



Oxfam Australia Timor-Leste Food Security Baseline Survey Report

CONTENTS

EXECUTIVE SUMMARY	3
Purpose.....	3
Methodology and sampling.....	3
Major findings	3
Underlying causes of household insecurity or vulnerability factors	5
1 INTRODUCTION	9
1.1 Background of the survey.....	9
1.2 Objectives of the baseline survey.....	9
1.3 Oxfam Australia programs in Timor-Leste	9
2 BACKGROUND INFORMATION	10
2.1 Food security and nutrition situation in Timor-Leste	10
2.1.1 Demography.....	10
2.1.2 Economy	11
2.1.3 Health and nutrition.....	11
2.1.4 Agriculture.....	12
2.2 Food security situation in 2007.....	13
METHODOLOGY AND SAMPLING	14
3.1 Sampling universe and sampling base.....	14
3.2 Sample size	15
3.3 Sampling technique	15
3.4 Data collection instruments.....	16
3.5 Training of enumerators	16
3.6 Field data collection, data entry and database management	17
3.7 Data analysis.....	17
3.8 Limitations of the study	17
4 ANALYTICAL FRAMEWORK	18
4.1 Analysis of household demographics, composition and, living conditions.....	18
4.2 Analysis of household ownership of productive assets	18
4.3 Analysis of household food security.....	18
4.4 Underlying causes of household food insecurity or vulnerability factors	19
5 RESULTS AND DISCUSSION OF THE SURVEY FINDINGS	19
5.1 Demographics	19
5.1.1 Head of household.....	19
5.1.2 Population composition	19
5.1.3 Education levels of household members	20
5.2 Household Assets and Capital.....	20
5.2.1 Building materials and house type.....	20
5.2.2 Drinking water and sanitation.....	21
5.2.3 Cooking fuel.....	21
5.2.4 Lighting.....	21
5.2.5 Non-productive and productive assets.....	21
5.3 Natural and Physical Assets.....	21
5.3.1 Agricultural land holdings	21
5.3.2 Tree crops	24
5.3.3 Livestock	24

5.4	Household Food Security	25
5.4.1	Food availability dimensions	25
5.4.2	Food access dimensions	27
5.4.3	Household diet diversity	30
5.4.4	Household coping strategies	31
6	UNDERLYING CAUSES OF HOUSEHOLD FOOD INSECURITY	33
6.1	Agriculture	33
6.1.1	Maize yields	33
6.1.2	Maize used as livestock feed	34
6.1.3	Rice yields	35
6.1.4	Area planted	36
6.1.5	Higher-yielding maize and rice varieties	37
6.1.6	Seed sources	37
6.1.7	Methods of land preparation and planting	38
6.1.8	Inter-cropping	38
6.1.9	Marketing tree crops	38
6.1.10	Irrigation	39
6.2	Non-agriculture related causes of household food insecurity	39
6.2.1	Lack of non-farm income earning opportunities	39
6.2.2	Sale of livestock assets	39
6.2.3	Low levels of remittance	39
6.2.4	Indebtedness	40
6.2.5	Female-headed households	40
	BIBLIOGRAPHY	42
Annex 1	Timor Leste Reference Map	44
Annex 2:	Oxfam Australia's EC Food Security Program Logical Framework	45
Annex 3:	Consultant's Terms Of Reference (TOR)	50
Annex 4:	Food security baseline survey	52
Annex 5:	Community Questionnaire	59
Annex 6:	Attachment to Household Questionnaire	63

TABLES

Table 1:	2007 crop harvest times	13
Table 2:	Estimates of 2007 food reserves	14
Table 3:	Education, % literate	20
Table 4:	Livestock ownership, % households	24
Table 5:	Uses of livestock, % households	28
Table 6:	Uses of tree crops, % households	28
Table 7:	Uses of staple crops, % households	29
Table 8:	Household diet diversity previous 30 days, % households	30
Table 9:	Household coping strategies, % households	32
Table 10:	Maize yields 2007, % surveyed households	33
Table 11:	2007 Maize yields by household food security status	34
Table 12:	Rice yields 2007, by surveyed household	35
Table 13:	2007 Rice yields by households food security status	35
Table 14:	Landholdings by household food security status	36

EXECUTIVE SUMMARY

Overview

In January 2007, Oxfam Australia undertook a food security baseline survey in Timor Leste in partnership with three NGOs; Christian Children's Fund, Concern Worldwide and CARE International. The survey was funded by the European Commission Food Security Program being implemented in Timor Leste, and was conducted in 7 districts; Manatuto, Liquica, Manufahi, Bobonaro, Oecusse, Covalima and Lautem.

The goal of the survey was to give EC food security program implementing partners a clear understanding of the food security/insecurity situation in the seven targeted districts in Timor Leste in order to implement an effective and targeted food security program. The survey covered quantitative and qualitative data on food access, availability and utilization.

The findings show that the food insecurity in Timor-Leste is a serious problem with 70% of households to be moderately to severely food insecure. The causes of this epidemic are multi-faceted, and while some causes are common to Timor Leste as a whole, many of the root causes vary by region.

Purpose

To establish baseline indicators and gather information for programming through a food security baseline survey implemented by Oxfam in August-September 2007, in Covalima and Oecusse districts, Timor-Leste. Funded by the European Commission (EC), the baseline survey data will allow measurement of the impact of project interventions on household food security.

Methodology and sampling

The sample universe for the baseline survey comprised beneficiaries of Oxfam's existing food security programs in Oecusse and Covalima in order to represent food security levels for Oxfam's target population. The survey used a 'systematic sampling technique' to identify sample households from current beneficiaries in the Oecusse and Covalima programs (385 and 612 respectively). Households were numbered, and sample households drawn using the sampling interval. 159 households were surveyed in Covalima and 150 in Oecusse.

Major findings

1. Food insecurity¹ is prevalent in Covalima and Oecusse Districts, with 80% of households surveyed in Covalima (N=128) and 70% (N=105) in Oecusse categorized as moderately or severely food insecure at the time of survey (based on FANTA Household Food Insecurity Access Scale Scores (HFIAS) and household estimation of maize and rice production). In a normal year², a period of food shortage also referred to as a hunger period is experienced at least 2-3 months before harvesting maize in February-March and rice in April. In 2007, late and insufficient rainfall and drought as well as locust damage to maize and rice crops in Covalima reduced maize and rice yields, extending the food shortage period to 5-6 months. The most severe food shortage was projected to occur between the months of October (2007) and February (2008).
2. Most farming households in Timor-Leste can be characterized as subsistence, and maize and rice are two important determinants of household food security. It was reported that in

1 The 1996 World Food Summit defined food security to exist 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."

2 A 'normal year' occurs when three out of the previous five years are similar in terms of livelihood, food and income acquisition strategies and household food security.

the previous season, 82% (N=123) in Oecusse and 63% in Covalima (N=100) planted maize as the principal crop, and 16% in Oecusse and 31% in Covalima planted rice as the principal crop. (Note that rice farmers may plant maize as a secondary crop but the figure above for maize growing does not include these farmers.)

3. Average maize yields in 2007 in Oecusse and Covalima were less than the national average of 1.1Mt per hectare projected for a 'normal year'. 20% (N=31) of households in Covalima and one household in Oecusse harvested 1.1 t/ha or more. In Covalima there was no clear relation between maize yield and food security status, with households categorized as severely food insecure yielding lowest (average 386kg/ha) but moderately food insecure households yielding highest – 870kg/ha. In Oecusse, maize yields were significantly lower overall and showed less variation with severely food insecure households yielding lowest (average 144kg/ha) and mildly food insecure households yielding highest (average 281kg/ha).
4. Average rice yields in 2007 in Covalima and Oecusse were less than the national average of 1.5Mt per hectare projected for a 'normal year'. 33% (N=23) of rice-growing households in Covalima and 7% (N=2) in Oecusse harvested 1.5 t/ha or more. In Covalima, 58% (N=40) yielded less than 1t/ha with 23 households yielding less than 500kg/ha. In Oecusse, 87% (N=26) of households yielded less than 500kg/ha. Severely food insecure households yielded lowest compared with all other categories. In Covalima, severely food insecure households yielded an average of 967 kg/ha, however moderately food insecure households yielded 2.3t/ha (food secure households yielded 3.3t/ha). Average rice yields in Oecusse were significantly lower than Covalima ranging from 190-240kg/ha with no clear relation between yield and food security status.
5. In terms of area and production, cassava is the third most important food crop next to maize and rice. Number of farmers in Oecusse and Covalima that cultivated cassava in the previous season. Cassava is drought-tolerant, and is cultivated for household consumption and as a livestock feed. It is stored in the ground and harvested on demand, but some varieties may be dried as a reserve food and re-hydrated for consumption.
6. 70% of households (N=111) have access to a wide range of perennial food crops such as orange, pawpaw, mango, jackfruit, banana and coconut. These food crops constitute an important source of household food security and diet diversity, but generate little income to households. 18 households (5%) had no tree crops at all, including 2 in Covalima and 16 in Oecusse.
7. Opportunity to earn non-farm income is minimal in Covalima and Oecusse. For most households, farming is the dominant source of food and cash. Despite reduced maize and rice yields in the previous season, and limited livestock ownership, in the month of survey, 63% of households (N=97) in Covalima and 42% in Oecusse (N=63) depended on the sale of crops and/or livestock as the main source of cash income. In Oecusse, 37% (N=58) of households practiced various strategies concurrently including cash for work, loans and credits, remittances and transfers, small business, in addition to sale of crops and/or livestock.
8. Remittance was not common among households surveyed, with 7% (N=21) reporting receiving remittances, mainly under USD50. Most households receiving remittance were severely food insecure (N=13).
9. Indebtedness was not common among households surveyed. Around 20% (N=59) of households surveyed (35 in Covalima and 24 in Oecusse) were indebted. However, food insecure households were more likely to be indebted than food secure households. Of

those indebted households around 69% (N=41) were severely food insecure. The debt burden for food secure households probably relates to purchase of non-food goods.

10. Livestock ownership was limited in Covalima and Oecusse. 93% of households (N=148) in Covalima and 70% in Oecusse (N=105) owned goats and pigs, with around 55% owning less than five head. In relation to cattle and buffalo, 36% of households (N=112) reported owning none, and around 22% (N=71) owned less than five head.
11. Sale of livestock to raise cash to purchase food was a common food security strategy among surveyed households (but may threaten food security when breeding stock is sold). Households in Oecusse were significantly more likely to sell livestock (goats, pigs, cattle, and buffalo) to raise cash to purchase food than Covalima. 74% of households in Oecusse compared with 24% in Covalima sold cattle to raise cash to purchase food, 61% of households in Oecusse compared with 40% in Covalima sold pigs in order to purchase food, and around 70% of households in Covalima and Oecusse raised chickens to for cash to purchase food.
12. Use of maize as livestock feed is a phenomenon that deserves further investigation. Despite reduced yields in 2007 in Covalima and Oecusse, 67% of households in Covalima (N=106) and 22% in Oecusse (N=34) reported feeding some maize to livestock. In Covalima, 79% of them used 25% or less of their maize harvest as livestock feed, and 19% used 26-50% of their maize harvest as livestock feed. In Oecusse, 74% used 25% or less of their harvest as livestock feed, and 20% used 26-50%.
13. Households deployed a range of coping strategies in response to food insecurity during the 30-day period prior to survey. Almost all surveyed households (99% N=81) in Covalima and 97% (N=57) in Oecusse reported eating cheaper or less preferred foods in the 30-day period prior to survey. Further, 98% (N=80) in Covalima and 80% (N=47) in Oecusse reduced meal size, and 84% (N=69) in Covalima and 76% (N=45) in Oecusse reduced the number of meals eaten.

Underlying causes of household insecurity or vulnerability factors

1. The productive capacity (yield per hectare) of farm land is affected by rainfall, soil fertility, weed burden, variety and slope. 98% of farm land in Oecussi and 93% in Covalima is reliant on rainfall. 70% of farm land in Oecusse and 35% in Covalima are located on moderate to steep slopes which may be vulnerable to erosion, surface run-off, and strong winds. The baseline data indicates that severely and moderately food insecure households were most likely to hold either rainfed flat land, or rainfed moderately sloping land, and least likely to hold irrigated land. Land under continuous farming often suffers from an increase in weed burden and a drop in soil fertility. Recent variety releases have shown that with no additional inputs, modern varieties can lift yields by 40%³.
2. Based on the calculation that an average Timorese household (six persons) requires about 0.8 hectare of agricultural land to produce sufficient maize for annual consumption,⁴ it can be projected that households with six or more persons farming less than one hectare may not yield sufficient food for annual consumption. The baseline report data indicates that most surveyed households in Oecusse do not farm sufficient land to provide for annual maize needs alone – 69% of households in Oecusse and 23% in Covalima farm less than half a hectare. Additionally, 30% of surveyed households in Covalima had

³ Personal communication with Rob Williams, Seeds of Life, MAF, 4 February 2008.

⁴ Average per capita daily requirement of maize is estimated at 600grams (UNTL/Oxfam, Maize production and storage in Timor-Leste, 2006, p.15) supplying the average minimum daily requirement of 2100 kilocalories (SPHERE, 2004, The Sphere Project: Humanitarian charter and minimum standards in disaster response, The Sphere Project: Geneva).

access to additional land (e.g., sharecropping) in the previous season compared with 9% in Oecusse.

3. There was low uptake of land reparation, soil fertilization, planting methods and, crop management by the households surveyed. Dibbling (planting without tilling) and intercropping accounted for 95% of planting methods, with no application of fertilizer or compost. Current practices of inter-cropping or mixed cropping systems without attention to crop mix (leguminous species to fix atmospheric nitrogen) or crop rotation techniques may result in soil depletion and productivity decline.
4. 82% (N=200) of surveyed households saved their own seed for planting the following season, and severely food insecure households were most likely to save their own seed for planting. There is limited distribution and access to higher-yielding cultivars. No households reported receiving seed material from the Ministry of Agriculture, and one household only reported receiving seed material from an NGO or other organization. 13% (N=33) of surveyed households purchased maize for planting from maize sellers in the local market, and of these, three-quarters were severely food insecure.
5. A large number of surveyed households in both districts consumed seed set aside for planting in the previous season, 44% (N=36) in Covalima, and 39% in Oecusse (N=23).
6. Subsistence households that report production of 'surplus' are restricted from participating in market-based activities due to lack of market, transportation and road infrastructure.
7. Female-headed households account for 18% of households surveyed in Covalima and 11% in Oecusse districts. Among households surveyed, female household heads had generally lower levels of schooling, and were significantly less likely to receive any remittances. The difference in food security, however, was not great enough to be able to draw strong conclusions without further study..
8. Natural disasters (late and short rains, strong winds, flood, land slides, soil erosion, bush fire) are common in Covalima and Oecusse, as is true for Timor-Leste generally. Natural disasters negatively impact on food security. Crop failure profoundly affects the household economy and food insecurity.

Recommendations

The following are Oxfam Australia's recommendations for improved food security based on the major findings:

Productive capacity of farmlands utilized to full potential to increase yields: Oxfam is working with farmers to better utilize their existing land. We have done this through the introduction/encouragement of terracing of slopes, introducing varieties of crops which are wind and/or drought resistant, showing the benefits of planting trees as wind breaks around cultivated areas and along terraces, introducing the practice of intercropping, teaching improved planting practices such as space between seeds and demonstrating techniques for soil improvement and weeding. In addition to more efficient utilization of land, the introduction of better producing varieties of crops, such as fast growing corn that can be harvested before the seasonal strong winds, helps farmers increase their crop yields. Oxfam is also supporting *taru banda*, a traditional practice which discourages commonly used farming practices such as slash and burn and supports re-vegetation and protection of water sources, which are necessary for productive crops.

Food and seed storage: Improved storage techniques need to be introduced and promoted in order for farmers to preserve food and seeds without damage. It was found that on average, 33% of seeds were destroyed due to improper storage. Oxfam believes that there would be a 40% increase in food production if farmers would grow improved varieties of crops; however, these varieties require storage in airtight containers which is currently not being practiced. It is important that communities learn the importance and necessity of storing food and seeds in airtight containers as well as having the means to obtain the containers. In addition, Oxfam recommends household storage instead of silo storage as farmers learn about storage techniques and become accustomed to storing their seeds and food in secure containers.

Disaster Risk Management: Natural disasters such as drought, locusts, flooding, landslides, soil erosion and strong winds are common occurrences in Timor-Leste and negatively impact food security. Yield and productivity per hectare for the staple crops of rice and maize were significantly lower than the national average (1.5 Mt/ha each) due in part to drought. To mitigate the effects of natural disasters, Oxfam incorporates community based disaster management interventions in our livelihood program such as terracing to prevent landslides and tree planting as windbreaks. In addition, we work closely with national and district government authorities and community members in conducting participatory disaster risk assessments. However, it is important to note that more needs to be done to prepare for the regular occurrences of natural disasters in Timor-Leste.

Increase non-farm income earning opportunities: For most households in Timor-Leste, farming is the prominent source of food and income. Because non-farm earning income opportunities are minimal, income generating activity options need to be explored to increase family earning potential. Small scale income generating activities such as weaving, basket making and food preservation would bring additional income to families, and in some cases, such as food preservation, bring added value to farmers. In order to promote sustainable income generating activities, basic business training, and in some cases, skills training, would be required. In addition, farmers who want to sell their harvests at the market could benefit from basic business training.

Market access: Limited markets, poor road access, lack of public transport and the high cost of transport all negatively impact the potential for farmers to bring their products to market resulting in a loss of potential income from cash crops. It is critical that when cash crops are introduced or supported by partners, that market driven production options are introduced and that market research studies are conducted to identify potential markets, prices and transportation options. Oxfam undertook a market research study in Oecusse in March 2008 to explore the access to markets for farmers.

Improved water irrigation and conservation practices: Rain fed agriculture is the primary livelihood for the majority of households (85%) in Timor-Leste, yet there are limited water conservation practices being utilized. An integrated water and sanitation program is needed to implement techniques such as water source and waste run-off irrigation and water storage techniques. Currently in Oecusse, Oxfam has introduced collection ponds to collect water run-off from rain and community water sources. As Oxfam builds our water and sanitation program, we will integrate more practices such as maximizing the use of water to better irrigate rain fed crops and introduce water storage practices for times of droughts.

In summary, Oxfam is committed to the above recommendations with the goal of empowering communities with the skills and knowledge to move from a food insecure to a food secure environment. When implementing our projects, Oxfam takes a step by step approach and introduces the activities slowly. We educate communities on the practices we introduce via starting with pilot activities and replicating successful projects. Utilizing participatory

approaches gives the communities ownership of the practices being introduced leading to long term sustainability, and building on traditional and current practices when possible minimize the degree of change a participant has to cope with in community uptake.

1 INTRODUCTION

1.1 Background of the survey

Oxfam is one of five⁵ international NGOs funded by the European Commission (EC) to implement a four-year food security project in Timor-Leste, which commenced in January 2007. The project's overall objective is to contribute to the achievement of poverty reduction targets set by the government of Timor-Leste. Specifically, for Oxfam's project it aims to assist 3,000 vulnerable households in Oecusse and Covalima Districts (annex 1 map) to achieve measurable and sustainable improvements in their food security (annex 2 Project Log-frame).

Expected results of the four-year food security project are:

1. Community groups and volunteers' capacity is increased enabling them to access training, inputs and services and implement effective activities aimed at delivering food security and nutritional improvements.
2. Community based groups activities are delivering lasting and environmentally sustainable increases in agricultural productivity, food security and income diversity at the household level.
3. Improved food use and nutrition are achieved for target groups, in particular for children under 5 years.
4. NGOs, National and District government demonstrate increasing levels of partnership and collaboration contributing to an enabling environment for improved food security at the community level.

Four⁶ of the five NGO partners assist a total of 12,000 vulnerable households in seven districts⁷ across Timor-Leste. These agencies jointly carried out a food security baseline survey in August-September 2007. The survey establishes baseline indicators allowing measurement of the impact of interventions on household food security over the four-year period of this project.

