying drivers in Timor-Leste

Prevalence of **STUNTING**¹ in children (aged 0 - 59 months) in **2013**



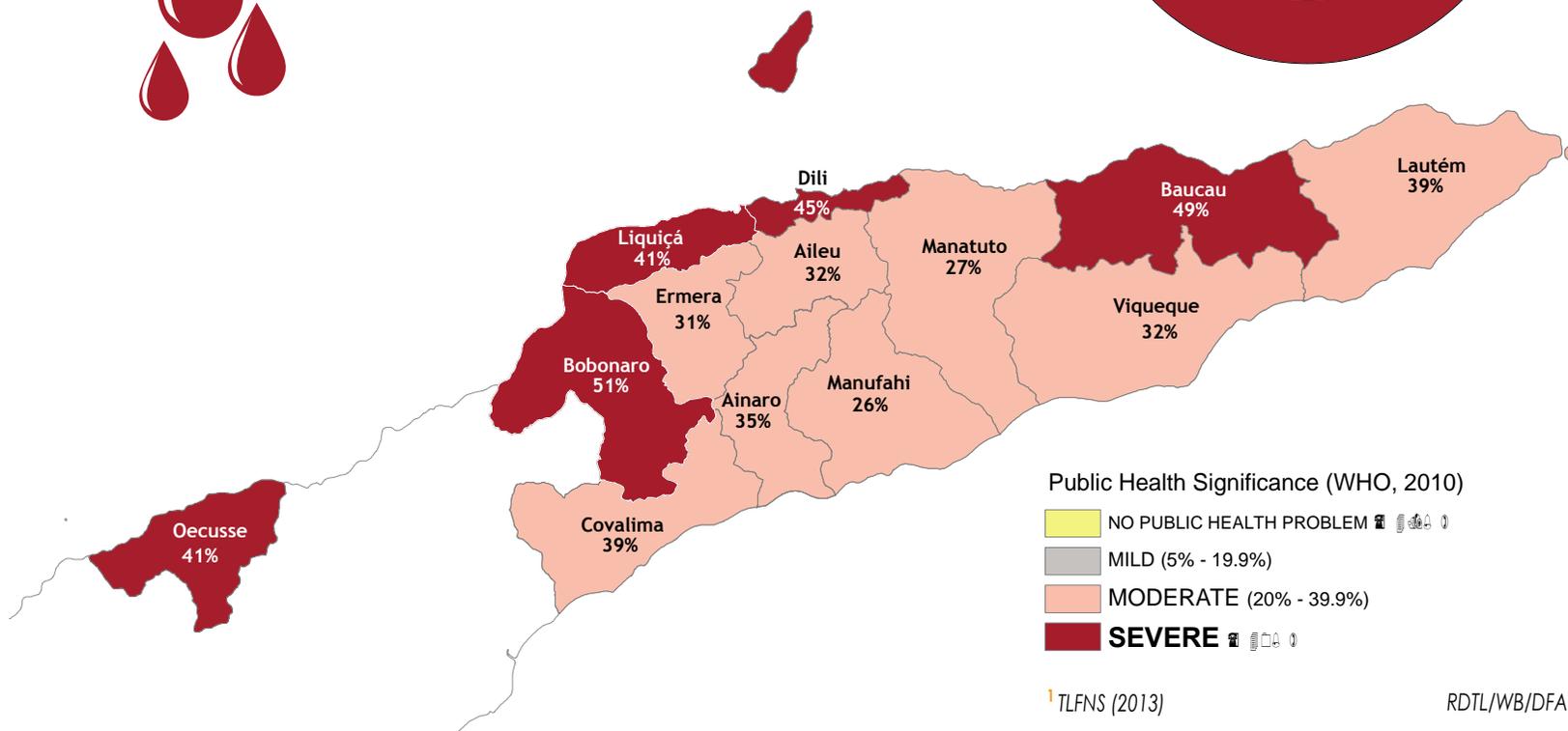
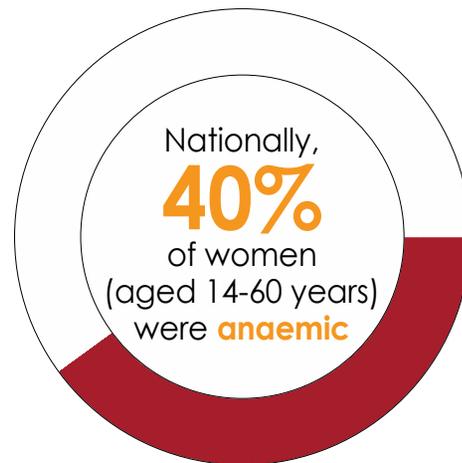
Prevalence of
ANAEMIA¹
 in children (aged 6 - 59 months)
 in **2013**



¹ TLFNS (2013)

