

SPECIAL REPORT

FAO/WFP CROP AND FOOD SUPPLY ASSESSMENT MISSION TO TIMOR-LESTE

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Mission Highlights

- 2007 production of cereals, cassava and other tubers, in cereal equivalent, is forecast at about 123 500 tonnes, a modest level reflecting adverse weather conditions, especially in the northern coast, and the outbreak of locusts in the western part. With some uncertainty due to the unreliability of data, production is estimated to have contracted by 25-30 percent compared to the average level of the last few years. Production of the secondary 2007 crop will depend on timely support to farmers, and more favourable growing conditions during the period starting in October.
- Output of maize, by far the most important crop in Timor-Leste, is estimated to have declined by 30 percent, to less than 70 000 tonnes from an average of 100 000 tonnes over the last few years. Main determinants for this decline include delayed onset of rains, below normal rainfall, and reduced maize area due to shortages of seeds.
- A major outbreak of locusts occurred in March in the western part of the country, causing heavy damage in maize and rice production on about 4 500 ha, losses are assessed at 4 500 tonnes.
- The shortfall in maize production will not, contrary to other years, be offset by an increase in rice production, since rice was affected by the same problems, with a resulting drop of 20 percent in output.
- In order to prepare the second crop, in May, and the next crop, in October, producers are in urgent need of rice and maize seeds, due to (1) the reduced output, (2) the likely consumption of seeds for food, (3) the replanting already carried out and (4) the poor quality of seeds.
- The cereal deficit in 2007/08 (April/March) is estimated at 86 364 tonnes. With commercial imports anticipated at 71 000 tonnes, including expected government purchase of 16 000 tonnes for strategy reserve, there remains an uncovered import requirement of 15 000 tonnes.
- The mission estimates that some 210 000 to 220 000 vulnerable rural people will require emergency food assistance for a period of 6 months, from October 2007 to March 2008, with 15 000 tonnes of cereal. In addition to the cereal deficit, the Mission recommends 3 800 tonnes of non-cereal food products to meet the required 2 100 kcal per person per day, including micro nutrient needs.
- Close monitoring of key food security indicators such as agricultural production, locust infestation, health and nutrition, prices of staples up-country and in the cities, price of fuel, is needed. Adjustments may also become necessary, depending on future climatic conditions and their impact on agricultural output.
- In February and March 2007, the country experienced a severe food crisis, with price hikes and virtually no rice available in the market. This was due to the unfavourable regional food supply/demand situation and social turmoil, but also to poor coordination and management of determinants of food security. This crisis highlights the need to improve food security policies, strategies, and implementation mechanisms.

1. OVERVIEW

A FAO/WFP Crop and Food Supply Assessment Mission visited Timor-Leste from 17 March to 8 April 2007 to review and analyze the food supply and demand situation in the context of the country's macro-economic situation, and to forecast import requirements in the light of potential food needs in marketing year 2007/08 (April/March), with particular attention to the needs of the most vulnerable groups. The team also carried out general analysis regarding food security policy in the country, as a rice crisis had just erupted; this provided lessons on what not to do in similar future circumstances. Emphasis was placed on the appropriate institutional set-up needed to achieve consistency in food security, as well as sustainable development over the longer term, especially through a rehabilitation of the agriculture sector.

The mission carried out a field survey in several districts (Manatuto, Lautem, Baucau, Oecussi, Bobonaro and Ermera), with WFP visiting the districts of Viqueque, Liquiça, and Manufahi. The situation in the other districts was assessed through interviews with agents of the Ministries, traders, and other sources. A specific survey was made to assess the extent of the locust outbreak in the districts of Bobonaro and Ermera and the risk of its subsequent propagation to other districts as migratory swarms already had started to form. An evaluation of the impact of the infestation on crops, especially maize and rice, in these two districts – among the few that can be labelled as surplus districts –, was carried out, and an emergency action plan was prepared to halt the propagation of the locusts. Damage to crops is currently estimated at 500 tonnes of rice and 4 000 tonnes of maize.