1.2 Objectives of the baseline survey

- ♦ To provide baseline information on project indicators for measuring project effectiveness and final project impact
- ♦ To generate information for use in designing project activities and implementation plans
- ♦ To establish indicators to target food insecure/vulnerable households to receive support and,
- ♦ To provide data that is comparable across districts, assist the government of Timor-Leste in policy and strategy planning, and assist the five international NGO partners in their capacity building work with the government.

1.3 Oxfam Australia programs in Timor-Leste

Oxfam⁸ has supported long-term development work in Timor-Leste since 1975. The agency currently works in partnership with 26 local organizations, government, and community groups

⁵ CARE International, CONCERN Worldwide, Christian Children's Fund and World Neighbours.

⁶ CARE International, CONCERN Worldwide, Christian Children's Fund and Oxfam

⁷ The other five districts are Liquica, Bobonaro, Manatuto, Manufahi and Lautem. World Neighbours undertook a separate baseline study.

⁸ Oxfam Australia, Oxfam Hong Kong and Oxfam New Zealand work in partnership in Timor-Leste with a joint strategic plan. The EC

in Covalima and Oecusse districts. Programs aim to improve people's access to basic services, ensure marginalized groups have the opportunity to take part in decisions that affect their lives, and address the root causes of conflict to build lasting peace.

- ♦ In the livelihoods sector, Oxfam supports communities and households to: (1) terrace land for sustainable use, and protect land from further erosion, (2) plant kitchen and market gardens that provide a diversity of food for household consumption and local trade, (3) use natural fertilizer and pesticide to enhance production while not degrading the land, (4) learn and experience alternative agricultural techniques including higher yielding seed varieties to improve production, (5) develop seed banks, (6) improve access to markets, and (7) improve food preservation techniques.
- ♦ In the basic services sector (health, nutrition, water and sanitation), Oxfam assists government and NGO partners with: (1) health promotion, with a focus on nutrition, environmental health and reproductive health, (2) mobile health clinics to extend health services to remote rural communities, and capacity building support to train volunteer health workers, (3) improved information on nutrition, seed for vegetable and fruit gardens and a supplementary feeding program for malnourished children in Oecusse, (4) construction and ongoing maintenance of household latrines and community water supply systems in rural communities, and, (5) with MOH the establishment of nutrition posts in isolated communities.
- ♦ In the humanitarian sector, (1) Oxfam supports internally displaced persons (IDPs) living in camps in Dili town with water and sanitation services, and supports the Department of Water and Sanitation in its emergency response role, and, (2) supports the National Disaster Management Directorate in disaster preparedness, response and community based disaster management, (3) supports key groups in mitigating violent conflict and supporting local peace-building initiatives.
- ♦ To empower women and increase their integration in the development process, Oxfam works with women and men to: (1) increase women's participation and create an environment where women can participate in decision-making processes and be politically active and (2) eliminate domestic violence and advocate for a strong legal and judicial framework that supports victims of violence.
- ♦ To improve community participation in development, Oxfam supports a number of initiatives with civil society organizations including the monitoring of budget and petroleum revenues, development of policies aimed at reducing poverty, and monitoring of key areas of legislation. Oxfam also mediates positive partnerships between government and civil society which aim to reduce poverty in Timor-Leste.

2 BACKGROUND INFORMATION

2.1 Food security and nutrition situation in Timor-Leste

2.1.1 Demography

Following the referendum on self-determination in 1999 which resulted in a majority vote for independence from Indonesia, civil unrest caused displacement of more than three quarters of the population, and destruction or damage to almost 90% of the country's infrastructure.⁹ In 2006, and February-March 2007, political crises resulting in civil unrest caused further displacement and damage to development infrastructure. Some 150,000 Dili residents fled their homes with 80,000 returning to districts outside the capital.¹⁰ In October 2007, about

Funded Food Security Program is being implemented by Oxfam Australia.

⁹ Asian Development Bank, Gender and Nation Building in Timor-Leste: Country Gender Assessment, Aug 2004 – Jan 2005, p.12

¹⁰ Ricardo Neupert and Silvino Lopes, The demographic component of the crisis in Timor-Leste, paper presented at the conference Political Demography: Ethnic, National and Religious Dimensions, September 29-30, 2006, Association for the Study of Ethnicity and Nationalism, London School of Economics

34,000 people remained in IDP camps and transitional shelter sites in Dili.¹¹ Prior to massive urban to rural displacement in 2006, around 19% of the population lived in the Dili district, with the remainder living in 12 districts outside the capital.¹² In mid-2007, the total population of Timor-Leste was estimated to be 998,907¹³ with a growth rate of around 3.2%, and a total fertility rate of about 6.7 in 2006 (7.8 in 2005).¹⁴

Covalima District lies in the western region and covers 1,226 square kilometers. It comprises seven sub-districts with a total population of 55,941 or 10,546 households. At the time of the 2004 Census, population had increased by around 13% since the previous Census (Suco Survey) in 2001.¹⁵ In mid-2007, the population of Covalima including the IDP influx was estimated to be 60,017.¹⁶ Oecusse District is an enclave of 815 square kilometers within the Indonesian territory of west Timor. It comprises four sub-districts with a total population of 58,521 or 13,016 households.¹⁷ In 2004, significant population increase of around 29% had occurred since the prior 2001 Census. In mid-2007, the population of Oecusse including the IDP influx was estimated to be 64,736.¹⁸ Among households surveyed, six households (2%) were hosting members categorized as IDPs at the time of survey, and four of those households were categorized as severely food insecure.¹⁹

2.1.2 Economy

Timor-Leste is ranked as one of the poorest nations in the world and the poorest in South-East Asia, of 140 among 177 countries considered in the 2005 UNDP Human Development Report.²⁰ The country's non-oil economy (Gross Domestic Product–GDP) is comprised of agriculture (32%), industries (15%) and services (53%)²¹. Additionally, the World Bank estimates that petroleum earnings of USD300 million are 'sustainably available' for the national Budget annually.²² Around 38% of the population live on less than 55 cents per capita per day (considered to be below the poverty line)²³ and over 350,000 could be considered chronically food insecure (obtaining regularly less than 2,100Kcal per capita per day).²⁴ Large disparities in living standards are recorded between urban and rural areas, for example, 44% of people living in rural areas have been assessed as living below the poverty line compared to 25% in urban areas.²⁵ Rural areas can be further categorized into a number of agro-ecological zones²⁶ based on rainfall and distribution which affect livelihood activity and agricultural productivity in the different zones.

2.1.3 Health and nutrition

The average life expectancy at birth is 59.5 years (both sexes) with females living longer than male (60.5 compared to 58.6 years). Maternal mortality remains high (estimated to be 660 per 100,000 live births) with infant mortality rates (78-150 per 1,000 live births) and mortality rates

11 OCHA, Timor-Leste, October 2007

12 Government of Timor-Leste Population Census, 2004

13 FAO/WFP, Crop and Food Supply Assessment, 2007, p.8

14 Government of Timor-Leste, National Health System Profile, 2006

15 Census 2004

16 FAO/WFP, 2007, p.8

17 Census 2004

18 FAO/WFP, 2007, p.8

19 One of four food in/security categories established through the Food and Nutrition Technical Assistance (FANTA) framework detailed in Section 5.

20 UNDP (United Nations Development Programme). 2005. Human Development Report – 2005, United Nations Development Programme, New York, USA

21 http://devdata.worldbank.org/AAG/tmp_aag.pdf

22 The World Bank/ Asian Development Bank, Economic and Social Development Brief, August 2007, p.1

23 WFP, Timor-Leste – Comprehensive Food Security and Vulnerability Analysis, 2007, p.15

24 WFP, Food Insecurity and Vulnerability Analysis Timor-Leste, April 2005

25 2002 Timorese Living Standards Survey

26 ARPAPET, 1996, Agro-climatic Zones of East Timor, Indonesia-Australia Development Cooperation, Agricultural and Regional Planning Assistance Program East Timor, Kantor Wilayah Departmen Pertanian Propinsi Timor Timur.

for children under five years (125 per 1,000 live births) among the highest in the world.²⁷ The 2003 Demographic and Health Survey (DHS) offers data on national averages for the nutrition status of children under five years. Against these national averages, this report presents data for Covalima and Oecusse drawn from regional studies made by CARE and Oxfam.²⁸ The nutrition status of children under five measured in terms of underweight (weight for age), stunting (height for age) and wasting (weight for height) reveal significantly higher rates for children surveyed in Covalima and Oecusse compared with the national average. On average, 46% of children under five were underweight compared with 60% in Covalima and 65% in Oecusse. 49% were stunted compared with 55% in Covalima and 58% in Oecusse, and 12% were wasted compared with 16% in Covalima and 18% in Oecusse.²⁹ Additionally, 2004 DHS data on the nutrition status of women using body mass index (cut-off value BMI <18.5 kg/m² = malnourished) found that 38% women had a low Body Mass Index of <18.50 due to chronic energy deficiencies.³⁰

Infant health and morbidity is influenced by short duration of exclusive breastfeeding, low consumption of vitamin A-rich foods, and high levels of anaemia in mothers.³¹ While it is recommended that infants be exclusively breastfed for the first six months of life, overall the mean duration for exclusive breastfeeding in Timor-Leste is 1.4 months, and only 18% of infants are exclusively breastfed (without complementary food) for the first six months. In Oecusse, 90% of infants are exclusively breast-fed in the first month, declining to 24% in the second month.³² Vitamin A deficiency leads to increased risk of morbidity and mortality. The 2003 DHS found that 62% of children aged 6-59 months had consumed Vitamin A-rich foods in the week prior to the survey, and 34% had received Vitamin A supplements. Severe anaemia in pregnancy increases the risk of maternal mortality and increases the risk of pre-term and low birth-weight babies as well as the subsequent risk of anaemia in the infants. The DHS found that around one-third of children had anaemia (Haemoglobin level < 110 g/L), with highest rates occurred in children whose mothers had low BMI. 30% of women and 37% of pregnant women had anaemia (Hb < 120 g/L).

In terms of access to safe water and sanitation, 76% of DHS-surveyed urban households in 2004 obtained their drinking water from a protected source compared to 22-61% for rural areas depending on the location (rural east lowest at 22%). A public tap was the main source of piped water for 38% of households. In terms of sanitation facilities, 51% used open areas and 19% used pit toilets.³³

2.1.4 Agriculture

Studies conducted in 2001 and 2003 show that farming was the sole source of income for up to 85% of rural households. Of an estimated 139,000 rural households, some 54,000 (39%) were engaged in subsistence farming, producing little if any surplus for sale, and not generating non-farm income.³⁴ About 41% of the total land area (14,500km²), is suitable for crop and livestock production.

In terms of ownership of agricultural land it should be noted that in Timor-Leste, 'ownership' is likely to be inferred from customary claims to rights of use i.e., usufruct. Further, standard units of measurement for area (e.g., hectares) or yield (e.g., kilograms) are not used by Timorese farmers. Various estimates have been made about average land holdings. A 2004

27 Ministry of Health., Draft health promotion strategy 2004-2010, Timor-Leste, 2004

28 CARE Timor-Leste Nutrition Survey 2006 in Bobonaro, Liquica and Covalima; Oxfam Australia's 2004 nutrition survey

29 Timor-Leste 2003 Demographic and Health Survey: Key Findings, p.16

30 Timor-Leste 2003 Demographic and Health Survey: Key Findings, p.15

31 Timor-Leste 2003 Demographic and Health Survey: Key Findings, p.14

32 Oxfam, Baseline Nutrition Survey, 2004

33 Timor-Leste 2003 Demographic and Health Survey: Key Findings, p.3

34 WFP/FAO, Crop and Food Supply Assessment Mission to Timor-Leste, 2003; UNDP, Poverty Assessment Report: Survey of Sucos in Timor-Leste, 2001, [Jointly with World Bank, ADB, ETTA]

Agricultural Rehabilitation Survey (ARP) found that the majority of farmer households reported land ownership of less than 1 hectare,³⁵ and a joint Asian Development Bank/UNICEF report claimed that on average 24% of households own less than 0.5 hectare of agricultural land and 60% own between 0.5 and 2 hectares.³⁶ A per capita estimate of 0.4 hectares per person has been suggested by the government of Timor-Leste.³⁷

Rainfall and its distribution are the main determinants of agriculture production. The island is divided by a mountain range lying east-west which creates a drier northern coast and hinterland. The northern side of the island is generally hot and dry for much of the year with a wet season lasting 4-6 months. There are extensive areas of savanna and Eucalyptus woodlands on the northern side. The southern half is characterized by a longer wet season (7-9 months) with two rainfall peaks due to the influence of the southeast monsoon. Over generations, farmers have adapted to local conditions, selecting crop varieties best suited for inter-cropping under existing conditions, and for their storage qualities rather than yield.

Maize, rice, cassava, and sweet potato are the main staple foods cultivated. Other significant crops include taro, bananas, beans, pumpkin, and arrowroot. These crops may act as alternative staple crops in years when maize and rice yields are very low. A wide range of other cultivars are planted in house gardens (Tetum: *kintal*) and dryland food gardens (Tetum: *to'os*). Additionally, non-cultivated seasonal foods often referred to as wild foods such as wild beans, sago, and tubers (kumbile [*Dioscorea esculenta*] and maek [*Amorphophallus paeoniifolius*]) provide a constant contribution to the diet of subsistence farmer households in some regions.³⁸

The agricultural cycle begins with the arrival of the northeast monsoon October-December, which signals the planting of maize and other garden crops. Rice is planted in lowland areas in December-January in the northern parts and, a month or two later on the south coast. During the second rain peak in the south (May-June), farmers plant a second crop of maize and irrigated rice. In Covalima and Oecusse districts in 2007, maize was harvested between March and June, with most harvesting done in April. Rice was harvested mainly in April, cassava was harvested between August and October, and beans harvested mainly in May and June (table 1).

Table 1: 2007 crop harvest times, surveyed households in Oecusse and Covalima (N=309)

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	n
1 Rice		1	7	123	49	8	5	4	6	2	1	1	190
2 Maize		1	44	98	65	74	15	12	5				292
3 Cassava	1	7	14	3	3	17	7	41	47	24	4	4	164
4 Beans		8	20	15	43	53	13	4	15	11	1		166

Covalima district produces a significant second crop of maize. Rice is cultivated in the lowlands under irrigation, and soybean, mung beans and groundnuts are also widely grown. In Oecusse a combination of crops and livestock (cattle, buffalo, goats) are the main sources of income for farmers and most areas have only one crop season per year. The district also produces groundnuts and sweet potatoes.

2.2 Food security situation in 2007

35 MAFF, ARP II and ARP III Baseline, 2004

36 Asian Development Bank/UNICEF, Country Gender Assessment, 2005, p. 1

37 Government of Timor-Leste, Timor-Leste Poverty Assessment: a new nation emerging from deprivation, 2003

38 MAFF/Seeds of Life, Stocks and flows of household food supplies during the wet and dry seasons and food shortage period: a longitudinal case study among subsistence farmers in Aileu, Baucau, Liquisa and Manufahi districts, Timor-Leste, 2006-07

Oxfam research conducted in 2004 found that in a normal agricultural year, up to 90% of Timorese experience an annual period of food shortage lasting for at least one month.³⁹ Depending on the region, the duration of this food shortage may be as long as three to five months, between November and March.

A food supply assessment undertaken by FAO and WFP⁴⁰ concluded that overall yields of maize, rice, cassava, and other tubers in 2007 had declined by 25-30% due to locust damage in the west, delayed and insufficient rainfall, and reduction in area planted to main crops due to shortage of planting material as farmers sowed maize two or more times. Maize yields were estimated to have declined by 30% and could not be offset by increases in rice production as rice yields had also declined (by 20%).

In February and March 2007, shortage of rice available for purchase resulted in a severe food crisis and inflated prices occurred throughout Timor-Leste. According to FAO/WFP, the crisis was due to an unfavorable regional food supply/demand situation, and poor coordination and management of determinants of food security.⁴¹ Oxfam monitored prices and availability and found that while the rice shortage had affected urban areas with cash economies, the availability of alternative food sources in rural areas reduced the impact.⁴² Additionally in 2007, IDP movement resulted in more rapid depletion of food stocks at the household level in the districts which lengthened the period of food shortage for many households, beginning as early as August.⁴³

The FAO/WFP assessment projected an estimated 210,000-220,000 people in rural areas would require emergency food assistance during the six-month period October 2007 to March 2008.

In Covalima, maize production was affected by delayed and below normal rainfall. In Oecusse, insufficient rainfall resulted in severe reduction in maize yields, particularly in the more densely populated coastal areas facing food shortage for the second consecutive year (in February 2006, maize and rice production, and livestock in Oecusse suffered major damage from heavy rains resulting in floods).

In this current survey, households were asked to estimate the month when reserves of rice, maize, cassava and beans would become exhausted in 2007. For the period after the survey (August-December), respondents were asked to project their estimation of reserves. Households projected clear declines in household food reserves beginning in August for rice, cassava and beans, and in September for maize (table 2).

Table 2: Estimates of 2007 food reserves, surveyed households in Oecusse and Covalima (N=309)

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	n
1 Rice	7	35	4	39	29	28	24	8	7	3	2	2	188
2 Corn	12	51	6	23	37	44	53	28	15	13	4	4	290
3 Cassava	8	38	30	32	16	10	10	3			2	3	152
4 Beans	2	39	40	43	11	17	4	3	3	3		1	166

3 METHODOLOGY AND SAMPLING

3.1 Sampling universe and sampling base

39 Oxfam, Baseline Nutrition Assessment Oecusse, 2004, p. 11

40 FAO/WFP, 2007, p. 4

41 FAO/WFP, 2007, p.4

42 Oxfam, Situational Analysis of Food Security (Briefing Note), 29th March 2007

43 FAO/WFP, 2007, p. 19

Given the environmental and economic differences between Covalima and Oecusse districts, separate baseline surveys were conducted in each district to allow for disaggregation of the data. The indicators for Oxfam's food security program are collective for both districts; therefore this report will provide both disaggregated and aggregated data analysis.

Oxfam has pre-existing food security programs in both Oecusse and Covalima, consequently, the sample universe for the baseline survey consisted of current beneficiaries only in order to ensure that the data collected represented the current food security level of Oxfam's target population. The sampling universe however did not take into account the planned expansion in the number of people to be reached by the program. As a result, Oxfam will seek to maintain baseline information on new participants in the program over the next four years to be able to better assess the impact of the program on the target communities.