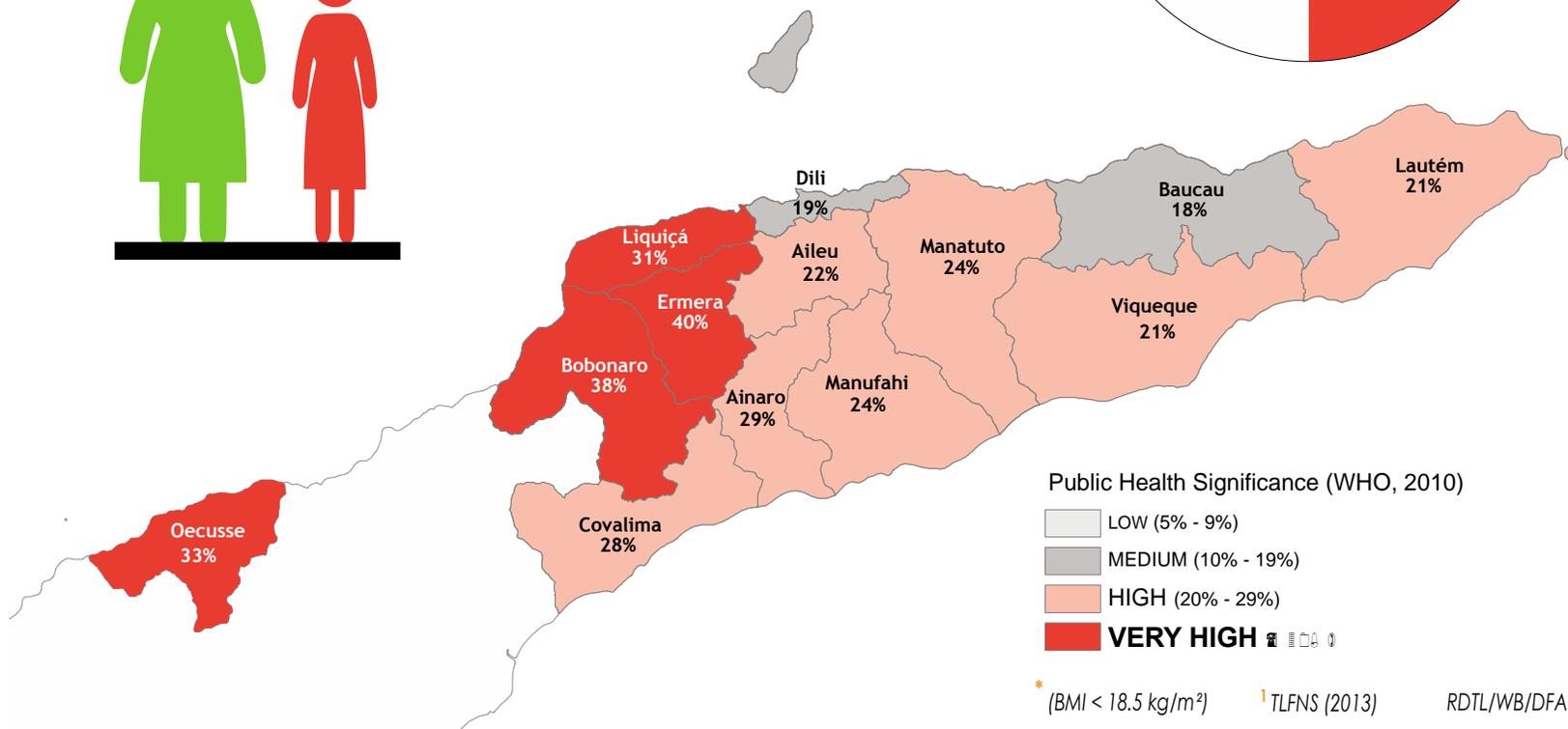
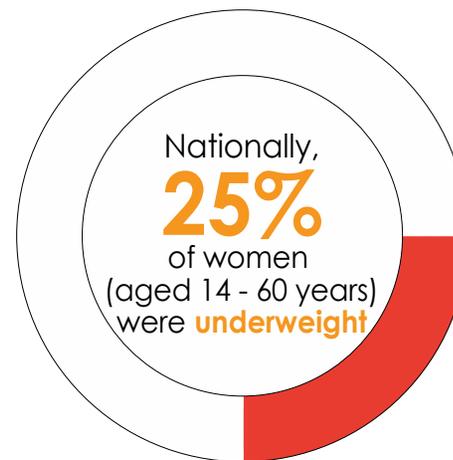
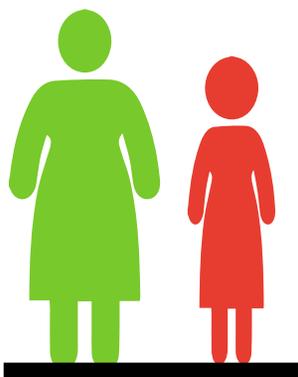
RDTL/WB/DFAT (2015)