The timing of the mission was scheduled for a normal harvest time starting in March and peaking in April. Due to a delay in the onset of rains, and drought during the flowering stage, the mission observed reduced crops, and a reduced planted acreage of rice.

The majority of rural households are subsistence farmers who practice inter-cropping of maize and cassava and other tubers or legumes, often in scattered locations. Hence, the transition to a market-based

agricultural system is likely to prove difficult in the coming years, with such difficulty further compounded by the isolation of remote areas, very poor extension services offered to producers, and limited access to private sector services. There is also very scant investment in up-and crops. Assistance to the rehabilitation of irrigation systems currently lacks planning, a weakness that is exemplified by the low provision for maintenance usually reported. Rehabilitation is also insufficiently based on community participation, a fact that may strengthen, or at least leave unchanged, an attitude of passivity inherited from the colonial and Indonesian eras. Poor post-harvest practices, particularly in rice, are a major constraint to raising the competitiveness of domestic agricultural production. This limits local procurement of food aid and the constitution of food reserves from domestic supply, which is currently minimal. In rice, poor drying contributes a high proportion of broken grains during milling, a defect of domestic rice often reported by consumers and traders. This is partly due to lack of labour and adequate threshing and drying facilities. Another major weakness of post harvest activities is the lack of adequate storage equipments and know-how, and the resulting high loss rate for grains. Effective policy measures are needed to promote the development of domestic agriculture to draw closer to self-sufficiency in staples and other food products and hence, improved food security.

Rice growers often are more specialized in this crop, which may weaken their food security to the extent that they cannot resort to other crops as a coping mechanism in case of rice shortfall. Rainfall and its distribution over time is a major limiting factor to yields and output. Generally speaking, this small country is very fragmented in terms of terrain and rainfall conditions, with sometimes an abundant crop in one location and a drastic shortfall in production only a short distance away. This complicates the assessment of overall production, also in view of unreliable data on agricultural production. In the Southern part of the country, a second crop of rice and maize can be grown, whereas in the Northern part, this is not possible, excepted on irrigated areas.

Overall agricultural performance in 2007 was poor. Total production of maize, rice and cassava (in cereal equivalent) is forecast at 123 469 tonnes, a decline of 25-30 percent compared to the average over the last few years, due to late onset of rains, lack of maize seeds and other inputs and generally unfavourable, erratic, rainfall. Assistance in providing seeds, particularly for maize, is therefore urgently needed. The drought occurred at the beginning of the season, adversely affecting maize. Farmers delayed rice planting until adequate water became available, but also reduced planted acreage.

Cassava production in 2007 is projected to decline slightly compared to the average level, causing a rise in the price of this tuber, as effective demand switched from expensive rice to tubers.

As a result of the lower overall production, cereal import requirements for the marketing year 2007/08 are estimated at 86 364 tonnes. Projected needs for food aid by WFP in rice total some 15 000 tonnes, government imports for the constitution of strategic reserves and for subsidized sales is expected at 16 000 tonnes which will be brought through private traders or government-to-government agreements. The rest of the rice import requirement of some 49 000 tonnes is expected to be met by private commercial importers. Due to methodological difficulties, the contribution beans, bananas and other products is not taken into account in the calculation of the country's overall food balance. These products often play an important part in nutrition both quantitatively – in terms of calorie intake – and qualitatively – due to the important nutrients that they bring to the diet. This, however, should not substantially change the stark picture of food security in the country in the coming year.

Food security in Timor-Leste is a key component of national security at large since only 36 percent of households are considered food secure, and global chronic malnutrition affects 47 percent of the population countrywide. Household food security is highly heterogeneous across districts, despite the fact that food insecurity is generally more pronounced in rural upland areas, where subsistence farmers are not able to engage in other activities. Food insecurity is positively correlated with the lean season, since the depletion of the vulnerable households' stocks is then particularly rapid. It is worth noting that this depletion of stocks added to the contraction of output is occurring after two years of reduced crops. Together with flaws in food security policy, these factors can help explain why stocks were very scarce at the beginning of the recent rice crisis, and why the disruptions thus caused were so deep.