3.2 Sample size

The FANTA Sampling Guide 1997⁴⁴ prescribes the following equation to determine sample size for both baseline and end-line surveys and this survey used the same equation to determine its sample size requirement:

$$N = (Z_{\alpha} + Z_{\beta})^2 * (P_1 (1 - P_1) + P_2 (1 - P_2)) / (P_2 - P_1)^2$$

Where:

N: required minimum sample size per survey round or comparison group

P₁: estimated 'prevalence' as observed from previous surveys/assessments

P₂: desired prevalence (P₂-P₁) i.e., the magnitude of change desired at the end of an intervention

Z_α: statistical significance (level of significance)

Z_β: statistical power

For lack of reliable secondary information on some of the key food security indicators (existing prevalence), P₁ and Q₁ were assumed to be 50% and P₂ was set at a 15 percentage point reduction over the existing prevalence at the end of first year of project interventions (35%). The study assumed standard parameters of 90% level of significance and 80% statistical power for double-sided indicators. Using the equation and the statistical parameters, a sample size of n = 132 was calculated. As per FANTA guidelines, the calculated sample size was increased by 10% as an insurance against non-response and rounded off. A total of 150 households were surveyed in each of Oxfam's program districts.

$$n = (Z_{\alpha} + Z_{\beta})^2 * (P_1 Q_1 + P_2 Q_2) / (P_2 - P_1)^2$$

$$n = (1.645 + 0.840)^2 * (0.50) (0.50) + (0.65) (0.35) / (0.15)^2$$

$$n = (2.485)^2 * (0.25 + 0.2275) / (0.0225)$$

$$n = 6.175 * 0.4775 / 0.0225$$

$$n = 132$$

$$n = 132 + 13.2 = 145$$

$$n = 150$$

3.3 Sampling technique

As Oxfam's sampling universe consisted of all known current beneficiaries, the survey used a systematic sampling technique to identify households to be sampled in each district. Separate lists of current beneficiaries were prepared for the Oecusse and Covalima programs, 385 and 612 respectively, and each household was numbered. For each sample, the sampling interval was determined "by dividing the number of households in the sample area by the number of households required to meet the sample size" and the households to be sampled were determined by "selecting the first household using a random number

⁴⁴ Robert Magnani, 1997, FANTA Sampling Guide, FANTA = Food and Nutrition Technical Assistance of Academy for Educational Development, Washington, USA

between one and the sampling interval and then systematically sample every Nth house (N is the sampling interval)".⁴⁵

Oecusse

Sample size	= 150
Sample universe	= 385
Sampling interval (n)	= 385 / 150
	= 2.567
Random number	= .686
First household	= .686 / 385
	= 264.11

Covalima

Sample size	= 150
Sample universe	= 612
Sampling interval (n)	= 612 / 150
	= 4.08
Random number	= .382
First household	= .382 / 612
	= 234.548

3.4 Data collection instruments

The survey used two instruments: a quantitative household questionnaire, and a set of qualitative interview questions for focus group discussion to capture community specific information. The questionnaires and focus group interview questions were translated into Tetum in order to avoid field translations.

The household questionnaire (Annex 4) included sections on demographics, literacy, displacement, housing and living conditions, access to basic services, asset ownership (productive and non-productive), agricultural land holding and land tenure system, major staples and cash crops, staple food production details, cultivation practices, diet diversity, FANTA 9-question food insecurity scale, coping strategies, and livestock and income sources.

Community focus group discussions (Annex 5) were carried out with men's and women's groups separately in three aldeias,⁴⁶ two in Oecusse and one in Covalima, and with mixed groups of men and women in two aldeias in Covalima. The community survey teams mobilized 8-12 men and women representatives from Oxfam's community groups. The survey captured details on population, in and out-migration, education facilities, road networks, markets, assistance from other agencies (government, UN, INGOs), active community-based groups, local decision-making systems and, major livelihood strategies and constraints. The surveys were facilitated by teams of two enumerators. One facilitated the discussion with the group while the other documented their responses.

3.5 Training of enumerators

Enumerators were trained for four days. The first two days focused on survey objectives and methodology, sample size, techniques for selecting sample households, ways of administering questionnaires with households and communities, role of enumerators and inter-agency co-ordination, as well as a food security framework applicable to the context of Timor-Leste. A number of simulation sessions were done to familiarize enumerators with questions in both the household questionnaire and community survey.

⁴⁵ Tony Stewart, 2006, Sample Size Calculation for Cross-Sectional Surveys, Field Methods for International Health Planning and Evaluation: Electronic Readings CD, Burnet Institute, Melbourne, Australia.

⁴⁶ Tetum term for administrative unit known as 'hamlet'. There are 62 aldeia in Oecusse and 147 in Covalima.

The third day was spent pre-testing questionnaires and guidelines in four aldeias in Liquica district. Each enumerator was required to complete three household questionnaires, and based on their experiences, a feedback session on technique and methods was facilitated the following day. The questionnaires and guidelines were subsequently modified based on enumerators' feedback.

Initial training for enumerators focused on a cluster sampling methodology, rather than the systematic sampling technique that was used to carry out the baseline survey by Oxfam. As a result there was some confusion among enumerators during the data collection phase which was dealt with through ongoing discussion before and during the data collection phase.

3.6 Field data collection, data entry and database management

Primary data collection was carried out during September 2007. In Covalima, a team of 10 enumerators carried out 159 household surveys and 4 community surveys in 3 aldeias. In Oecusse, a team of 7 enumerators carried out 150 household surveys and 4 community surveys in 2 aldeias. Oxfam was responsible for quality control of the primary data. The enumerators sat with the field supervisor every evening to check each household questionnaire for inconsistencies and errors. Data was corrected where required, and sent to Dili for entering into the EPI-Info database.

Data entry work was centralized in the Dili-based office of Oxfam, with each partner INGO providing a computer and operator to input data into the Epi-Info version 6.04d database. The consultant trained the operators over two days, and coordinated data entry and quality control on a daily basis.

3.7 Data analysis

The quantitative data from household surveys was analyzed using Epi-Info version 6.04d of Center for Disease Control (CDC), and ACCESS database. The draft report was circulated several times to seek technical input from the four agencies into the analysis, and improve data analysis to meet their information needs. The qualitative data was analyzed manually to supplement the quantitative analysis based on the household survey data.

3.8 Limitations of the study

Several limitations encountered in the field were not anticipated prior to data collection. They are listed below in order to guide future surveys or assessments:

- ♦ Household questionnaires were amended to incorporate FANTA-HFIAS questions so that the food security status of each household could be determined based on the FANTA methodology's nine questions. These amendments were made after survey implementation had commenced, resulting in incomplete HFIAS data for 64 households (63 in Covalima and 1 in Oecusse). As a result, where percentage calculations in the text correlate food security status (i.e., HFIAS) with any other field, these percentages are based on a total number of 245 households, whereas non-HFIAS calculations are based on a maximum total number of 309 households.
- ♦ A number of systematically selected households were not administered household surveys as they were unavailable on the day of surveying, or because more than one member of the household was randomly selected due to the sampling universe being a list of individuals rather than households. To some extent this was addressed by enumerators visiting each aldeia the night prior to survey to notify households listed for interview. Where respondents to be interviewed were absent, an alternate household was selected using a secondary systematic sample. This second list was also used where more than one member of a household was selected.

- ♦ The baseline survey was administered in Tetum (known as Tetum Dili or Tetum Prasa). However, Tetum Dili differs from Tetum Terik which is spoken in Covalima, resulting in some field translation being carried out. In Oecusse, Tetum is not widely spoken and enumerators were required to undertake field translation of the survey from Tetum into Baikeno (spoken in Oecusse), increasing the likelihood of enumerator bias, and misinterpretation of questions and responses. Additionally, Baikeno has not been fully transliterated.
- ♦ Standard units of measurement for area (e.g., hectares) or yield (e.g., kilograms) are not used by East Timorese farmers. Therefore, data on area and yield presented in this report are based on estimates made by farmer respondents sometimes with the assistance of an enumerator who made a visual estimate.

4 ANALYTICAL FRAMEWORK

Listed below are several analytical tools that were applied to the data to better understand food insecurity and vulnerability of the population. Triangulation of the results of these analyses and with available secondary information resulted in a sound categorization of households in the two districts by their vulnerability to food insecurity.

4.1 Analysis of household demographics, composition and, living conditions

The information collected on these indicators from household surveys has been analyzed and presented in percentage terms.

- ♦ Extent of male-and-female headed households
- ♦ Education levels of household heads and members
- ♦ Population displacement and households hosting IDPs
- ♦ Housing and housing conditions
- ♦ Households' access to drinking water, sanitation facilities and other basic facilities
- ♦ Ownership of non-productive assets

4.2 Analysis of household ownership of productive assets

Household surveys captured information on the size and type of agricultural land holding, status of land ownership, cropping times, and production of tree crops, cash crops, livestock and vegetable gardens. The results of the analysis are provided under the following heads in terms of percentages, disaggregated by the two districts.

- ♦ Agricultural land-holding details and crop diversity of annual staples
- ♦ Household production of food tree, cash crops, livestock and vegetable gardens

4.3 Analysis of household food security

The concept of household food security is multi-dimensional, has complex interactions with various indicators, and is therefore difficult to capture using any single/specific indicators. The dynamic interactions between different components of food security at the household level, and the ways in which people of Timor-Leste gain access to food and income was investigated and analyzed using the following different perspectives:

- ♦ Household food in/security as reported by households themselves
- ♦ Household food in/security as analyzed from households' own production – maize + rice
- ♦ Household food in/security according to household food insecurity access scale (HFIAS scores)
- ♦ Households' income diversity - access to different sources of income
- ♦ Household food utilization – access to safe drinking water and sanitation facilities; vital statistics on key health and nutrition indicators and their incidence levels; and household diet diversity
- ♦ Household coping mechanisms – type and frequency of different copings mechanisms deployed

4.4 Underlying causes of household food insecurity or vulnerability factors

The information generated through household surveys on the various underlying causes of households food insecurity and vulnerability at the household and community level has been analyzed in terms of agriculture and non-agriculture:

- ♦ Agriculture and food in/security related household/community level causes – maize and rice yields, area planted, higher-yielding varieties, seed sources, method of land preparation and planting, intercropping, marketing tree crops, irrigation, and transport and marketing
- ♦ Non-agriculture related household/community level causes – income-earning opportunity, sale of livestock assets, remittance, indebtedness, and female-headed households

5 RESULTS AND DISCUSSION OF THE SURVEY FINDINGS

5.1 Demographics

5.1.1 Head of household

Overall, female-headed households totaled 45 and male-headed households totaled 264. 82% (N=130) of surveyed households in Covalima and 89% (N=134) in Oecusse were male-headed. 18% (N=29) of households in Covalima were female-headed, and 11% (N=16) in Oecusse.

56% of female-headed households in Oecusse compared to 10% in Covalima reported losing their husbands due to illness. Around 7% of women household heads across both districts were divorced.

88% of heads of household in Covalima and 86% in Oecusse were married, while 9% in Covalima and 8% in Oecusse were either separated or widowed.

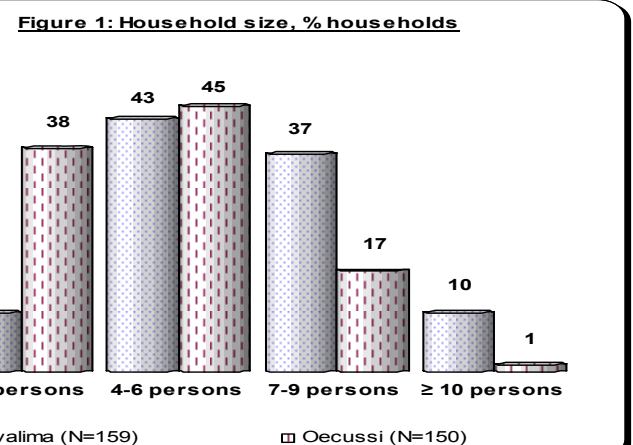
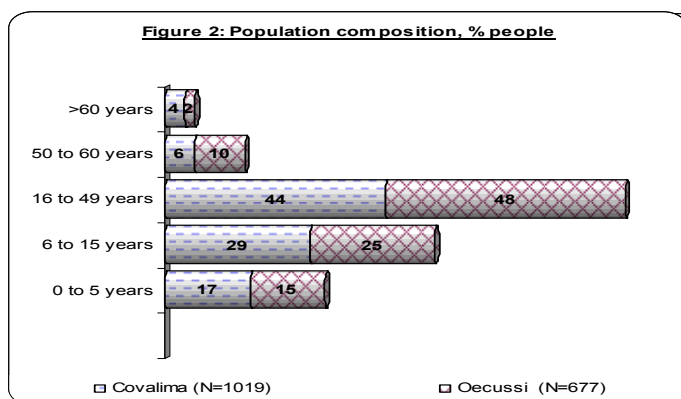
Most heads of households (83%) were aged 25-60 years, however 9% were less than 25 years old and 8% over 60 years old across both districts.

There are significant differences in literacy levels with 56% literacy levels for household heads in Covalima compared with 31% for Oecusse.

5.1.2 Population composition

The average household size ranged from a low of 4.5 persons in Oecusse, to 6.5 persons in Covalima. Household size in Oecusse is far below the national average of 6 members, and averages in the other five districts surveyed in this collaborative baseline study.

Almost 80% of households (N=120) in Oecusse had an average of 6 or less persons, whereas 50% of households in Covalima had 7 or more persons (figure 1).



In terms of family composition, both Covalima (17%) and Oecusse (15%) showed figures for household members aged 0-5 years to be slightly lower than the national average of 20+% (figure 2).

In terms of the size of households categorized as food insecure, food insecure households were more likely to have more members. 66% (N=62) of households with 6-8 members and 63% (N=12) of households with 9-12 members were severely food insecure.

5.1.3 Education levels of household members

Civil unrest following the 1999 Referendum resulted in destruction and damage to 90% of education facilities. 80% of specialized teachers and administrators left the country.⁴⁷

Difference in literacy rates between Covalima and Oecusse are significant. Over 60% of the surveyed population in Covalima (N=637) were literate compared with 45% (N=294) in Oecusse, consistent with the national average of 45% (table 3).⁴⁸

In both Covalima and Oecusse, completion rates for primary-level education were two to three times higher than for junior secondary school. Completion rates for senior secondary school were far higher in Covalima than Oecusse. Overall, men were more likely to have completed primary and secondary-level education than women across both districts, but men and women were equally likely to complete tertiary-level education.

Table 3: Education, % literate

Schooling level completed	Covalima N=637		Oecusse N=294	
	Female	Male	Female	Male
Primary 1-6	26	29	32	36
Junior Secondary 1-3	10	13	11	7
Senior Secondary 1-3	8	10	4	6
University	2	2	2	2
Total %	46	54	49	51

5.2 Household Assets and Capital

5.2.1 Building materials and house type

The baseline survey gathered data on the types of house building materials used by households. Building materials and house style are a widely used proxy for relative economic standing and tend to correlate with household financial capacity. Changes in building materials used by surveyed households throughout the duration of the food security project will provide one measure of the impact of intervention.

- ♦ Walls made from palm rib partitions (Tetum: *bebak*) were used in 80% (N=127) of houses in Covalima and 71% (N=107) in Oecusse. Cement walls were used in 9% (N=13) of houses in Oecusse, and 8% (N=12) in Covalima.
- ♦ Corrugated iron roofing was used in 53% (N=85) of houses in Covalima, and 32% (N=48) in Oecusse. Palm leaf thatch was used in 35% (N=56) of houses in Covalima, and 52% (N=78) in Oecusse.
- ♦ 90% of houses in Oecusse and 60% in Covalima had dirt floors, while 30% of houses in Covalima had timber flooring.

⁴⁷ Asian Development Bank/UNIFEM, 2005, p.1

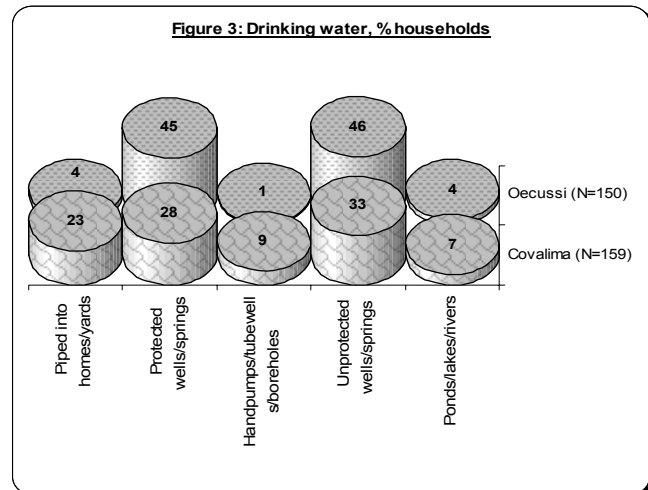
⁴⁸ 2004 Census

Predominant use of local materials (e.g., palm ribs and fronds) in housing construction in surveyed households in Covalima and Oecusse reflect low financial capacity. This basic housing contrasts with building materials which are manufactured for purchase (cement, corrugated iron/tin) and require increased financial capacity.

5.2.2 Drinking water and sanitation

Covalima has comparatively better access to safe drinking water than Oecusse - 60% of households in Covalima compared with 50% (figure 3). 40% of households in Covalima fetch drinking water from unprotected sources. Among surveyed households in Oecusse, 90% use springs as the main sources of drinking water for 90%, and around 45% of these springs and wells are protected from contamination.

In terms of sanitation, the majority of households in Covalima (65%) and Oecusse (94%) use open areas or bushland, with about 30% of households in Covalima having access to a house-based toilet.



5.2.3 Cooking fuel

Timber gathered from nearby forest and bushland as firewood remains the main source of fuel for 100% households.

Accurate data about the relation between decline in forest cover and demand for fuel wood are not available. However, the Ministry of Agriculture, Forestry and Fisheries (MAF) reported that forests have been severely over-harvested and degraded, and that reliance on fuel wood has increased substantially since discontinuation of a kerosene subsidy in 1999.⁴⁹

5.2.4 Lighting

Kerosene and palm oil provide the main source of lighting for 83% of households in Covalima and 99% in Oecusse. 7% of households surveyed in Covalima (those in Belulik Leten village, Fatumean sub-district) have access to public electricity supply.

5.2.5 Non-productive and productive assets

The type and combination of assets may be used as a proxy indicator for household wealth and is therefore related to household food security. Some assets (e.g., radio) are non-productive and relate to living standards, whereas others (e.g., bicycle, motorbike, four-wheel motorbike) are productive as they may generate income.

Bicycles and radios were the most commonly owned assets, with higher levels of ownership in Covalima. 32% (N=40) of households in Covalima and 9% (N=8) in Oecusse owned at least one bicycle. 31% (N=39) of households in Covalima and 26% (N=23) in Oecusse owned at least one radio. Motorbike ownership was very uncommon with 4% (N=5) in Covalima and none in Oecusse.

5.3 Natural and Physical Assets

5.3.1 Agricultural land holdings

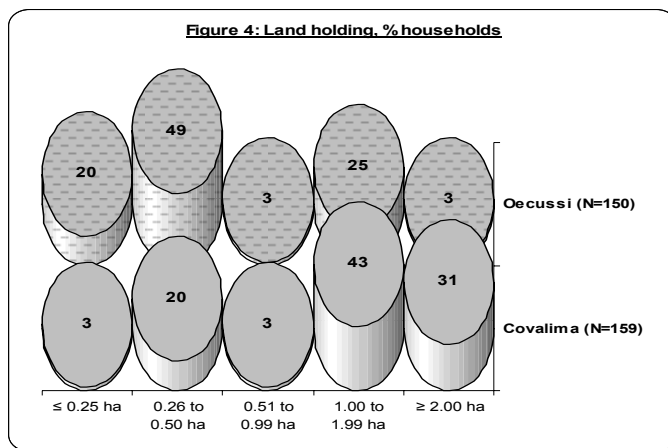
⁴⁹ MAFF, Policy and Strategic Framework, Dili 15 September 2004, p.7

Farming is the sole source of income for up to 85 percent of an estimated 139,000 rural households in Timor-Leste. In this survey, 1% (N=3) of households surveyed reported having no landholding, one was severely food insecure, and the other two were moderately food insecure. The category 'own land' (Tetum: *rai rasik*) was dominant with 96% of respondents (N=298) nominating this status. Nine households (2%) rented or leased land (Tetum: *rai aluga*), and one household each sharecropped (Tetum: *fahé produsaun*) or claimed their land to be 'customary' (Tetum: *rai komunal/kostumariu*).

Various estimates of minimum land under cultivation per capita or per household were mentioned earlier in this report. Estimates have also been made about the minimum land under cultivation required per household. The National University of Timor-Leste (UNTL) research study on maize requirements calculated that based on an average land holding of 0.8 hectares, an average household of 6 persons required 1.2 ton of maize annually for household consumption – a yield requirement at the upper end of estimates of average maize yields.⁵⁰ In summary, the UNTL study found that an average household requires 0.8 hectares for its annual maize consumption requirements.

Previous studies relating to food security have drawn attention to the difficulties in collecting and analyzing agricultural data without undertaking actual measurements, yet standard units of measurement for either area (e.g., hectares) or yield (e.g., kilograms) are not used by Timorese farmers.⁵¹ Data on area and yield presented in this report are based on estimates made by farmer respondents sometimes with the assistance of an enumerator who made a visual estimate.