Prevalence of
ANAEMIA¹
 in women (aged 14 - 60 years)
 in **2013**

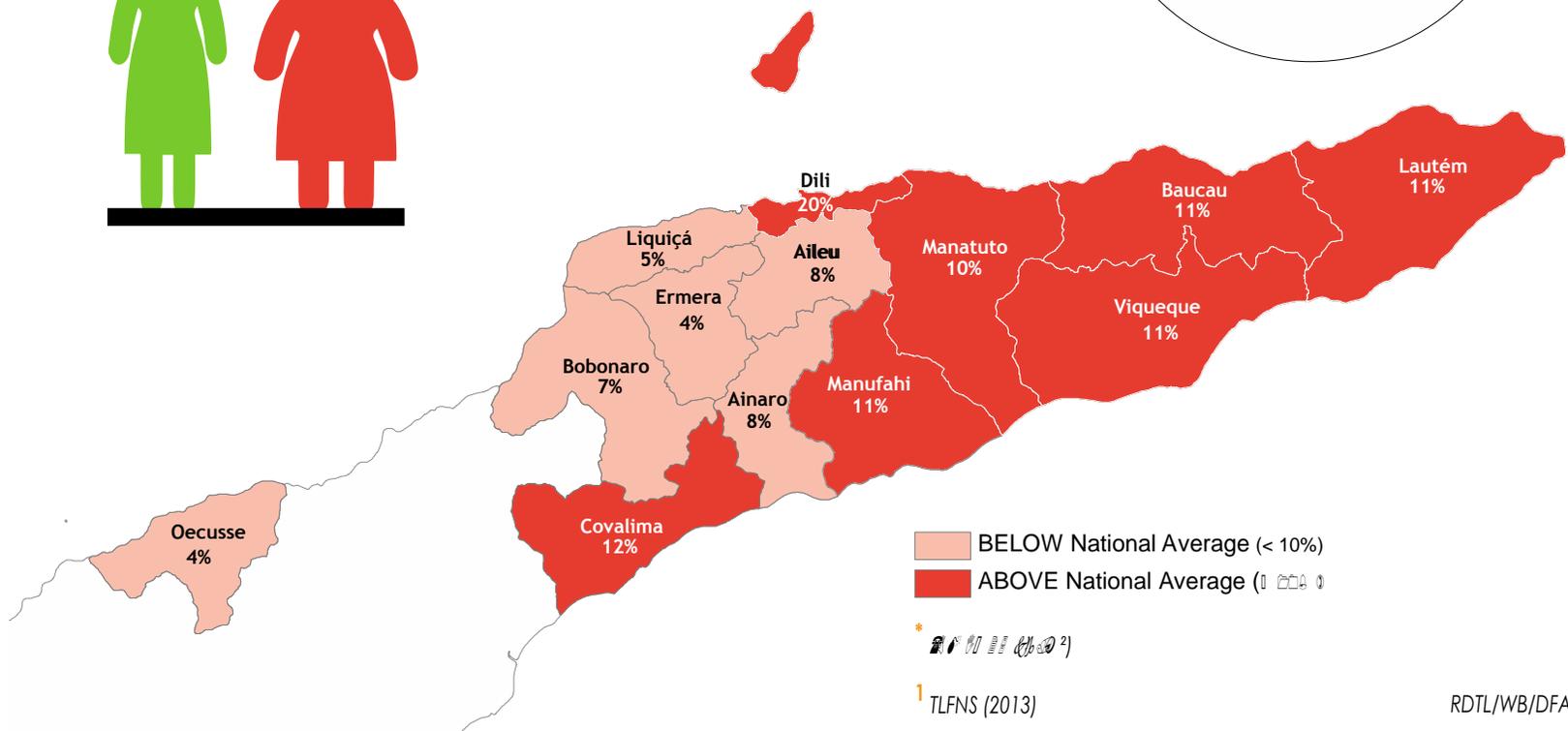
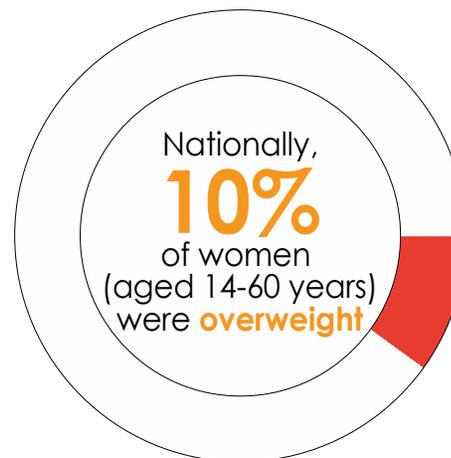
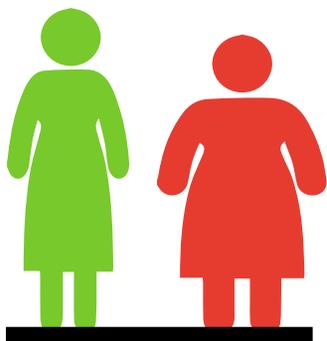


¹ TLFNS (2013)

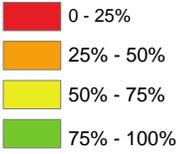
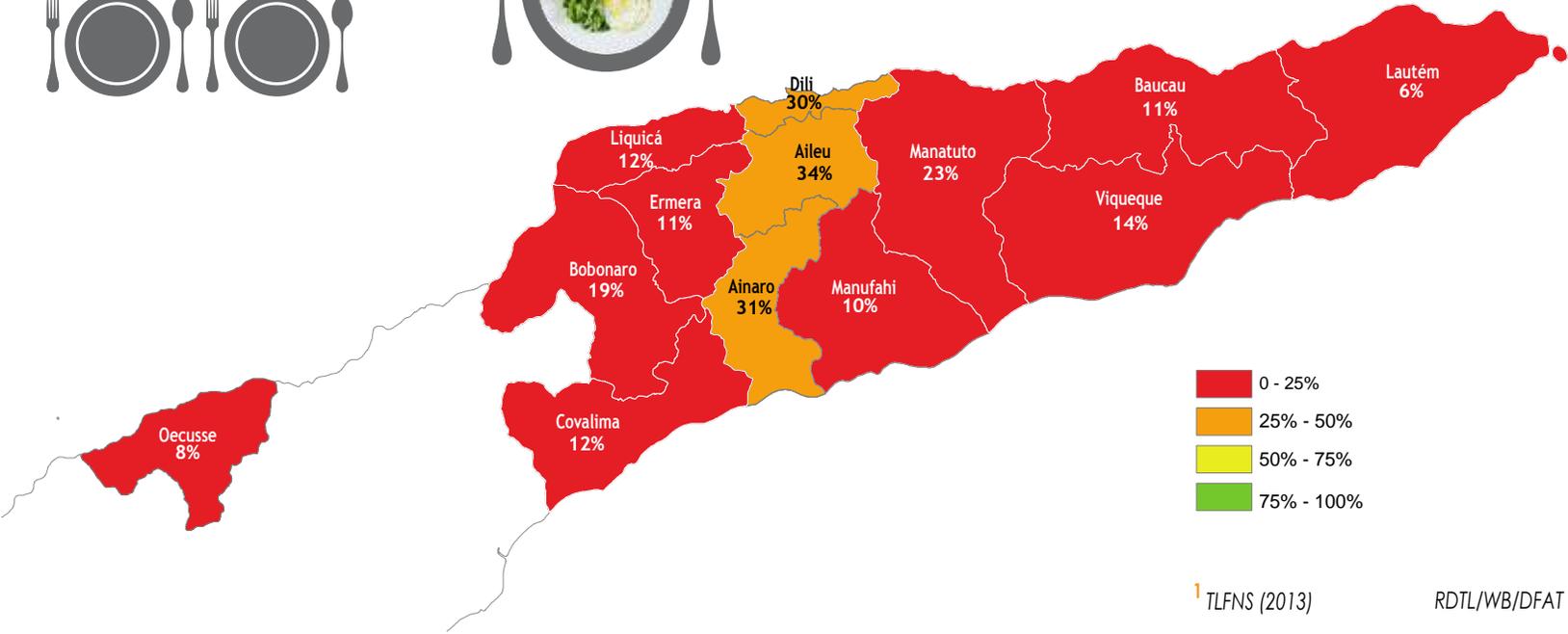
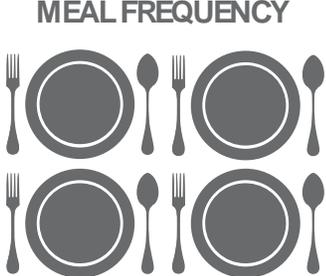
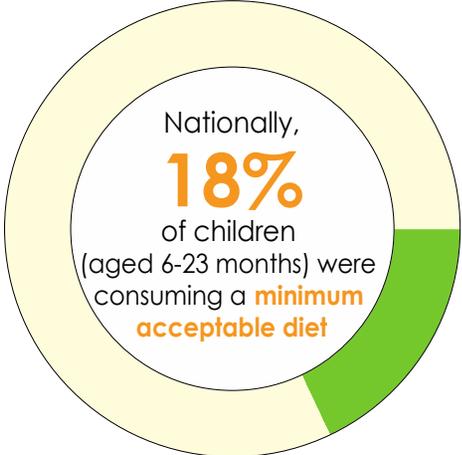
Prevalence of
UNDERWEIGHT^{*1}
 in women (aged 14 - 60 years)
 in **2013**