Food security also continues to be hampered by (1) limited market access, with villages being on average 20 miles away from the nearest market, (2) lack of effective demand by subsistence farmers in rural areas and impoverished city dwellers, Dili in particular, (3) very high post-harvest losses, (4) shortages of secure on-farm storage capacity, as well as (5) absence of policies to promote domestic production in the face of strong international competition, especially for rice.

Vulnerability analysis indicates that the total number of persons in prioritized districts in need of food assistance is 210 000-220 000 countrywide. It is worth noting that while most IDPs receive food aid, only a small proportion of subsistence farmers benefit from it. In addition to this, households up-country often accommodate IDPs from the cities, mainly Dili, a situation which further strains their already stressed resources. A better targeting of the needy and commensurate allocation of food aid may help in addressing the tensions created by what is often perceived as an unfair treatment by some population groups.

School-feeding (now called Food for Education) is an efficient tool to build up food security as it combines many advantages: (1) child under- and malnutrition problems are directly addressed, with all subsequent benefits when they grow, (2) it is an incentive to attend school, hence is conducive to sustainable development and (3) takes off a burden from their parents' shoulders both in terms of time to prepare food and, obviously helps provide sufficient food for the children. Mother and Child Health programmes (MCH) are also needed to safeguard pregnant women and children from deterioration of nutrition situation.

2. OVERALL ECONOMIC SETTING AND AGRICULTURE IN TIMOR-LESTE

2.1 Macro-economic situation

Timor-Leste is a small mountainous country occupying the eastern half of an island (plus the enclave of Oecussi in the western half, which is Indonesian territory). Its insularity contributes heavily to the economic problems faced by the youngest nation in the world, whose independence took place in 1999 under dramatic conditions.

In 1999, after Timorese electors overwhelmingly voted in favour of independence, violence erupted throughout the country, causing the displacement of more than the three quarters of the population and destruction and damage of about 70 percent of the physical infrastructure. The war, as well as political and social unrest in 2006 and in February-March 2007, has taken a heavy toll on the country, which is currently the poorest in South-East Asia.

According to the EIU country report released in January of this year, real non-oil growth has been negative in 2002 (-6.7 percent) and 2003 (-6.7 percent) but became slightly positive in 2004 and 2005 (respectively 0.4 percent and 2.3 percent). This modest growth is, however, lower than that of the population, around 3 percent per year. The establishment of UNMIT to help restore stability and support the electoral process is likely to have supported economic activity, but recent events (social turmoil and the consequences of the drought) have had the reverse effect, probably leading to a contraction in 2006 and in the first quarter of 2007. The modest non-oil GDP at current prices of US\$350 million for a population nearing one million, illustrates the population's difficult living conditions.

Government expenditure currently remains a major component of the limited effective demand, despite the limited budgetary resources. In 2005, a Petroleum Fund was created to manage the country's oil and gas revenues in a sustainable development perspective, to prepare for the time when, eventually, oil and gas reserves will run out. These revenues are expected to increase manifold as tapping of the reserves enters in its full phase. According to the EIU, the Fund's closing balance stood at US\$847.1 million at the end of September 2006. However, State expenditure expansion through use of effectively available funds, of all origins, is hindered by its limited capacity to formulate and implement development projects and to meet stringent financial procedures avoiding graft.

Inflation is picking up as consumer prices rose sharply, by 6.9 percent, in the second quarter of 2006, though it fell slightly to year-to-year rate of 6.3 percent in the third quarter of that same year. A matter of concern is that the price index is pushed by a steep rise in local fuel prices: local transportation, both for its cost and its availability, indeed is a major problem for food distribution inside the country, hence is also a major issue for food security policy.

Coffee accounts for nearly all of the country's non-oil exports, at a very low level of US\$1.4 million in January-February 2006. Despite this level, coffee is the main source of cash income for a sizeable proportion of the rural poor, so that any drop in coffee price or output would deeply affect their livelihood; many of the concerned farmers concentrating on coffee production to the detriment of food crops.