Most households (68% N=167) cultivated one main plot only (plus kitchen garden), with one-quarter of households (N=64) cultivating two plots. Of those households cultivating two plots, 67% (N=43) were severely food insecure households. Few households cultivated three or more plots (N=11).



Overall, landholdings were significantly smaller in Oecusse than Covalima (figure 4). 26% of surveyed households in Covalima had landholdings of less than one hectare, while 74% had more than one hectare. Additionally, 30% of households had access to additional land (e.g., sharecropping) in the previous season. In contrast, 69% of surveyed households in Oecusse had landholdings of less than half a hectare with 9% accessing additional land.

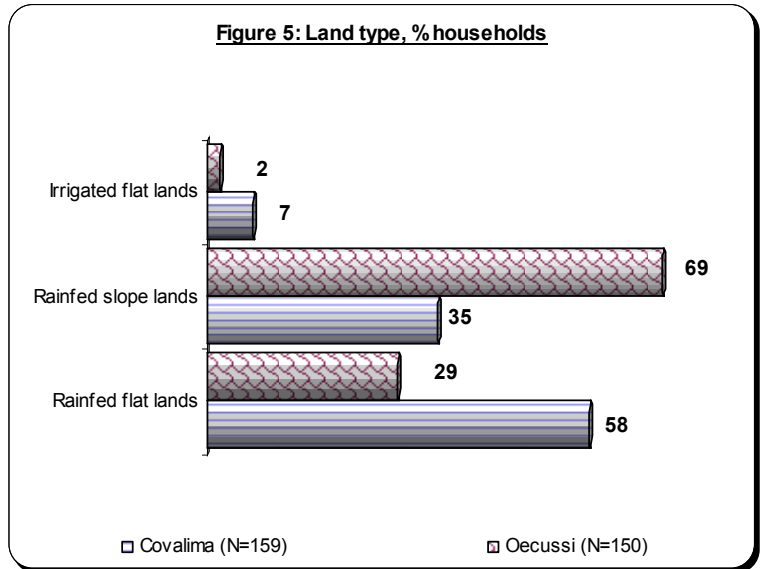
Calculating landholding by food security status shows that a clear relation between food insecurity and landholding size cannot be drawn easily (table 14). For example, 50% (N=77) of severely food insecure households and 42% (N=12) of moderately food insecure households held land of less than half a hectare. 45% (N=69) of severely food insecure households and 52% (N=15) of moderately food secure households held one hectare or more. Mildly food insecure households, of which there were only seven in the sample, had comparatively larger holdings with 70% (N=5) holding one hectare or more. Food secure households tended to hold small areas of land - 67% (N=40) held land of less than half a

50 UNTL, 2006, p. 15-16

51 Care/JICA/GoTL, Rice marketing Survey Report, 2004

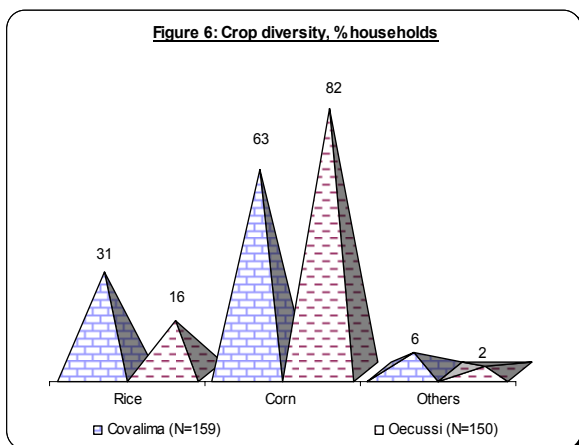
hectare, presumably because they had access to off-farm sources of income and were not dependent on crop production for their food security.

In terms of land type, households were most likely to hold rainfed land, either flat or moderately sloped (figure 5). 47% (N=116) of households held rainfed flat land, while 39% (N=96) held rainfed moderately sloping land. 6% (N=15) held rainfed steep land, and 6% (N=15) held irrigated flat land. In terms of the relation between land type and food security status, severely and moderately food insecure households were similarly likely to hold either rainfed flat land, or rainfed moderately sloping land. Rainfed flat land was held by 54% (N=82) of severely food insecure households and 50% (N=14) of moderately food insecure households. Rainfed moderately sloping land was held by 39% (N=59) of severely food insecure households and 32% (N=9) of moderately food insecure households.



Irrigated land was less likely to be held by severely and moderately food insecure households (5% and 7% respectively), and most likely to be held by mildly food insecure households (28% N=2).

Constraints to production on rainfed, steep land include erosion, surface run-off, strong winds, as well as reliance on rainfall. The data shows no correlation between severely and moderately food insecure households and holdings of rainfed steep land – only one household in both of these categories held this land type. Rain-fed land accounts for 98% of the total land in Oecusse, and 93% in Covalima. 70% of land in Oecusse is sloping land, compared with 35% in Covalima.



In terms of crop diversity, it was reported that in the previous season, 82% (N=123) in Oecusse and 63% in Covalima (N=100) planted maize as the principal crop, and 16% in Oecusse and 31% in Covalima planted rice as the staple crop (figure 6). (Note that rice farmers may plant maize as a secondary crop but the figure above does not reflect this.)

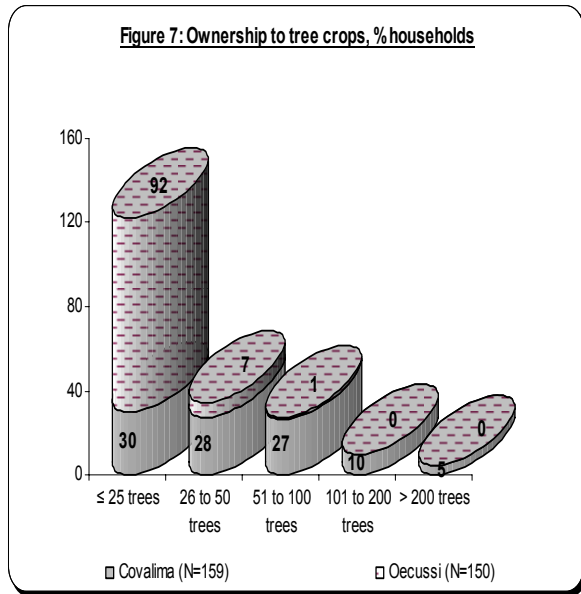
However, the previous season’s crops in both survey sites were badly affected by drought. In Covalima, maize production among households surveyed was affected by delayed and below normal rainfall. In Oecusse, low

rainfall resulted in severe reduction in maize yields, particularly in the more densely populated coastal areas facing food shortage for the second consecutive year. FAO/WFP reported overall declines of up to 30% as a result of reduction in the area planted to maize and rice due

to inadequate planting stock because farmers re-planted failed crops, and low yield as a result of drought.⁵²

5.3.2 Tree crops

Tree crops include food-producing trees such as orange, pawpaw, mango, jackfruit, banana, apple, and coconut (figure 7). Households surveyed in Oecusse were most likely to have small holdings of treecrops (25 and under) whereas most households in Covalima had larger holdings. 55% of households in Covalima owned between 26-100 trees compared to 8% in Oecusse. In Oecusse 92% households have 25 or less trees. Note that 18 households (5%) had no treecrops at all, including 2 in Covalima and 16 in Oecusse.



In terms of the relation between food security and tree crop ownership, households across all four food security categories were likely to own no more than 100 food crop or coffee trees. Households categorized as severely food insecure were significantly more likely to own food crop trees and coffee trees than the other three categories.

Coffee and Candlenut

Neither coffee nor candlenut (*Aleurites molucana*) were grown by surveyed households in Oecusse District. In Covalima, in the season prior to survey, 45% of households (N=71) grew candlenut, and 22% (N=35) farmed coffee. Coffee particularly is a high value commodity and provides at a least a portion of the source of income for around 40,000 households annually.⁵³ Small

quantities of candlenut oil are exported.

5.3.3 Livestock

Livestock raised in Timor-Leste include cattle (Tetum: *karau vaka*), buffalo (Tetum: *karau Timor*), sheep, goats, pigs, chickens and ducks. Small numbers of chickens, goats, and to a lesser extent pigs, are raised by households for consumption on special occasions, to fulfill social obligations and to be sold when cash is required. Some farmers raise buffalo to fulfill social obligations particularly marriage and funeral, and as traction for preparing irrigated rice fields.

Generally, livestock (except poultry) are considered household assets to be traded only where necessary. Larger scale cattle production for sale occurs in districts bordering Indonesia due to higher prices for livestock in Indonesia.⁵⁴

Table 4 shows that Covalima has more households with livestock, and more head of livestock per household than Oecusse. Similar numbers of households in both districts owned five or less head of livestock. However, four times as many households in Oecusse did not have any goats, sheep or pigs.

Table 4: Livestock ownership, % households

⁵² FAO/WFP, 2007

⁵³ MAFF, 2004, p.5

⁵⁴ FAO/WFP, 2007, p.15

Type of livestock	Zero head	≤ 5 head	6 to 9 head	≥ 10 head
Covalima district (N=159)				
Goats/sheep/pigs	7	54	18	21
Cattle/buffalo	56	32	6	6
Poultry/ducks	16	32	17	35
Oecusse district (N=150)				
Goats/sheep/pigs	29	57	9	4
Cattle/buffalo	56	39	3	2
Poultry/ducks	18	60	11	11

About 54% of households in Covalima and 57% of households in Oecusse owned 5 or less goats, sheep or pigs.

- ♦ 44% of households own cattle or buffalo, with 32% (Covalima) and 39% (Oecusse) respectively, owning five or less head. Significantly more households in Covalima owned six or more head of cattle or buffalo (12% compared with 5% in Oecusse).
- ♦ About 85% of households in both districts owned chickens. Significantly more households in Covalima owned 10 or more head of poultry (35% compared with 11% in Oecusse).

5.4 Household Food Security

Household food security is multi-dimensional and has complex interactions with various indicators. Food security is defined in terms of three elements: availability, access, and utilization of food. The combination and interaction of these elements represent household food security. Natural disaster and political instability can affect all three dimensions of food security at any time.

Food availability means consistency in supply of sufficient quantities of food for all household members procured either through household production, domestic output, commercial import, or humanitarian assistance. Food access means adequate resources at the household level to obtain foods necessary for a balanced diet. Food utilization refers to a household's use of food, and is determined by such factors as households' access to safe drinking water, adequate sanitation, food storage and processing techniques, and knowledge of nutrition principles.

The baseline survey investigated food availability through the amount and type of food produced by surveyed households in the season prior to survey, and the length of time between harvest and depletion of household-produced food. The survey considered food access in terms of the range of cash acquisition strategies used by households, and the proportion of households using these strategies. The subject of food utilization was not a survey objective, however, secondary information on nutrition, health, water and sanitation for both districts was presented in section 2 on background information.

5.4.1 Food availability dimensions

Three sets of data were used to analyse food availability. First, data on duration of food reserves were gathered via surveyed households' responses to the question: "How long do you think the foods you harvested in the last season would last, if consumed by your household members only?"

Second, data on maize and rice yields from most recent harvest were combined for each surveyed household. An average daily per capita requirement of 600 grams of cereals⁵⁵ was then multiplied by the number of household members in order to calculate the household's daily cereal requirement. The total yield from maize and rice harvests was then divided by the daily cereal requirement to determine the number of days or months a household was food in/secure based on their own household production.

⁵⁵ UNTL research (2007, p.15) into maize production proposes an average per capita daily requirement of 600grams to supply 2100 kilocalories.

The third data were drawn from FANTA'S nine closed-ended food insecurity questions, which were then analysed to categorize each household into four food in/security categories.

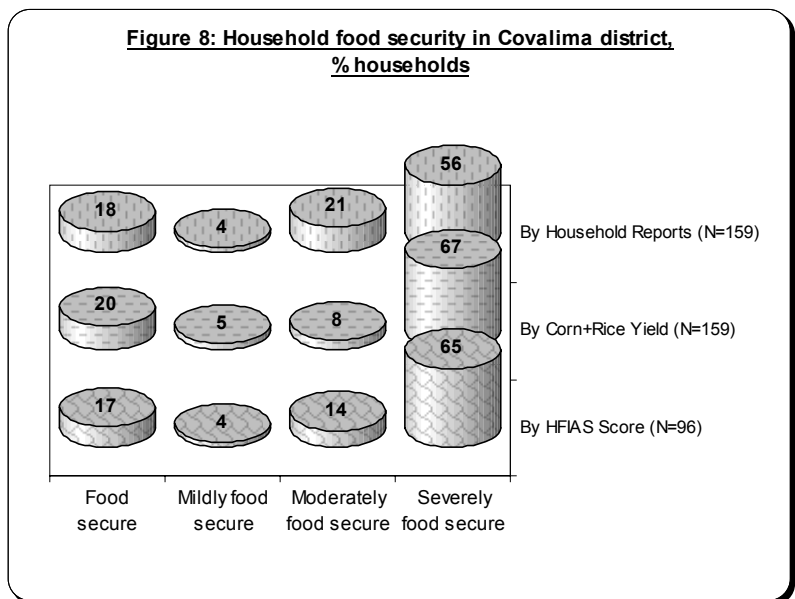
- Category 1: Food secure households **OR** ≥ 12 months of food security
- Category 2: Mildly food insecure households **OR** 1 to 2 months of food insecurity
- Category 3: Moderately food insecure households **OR** 3 to 5 months of food insecurity
- Category 4: Severely food insecure households **OR** ≥ 6 months of food insecurity

Results from the three analytical approaches for the surveyed sample as a whole follow: 61% (N=151) were categorized as severely food insecure, 11% (N=28) were moderately food insecure, 2% (N=7) were mildly insecure, and 24% (N=59) were food secure.

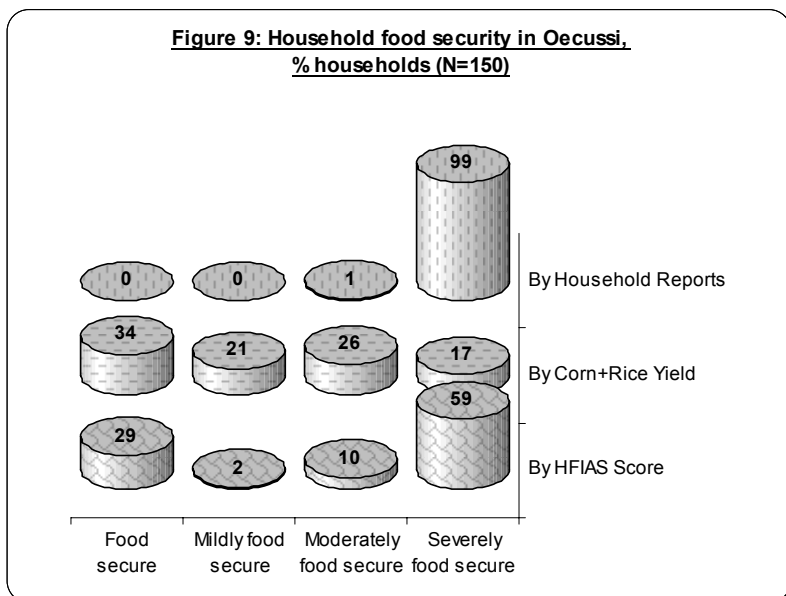
Findings from the three analytical approaches were consistent for households surveyed in Covalima District. 75-80% of households surveyed were found to be 'moderately food insecure' or 'severely food insecure', with 17-20% of households food secure for more than 12 months (figure 8).

The high proportion of households falling into moderately or severely food insecure categories could be due to (1) conceptual definitions attached to each food insecure category on the HFIAS scale; (2) differences in households' perceptions and reporting of their own food in/sufficiency and; (3) possible inaccuracies in households' reporting of harvest details using various local measures.

Households in the 'severely food insecure' category have six months of food stores (April-September), meaning depletion of food reserves by September. Households categorized as 'moderately food insecure' experience depletion of reserve foods after 7-9 months (April until October-December). Given that the next maize crop is due to be harvested in February-March 2008, it is estimated that up to 75% of households surveyed in Covalima will suffer from food shortage over the six-month period October-March.



Using macro-indicators and district level production estimates, the FAO/WFP 2007 Crop and Food Supply Assessment established similar observations, proposing that 20-22% of the total population be provided with emergency food assistance for a period of six months, from October 2007 to March 2008.



Findings from the three analytical approaches were not consistent for households surveyed in Oecusse (figure 9).

The HFIAS scores indicated 'moderate' or 'severe' food insecurity in 70% of households. However, analysis of household maize and rice production indicated food insecurity in 44% of households. Finally, based on households' responses about duration of food reserves, 100% of households would be food insecure by November 2007 as they had exhausted their household food stores from the previous harvest.

There are several explanations for the different findings for Oecusse. Interventions prior to the survey, specifically Oxfam's previous food security programs, may have affected the food security of surveyed households, and some households may have provided strategic responses with the aim of receiving assistance from Oxfam and other agencies. Second, there may have been errors in the enumerator process as a result of translation issues or difficulty in explaining questions to respondent households.

5.4.2 Food access dimensions

Households surveyed in Covalima and Oecusse gained access to cash through the following strategies:

- ♦ Sale of crops and livestock
- ♦ Sale of crops and animals, plus wage labour, or cash-for-work, or other local activity
- ♦ Cash-for-work, plus wage labour or other local activity

When asked about their major source of cash during the 30 days prior to survey, 63% of households (N=97) in Covalima responded that they raised cash through sale of crops and/or livestock. This reliance on exclusive sale of crops and livestock suggests the extent of subsistence agriculture which does not engage paid labour, and lack of alternate sources of income locally.

In Oecusse, 52% of surveyed households (N=63) relied exclusively on sale of crops and/or livestock. 37% (N=58) of households practiced strategies such as cash for work, loans and credits, remittances and transfers, small business, in addition to sale of crops and/or livestock. Anecdotal evidence suggests that young men migrate from Oecusse to Dili and work as vendors (Tetum: *fila liman*) selling cigarettes drinks, or fuel. Some remit earnings back to their family in Oecusse, others may use it to pay for university tuition in Dili. The survey, however, demonstrated that remittance was not common, and most households receiving remittance were severely food insecure. Among households surveyed, 6% (N=21) reported receiving remittance in the 30-day period prior to survey. Of those households receiving remittance, 13 (68%) were severely food insecure, two (10%) were either moderately or mildly food insecure, and four (21%) were food secure.

Indebtedness was also not common among households surveyed, however, food insecure households were more likely to be indebted than food secure households. 16% (N=41) of surveyed households had debts at the time of survey, with 75% (N=31) of indebted households severely or moderately food insecure, compared with 22% (N=9) food secure. The debt burden for food secure households probably relates to purchase of non-food goods.

Livestock as cash source⁵⁶

Table 5 shows various uses of livestock, including sale of livestock to raise cash. Overall, the data indicate that households surveyed in Oecusse were significantly more likely to sell livestock (goats, pigs, chickens, cattle and buffalo) to raise cash to purchase food than Covalima. Furthermore, few households in Oecusse sold livestock to raise cash for non-food purchases. It would appear that households in Oecusse may have alternative sources of cash

⁵⁶ Discussion on uses of livestock (table 5) must be qualified. First, respondents were asked to indicate uses of livestock according to five fields (table 5). Two of these categories refer to sale of livestock in order to raise cash: one category mentions raising cash specifically for the purpose of purchasing food, while the other mentions raising cash without referring to its use. The discussion below assumes that the latter category 'sold for cash' refers to purchase of non-food goods. Second, single responses were only recorded whereas respondents may have used livestock for several purposes. Due to these two limitations with this question, data should be taken as indicative only.

income, apart from sale of livestock, to pay for non-food goods. In contrast, many more households in Covalima sold livestock in order to raise cash to pay for non-food goods.