Prevalence of
OVERWEIGHT^{1*}
 in women (aged 14 - 60 years)
 in **2013**

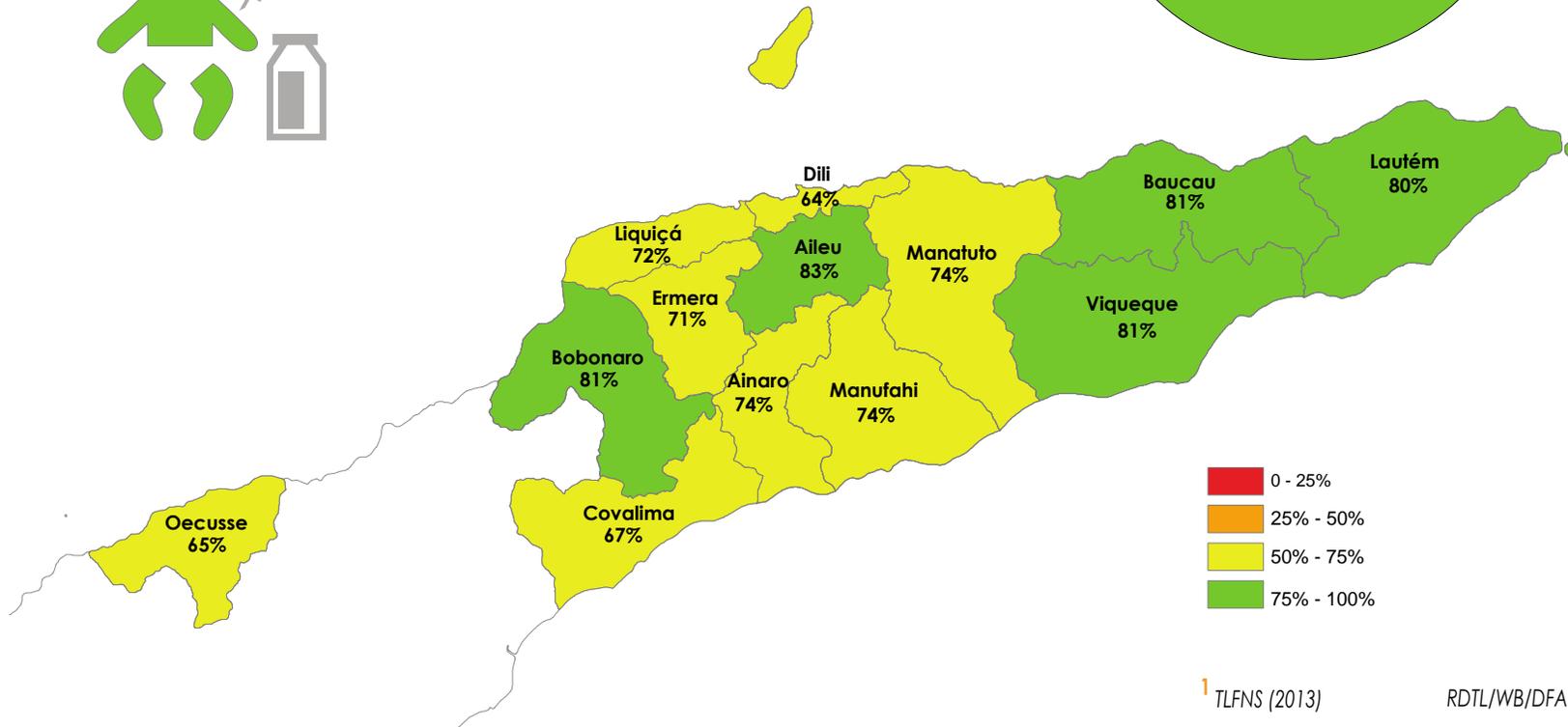
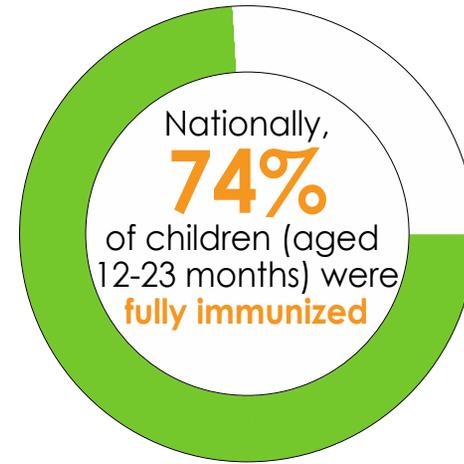


Prevalence of children (aged 6 - 23 months) consuming a **MINIMUM ACCEPTABLE DIET**¹ in **2013**



¹ TFNS (2013) RDTL/WB/DFAT (2015)