Exports (all commodities) cover only a very small fraction of imports, as these stood at 30.1m in January-February and April-May 2006, of which 2m were cereals (as commercial imports). In 2005, cereals imports reached US\$5.8 million, while imports of petroleum products added up to US\$35.1 million.

The rate of unemployment is very high, posing a very serious challenge for the future given limited development opportunities. It also constitutes a cause of social unrest, especially in cities. Unemployment is a main reason of limited effective demand, along with the predominance of subsistence farming. The situation decisively worsened after independence, as many jobs in the Indonesian public sector disappeared.

The country's dependence on cereal imports rose from 20 percent in 1990 to approximately 40 percent at present as mentioned in the WFP document released in April 2006 and entitled *"Timor-Leste: Market Profile for Emergency Food Assessments"*. Annual rice imports of 35 000-40 000 tonnes increased to 55 831 tonnes in 2004. Free trade and free market policies adopted in the wake of independence (a 5 percent import duty on all goods, a 5 percent income tax and a 5 percent sales tax) totally reversed the situation that existed during Indonesian domination. In the course of this 24 years period, stringent quantitative restrictions on imports were supplemented by a centralized scheme for the collection and distribution of basic staples, which was regulated by the national logistics system BULOG, with, at the provincial level, the provincial Depot Logistik (DOLOG). Indonesian restrictive import policies drew exclusively on quantitative restrictions, plus BULOG's monopoly on imports of rice, sugar, wheat, maize and soybeans. This scheme, though it favoured very hierarchical relations in the farming sector and discouraged an innovative spirit, sought to keep domestic prices at targeted levels, in application of the policies chosen.

Currently, local producers, who are mostly subsistence growers, find themselves exposed directly to international competition while no longer benefiting from subsidized fertilizers and other inputs, or from guaranteed Government purchase prices.

As a radical change from Indonesian times, private traders now dominate commercial imports, but have functioned in an environment of high uncertainty due to market interventions that were not well prepared and predictable, and social unrest. There is a clear need for coordination between all parties contributing to national food security, with the objective of making sure that all stakeholders, including traders, know their respective roles, opportunities and constraints.

The consequence of this combination of low productivity of farming and open barriers is stated as follows in the above-mentioned WFP study (p.12): *"Although free trade is good for the urban poor, food security for subsistence farmers – more than 90 percent of the rural population – has been negatively affected by imported cheap rice. As consumers, the benefits of cheap rice for these households are very limited owing to their limited purchasing power. As subsistence producers with limited alternative income sources, they have to sell portions of their crops for cash requirements. Monthly data show that the rice import pattern has not followed monthly rice imports requirements or production-hunger seasons, implying that farmers' food deficit during the lean season has not been met by imported rice."*

This means that the separation between imports and domestic production does not only lie in the fact that subsistence farmers cannot, in practice, access commercially imported rice (and, in addition, receive scarce humanitarian rice), due to their very limited income. It also relates to price formation: since the domestic market has been integrated into the world market as of 2003, the domestic price of rice is no longer affected by domestic supply shocks. Shortages of supplies during the lean season do not affect wholesale and retail prices, so food aid accurately targeted to the rural poor during the lean season, or after crop failures, would thus make a valuable and much-needed contribution to food security while not causing market disruption.

2.2 Population

As shown in Table 1 below, population is steadily increasing, at an annual rate of around 3 percent. To be noted is the specific situation of Dili, which registers a substantial loss due to the high number of IDPs leaving it, while Baucau is on the contrary receiving a very substantial influx of IDPs, hence a sharp rise of 35 percent of its population.