Parameters / N	Covalima					Oecusse				
	Goat	Pigs	Chicken	Cattle	Buffalo	Goat	Pigs	Chicken	Cattle	Buffalo
	32	132	125	63	5	67	89	122	34	32
100% self consumption	6	12	12	16	-	13	15	16	-	25
100% sold for cash	41	30	15	37	-	-	1	3	-	3
Sold some ate some	9	16	4	18	-	2	5	-	3	3
To buy food	41	40	69	24	-	69	61	70	74	53
Special ceremonies only	3	3	-	6	-	16	19	12	24	16

74% of households in Oecusse compared with 24% in Covalima sold cattle to raise cash to purchase food. 37% of households in Covalima sold cattle to raise cash however it is unclear whether any portion of this cash was used to purchase food. In relation to buffalo, 53% of households in Oecusse and zero households in Covalima sold buffalo to purchase food.

In terms of household consumption of cattle or buffalo, no surveyed households in Oecusse raised cattle for household consumption compared with 16% in Covalima. It can be proposed from the data that cattle production in Oecusse is oriented towards raising cash in order to purchase food, which constitutes a food security strategy.

In relation to sale of other livestock to raise cash to purchase food, 61% of households in Oecusse compared with 40% in Covalima sold pigs in order to purchase food, and around 70% of households in Covalima and Oecusse raised chickens to raise cash to purchase food. Similar numbers of households (15% in Oecusse and 12% in Covalima) raised pigs entirely for household consumption, and raised chickens entirely for household consumption (16% in Oecusse and 12% in Covalima).

The data on uses of livestock reveals significantly higher allocation of livestock, mainly cattle, for ceremonial purposes in Oecusse, reflecting high levels of participation in social networks. Distribution of meat at these ceremonies to participating households constitutes an important source of meat for household consumption.

Tree crops as cash source

Fewer varieties of tree crops are planted in Oecusse compared to Covalima, and no households surveyed in Oecusse grew either of the cash crops coffee or candlenut (table 6).

Crop	Covalima					Oecusse				
	N	100% self consumption	100% sold for cash	Sold some & ate some ⁵⁷	Others ⁵⁷	N	100% self consumption	100% sold for cash	Sold some & ate some ⁵⁸	Others ⁵⁸
Orange	43	54	40	-	6	-	-	-	-	-
Papaya	120	85	-	10	5	56	82	-	18	-

Mango	83	59	1	34	6	42	52	-	48	-
Jackfruit	57	88	-	11	1	-	-	-	-	-
Banana	127	52	2	45	1	38	40	-	60	-
Pineapple	38	55	5	34	6	-	-	-	-	-
Coffee	35	29	20	51	-	-	-	-	-	-
Coconut	106	75	2	22	1	62	77	-	23	-
Candle Nut	66	14	68	14	4	-	-	-	-	-

While no households surveyed in Oecusse reported growing tree crops for the sole purpose of raising cash, many grew a variety of tree crops (mainly banana, mango, coconut and pawpaw) for the purpose of either consumption *or* sale.

Households in Covalima also grew tree crops for consumption and sale, particularly, coffee, banana, pineapple, and mango. Significant numbers of households in Covalima also grew a limited number of crops (coffee, candlenut, and oranges) for the sole purpose of raising cash.

Tree crops contribute to household food security in several ways including:

- ♦ Tree crops are perennial, capable of surviving for many years in harsh climates with low rainfall due to deep root systems.
- ♦ Their seasonality means that a variety of tree crops will provide a household with fresh fruits all year round.
- ♦ Tree crops require little maintenance, and
- ♦ Some tree crops may be consumed raw and cooked, e.g., green banana, green pawpaw, young jackfruit and pawpaw flowers may be cooked for consumption, green mangoes may be pickled, and ripe pawpaw and jackfruit is eaten raw.

A very low proportion of farmers in surveyed households produce tree crops for sale. Several factors may influence this:

First, there is low demand due to local households growing the same crops, and high supply due to the seasonal nature of the crop results in low demand and low prices. Where surplus exist, some households may choose not to harvest the produce, use the harvest as livestock feed, or invite neighbours or relatives without tree crops to harvest and keep the produce for their own needs. Second, inadequate marketing and transport infrastructure constrain marketing of tree crop produce. Third, pests and disease reduce the yield, quality, and marketability of tree crop produce.

Interventions such as support through agricultural extension and improved marketing may increase production of tree crops for sale, increasing household income.

Staple crops as cash source

Note that data on uses of staple crops was elicited using the '100 bean' method. Respondents were asked to allocate a pile of 100 beans to the various fields listed in table 7, allowing enumerators to *approximate* percentage distribution.

Uses	Covalima – % harvest used					Oecusse – % harvest used				
	N	<25%	25-50%	50-75%	≥75%	N	<25%	25-50%	50-75%	≥75%
	RICE									
Own consumption	80	3	28	43	28	111	2	8	23	68
Sold for cash	20	-	-	-	-	2	-	-	-	-
To sharecropper	39	85	15	-	-	8	-	-	-	-

None of the surveyed households sold rice or cassava. In Covalima, small quantities of maize were sold (89% sold less than one-quarter of their harvest, and 11% farmers sold between 25-50% of their harvest) (table 7). Most households consumed most of their harvest, and 80-100% of households saved seed material for the next planting.

Households surveyed in Oecusse were significantly

more likely to consume a larger proportion of their staple food crops compared with Covalima. In Oecusse, 57% of households consumed three-quarters or more of maize produced compared with 16% in Covalima, 68% of households in Oecusse consumed three-quarters of rice produced compared with 28% in Covalima, and 60% of households in Oecusse consumed three-quarters of cassava produced compared with 14% in Covalima.

5.4.3 Household diet diversity

Diet diversity refers to the number of different food groups households consume over a specific period of time, and relates to households’ use of food, or food utilization. Diet diversity is underpinned by several assumptions including:

- ♦ A more diversified diet is highly correlated with caloric and protein adequacy, percentage of protein from animal sources (high quality protein), and household income. It has been found that in poor households, increased expenditure on food due to additional income results in increased quantity and diversity of food consumed.⁵⁹
- ♦ A more diversified diet is associated with better nutritional status in children.

Every household surveyed was asked a standard set of questions about consumption of different food groups, and frequency of consumption in the 30 days prior to the survey.

In order to represent diet diversity, the study calculated the number of different *food groups* consumed rather than the number of different *foods* consumed which may belong to the same food group (e.g., cereals). This survey classifies foods in terms of their nutrition value:

- ♦ Cereals, cassava, sweet potato and oils/fats are the main sources of carbohydrates and energy
- ♦ Pulses/legumes, meat/poultry, eggs, sea foods and, milk and milk products are the main sources of protein and referred to as ‘body-building’ foods
- ♦ Vegetables and fruits are rich sources of vitamins and minerals referred to as ‘protective’ foods

Consideration of the diet diversity of surveyed households based on analysis of food consumption data (table 8) follows.

Table 8: Household diet diversity previous 30 days, % households		
	Covalima	Oecusse
Loan paid in kind	14	13
Fed to livestock	22	0
Seeds saved	80	108
CORN/MAIZE		
Own consumption	140	147
Sold for cash	28	7
To sharecropper	68	13
Loan paid in kind	15	8
Fed to livestock	108	34
Seeds saved	126	139
CASSAVA		
Own consumption	58	65
Sold for cash	22	2
To sharecropper	28	6
Loan paid in kind	4	0
Fed to livestock	56	28
Seeds saved	0	0

	N	Ate Rarely	Ate Sometimes	Ate Often	Did not eat	N	Ate rarely	Ate Sometimes	Ate often	Did not eat
Cereals	159	2	1	96	1	149	7	34	59	-
Vitamin-A vegetables	159	31	46	14	9	150	8	51	2	39
Roots/tubers	159	28	35	16	21	150	10	35	1	54
Green leaves	159	1	7	92	-	150	9	64	8	19
Other vegetables	159	9	16	75	-	150	11	56	10	23
Pulses/legumes	157	28	26	10	36	149	15	24	2	59
Vitamin-A fruits	159	25	49	25	1	150	12	48	3	37
Other fruits	158	47	35	3	15	150	7	48	1	44
Meat/poultry	159	40	43	2	15	150	9	72	2	17
Eggs	158	40	42	4	13	150	14	35	-	51
Sea foods	157	33	33	19	15	150	9	26	8	57
Milk/ milk products	157	38	17	2	43	150	10	8	-	82
Oils/fats	158	11	22	65	3	150	5	39	17	39

In Covalima the baseline data shows that 60% of surveyed households (N=100) cultivate kitchen gardens, usually planted with a diverse range of vegetables and fruits. The range of foods consumed by households in Covalima appears relatively more diverse than those in Oecusse. For example, foods consumed include those that are rich in energy, oils and fats, a variety of vegetables including those rich in vitamin A and iron, as well as seafood, eggs, meat, and poultry. Consumption of protein from pulses and legumes is lower; however there is increased consumption of meat and chicken.

In Oecusse, the baseline data shows that 73% of surveyed households (N=110) cultivate kitchen gardens. The range of foods consumed by households in Oecusse is narrower. Foods consumed tend to be energy-rich, with some vitamins from vegetables and some protein from animal sources. However, the range of foods consumed consistently lack vegetable proteins, vitamin-A rich, and oils and fats. 40% of households did not consume foods containing Vitamin A, and 57% of households did not consume seafood during the 30-day period prior to the survey.

Legumes and pulses are a cheap source of protein, and readily cultivated in kitchen gardens or dry land gardens. In spite of this, 35% of households in Covalima, and 60% of households in Oecusse did not consume legumes or pulses.

5.4.4 Household coping strategies

Coping strategies⁶⁰ refer to adjustments in behaviour made by households during periods of food insecurity. Surveyed households were asked to respond to a set of questions based on the principle *“What do you do when you don’t have enough food, and don’t have enough money to buy food?”* A reference period of 30 days prior to survey was used, and frequency of use was measured in terms of a sliding scale (daily, 3-5 times per week, 1-2 times per week, never used).

During periods of food shortage, households adopt a range of coping strategies to increase their food availability. In the early stages, strategies are used that are considered reversible, causing minimal damage to future livelihoods. If insecurity persists, households may begin to use strategies that are not reversible, and may damage future livelihoods. The baseline survey measured frequency of coping strategies, and ir/reversibility of the strategy indicating the level of food in/security of the household. The survey considered only those coping strategies that were relevant to the local context in Covalima and Oecusse (table 9).

Households deployed a range of coping strategies in response to food insecurity during the 30-day period prior to survey. Almost all surveyed households (99% N=81) in Covalima and 97% (N=57) in Oecusse reported eating cheaper or less preferred foods in the 30-day period prior to survey. Further, 98% (N=80) in Covalima and 80% (N=47) in Oecusse reduced meal size, and 84% (N=69) in Covalima and 76% (N=45) in Oecusse reduced the number of meals eaten.

Coping strategies are progressive and households may shift from reversible to irreversible strategies over time if food insecurity persists. It can be projected that as the proportion of food insecure households increased during the period October 2007 to March 2008, the range of reversible strategies available to households would have become exhausted, and households may have turned to other strategies which would affect household health and nutrition status, and possibly damage future food security.

According to the 'Coping Strategies' index adopted for the baseline survey, the following practices are considered to be reversible strategies to alleviate food shortage (table 9): eating less preferred or cheaper food (in the context of Timor-Leste this probably refers to food grown in the household's own garden in contrast to purchased food), reducing meal size and number of meals, and eating leaves from pawpaw and pumpkin. These three strategies were observed to be common among surveyed households.

STRATEGIES	Covalima					Oecusse				
	N	Daily	1-2 times/week	3-5 times/week	Did not use	N	Daily	1-2 times/week	3-5 times/week	Did not use
Reversible strategies										
Ate cheap foods	82	33	49	17	1	59	7	70	20	3
Reduced meal size	82	26	40	32	2	59	2	44	34	20
Reduced number of meals	82	16	41	27	16	59	5	35	37	24
Skipped days with out eating	82	1	16	7	76	59	3	24	19	54
Sought assistance from relatives	82	2	33	12	53	59	2	37	19	42
Food loans/credits from local shops	82	2	26	11	61	59	2	14	14	70
Ate wild foods from bush/forest	82	6	36	18	40	59	5	19	22	54
Ate pawpaw and pumpkin leaves	82	37	34	24	5	59	3	31	17	49
Irreversible strategies										
Ate seeds kept for next planting	82	10	28	6	56	59	2	34	3	61
Bartered household items for food	82	4	23	13	60	59	-	15	9	76
Sold chickens/duck to buy food	82	5	50	27	18	59	-	59	14	27
Sold goats/sheep to buy food	82	2	39	10	49	59	-	39	12	49

Although the three strategies mentioned above are categorized as reversible, they may impact negatively on the health and nutritional status of household members, particularly children and elderly or sick members who are sensitive to minor fluctuations in food security. (Note that depending on the nutrition content of the 'less preferred food' it cannot be assumed that this substitution is negative in nutrition terms.) In general, the growth and development of

young children is negatively affected by periods of food insecurity without external food assistance.

Households were also deploying irreversible strategies such as consuming seeds (e.g., maize kernels, rice grains) set aside for planting (table 8). Significant numbers of surveyed households in both districts consumed seed set aside for planting in the previous season, 44% (N=36) in Covalima, and 39% in Oecusse (N=23).

Another strategy considered to be irreversible is sale of livestock. (Note that depending on whether the livestock sold is female breeding stock or male stock, it cannot be assumed that selling livestock is by definition a strategy which damages future food security. 82% (N=67) of households in Covalima and 73% (N=43) in Oecusse had sold chickens to raise cash to purchase food, and 51% (N=42) of households in Covalima and 51% (N=30) in Oecusse had sold goats or sheep to raise cash to purchase food (table 8).⁶¹

6 UNDERLYING CAUSES OF HOUSEHOLD FOOD INSECURITY

6.1 Agriculture

6.1.1 Maize yields

In Timor-Leste, an average of 160,000 hectares are planted to maize or rice annually - 85% to maize, and 15% to rice.⁶² It was reported that in the previous season, 82% (N=123) of surveyed households in Oecusse and 63% in Covalima (N=100) planted maize as the principal crop, and 16% in Oecusse and 31% in Covalima planted rice as the staple crop. (Note that rice farmers may plant maize as a secondary crop but the figure for maize planting above does not include these households.)

The national average maize yield is estimated to be between 1.1 t/ha (WFP/FAO 2007) and 1.5t/ha (UNTL 2006). Maize yields range from 0.9 to 2.2 t/ha in normal years. In 2007, maize yields were expected to range between 0.3 and 1.3 t/ha depending on the local conditions of each district and sub-district.⁶³

In this baseline, productivity of maize among surveyed households in 2007 was analysed by grouping maize yields into four categories of yield by hectare (table 10). 31% (N=45) of farmers in Covalima and one only in Oecusse harvested 1.1 t/ha or more. 94% (N=135) of households in Oecusse and 52% (N=76) in Covalima yielded an average of about 200kg/ha.

Yield category (Kg/ha)	Covalima (N=148 hhs)		Oecusse (N=144 hhs)	
	% households	Average yield Kg/ha	% households	Average yield Kg/ha
≤ 500	52	223	94	201
501 to 1000	17	774	5	651
1001 to 1500	7	1255	1	1020
>1500	24	2992	-	-

Table 11 shows correlations between maize yield and household food security status. In Covalima there is no clear relation between maize yield and food security status, with households categorized as severely food insecure (N=63) yielding lowest at 386kg/ha, while moderately food insecure households (N=13) yielded highest (870kg/ha) followed by mildly food insecure households (734kg/ha).

In Oecusse, maize yields were significantly lower overall than Covalima and showed less variation. The relation between maize yield and food security status is clearer, with households categorized as severely food insecure yielding lowest (average 144kg/ha) and mildly food insecure households yielding highest (281kg/ha).

Table 11: 2007 Maize yields by household food security status

Maize Yield	HFIA Food Security Category (% households)				N
	Food secure households	Mildly food insecure households	Moderately food insecure households	Severely food insecure households	
Covalima - HH	14	4	9	55	82
Yield (KG/Ha)	416	734	870	386	
HH Yield (KG/HH)	416	964	1,092	352	
HH Area (Ha/HH)	1.00	1.31	1.26	0.91	
Oecusse - HH	42	3	14	84	143
% of total HH	28%	2%	9%	56%	
Yield (KG/Ha)	222	281	203	144	
HH Yield (KG/HH)	129	141	90	85	
HH Area (Ha/HH)	0.58	0.50	0.44	0.59	
TOTAL HH					225

6.1.2 Maize used as livestock feed

Use of maize as livestock feed is a phenomenon that deserves further investigation. Despite reduced yields in 2007 in Covalima and Oecusse, 67% of households in Covalima (N=108) and 22% in Oecusse (N=34) reported feeding some maize to livestock.

In Covalima, 79% (N=84) of households used one-quarter or less of their maize harvest as livestock feed (about 20% of households used less than 10% of their maize crop, 25% used 11-15%, and 25% used 16-20%). A further 20% used 26-40% of their maize harvest as livestock feed. While the total number of households in Oecusse feeding maize to livestock is significantly less than Covalima, those households that used maize as livestock feed in Oecusse allocated similar proportions of their harvest. In Oecusse, 74% (N=26) used one-quarter or less of their harvest as livestock feed (about 20% of households used less than 10% of their maize crop, 17% used 11-15%, and 17% used 16-20%). A further 20% used 26-40% of their maize harvest as livestock feed.

The majority of severely food insecure (57% N=36) and food secure households (68% N=11) in Covalima fed maize to their livestock. In Oecusse, a majority of households in each of the four food security categories did *not* feed maize to their livestock. About 20% (N=30) of severely food insecure households in Oecusse fed maize to their livestock.

This data deserves further investigation, specifically, greater detail about the proportion of maize harvest used as livestock feed, the rationale behind allocating a staple food like maize as livestock feed (compared to cassava), and the relation between the significant sale of livestock and allocation of maize as livestock feed.

Cassava as livestock feed was less common than maize, but in terms of proportion of harvest, households that used cassava as livestock feed allocated larger proportions of their harvest.

35% of households surveyed in Covalima (N=56) and 18% of households in Oecusse (N=28) used cassava to feed livestock. In Covalima, 45% of households allocated 25-50% of their cassava as livestock feed and 21% allocated 50-75%. In Oecusse, 53% allocated 25-50% and the remainder allocated less than 25%.

6.1.3 Rice yields

Rice yields vary from 1.2 to 1.5 t/ha with peaks of around 1.8 t/ha in areas where water is available for irrigation throughout the growing period.⁶⁴ In a rice study implemented by CARE, it was estimated that in 2003, households farming rice in Oecusse planted 0.7 hectares, and yielded on average 1.9 ton per hectare.⁶⁵ Estimated rice yields in 2007 for all irrigated rice areas was projected to be 1.4 t/ha.⁶⁶ In this baseline, productivity of rice among surveyed households in 2007 was analysed by grouping rice yields into four categories of yield by hectare (table 12).

33% (N=23) of surveyed households in Covalima and 7% (N=2) in Oecusse harvested 1.5 t/ha or more. In Covalima, 58% (N=40) yielded less than 1t/ha with 23 households yielding less than 500kg/ha. In Oecusse, 87% (N=26) of households yielded less than 500kg/ha.

Table 12: Rice yields 2007, by surveyed household

Rice Category	Yield	Covalima n=69			Oecusse n=30		
		HH	%HH	Avg Yield	HH	%HH	Avg Yield
< 500 kg/ha		23	33%	305	26	87%	230
501 – 1000		17	25%	843	2	7%	600
1001 – 1500		6	9%	1,262	0	0%	0
> 1500		23	33%	3,675	2	7%	9,167

Table 13 shows correlations between rice yield and household food security status. In 2007, average rice yields in Covalima ranged between 900kg/ha and 3.3 t/ha. However, severely food insecure households yielded lowest compared with all other categories. On average, severely food insecure households (N=63) yielded 967 kg/ha compared with food secure households (N=16) yielded about 3.3 t/ha.