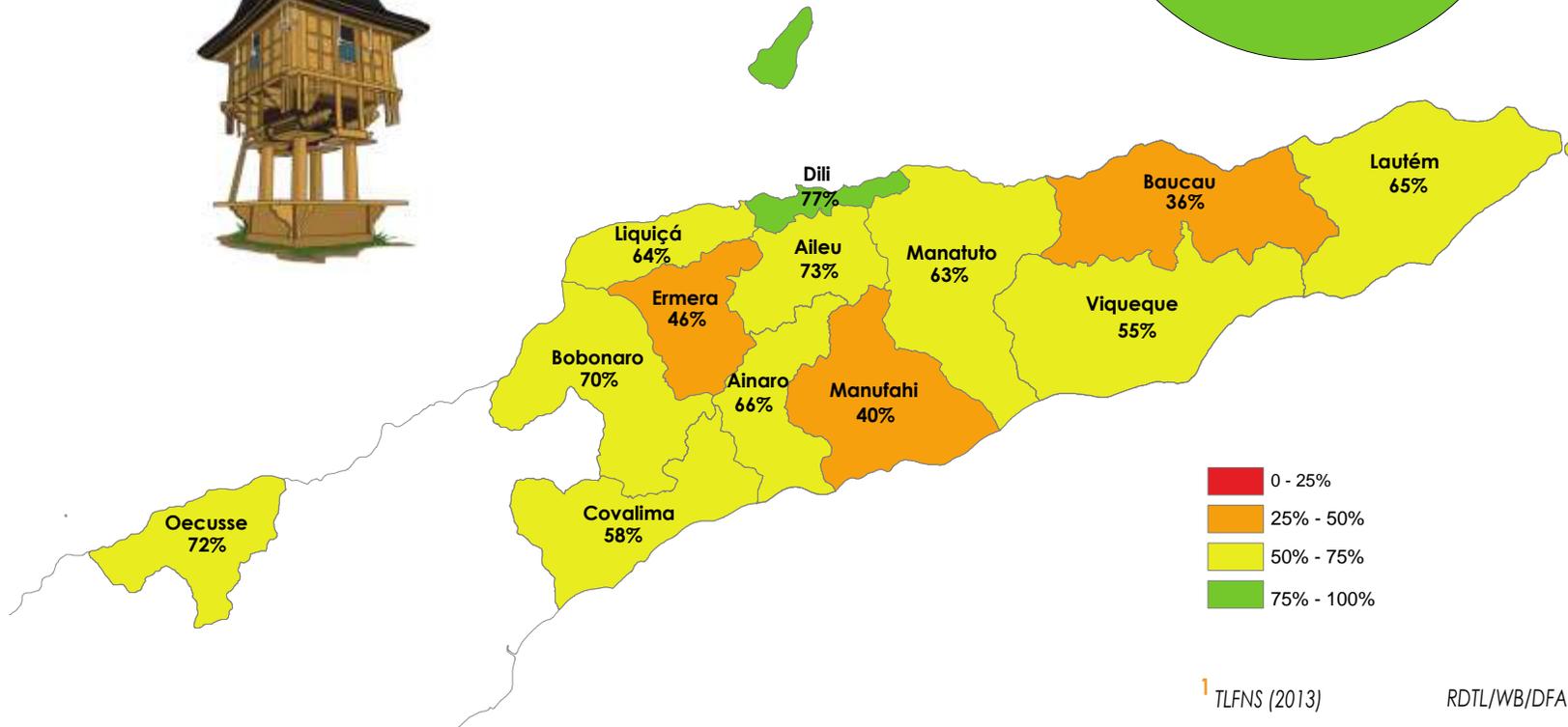
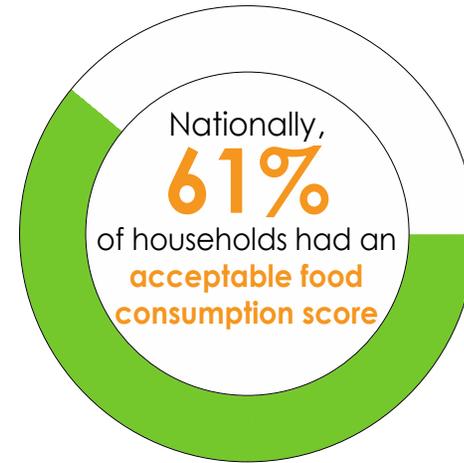
% of children
(aged 12 - 23 months) who were
FULLY IMMUNIZED¹
in 2013



¹ TLFNS (2013)

RDTL/WB/DFAT (2015)