Table 1: Evolution of the population in Timor-Leste 2004-2007

District	Census 2004	Mid Year 2007 without IDPs	IDPs flux in 2006	Mid Year 2007 with IDPs
Aileu	37 967	41 081	5 816	46 897
Ainarao	52 480	56 784	3 572	60 356
Baucau	100 748	109 010	25 776	134 786
Bobonaro	83 579	90 433	3 340	93 773
Covalima	53 063	57 415	2 602	60 017
Dili	175 730	190 141	-74 180	115 961
Ermera	103 322	111 795	4 380	116 175
Lautem	56 293	60 909	5 841	66 750
Liquiçá	54 973	59 481	7 942	67 423
Manatuto	36 897	39 923	2 516	42 439
Manufahi	45 081	48 778	1 795	50 573
Oecusse	57 616	62 341	2 395	64 736
Viqueque	65 449	70 816	8 205	79 021
Total	923 198	998 907	0	998 907

Table 2 below shows the food balance district per district, using available data. However, it must be stressed that the relevance of such an exercise is very limited due to the marked unreliability of production data. While due caution is needed in using this table, it provides some indications on the surplus and the deficit districts, with the latter by far outnumbering the former. Determining accurately the variations of the food balance district-wise would require a marked improvement in data collection and processing by the Ministry of Agriculture, with substantial assistance by donors.

Table 2: Indications on food balance district-wise (tonnes)

	Maize	Rice	Cassava & Other Root Crops ^{1/}	Total	Maize	Rice	Cassava & Other Root Crops ^{1/}	Total
AILEU				LAUTEM				
Total Availability	2 448	419	1 085	3 952	14 491	2 598	4 883	21 973
Production	2 448	419	1 085	3 952	14 491	2 598	4 883	21 973
Total Utilization	4 898	3 555	736	9 189	9 903	5 241	1 148	16 291
Food Use	4 221	3 517	703	8 441	6 008	5 006	1 001	12 015
Seed feed and losses	677	38	33	747	3 895	234	146	4 276
Deficit/Surplus	2 450	3 136	-349	5 237	-4 588	2 643	-3 735	-5 681
AINARO				LIQUICA				
Total Availability	4 001	743	1 750	6 495	1 400	236	445	2 081
Production	4 001	743	1 750	6 495	1 400	236	445	2 081
Total Utilization	6 545	4 594	958	12 096	6 454	5 078	1 025	12 557
Food Use	5 432	4 527	905	10 864	6 068	5 057	1 011	12 136
Seed feed and losses	1 113	67	53	1 232	386	21	13	421
Deficit/Surplus	2 543	3 850	-793	5 601	5 054	4 842	580	10 476
BAUCAU				MANATUTO				
Total Availability	6 616	3 018	2 042	11 676	3 508	3 027	1 914	8 448
Production	6 616	3 018	2 042	11 676	3 508	3 027	1 914	8 448
Total Utilization	13 910	10 388	2 083	26 380	4 771	3 457	694	8 923
Food Use	12 131	10 109	2 022	24 262	3 819	3 183	637	7 639
Seed feed and losses	1 779	279	61	2 119	952	274	57	1 284
Deficit/Surplus	7 294	7 370	41	14 705	1 263	431	-1 220	474
BOBONARO				MANUFAHI				
Total Availability	3 718	4 074	2 512	10 304	6 612	2 519	1 411	10 542
Production	3 718	4 074	2 512	10 304	6 612	2 519	1 411	10 542
Total Utilization	9 431	7 343	1 482	18 256	6 337	3 992	801	11 130
Food Use	8 440	7 033	1 407	16 879	4 552	3 793	759	9 103
Seed feed and losses	991	310	75	1 377	1 785	199	42	2 027
Deficit/Surplus	5 712	3 269	-1 030	7 951	-275	1 473	-610	588
COVALIMA				OECUSSE				
Total Availability	8 436	4 407	2 854	15 698	2 976	1 440	2 621	7 037
Production	8 436	4 407	2 854	15 698	2 976	1 440	2 621	7 037
Total Utilization	7 641	4 843	986	13 469	6 749	4 985	1 050	12 783
Food Use	5 401	4 501	900	10 803	5 826	4 855	971	11 652
Seed feed and losses	2 239	341	86	2 666	923	130	79	1 131
Deficit/Surplus	-795	435	-1 869	-2 229	3 773	3 545	-1 571	5 746
DILI				VIQUEQUE				
Total Availability	778	40	563	1 381	12 376	3 600	3 437	19 413
Production	778	40	563	1 381	12 376	3 600	3 437	19 413
Total Utilization	10 657	8 701	1 756	21 114	10 445	6 222	1 288	17 956
Food Use	10 437	8 697	1 739	20 873	7 112	5 927	1 185	14 224
Seed feed and losses	220	3	17	241	3 334	295	103	3 732
Deficit/Surplus	9 879	8 661	1 193	19 733	-1 931	2 622	-2 148	-1 457
ERMERA								
Total Availability	2 460	618	1 392	4 469				
Production	2 460	618	1 392	4 469				
Total Utilization	11 136	8 769	1 784	21 689				
Food Use	10 456	8 713	1 743	20 912				
Seed feed and losses	680	56	42	777				
Deficit/Surplus	8 676	8 151	392	17 219				