Average rice yields in 2007 were significantly lower in Oecusse ranging from 190-240kg/ha. As a result, all households yielded poorly, and there is no clear relation between yield and food security status. Severely food insecure households (N=88) yielded slightly more than food secure households (N=43) - 240kg/ha compared with 193kg/ha. However, moderately food insecure households (n=15) achieved highest yield averages of 490kg/ha.

Table 13: 2007 Rice yields by households food security status

HFIA (% households)	Food	Security	Category
------------------------	------	----------	----------

Rice Yield	Food secure households	Mildly food insecure households	Moderately food insecure households	Severely food insecure households	n
Covalima - HH	9	2	8	15	34
Yield (KG/Ha)	3,364	3,375	2,354	967	
HH Yield (KG/HH)	3,252	3,375	3,458	1,093	
HH Area (Ha/HH)	0.97	1.00	1.47	1.13	
Oecusse - HH	4	1	5	19	29
% of total HH	3%	1%	3%	13%	
Yield (KG/Ha)	193	200	490	240	
HH Yield (KG/HH)	51	100	150	111	
HH Area (Ha/HH)	0.26	0.50	0.31	0.46	
Total HH					63

6.1.4 Area planted

Yield is related to land area planted. Based on the calculation that an average Timorese household (6 persons) requires about 0.8 hectare of agricultural land to produce sufficient maize for annual consumption, this report has proposed that an average-sized household farming less than one hectare may not yield sufficient food for annual consumption. The baseline report data indicates that most surveyed households in Oecusse do not farm sufficient land to provide for annual maize needs alone. 69% of households in Oecusse and 23% in Covalima farm less than half a hectare.

Correlating landholding by food security status shows that severely and moderately food insecure households were slightly more likely to hold land of less than half a hectare than larger holdings (table 14). 50% (N=77) of severely food insecure households, and 42% (N=12) of moderately food insecure households held land of less than half a hectare. Overall, moderately food insecure households were slightly more likely to hold larger land holdings with 52% (N=15) holding one hectare or more, compared with 45% (N=69) of severely food insecure households.

While most households (68% N=167) cultivated one main plot only (plus kitchen garden) and very few cultivated three or more plots (N=11), one-quarter of households cultivated two plots. Of those households cultivating two plots, most (67% N=43) were severely food insecure. Additionally, 30% of surveyed households in Covalima had access to additional land (e.g., sharecropping) in the previous season compared with 9% in Oecusse (figure 4).

Table 14: Landholdings by household food security status

	Less than 0.25 ha.	0.25-0.5 ha.	0.51-0.99 ha.	1.0-1.99 ha	More than 2 ha.
Severely food insecure (N=151)	10%	40%	3%	37%	8%
Moderately food insecure (N=28)	21%	21%	3%	35%	17%
Mildly food	0%	28%	0%	28%	42%

insecure (N=7)					
Food secure (N=59)	20%	47%	1%	20%	10%

6.1.5 Higher-yielding maize and rice varieties

61% of households (N=144) planted a rice variety mentioned simply as 'lokal', while 15% (N=36) planted improved varieties including IR64 (8% N=20), Membramo (5% N=14), and IR8 (N=2). Higher-yielding rice varieties not grown by surveyed households include PT 5 Utamua and PSB RC54 Nakroma which are currently being trialled by a limited number of subsistence farmers in a restricted number of districts through the MAF.

Most surveyed households (85% N=258) grew the maize variety known as local white (Tetum: *lokal mutin*), while 21% (N=66) grew local yellow maize (Tetum: *lokal kinur/mean*). Both of these varieties harvest in a short time period (about three months), and store better when traditional storage methods are used, but yield poorly compared to other varieties. 11% (N=35) of households grew both local white and yellow maizes. Improved, higher-yielding varieties Arjuna and Kalinga were grown in few households. Six households grew Arjuna, and four grew Kalinga.

UNTL research has found farmer criteria to include taste and storage as well as yield. The research recommended that higher-yielding open pollinated maize varieties may increase food security of farmer households, but that weevil vulnerability in higher-yielding varieties like Arjuna and Kalinga mean that airtight storage technology must be made available to farmers. Other higher-yielding maize varieties such as Suwan 5 and Sele are currently being trialed by a limited number of subsistence farmers in a restricted number of districts through the Ministry of Agriculture.

6.1.6 Seed sources

82% (N=200) of surveyed households saved their own seed for planting the following season, and severely food insecure households were most likely to save their own seed for planting. (Note that 'seed' was mentioned generically and did not refer to a specific crop.) Households saving their own seed for planting were more likely to be severely food insecure households. Of those households that saved seed, 58% (N=117) were severely food insecure, 12% (N=24) were moderately food insecure, 3% (N=6) were mildly food insecure, and 26% (N=53) were food secure.

In relation to maize seed specifically, continuous saving of own seed *may* result in declining yield. This is due to the nature of maize as an out-crossing species, i.e., plants are fertilised by surrounding plants, meaning that a new or improved variety grown next to a local unimproved one results in some genes of the unimproved population crossing with the improved maize, reducing the value of the new variety. Additionally, where seed is collected from maize which has self-pollinated due to being grown in isolation, in-breeding may occur and may also affect yield.⁶⁷

13% (N=33) of surveyed households purchased maize for planting from maize sellers in the local market, and of these, three-quarters (N=25) were severely food insecure. There is limited distribution and access to higher-yielding cultivars. No households reported receiving seed material from MAF, and one household only reported receiving seed material from an NGO or other organization.

Significant numbers of surveyed households in both districts consumed seed set aside for planting in the previous season, 44% (N=36) in Covalima, and 39% in Oecusse (N=23). Consuming seeds meant for planting is a sign of 'severe' food insecurity that probably results

in less area planted in the following season which leads to lower yield. Further, in order to source replacement seed for planting, farmers may have to raise cash to purchase seed.

6.1.7 Methods of land preparation and planting

Close to 90% of surveyed households (139 in Covalima and 131 in Oecusse) reported using 'slash and burn' (Tetun: *lere no sunu to'os*) method of garden preparation prior to planting their previous crop. The remaining 10% of households adopted a variety of terracing methods.

Dibbling (Tetun: *halo kuak ho ai suak*) refers to small holes made in saturated soil with digging sticks, followed by the planting of seeds, and covering with soil. This method does not use any soil tillage in the proximity of the planting hole. Food insecure households were more likely to practice dibbling. Almost all households (90-100%) categorized as food insecure used dibbling as a planting method, while 67% (N=40) of food secure households practiced dibbling, suggesting access to additional labour.

Fertile soils ensure good growth in the initial stages of crop cycle – essential for vigor and girth in the plants. The baseline results indicate that organic or inorganic fertilizer was rarely applied. In Covalima, only 7% of households surveyed had applied organic or inorganic fertilizers before planting in the season prior to the survey. In Oecusse, 32% of households had applied organic fertilizer (i.e., compost) to their gardens.

6.1.8 Inter-cropping

Timorese farmers intercrop maize with a variety of crops including long beans, pumpkin, pigeon pea, velvet bean and arrowroot.⁶⁸ Around 90% of surveyed households that grow maize (N=208) practice intercropping (Tetun: *kuda kahor malu*) i.e., they plant two or more crops in the same area, with dominant intercropping combinations maize and cassava, maize and sweet potato, or maize and both cassava and sweet potato. None of these three crops return any nutrients back to the soil, and inter-cropping them may affect maize yield. During early stages of plant growth, sweet potato and cassava absorb more nutrients (nitrogen, phosphorous and potash) from the soil and leave less available for maize, affecting the initial vigor and girth of maize plants, which in turn affects yield.

Intercropping maize with legumes is beneficial as the latter have a natural ability to fix nitrogen into the soil, improving soil health.

Note that there is no correlation between food insecurity status and intercropping practices. In fact food secure households were slightly more likely to use intercropping, 67% (N=40) compared to 44% (N=67) for severely food insecure households, and 53% (N=14) for moderately food insecure households.

6.1.9 Marketing tree crops

While no households surveyed in Oecusse reported growing tree crops for the sole purpose of raising cash, many grew a variety of tree crops (mainly banana, mango, coconut and pawpaw) for the purpose of either consumption or sale. Households in Covalima also grew tree crops for consumption and sale, particularly, coffee, banana, pineapple, and mango. Significant numbers of households in Covalima also grew a limited number of crops (coffee, candlenut, and oranges) for the sole purpose of raising cash.

A very low proportion of farmers in surveyed households produce tree crops for sale. Several factors may influence this. First, there is low demand due to local households growing the same crops, and high supply due to the seasonal nature of the crop results in low demand and low prices. Where surplus exist, some households may choose not to harvest the produce, use the harvest as livestock feed, or invite neighbours or relatives without tree crops to harvest and keep the produce for their own needs. Second, inadequate marketing and

transport infrastructure constrain marketing of tree crop produce. Third, pests and disease reduce the yield, quality, and marketability of tree crop produce.

Interventions such as support through agricultural extension and improved marketing may increase production of tree crops for sale, increasing household income.

6.1.10 Irrigation

Rain-fed land accounts for 98% of the total land in Oecusse, and 93% in Covalima. In terms of land type, households were most likely to hold rainfed land, either flat or moderately sloped. 47% (N=116) of households held rainfed flat land, while 39% (N=96) held rainfed moderately sloping land. Irrigated land was less likely to be held by severely and moderately food insecure households (5% and 7% respectively), and most likely to be held by mildly food insecure households (28% N=2).

Constraints to production on rainfed, steep land include erosion, surface run-off, strong winds, as well as reliance on rainfall. The data shows no correlation between severely and moderately food insecure households and holdings of rainfed steep land – only one household in both of these categories held this land type.

6.2 Non-agriculture related causes of household food insecurity

6.2.1 Lack of non-farm income earning opportunities

When asked about their major source of cash during the 30 days prior to survey, 63% of households (N=97) in Covalima responded that they raised cash through sale of crops and/or livestock. This reliance on exclusive sale of crops and livestock suggests the extent of subsistence agriculture which does not engage paid labour, and lack of alternate sources of income locally. In Oecusse, 52% of surveyed households (N=63) relied exclusively on sale of crops and/or livestock. In Oecusse, 37% (N=58) of households practiced various strategies concurrently including cash for work, loans and credits, remittances and transfers, small business, in addition to sale of crops and/or livestock.

6.2.2 Sale of livestock assets

Livestock ownership is limited in Covalima and Oecusse. 93% of households (N=148) in Covalima and 70% in Oecusse (N=105) owned goats and pigs, with around 55% owning less than five head. In relation to cattle and buffalo, 36% of households (N=112) reported owning none, and around 22% (N=71) owned less than five head. Sale of livestock to raise cash to purchase food is a common food security strategy among surveyed households which may however threaten food security when breeding stock are sold. Overall, the data indicate that households surveyed in Oecusse were significantly more likely to sell livestock (goats, pigs, chickens, cattle, buffalo) to raise cash to purchase food than Covalima. 74% of households in Oecusse compared with 24% in Covalima sold cattle to raise cash to purchase food. 61% of households in Oecusse compared with 40% in Covalima sold pigs in order to purchase food, and around 70% of households in Covalima and Oecusse raised chickens to raise cash to purchase food.

Households were asked to report sale of livestock to raise cash to purchase food during the 30-day period prior to survey i.e., July and August 2007. Given that the period of food insecurity was expected to continue until March 2008, it can be assumed that unless those households were provided with assistance, they may have sold additional livestock.

6.2.3 Low levels of remittance

Remittance was not common among households surveyed, however most households receiving remittance were severely food insecure. Among households surveyed, 6% (N=21) reported receiving remittance in the 30-day period prior to survey. Of these 21 households, 11

received less than USD50, 6 received between USD50-100, and 4 received over USD100. Of those households receiving remittance, 13 (68%) were severely food insecure, two (10%) were either moderately or mildly food insecure, and four (21%) were food secure.

6.2.4 Indebtedness

Indebtedness was not common among households surveyed. Around 20% (N=59) of households surveyed (35 in Covalima and 24 in Oecusse) were indebted. However, food insecure households were more likely to be indebted than food secure households. Of those indebted households around 59% (N=41) were severely food insecure. The debt burden for food secure households probably relates to purchase of non-food goods.

Of the 59 households in debt, most had borrowed money to purchase food. 24 households in Covalima mentioned loaning money to buy food and 14 in Oecusse. School-related costs were the second most common reason for taking out a loan. 19 households in Covalima and 6 in Oecusse had borrowed money for school fees, and 4 households in Covalima and 3 in Oecusse had borrowed money to purchase school uniforms. Seven households had borrowed money to fulfil ceremonial obligations, 4 households in Covalima and 3 in Oecusse.

6.2.5 Female-headed households

Female-headed households totaled 45, compared to 264 male-headed households. Female headed households surveyed account for 18% (N=29) of households in Covalima and 11% (N=16) in Oecusse. 44% of female household heads were widowed, with a higher proportion in Oecusse (56% (N=9) of households compared with 37% (N=11) of households in Covalima. 33% (N=15) of all female household heads were married at the time of survey but with male spouse living elsewhere. This arrangement was four times more prevalent in Covalima (44% of households, N=13) compared with 12% (N=2) of households in Oecusse. 6% of female household heads reported that they were divorced (2 in Covalima and 1 in Oecusse). Death of the male household-head as a result of illness was more likely among households surveyed in Oecusse – 56.25% of female headed households (N=9) compared with 10% (N=3) of households in Covalima.

Other research has shown that female-headed households lack male members for heavy agricultural work such as garden preparation and for generating off-farm income, and experience difficulties in accessing credit.⁶⁹ Among households surveyed, female household heads had generally lower levels of schooling, were significantly less likely to receive any remittances, and were more likely to be food insecure.

In surveyed households, female heads had fewer years of schooling than their male counterparts. 62% (N=28) of female-headed households compared with 53% (N=138) of male-headed households had not attended any formal schooling, and 13% (N=6) of female-headed households compared with 25% (N=65) of male-headed households had completed primary-level education. Of those household heads with junior and senior secondary school, proportions were similar for men and women.

Among households surveyed, 6% (N=21) reported receiving remittance in the 30-day period prior to survey, and most of these are categorized as severely food insecure. Of those households receiving remittance, 13 (68%) were severely food insecure, two (10%) were either moderately or mildly food insecure, and four (21%) were food secure. Of those households that reported receiving remittance, 85% (N=18) were male-headed and 14% (N=3) were female-headed. Most households, whether female or male-headed that received remittance were households categorized as severely food insecure. All female-headed households (N=3) receiving remittance were severely food insecure compared with 64% (N=11) of male-headed households. In terms of indebtedness, female households were

slightly less likely to be indebted, 13% (N=6) of female-headed households compared with 20% (N=53) of male-headed households.

In relation to land ownership (Tetum: *rai rasik*), proportions were very similar for female and male-headed households. Of those households that did not own their own land, or have access to other land, two were female-headed and one was male-headed. Of those households that had access to land, 62% (N=28) of female-headed households had access to one plot of land (compared with 60% (N=159) of male-headed households). 28% (N=13) of female-headed households had access to two plots of land (compared to 33% (N=89) of male-headed households). The same percentage of households (4% only) had access to three plots of land.

In conclusion, slightly more female-headed households were food insecure than male-headed households. 69% (N=23) of female-headed households were categorized as severely food insecure compared with 60% (N=128) of male-headed households. The difference in food security, however, was not great enough to be able to draw strong conclusions without further study. Due to the small sample size of female-headed households, this data is not statistically significant and we cannot compare male and female headed households. The analysis, however, will be useful in program planning and determining if further study is required.

BIBLIOGRAPHY

Anne Swindale and Paaula Bilinsky, September 2006, Household Diet Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide Version 2, FANTA-AED, Washington, USA

Asian Development Bank (ADB)-United Nations Development Fund for Women (UNIFEM), November 2005, Country Gender Assessment in Timor Leste

Asian Development Bank Timor Leste Country Assistance Plan 2001-2003

CARE Timor Leste, April 2004, Nutrition Screening Report

CARE, August 2004, Assessment of Nutritional Status and Vaccine Coverage in Timor Leste – Covalima, Bobonaro and Liquica districts

CARE, November 2006 Nutrition and Health Survey of Children and Pregnant women in Timor Leste – Covalima, Bobonaro and Liquica districts

FAO/WFP, June 2007, Crop and Food Supply Assessment Report, Dili, Timor Leste

Government of Timor Leste, 2005, National Development Plan and Food Security Policy Document

Government of Timor Leste, 2006, National Health Systems Profile

Government of Timor Leste, August 2002, Health Profile

[HTTP://www.devdata.worldbank.org.aag.tmp_aag.pdf](http://www.devdata.worldbank.org.aag.tmp_aag.pdf) (Timor Leste economic indicators)

<http://www.nutristrategy.com/nutrition/vitaminc.htm> (information on Pineapple)

www.care.ca/work/emergency/EastTimor/EastTimor_e.shtm

Medicines Sans Frontiers, 1995, Nutrition Guidelines First Edition, Amsterdam, Holland

National University of Timor Leste Department of Agronomy, March 2006, Maize Production and Storage in Timor Leste,

Oxfam Oecusse Baseline Nutrition Assessment Report, April 2004

Oxfam Timor Leste 2006 EC Food Security Project Proposal

Robert Magnani, 1997, FANTA Sampling Guide, Academy for Educational Development, Washington, USA

Save the Children UK, 2005, EPI-Info Manual

Timor Leste Demographic and General Health Survey 2003

UNICEF, 2005, The State of the World Children

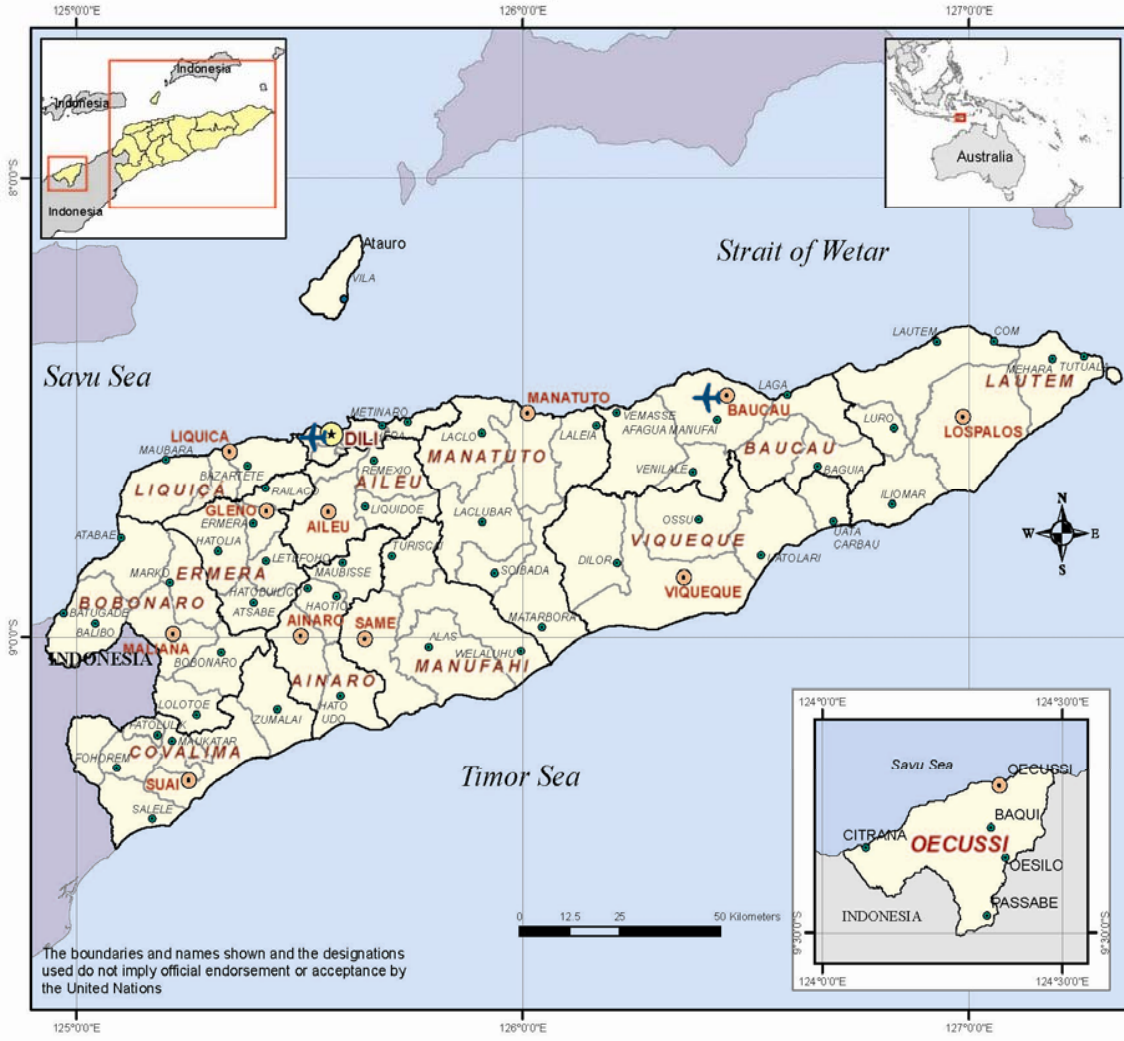
UNICEF, August 2002, Multiple Cluster indicators Survey Report at
http://www.unicef.org/infobycountry/Timorleste_statistics.html