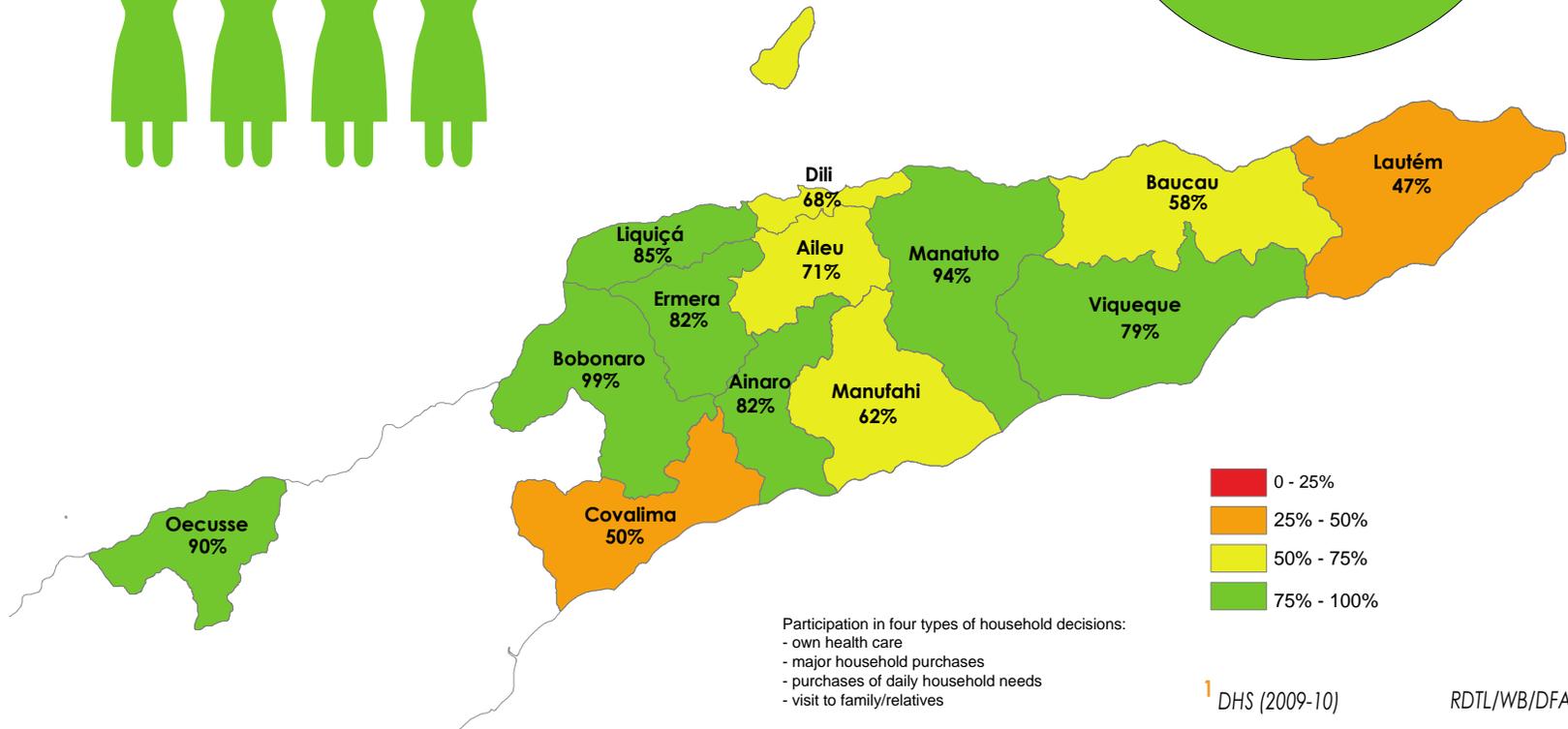
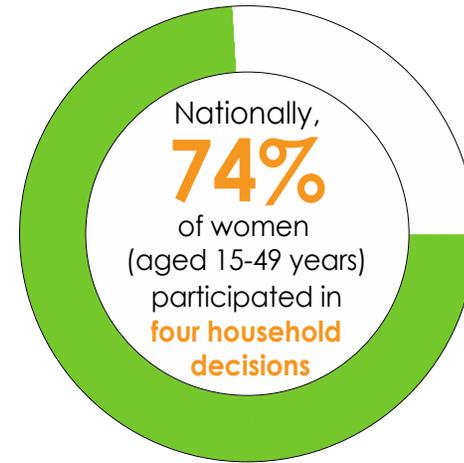
% of households with
ACCEPTABLE FOOD CONSUMPTION SCORE¹
 in 2013



¹ TLFNS (2013)

RDTL/WB/DFAT (2015)

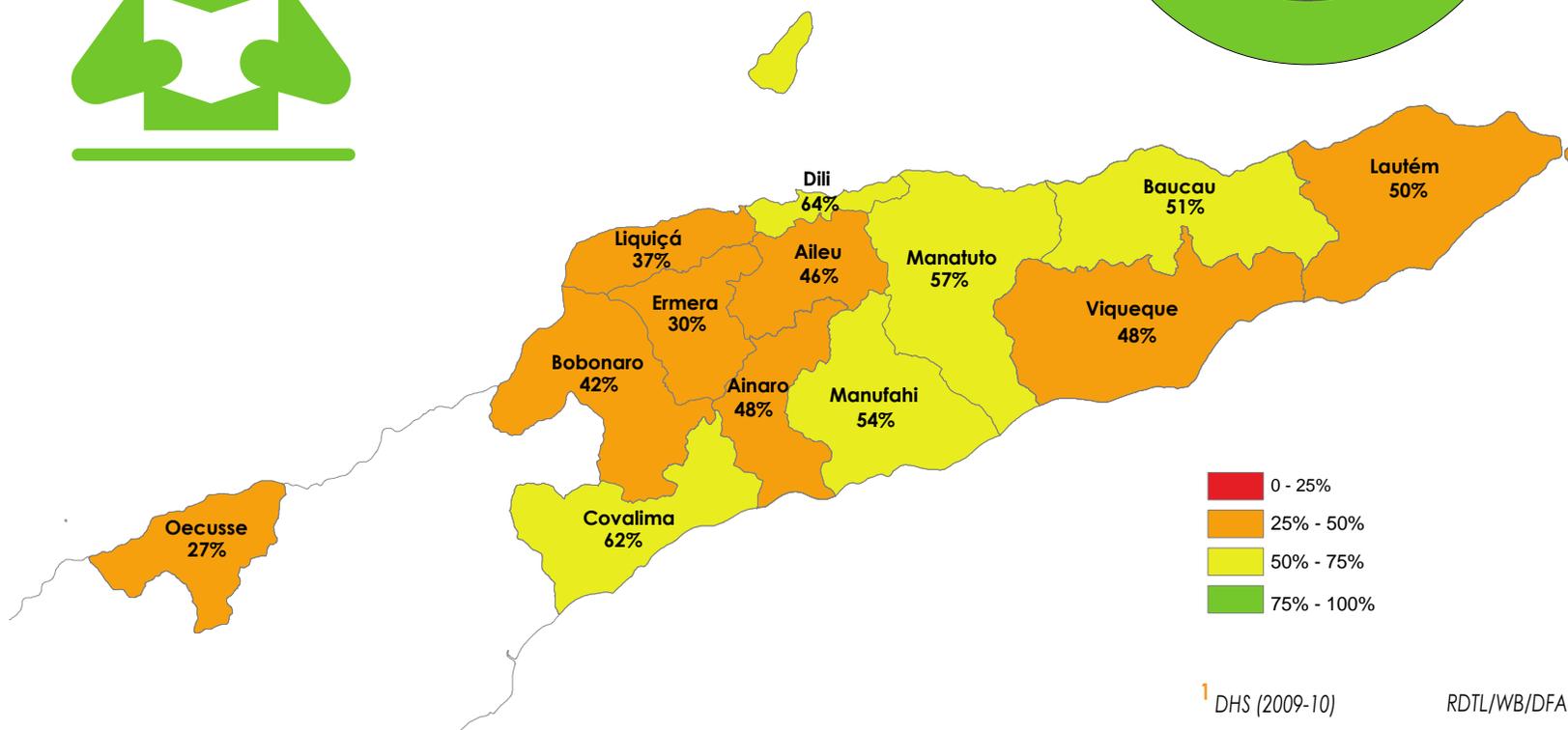
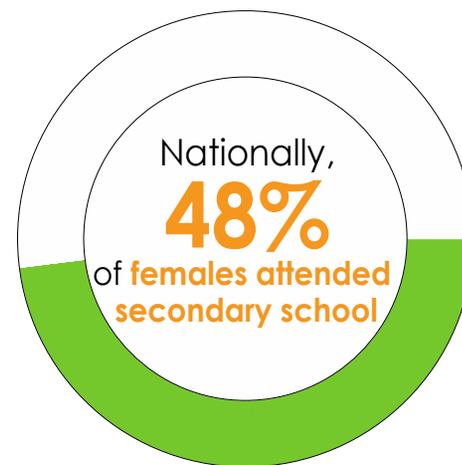
% of women (aged 15-49 years)
 who participated in
FOUR HOUSEHOLD DECISIONS¹
 in 2009-10