Source: Estimated by this mission.

^{1/} Cereals equivalent.

2.3 Agricultural sector

General

Timor-Leste has a total land area of approximately 14 500 sq. km, of which 600 000 hectares are suitable for crop and livestock production. Approximately 174 000 hectares are arable with an additional 124 000 hectares that can be used as bushed gardens. Untapped land however abounds in some parts of the country. This gives some leeway for mechanization and the possible development of large-scale agriculture. However, the vast majority of farmers grow for their own subsistence and a large proportion of them practice inter-cropping, especially with maize as the main crop. Despite some apparent increase in agricultural production during recent years, the sector suffers from lack of investments that could provide a more business-friendly environment. This particularly concerns market infrastructure and public services like extension and agricultural statistics.

Rainfall and its distribution closely determine the outcome of agriculture production, as irrigation accounts for a minor share of the total and is used almost exclusively for rice. With rains becoming increasingly erratic over the years, variation in output tends to grow larger, putting food security at risk. Agricultural activities start with the onset of the main northeast monsoon rainy season. Soils are generally poor and the terrain is often steep to very steep in upland areas. Farmers have adapted to these conditions and selected crop varieties best suited for inter-cropping under prevailing conditions over centuries. Crop varieties have been selected more for coping with post-harvest losses than for increasing yields. Full heed must be taken of this long-acquired experience when trying to modernize agricultural production.

Climatic conditions

Two climatic zones correspond to the northern and the southern part of the country, and they are divided by mountains and a central plateau:

The northern part has one rainfall peak within the wet season lasting between four to six months. The coastal areas receive on average from 500 to 1 500 mm of rainfalls yearly, while above 500 m rainfalls vary between 1 500 to 3 000 mm.

The southern part has two rainfall peaks during the wet season which lasts between seven and nine months. The first peak is situated in December and February and the second peak manifests itself in May and June. Coastal areas get an average annual rainfall from 1 500 to 2 000 mm, while the areas above 500 m receive more abundant rainfall from 1 700 to 3 500 mm.

Starting with the onset of the main, northeast-monsoon, and rainy season, the agricultural cycle in Timor-Leste normally begins in November with land preparation and planting of maize in upland, followed by nursery preparation and transplanting of rice in lowland, in December/January in the northern part, and a month or two later in the south coast. Harvesting of maize begins from February and completes in April, while harvesting of wet season rice is around June/July in the north and August/September in the south. In the south where there is a second rainy season (maize and rice) in areas with some supplementary irrigation. The relative importance of the second crop is however small, approximately 10 percent of the total production areas. Planting is around 90–110 days prior to the harvesting of maize and rice while generally cassava is planted in December inter-cropped with maize”.