WFP, April 2005, Food Insecurity and Vulnerability Analysis Report, Dili, Timor Leste

WFP-ODAN, April 2006, Timor Leste Market Profile for Emergency Food Security
Assessment

Annex 1

Timor-Leste Reference Map



Key Indicators

Population	1,015,187 (2006)
Life Expectancy	55.5 years
Literacy Rate (15-24)	73%
Under Five Mortality	136 per 1000 live births
Infant Mortality	60 per 1000 live births
Food Insecure & Highly Vulnerable to Food Insecurity	43% (WFP)
Total Fertility	7 births per woman

District	Population	Percentage of Total
Baucau	100,326	10.92
Lautem	55,921	6.09
Viqueque	65,245	7.10
Ainaro	52,476	5.71
Manufahi	44,950	4.89
Manatuto	36,719	4.00
Aileu	37,926	4.13
Dili	173,541	18.89
Ermera	103,199	11.24
Bobonaro	83,034	9.04
Covalima	52,818	5.75
Liquica	54,834	5.97
Oecusse	57,469	6.26

Sources:
 Comprehensive Food Security & Vulnerability Analysis, 2006
 Timor Lestes 2004 Census

Legend

Settlements	Boundary
★ National Capital	— District
● Major Town	— Sub District
● Minor Town	✈ Airport

Cartography : OCHA Timor Leste, April 2007

The boundaries and names shown and the designations used do not imply official endorsement or acceptance by the United Nations

Annex 2: Oxfam Australia's EC Food Security Program Logical Framework

	Intervention logic	Objectively verifiable indicators of achievement	Sources & means of verification	Assumptions
Overall objective	To contribute to the achievement of poverty reduction targets set by the government of Timor-Leste.	Timor Leste is achieving its MDG-poverty reduction target of 2.73% per year by 2010 in Oecusse and Covalima districts.	GoTL monitoring data UNDP annual poverty report Poverty surveys and studies	Security situation remains stable . The elections are timely and validated. There is the political will to prioritize poverty reduction policy and action. International Donors honor their funding and other support commitments. There are no major natural disasters.
Specific objectives	To enable 3000 vulnerable households in Oecusse and Covalima districts to achieve measurable and sustainable improvements in their food security.	3000HH report significant improvements in food security and at least 60% of them demonstrate increased access to food through the lean season	Mid term review in 2008. Final evaluation in 2010. Annual stakeholder workshops (commencing 2007), Program monitoring systems MoH health and nutrition data	No major natural disasters in Oecusse and Covalima. Civil unrest does not impact on project implementation or significantly on household numbers No health epidemics Continued government commitment and support to community outreach health services
Result 1	Community groups and volunteers capacity is increased enabling them to access training, inputs and services and implement effective activities aimed at delivering food security and nutritional improvements.	70% of men & women involved in community groups and 240 COs and family health promoters (75% are demonstrating improved skills to improve their food security and nutrition practices.	FGD and stories of significant change; Program reports; Program review report	No leadership problem or vacuum at the community level
		60% of women involved in the project demonstrate increased participation in decision making within their groups	FGD and stories of significant change; program review report.	women are willing and able to participate in project activities
		60% of targeted communities have implemented capacity & vulnerability assessment as part of their community based planning for improved food security.	project documentation identifying key capacities and vulnerabilities	
		50% of targeted communities that are involved in food	project documents; FGD, video of CO Forums, stories of	proposed changes in local and district government structures result impact

		security, disaster management and nutrition initiatives demonstrate strengthened links with suco councils, local or district government (MAFF, DA, Health) and partner NGOs	significant change, interviews with government	negatively on relationships and activities between community groups and local government
Result 2	Community based groups activities are delivering lasting and environmentally sustainable increases in agricultural productivity, food security and income diversity at the household level	60% households have reduced the duration of their annual food deficit	Food Security Assessments; monitoring reports from each community groups (HH level results)	No major natural disasters. Security situation allows the ongoing implementation of project activities. Groups members, particularly women are empowered, willing and able to implement activities to achieve improvements in household food security (i.e. achievement of Result 1)
		60% of household report reduction of post harvest losses due to improved food & seed storage at either the community or household level	monitoring reports from each community groups (HH level , Food Security Assessments; Harvest reports	
		60% households have adopted improved livelihood and food security techniques	Program records; Program evaluation reports	
		60% of households report an increase in variety of foods grown/produced at the household level	Program reports; Food security assessments	
		50% of households report increase in livelihood options	Program reports; livelihood security assessments	
		In at least 40% of targeted communities, groups have access to micro-credit/savings mechanism at the community level	Program reports; policy discussion reports; community agreements	organizations that support micro-credit mechanisms are willing and able to work in the targeted communities)
Result 3	Improved food use and nutrition practice for target groups, in particular children under 5.	1400 households in target communities demonstrate improved nutrition practices	FGDs; program monitoring reports,	men and women are able to willing to implement improved nutrition practices at the household level
		1000 HH are have adopted proper food processing, preparation and storage practices	program monitoring reports	
		70% of groups have established vegetable gardens	program monitoring reports	sufficient water for vegetable gardens
Result 4	NGOs, National and District government demonstrate increasing levels of partnership and collaboration contributing to an enabling environment for improved food security at the community level.	District government (MAFF, DA, Health) and CSOs are engaged in joint planning and implementation of food security, disaster management and nutrition initiatives with at least 40 community groups across	Partnership agreements; Program reports, FGD with key stakeholders	District Administrations are supportive of program interventions

		Covalima and Oecusse Districts		
		Local government and partners take into account community recommendations when planning projects in Covalima and Oecusse Districts	project records (CO Forum); FGDs with key stakeholders	Local and district government and district NGO continue to work together in Oecusse and Covalima districts and are supportive of Cos
		Food security monitoring in place and working from the community to the sub-district/district and national levels.	six monthly food security reports	Local and district government and district NGOs continue to work together in Oecusse and Covalima districts to support transparent monitoring of food security
		Number of operational disaster management and food security committees at the community, sub-district/district levels linked to the national level	minutes from multi-sectoral district coordination meetings which discuss and address food security at national, district & sub-district level	Local government leads on the process of Disaster Management Committees and key stakeholders support them
		Oxfam, partners and government counterparts have increased capacity to appropriately respond to and support the response of women and communities to food insecurity	Training reports; records of workshops; FG discussions	Continued commitment to strengthening capacity by all players.
	Activities	Means	Source of Information about progress of action	Pre-conditions
Result 1	Community Organizing/Mobilization	Human Resources: EUR613,107	Quarterly monitoring at month 3	MOUs with key government departments are signed
	Participatory Rural Appraisal/Capacity and Vulnerability Assessment	Travel: EUR31,855	Quarterly monitoring at month 6	start up resources are mobilized
	Selection, training and mentoring Community Organizers (CO) and Family Health Promoters (FHP)	Equipment and Supplies: EUR9,200	Quarterly monitoring at month 9	project areas a accessible
	Establishment/Strengthening of Community Groups focusing on women and women-headed household as members	Operations Costs: EUR185,320	Annual stakeholder review; Quarterly report month 12	
	Community Action Planning	Other Costs / Services: EUR49,300	Quarterly monitoring at month 15	
	Capacity building of community groups	Other program: EUR 487,150	Quarterly monitoring at month 18	

	Support for establishing appropriate community structure for effective program coordination and implementation, including DM response	Contingency: EUR 27,519	Quarterly monitoring at month 21	
	Developing markets and other trade mechanisms through research and networking	Administrative Costs: EUR 96,550	Quarterly monitoring at month 24	
	Conflict Mitigation Training	Total Budget: EUR 1,500,000	Mid Term Review including annual stakeholder review (Year 2)	
	Institutionalizing COs forum for learning, information/experience learning and discussion of issues surrounding sustainable livelihoods and food security		Quarterly monitoring at month 27	
Result 2	Developing/Sustaining demonstration/pilot areas on best practices to improve food security and livelihoods		Quarterly monitoring at month 30	
	Replicating and expanding successful livelihood and food security initiatives		Quarterly monitoring at month 33	
	Improving seed and food storage system to reduce post-harvest losses		Quarterly monitoring at month 36	
	Developing seed banks and seed multiplication areas		Annual Stakeholder review - Year 3	
	Supporting natural resource rehabilitation and management regulations		Quarterly monitoring at month 39	
	Establishing community savings and credit mechanism		Quarterly monitoring at month 42	
Result 3	Promoting awareness of the links between health, nutrition and food security awareness		Final Evaluation including Annual Stakeholder Review - Year 4	
	Increasing food production, processing and utilization of food types through support to groups and/ or households to plant vegetable gardens, fruit trees and in the development of appropriate local technology			
	Improving water and sanitation facilities in 10 critical communities			
Result 4	Standardized consultation reporting of food security levels			

	collaboration between CSOs, government and other agencies in program planning and implementation, and policy development			
	Recommend options for policy development and practice.			
	Develop links and provide appropriate support to local government on improvements to food security and nutrition.			
	Joint integrated livelihoods assessment, learning and best practice workshops, baseline and monitoring systems together with Care and Concern across relevant districts			
	Effective monitoring and evaluation of Oxfam's food security and nutrition project			

Annex 3

TERMS OF REFERENCE (TOR)

Concern Worldwide Timor Leste on behalf of Care, Oxfam, CCF Timor Leste Baseline Consultancy for EU funded food security project

1. Background

Five INGOs have received four year grants from the EU as part of the EU Food Security program. These grants commenced 1 January 2007. Four of the INGOs, Care, Concern, Oxfam and CCF, are funded for proposals that are very similar in nature, including a shared overall objective, shared strategies, and joint activities. With a commitment to supporting the government of Timor-Leste in its capacity building and development, the INGOs will add value to their programs by working collectively, sharing information and lessons learned, increasing efficiency and effectiveness by undertaking some work cooperatively and providing support to the government that represents our work over six districts. As part this collaboration, the INGO's will conduct a collaborative baseline survey in their respective target areas in 6 districts.

2. Purpose

To support Care, Oxfam, Concern and CCF assessing the levels of food security in the target Districts of Bobonaro, Liquica, Manatutu, Covalima, Oecusse, Manufahi and Lautem. The consultant will oversee the completion of a baseline in the INGO target areas in six districts. The purpose of this baseline will be to:

- ♦ Provide baseline information, by which project effectiveness and impact can eventually be measured,
- ♦ Provide information that will guide activity design and implementation,
- ♦ Assist in identifying target beneficiaries.
- ♦ Provide data that is comparable across districts and assists the government of Timor-Leste in policy and strategy planning, and assists the INGOs in their capacity building work with government.

3. Specific Tasks

- ♦ Assist in developing the experimental design required for undertaking a baseline survey for food security within the 6 districts covered by CARE, OXFAM, Concern and CCF. This entails evaluating the needs of CARE, OXFAM, Concern and CCF within the proposed districts, and determining the appropriate sampling methodology required. The proposed study design must have sufficient rigor for ensuring the information reported is within the confidence levels required by all parties.
- ♦ Develop the necessary documentation/questionnaires for undertaking the survey. Sufficient pre-testing regime will be required to verify the questionnaire is suitable for generating the information required.
- ♦ Develop a finalized model for the baseline survey indicating the sampling regime for the proposed study areas; a tested questionnaire; data base and a proposed timeline for undertaking the study.
- ♦ Train enumerators from all four INGO's on survey techniques and the questionnaire.
- ♦ Oversee survey implementation in the target areas.
- ♦ Develop an appropriate data base and undertake analysis of the data generated,
- ♦ Provide statistically significant information regarding the overall food security status in the target areas.
- ♦ Make suggestions for future data collection and evaluation,
- ♦ Final reports for each individual organization and collective results for presentation to MAFF/EC.

d) Other

The exact methodology that will be used by the survey will be designed with input from the consultant, but will build upon work already undertaken by the INGO's. The proposed design must meet the programming needs of the four INGO's.

At all stages of the survey incl. design, socialization, the survey exercise, the consultant, in collaboration with the four INGO's shall seek to involve representatives from the Ministry of Agriculture, Forestry and Fisheries.

In fulfilling her/his responsibilities the Consultant will closely co-operate with and be supported by CARE, OXFAM, Concern and CCF. The INGO's will cover costs for and make all international and local travel arrangements and provide the consultant with office space and accommodation as required. Concern Timor Leste, the lead INGO for the consultancy shall introduce the consultant to the key contacts for this

work and make necessary organizational arrangements. CARE, OXFAM, Concern and CCF will provide the consultant with all necessary background information. For this assignment the Consultant will be required to work on weekends.

The field portion of the evaluation will take place in Timor Leste. While performing the field works the Consultant will be based at Care, Oxfam, Concern and CCF field offices. S/he will report to Project Managers assigned by the respective organisations. The Consultant shall at all times follow security rules and regulations as established by Concern Timor Leste.

4. Outputs

The consultant should produce two major outputs:

- ♦ A finalized model for the baseline survey indicating the sampling regime for the proposed study areas - a tested questionnaire, a data base and, a proposed timeline for undertaking the study.
- ♦ A report for each organization, including a fact sheet with the project information; an executive summary; an overview of the applied methodology; an overview of quantitative/qualitative data ascertained; **specific findings** as they relate to the specific objectives of the Terms of Reference.

5. Lines of Communication

Day to day support to the Consultant(s) will be coordinated by Concern Timor Leste in consultation with Care, Oxfam and CCF. Communication relating to the management of logistics/finance for the consultancy will also be performed by Concern

6. Duration of Assignment

The assignment will be for a total period of 15 weeks beginning mid July 2007.

7. Qualification and competencies

Required:

- ♦ Relevant university degree in social sciences, agriculture or health sciences, or equivalent experience
- ♦ Previous experience in food security assessments
- ♦ Previous experience in assessment, evaluation
- ♦ Proven skills in data analysis and statistics,
- ♦ Ability to train, guide and supervise a team of field staff
- ♦ Ability to design and develop data bases
- ♦ Ability to work independently;
- ♦ Flexibility
- ♦ Excellent communication & report writing skills in English
- ♦ Literacy in standard MS office applications and required software for evaluation of nutrition data evaluation

Desired:

- ♦ Experience within an organization undertaking food security programming
- ♦ Previous experience within the region; knowledge of the cultural & social background

Please email applications to Clare Danby (clare.danby@concern.net):

Applications will require a full CV and a cover letter explaining how you would meet the Terms of Reference by 1700 (Timor time) on Wednesday 13 June 2007

Office Tel: +670 3312035, Mobile Tel: +670 7230961,
Office address: Governador Lacerda da Maia, Vila Verde, Dili.
Mail address: PO Box 211 , Correios Dili, Timor Leste

Annex 4

Food security baseline survey Household Questionnaire

1 Location details

District: _____ Sub-district: _____
Suco: _____ Aldeia: _____

2 Household details

- a) Head of household (HH) (M) Male (F) Female
- b) If the HH head is female, what happened to the male head?
(1) HH traditionally headed by female (2) Died naturally (3) Died in conflict
(4) Died in an accident (5) Illness (6) Divorced
(7) Others specify _____
- c) Age of the current HH head (estimated in years) _____
- d) Marital status of the HH head:
(1) Married (2) Divorced/separated (3) Widowed (4) Never married
- e) Education of the HH head:
(1) Primary school (2) Junior High school (3) Senior High school
(4) Undergraduate degree (5) None (6) Others specify: _____

f) Household size and literacy:

Person	Age (in years)	Sex (M / F)	Level of Schooling (write codes)	Level of schooling codes ... 1. SD1 2. SD2 3. SD3 4. SD4 5. SD5 6. SD6 7. SMP1 8. SMP2 9. SMP3 10. SMA1/SMU1 11. SMA2/SMU2 12. SMA3/SMU3 13. University
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

- g) Are you currently hosting any internally displaced persons (IDPs) in your household, who have been displaced since April 2006?
(Y) Yes (N) No

If the answer is YES, how many persons are currently living with you? _____

3 Housing details

- a) Do you own this house or rent it?
(1) Own house (2) Rented house (3) Don't own, live for free
(4) Others specify: _____
- b) What are the walls made of? Observe, confirm with the respondent and circle all that apply
(1) Mud and sticks (2) Bebak/piku (3) Mud walls/mud bricks
(4) Cement/concrete (5) Zinc sheets (6) Others specify: _____
- c) What is the roof made of? Observe, confirm with the respondent and circle all that apply
(1) Palm leaf/Thatch (2) Palm/bamboo/mats (3) Wooden planks

- (4) Papu (5) Zinc/metal sheets (6) Plastic sheet/tarpaulin
 (7) Concrete roof (8) Others specify: _____

d) What is the floor made of? Observe, confirm with the respondent and circle all that apply
 (1) Mud floor (2) Stone/stone slabs (3) Concrete floor (4) Others specify: _____

4 Water, sanitation, fuel and lighting

- a) What is the **main** source of drinking water for your household?
 (1) Piped into the house (2) Piped into yard/plot (3) Protected dug well/ spring
 (4) Unprotected dug well/spring (5) Hand pump (6) Tube well/borehole with pump
 (7) Pond/lake/river/creek (8) Others specify: _____
- b) Where do you/ your household members go for defecation?
 (1) HH Traditional pit latrine (2) HH Concrete toilet (3) Open toilet inside compound (4) Communal latrine
 (5) Bush/nature (6) Others specify: _____
- c) What is the **main** source of cooking fuel for your household?
 (1) Charcoal (2) Firewood (3) Kerosene (4) Gas cylinders (5) Electricity
 (6) Others specify: _____
- d) What is the main source of lighting for your household?
 (1) Kerosene/Gas/Palm oil (2) Flash lights/Batteries (3) Generator
 (4) Electricity (5) Candles/firewood (6) Others specify: _____
- e) Do you currently own any of the following assets? **Circle all that apply**
 (1) Bicycle (2) Motorbike (3) Four wheeler (4) Television
 (5) Radio (6) Others specify: _____

5 Household land holding and crop production details – last harvesting season

- a) How many plots/parcels of agricultural land does your household currently own? _____
- b) Collect the land holding size and crop production details for each plot/parcel of land, in the box below (**use codes**)

Plot	Land type	Land status	Area (hectare)	Main crop	Production details					Inter-cropped with others (Y / N)
					No of sacks/ baskets	No of pieces in each sack / basket	Total number of pieces	Average weight of one piece	Total Production in Kgs	
1										
2										
3										
4										
5										
6										
7										

1 Maize cob = 170 grams 1 Cassava = 616 grams 1 Sweet potato = _____ grams

Use the following CODES to fill in the information in to the boxes above

Land type codes	Main Crop codes	Land status codes
1. Flat land rain fed 2. Flat land irrigated 3. Moderate sloppy rain fed 4. Steep sloppy rain fed 5. Others	1. Rice 2. Corn / Maize 3. Cassava 4. Sweet potato 5. Beans 6. Others	1. Fully owned/ freehold 2. Rented / leased 3. Share cropped 4. Communal/ customary 5. Government land 6. Others

c) How was the production/harvest of each crop used, last season? **Please use the BEANS TECHNIQUE to quantify the uses of production**

Production		Uses of production						
		Self	Sale	Share cropper	Loan paid	Animal feed	Seeds	Other
1	Rice							
2	Corn/Maize							
3	Cassava							
4	Sweet potato							
5	Beans							

d) **Tree crops: ownership and 'use of produce last season**

How many of the following trees your household currently own?