¹ DHS (2009-10)

RDTL/WB/DFAT (2015)

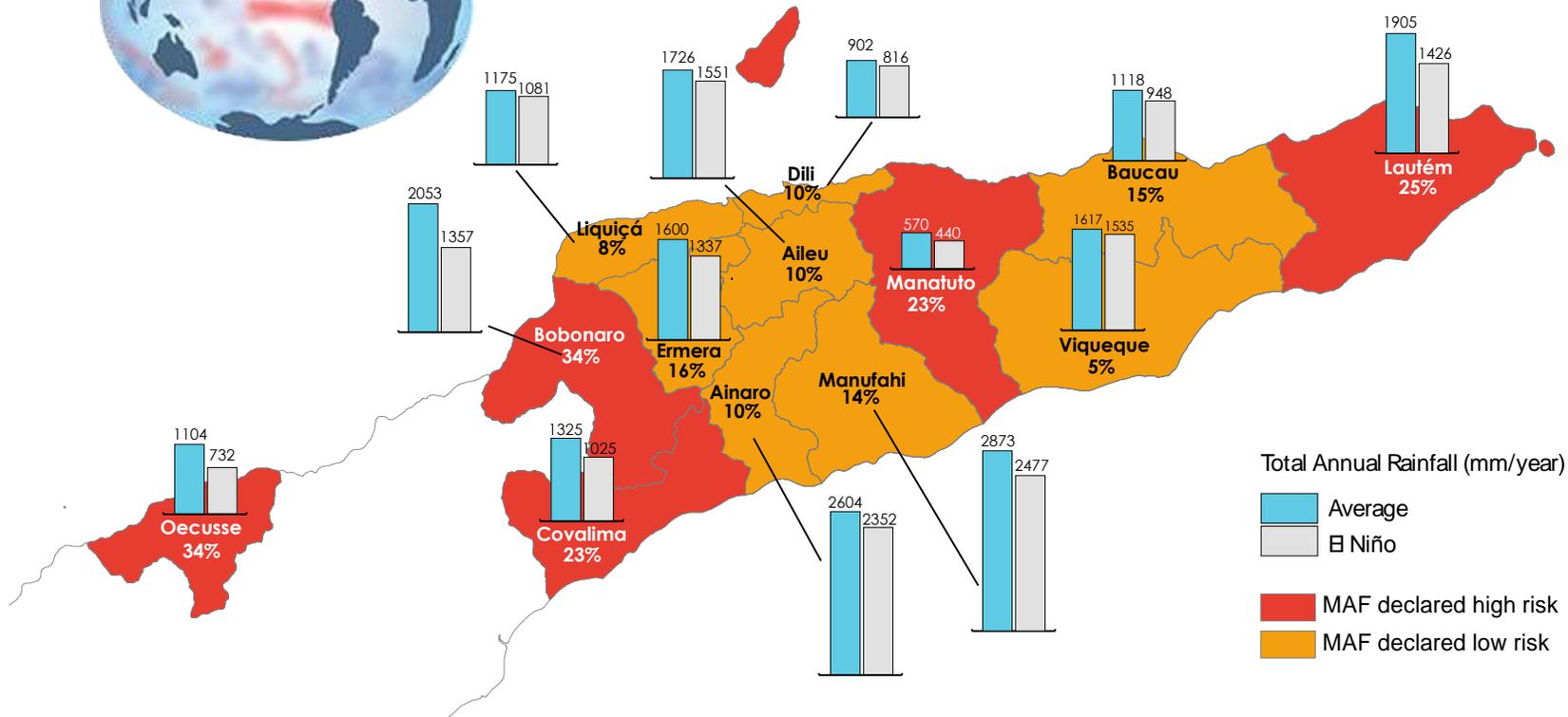
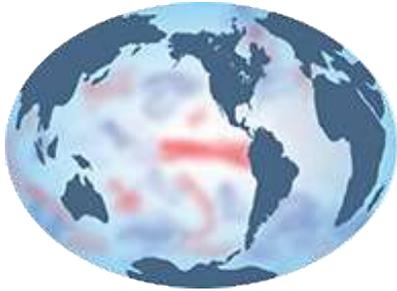
Net female secondary school ATTENDANCE RATIO¹ in 2009-10