Farming systems

Low input/output subsistence farming forms the bulk of Timorese agriculture. Shifting cultivation, often based on slash and burns is widely practiced. Soils are shallow in a large proportion. Inter-cropping of maize and cassava is usual on steep slopes situated in the northern area of the country but also in the more fertile terrain found in the southern part of the country. Cowpeas and sweet potatoes are also cultivated at the onset of rains in November. While cereals and cassava are grown in most parts of the country, other crops like sweet potatoes, Irish potatoes, beans and bananas constitute a significant portion of the diet of subsistence farmers and bring useful nutrients, two characteristics which explain their important role as coping mechanism in difficult periods, hence their important contribution to overall food security. The main lowland rice is generally irrigated but also to a smaller extent is grown as rainfed, while upland rice is in most cases rainfed. Irrigated areas are often poorly maintained and managed and some networks need urgent, large scale, repair. Other crops include yam, soybean, taro (swamp and upland), squash, pumpkin, cabbage, onion, peanuts, sago, coconuts, fruits, coffee, and tobacco. The availability of the produce varies rather widely according to the location, season and tradition in line with the fact that the country is very heterogeneous despite its small size.

3. FOOD PRODUCTION IN 2007

3.1 General indications and rainfall conditions

As a consequence of the El Niño effects on global weather conditions, the main rainy season in Timor-Leste started only in December 2006, with a delay of more than one month compared to normal conditions. In addition, rainfall pattern remained erratic and dry spells have been reported until late February 2007. The late onset of the rainy season and erratic rainfall pattern is having a serious negative impact on agricultural production in Timor-Leste for 2007.

Consequently, land preparation and planting of inter-cropped maize, cassava and other root crops and pulses have themselves been delayed for more than one month. The total area planted is reduced due to shortages of planting material experienced by farmers who had to sow maize twice or even several times. In addition, dry spells during the flowering period have further reduced the expected yields. Maize harvest has also been delayed and was just starting at the time of the mission field visits in late March 2007. An extremely high spatial variability of production has been observed, with some fields showing crops in reasonably good status while fields just a few kilometres away registered severe damages or complete crop failure.

Delayed onset of rains also postponed the planting of rice. Sowing in nurseries started in February and transplanting to paddy fields was ongoing during the mission's visits. In some areas, direct broadcast sowing in paddy fields was preferred in order to accelerate planting operations. As a consequence of the late sowing/transplanting, there is an increased risk of damages to rice crops caused by possible dry spells during April and May. Rainfall pattern between April and June will be critical for rice production in 2007. This higher risk of crop failure induced some farmers to cultivate a reduced area in order to save part of their paddy rice stocks.

The erratic rainfall pattern has also created favourable conditions for various crop pests. A major locust outbreak is currently causing severe damage to both maize and rice fields in Bobonaro and Ermera districts with potential risk of spreading of swarms to Covalima district. More than 4 000 ha have been severely damaged to date and the infested area is expanding. FAO is currently supporting the government in facing the locust outbreak and control operations will soon start in the affected areas. Despite this, the impact of the locust outbreak on the overall 2007 maize and rice production is likely to be relevant considering that Bobonaro is probably the most productive districts of Timor-Leste. In addition to the locust, rodent infestations have been observed in various districts and severe damages on maize production have been reported for the central and southern sub-districts of Manatuto.

High post-harvest losses on stored grains due to the lack of proper storage facilities at the household level also affect food production. These losses, mainly caused by insects and rodents, are estimated at approximately 20-30 percent for maize and 5 percent for paddy rice.

3.2 Area planted and area harvested

All available data on cultivated areas, yields and total production present a significant degree of uncertainty. In the case of maize and other crops under shifting cultivation systems, the area planted varies every year. Agriculture Officers at the District level are responsible for data collection and transmission to the Ministry of Agriculture, Forestry and Fisheries (MAFF). However, they lack adequate capacity in terms of training, technical equipment and funds to carry out an accurate job.

MAFF provided the mission with the available data on agriculture production (area planted, yields and total production for the main crops) for the past years. The mission analyzed the data on area planted together with MAFF staff and elaborated the final estimates used in this report.

The total area of harvested maize crop in the 2005-2006 agricultural season was of approximately 71 000 ha. Due to the delay and erratic nature of the 2006-2007 main rainy season, the area of maize being harvested this year is expected to be about 10 percent lower than last year, reaching a total of over 63 000 ha.