Type of tree crop	# of plants owned	Did they bear fruit last season?	How did you use the harvest?
1	Orange		
2	Papaya		
3	Mango		
4	Jackfruit		
5	Banana		
6	Pineapple		
7	Coffee		
8	Coconut		
9	Candle nut		
10	Others: _____		
11			
12			
13			

Use of harvest: 1) 100% own consumption
 2) 100% sold for cash
 3) Some consumed, some sold for cash
 4) Did not harvest, lack of market
 5) Did not harvest, pest/diseases
 6) Only harvested some of it
 7) Did not harvest, due to floods
 8) Others specify: _____

e) Do you grow vegetables? (Y) Yes (N) No

f) **Crop varieties planted last season**

1) What were the **RICE** varieties your household planted last season? **Circle all that apply**
 (1) _____ (2) _____ (3) _____ (4) _____
 (5) Others specify: _____

2) What were the **CORN** varieties your household planted last season? **Circle all that apply**
 (1) _____ (2) _____ (3) _____ (4) _____
 (5) Others specify: _____

3) What were the **CASSAVA** varieties your household planted last season? **Circle all that apply**
 (1) _____ (2) _____ (3) _____ (4) _____
 (5) Others specify: _____

4) What were the **COFFEE** varieties your household planted last season? **Circle all that apply**
 (1) Mocha (2) Robusta (3) Arabica (4) Others: _____

5) What were the **BEANS** varieties your household planted last season? **Circle all that apply**
 (1) _____ (2) _____ (3) _____ (4) _____
 (5) Others specify: _____

g) **Farm/cultivation practices your household used last season for major annual crops**

Land preparation / soil and water conservation practices, **circle all that apply**
 (1) Slash and burn agriculture (2) Earth terracing (3) Contour terracing with hedge plants
 (4) Shifting cultivation (5) Grass strips (6) Mulching
 (7) Stone terracing (8) Others specify: _____

- 2) Planting methods **Circle all that apply**
 (1) Dibbling (2) Row planting (3) Broadcasting
 (4) Inter-cropping (5) Alley cropping (6) Multiple cropping
 (7) Agri-silviculture (8) Pure cropping (9) Others specify: _____
- 3) Water storage/conservation practices, **circle all that apply**
 (1) Log check dams (2) Concrete check dams (3) Water impounding dams
 (4) Drip irrigation (5) Conventional irrigation (6) Rainwater collection
 (7) Mulching (8) Others specify: _____
- 4) Soil fertilization and management practices, **circle all that apply**
 (1) Weeding (2) Composting (3) Liquid fertilizers (4) Organic pesticides
 (5) Chemical fertilizers (6) Chemical pesticides (7) Others specify: _____
- 5) Seeds selection and storage for next planting season, **circle all that apply**
 (1) Save seeds from total produce (2) Select ear heads from standing crop and save
 (3) Buy from community seed bank (4) Buy from market
 (5) Supply from agriculture department (6) Supply from NGOs and other institutions
 (7) Others specify: _____

6 Household food self-sufficiency

- a) How many meals does your household NORMALLY eat everyday?
 (1) Two meals (2) Three meals (3) Four meals (4) Others specify: _____

- b) When did you harvest these crops? **Check all the months that apply to each crop**

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1 Rice												
2 Corn												
3 Cassava												
4 Beans												

- c) How long do you think – the foods you have harvested already – would last, if consumed by your household only? **Check all the months that apply to each crop, from the month of harvest**

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1 Rice												
2 Corn												
3 Cassava												
4 Beans												

- d) Did your household have to BUY any of the following foods from the market in the LAST 30 days?

Circle all that apply

- (1) Rice (2) Corn (3) Cassava (4) Sweet potato (5) Beans
 (6) None

7 Household diet diversity

- a) How often did your household eat the following 'groups of foods' over the last 30 days?

Mark the responses using the following codes

- (1) Ate rarely (1-3 time/week) (2) Ate sometimes (3-5 time/week)
 (3) Ate often (daily) (4) Did not eat

	Food group	Frequency
1	Rice, maize, sorghum, cassava, noodles	
2	Pumpkins, carrots, squash, chayote and other yellow colored foods	
3	Irish potatoes, sweet potatoes, tapioca, yam, corn and other roots/tubers	
4	Cassava leaves, spinach, papaya leaves, pumpkin leaves, broccoli, kale and other green leafy vegetables	
5	Other vegetables: brinjal, papaya flowers, green papaya and others	
6	Legumes/vegetable proteins – all green beans, green/dry peas, lentils, nuts and other leguminous vegetables	
7	Vitamin A rich fruits – Ripe papaya, tomatoes and other colored fruits	

8	Other fruits – mango, orange, pomegranate, pineapple and other fruits	
9	Meat – goat meat, sheep meat, pork, chicken, beef and other wild meat	
10	Eggs – chicken eggs, duck eggs, and other wild eggs	
11	Sea food - wet and dry fish, prawns, crabs, and other sea foods	
12	Milk and milk based foods – milk, yogurt, lassi, etc	
13	Oils and fats – cooking oils, cheese, butter, ghee, palm oil, coconut oil, etc	
14	Sugar and honey	
15	Coffee, tea	

8 Household coping strategies

a) In the last 30 days, were there any times your household did not have enough food to have NORMAL meals? **(Normal – in terms of type of food, quantity and, frequency)**

(Y) Yes (N) No

b) If the answer is YES, probe and circle all the options in this BOX below that apply to this household, and to determine the frequency, ask how many times in a week they used each of the coping strategies.

Mark the responses using the following Frequency codes:

(1) Daily (2) 1-2 times a week (3) 3-5 times a week (4) None

Type of coping strategy		Frequency
1	Relied on less preferred, less expensive foods – cheap & low priced foods	
2	Reduced meal size	
3	Reduced the number of meals	
4	Skipped days with out eating	
5	Borrowed food and/or received help from relatives and friends	
6	Took food loans/credits from local shops	
7	Ate wild foods from nearby bush/forest	
8	Ate papaya leaves, pumpkin leaves, sago	
9	Ate seed stock meant for next planting	
10	Bartered some household items for food	
11	Sold chickens/ducks to buy food	
12	Sold goats/sheep/pigs to buy food	
13	Sold household articles to buy food	
14	Sold agricultural tools/implements to buy food	
15	Some members are in migration to earn cash	
16	Collection and selling of firewood and other natural resources	
17	Others specify:	

c) Household Food Insecurity Access Scale (HFIAS) Measurement Tool

(In answering each of the following questions, please respond according to your situation in the **past 30 days**)

1. Did you worry that your household would not have enough food?
(0) No (skip to Q2) (1) Yes

1a. If the answer to Q1 is YES, how often did this happen?
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)

2. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?
(0) No (skip to Q3) (1) Yes

2a. If the answer to Q2 is YES, how often did this happen?
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)

3. Did you or any household member eat a limited variety of foods due to a lack of resources?
(0) No (skip to Q4) 1 = Yes
- 3a. If the answer to Q3 is YES, how often did this happen?
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)
4. Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?
(0) No (skip to Q5) (1) Yes
- 4a. If the answer to Q4 is YES, how often did this happen?
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)
5. Did you or any of your household members eat smaller meals than you felt you needed because there was not enough food in your house? (8C in the database)
(Y) Yes (N) No
- 5a. If the answer is YES, how often did it happen? (8D in the database)
(1) Rarely (2) Sometimes (3) Often
6. Did you or any other household member eat fewer meals in a day because there was not enough food? (5 in the database)
(0) No (skip to Q6) (1) Yes
- 6a. If the answer to Q5 is YES, how often did this happen? (5a in the database)
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)
7. Was there ever NO FOOD at all in your household because there were not enough resources to go around? (8e in the database)
(Y) Yes (N) No
- 7a. If the answer is YES, how often did it happen? (8f in the database)
(1) Rarely (2) Sometimes (3) Often
8. Did you or any household member go to sleep at night hungry because there was not enough food? (6 in the database)
(0) No (questionnaire is finished) (1) Yes
- 8a. If the answer to Q6 is YES, how often did this happen? (6a in the database)
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)
9. Did you or any of your household members go a WHOLE DAY with out eating because there was not enough food? (8g in the database)
(Y) Yes (N) No
- 9a. If the answer is YES, how often did it happen? (8h in the database)
(1) Rarely (2) Sometimes (3) Often
- d) In the past TWELVE months, were there any months during which your household did not have food to meet your family needs
(Y) Yes (N) No
- e) If the answer is YES, which were those months, **check all the months that apply to this household?**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

9 Household's ownership to livestock

a) What is the type and size of the livestock your household currently own?

Type of animal / bird		Total # of heads / birds	How do you use these animals?
1	Goat		Animal use codes 1. 100% own consumption 2. 100% sale for cash 3. Special ceremonies only 4. We sell some, we eat some 5. To buy food
2	Sheep		
3	Pig		
4	Poultry		
5	Ducks		
6	Cattle		
7	Buffalo		
8	Horse		

10 Household income and debt details

a) Does your household currently owe any money/loans to anybody within/outside your community?
 (Y) Yes (N) No

b) Who do you owe this money/loan to? **Circle all that apply**
 (1) Someone with in the community (2) Someone outside the community
 (3) Landlord in the community (4) Formal institutions
 (5) Local savings/credit scheme (6) Local money lender
 (7) Others specify: _____

c) What is the size of the loan in US Dollars? _____

d) Why did you have to take that loan?
 (1) To buy food (2) To pay school fee (3) To buy school uniforms
 (4) For special ceremonies (5) To buy seeds/seedlings (6) Others specify: _____

e) How are you repaying that loan? **Circle all that apply**
 (1) Monthly cash payment (2) Through crop share (3) Bonded labor
 (4) Daily labor (5) Gave away animals (6) Gave away some land
 (7) Repay when we have money (8) Others specify: _____

f) Is your household receiving any REMITTANCES/TRANSFERS from your relatives and friends working outside your community/abroad?

g) If the answer is YES, what was the size of the last remittance/transfer in US Dollars? _____

h) What is the MAIN source of cash for your household THIS month?
 (1) Crop sale (2) Animal sale (3) Cash for work (4) Loans/credits
 (5) Remittance/transfer (6) Small business (7) Others: _____

End of interview

Before leaving this household, please check if there is/are question(s) that you may have missed during the interview. Then THANK the respondents for his/her cooperation.

Annex 5

Community Questionnaire Focus Group Discussion guidelines

Focus group discussion (FGD) is a PRA tool to gather information about the community on key issues that represents the community. For this survey, the discussion would center on food security and livelihood issues of the community in general, in addition to information collection of basic facilities.

Objectives

- To understand community perceptions of food security and livelihoods
- To understand community constraints to achieving food and livelihood security
- To understand how the community and households cope with food insecurity
- To understand and list community level criteria to define vulnerable households

With whom:

One FGD with 8 – 10 men drawn from different sections/ethnic groups in the community

One FGD with 8 – 10 women drawn from different sections/ethnic groups in the community

Time taken: about two hours for each FGD

Facilitators:

Totally FOUR people – two facilitate one FGD with men and the other two facilitate another FGD with women, simultaneously. One each group takes notes (in verbatim). **Seek group's permission to take notes.**

How to facilitate

- After reaching selected Aldeias, try and meet with Aldeia chiefs and explain him the purpose of your visit.

Say your names and who you work with – mention your agency. We are doing a survey to understand food security/livelihoods issues in about 100 Aldeias across SEVEN districts and your Aldeia was selected randomly. That is why we are with you here today. The information we would collect from your community today would be used for planning food security and livelihood interventions to benefit poor and vulnerable people in your district. **(Politely say, we would not compensate for the time you and your people spend with us today).**

- Request the chief to walk you through the village so that you understand different sections of the Aldeia. You should use this walk to also identify 8 – 10 knowledgeable MEN and WOMEN from different sections/ethnic groups in the community - school teachers, farming men and women, priests, youths, members of active groups in the community, etc. **Decide the timing of FGD with men and women so that the chief can convey it to men and women members who would participate.**
- Ask the chief to suggest a suitable place where you can conduct the Focus Group Discussion. As far as possible, avoid using the Chief's house. Ask the members to sit comfortably, preferably in circular fashion so that you could observe everyone during discussion.
- Introduce yourselves to the members and explain the purpose (repeat what you said to the chief). Tell them we would ask you a few questions that can get us an understanding about your community's food security and livelihood issues and how that information would be used. Now you proceed with the community questionnaire

Some tips

- Make sure everyone participates in the discussion, observe and ask silent spectators to speak up
- Politely silence/ignore those who dominate the discussions and speak for others
- Reach consensus through majority vote and after detailed discussions
- Do not prompt, but PROBE, let the answers to your questions come from them
- Give respect to every member and maintain your body language

**Food security baseline survey
Community questionnaire for Focus Group Discussion**

1. Location details

District: _____ Sub-district: _____
Suco: _____ Aldeia: _____

2 Basic details and facilities

- a) Total number of households in your Aldeia: _____
- b) What is the estimated population of your Aldeia? _____
- c) Are there any displaced persons currently living in your community (**people** displaced from other communities into your community)?
(Y) Yes (N) No
- If the answer is YES, how many displaced people are currently living in your community? _____
- Since when have they been displaced into your community? **Write year** _____
- Why have they been displaced into your community?
- d) Are there people who have been displaced from your community and are currently living in other communities?
(Yes) (N) No
- If the answer is YES, how many people have been displaced from your community? _____
- Since when have they been displaced from your community? **Write year** _____
- Why have they been displaced from your community?
- e) Is there a functioning primary school in your community? Y / N
If the answer is NO,
How long (amount of time) do your children take to get to the nearest primary school? _____
- f) Is there a functioning junior secondary school in your community? Y / N
If the answer is NO,
How long (amount of time) do your children take to get to the nearest Jr. secondary school? _____
- g) Is there a functioning senior secondary school in your community? Y / N
If the answer is NO
How long (amount of time) do your children take to get to the nearest Sr. secondary school? _____
- h) Is there a functioning health post/clinic in your community? Y / N
Is the answer is NO,
How long (amount of time) do you people take to get to the nearest health post/clinic? _____
- i) What are the major means of transport for people in your community?
List all major transport means
- j) What is the condition of the road from this village to the main road?
Mud road / Gravel road / Tarmac road
- What is the distance from your village to the main road? _____ km
- Is your village accessible by ROAD throughout the year? Yes / No

k) What are the functioning milling and grinding facilities available for you with in your community?
(Facilities for grinding/milling food grains, coffee, etc)

l) Is there a functioning market in your community where you can buy / sell things? Y / N

If the answer is YES, how often it is open? (D) Daily (W) Weekly

If the answer is NO,
How long (time) do you people take to get to the nearest market? _____

If traveled by public transport to that market, how much it would cost **one way**? _____ USD

m) Where do you sell your agricultural produce / buy agricultural inputs?

n) If you need some information /assistance about **agriculture**, where do you go? Who do you ask?

3 Are there any **NGO/UN** agencies currently assisting your community? Y / N

If the answer is YES, who are those and what are they assisting your community with?

Enter all the sector/s that apply to each agency

Name of NGO / UN agency		Since when (Year)	Sector of assistance	Sector codes.....
1				1. Emergency food assistance
2				2. Community health
3				3. Water and sanitation
4				4. Education
5				5. Agriculture
6				6. Household Income Generation
				7. Peace building
				8. Others specify: _____

4 What are the sectors/services **Government of Timor Leste** is assisting your community with?

Government Department / Ministry		Services extended	Frequency service/s extended	Service codes.....
1				1. Agriculture extension services
2				2. Seeds / tools distribution
3				3. Agricultural irrigation works
4				4. Health services/ campaigns
5				5. Microcredit/microfinance
6				6. Peace building efforts
7				7. Education / literacy
				8. Road construction/repair
				9. Infrastructural works
				10. Others specify: _____
				Frequency codes
				1. Once every fortnight
				2. Once monthly
				3. Once every two months
				4. Others specify: _____

Frequency is defined as the number of visits Government representative makes to your community to extend services

5 What are the other groups that are **ACTIVE** in your community (**list groups' name and the activities they have undertaken**)

Name of the group active in your community		Activities or services undertaken
1		
2		
3		
4		
5		
6		
7		

6 Land tenure in your Aldeia

a) What kind of LAND TENURE **most** households in your community have to the lands they cultivate now?

Circle three major options

- (1) Own land/free hold (2) Rented / leased (3) Communal/customary land
 (4) Government land (5) Share cropping (6) Others specify: _____

b) Was the LAND TENURE same **10 years ago** as it is today? Y/ N

c) If the answer is NO, how has it changed since then, list community responses?

d) Are there any **traditional law/s or practice** (Tarabandu) in your community you use make decisions or resolve conflicts? If YES, list those laws or practices

Who, in your community, are involved in making decisions or resolving conflicts?

List **three** main areas you use traditional law or practice (Tarabandu) to make decisions or resolve conflicts?

7 Livelihood strategies

a) What were the MAJOR livelihood activities for MOST households in your community last season?

List THREE major activities for each livelihood activity

Livelihood activity		Three major activities for each livelihood activity		
1	Crops grown			
2	Animals reared			
3	Wage labor activities			
4	Cash for work activities			
5	Handicrafts activities			
6	Food for work activities			
7	Small business			
8	Hunting/gathering			
9	Fishing			
10	Others specify: _____			

b) How many households in your community **currently** have members working outside the country? _____

c) What were some of the MAJOR constraints people in your community encountered while pursuing livelihood strategies, last season? **List community responses**

8 Household vulnerability

a) How do you define if some families in your community are **poor** and have **most** difficulty in meeting their food and/ or cash needs and WHY? **List reasons for being Poor**

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

End of interview; please thank all the members for their time and cooperation

Annex 6: Attachment to Household Questionnaire

Household Food Insecurity Access Scale (HFIAS) Measurement Tool

In answering each of the following questions, please respond according to your situation in the **past 30 days**

1. Did you worry that your household would not have enough food?
(0) No (skip to Q2) (1) Yes
- 1a. If the answer to Q1 is YES, how often did this happen?
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)
2. Were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?
(0) No (skip to Q3) (1) Yes
- 2a. If the answer to Q2 is YES, how often did this happen?
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)
3. Did you or any household member eat a limited variety of foods due to a lack of resources?
(0) No (skip to Q4) 1 = Yes
- 3a. If the answer to Q3 is YES, how often did this happen?
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)
4. Did you or any household member eat food that you preferred not to eat because of a lack of resources to obtain other types of food?
(0) No (skip to Q5) (1) Yes
- 4a. If the answer to Q4 is YES, how often did this happen?
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)
5. Did you or any other household member eat fewer meals in a day because there was not enough food?
(0) No (skip to Q6) (1) Yes
- 5a. If the answer to Q5 is YES, how often did this happen?
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)
6. Did you or any household member go to sleep at night hungry because there was not enough food?
(0) No (questionnaire is finished) (1) Yes
- 6a. If the answer to Q6 is YES, how often did this happen?
(1) Rarely (once or twice in the past 30 days) (2) Sometimes (3-10 times in the past 30 days)
(3) Often (more than 10 times in the past 30 days)