¹ DHS (2009-10)

RDTL/WB/DFAT (2015)

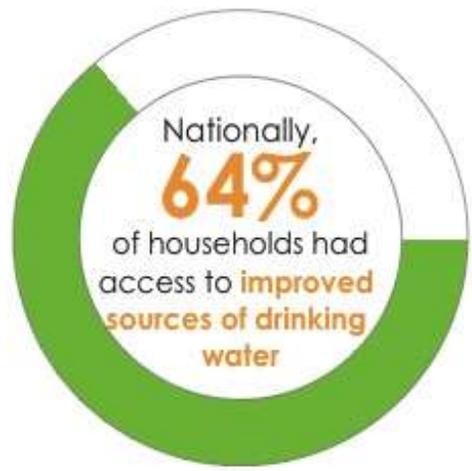
Predicted % decrease in annual rainfall (mm) as a result of EL NIÑO in 2015-16



Total Annual Rainfall (mm/year)

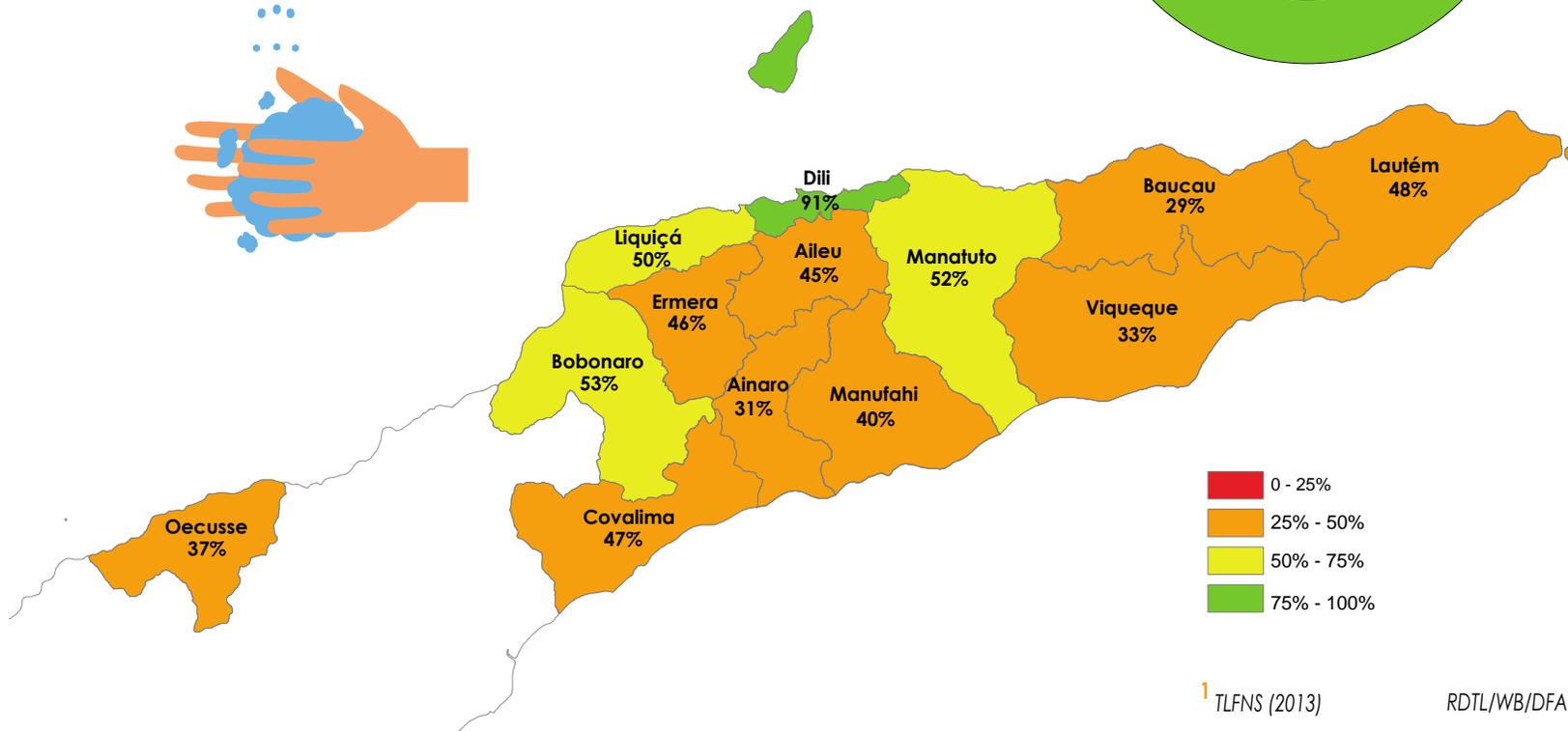
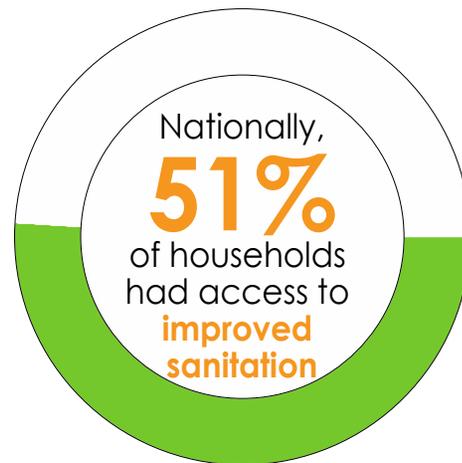
- Average
- El Niño
- MAF declared high risk
- MAF declared low risk

% of households with access to improved sources of **DRINKING WATER**¹ in 2013



¹ TLFNS (2013) RDTL/WB/DFAT (2015)

% of households with access to
IMPROVED SANITATION¹
 in 2013



¹ TLFNS (2013)

RDTL/WB/DFAT (2015)