Rice production in irrigated and rainfed areas has also been affected by the late onset of rains, with a reduction of approximately 5 percent in the area planted. However, the area which will produce a satisfactory harvest will depend much on the rainfall pattern during the period from April to June. A decrease has been observed in areas under up-land rice cultivation.

Worldwide, production of maize is greater than that of rice, even though maize is grown on a smaller area than rice. This pattern is reversed in Timor-Leste, in large part due to the mountainous relief. According to the "Suku Survey"¹, approximately 81 percent of Timor-Leste farmers grow some maize. Maize is the most important staple crop in the country, but its yields are extremely low, compared to that of the other countries in the region. Hence, there is potential for increasing yields, in particular through an improvement of farm productivity on relatively favourable lands.

Cassava is the third most important food crop in Timor-Leste, after maize and rice. It is mostly planted in backyards or in small plots near the house. Plants are pulled up when needed and the peeled roots are eaten after boiling. Most local varieties have good eating quality but low yields and starch contents. The average cassava yield in the country is reported as 4 t/ha, one of the lowest in Asia.

Groundnuts are grown widely in small plots, but it is not a major crop in Timor-Leste. Low yield varieties are grown and the produce is used for direct consumption.

There is good potential to increase the cultivation of groundnut in the country. Moreover, introducing legumes in cropping systems will help stabilise the productivity of cereal-based cropping systems. ICRISAT, under an ACIAR-funded and coordinated project, 'Seeds of life – East Timor', introduced into East Timor 15 advanced varieties in the 2000–2001 season. These varieties outperformed the local varieties in all locations. According to a study conducted in 2002², increased groundnut production would not only stimulate the local food and oil processing industry but would also provide an opportunity to export to neighbouring countries which are currently net importers of this commodity. However, premium quality groundnut can hardly be grown by subsistence producers, hence expansion of production is highly dependent on high-input farming, but all the related services, such as effective extension, are currently lacking.

3.3 Factors affecting yields

General comments

Many factors limit agricultural productivity, including:

- Low quality varieties: seed stocks have been severely affected by the current crisis, not only quantitatively since growers and their families eat them in last resort, when no other food is left, but also qualitatively. This year in particular, as the season started late, a large proportion of seeds did not germinate. Seeds are essential in improving crop productivity. In Timor-Leste, where there is no seed industry, public support is needed to build up a viable system of seed production and distribution. FAO and NGOs distribute maize seeds, such as the Arjuna and Kalinga varieties, as well as rice seeds, which can yield much more than most local varieties. However, these varieties remain little used in Timor-Leste.
- Lack of mechanization: farming is overwhelmingly hand-powered, a characteristic which is, however, useful for intercropping. Animal traction is not widespread, with the exception of buffaloes for puddling. Family is by far the dominant labour source.
- Inputs use is very low: fertilizers and seeds are expensive or unavailable; this, combined with the fact that farmgate prices are generally low, makes intensification impossible for most farmers.
- Credit institutions are non-existent, with some exceptions concerning micro-credit provided through some local NGOs and small credit unions.
- Some farmers organize themselves in farmers' groups, but this only facilitates their access to inputs and marketing channels in a limited number of cases. Moreover, the many low skilled farmers cannot benefit from extension services as these obviously need to be up-graded.
- Lack of markets: marketing channels in rural areas are very inefficient, and many cities (including Dili) do not have a food market with suitable equipment such as storage facilities, weighing machines, packing and grading facilities, etc. This induces high transaction costs and remains a bottleneck to a sound marketing of domestic production.

¹ ETTA, Suku Survey, 2001

² Nigam S.N., Palmer, B., San Valentin G., Kapukha P., Piggins C and Monaghan P "Groundnut: ICRISAT and East Timor" in da Costa et al. (eds) "Agriculture: New Directions for a New Nation — East Timor (Timor-Leste)" ACIAR Proceedings No. 113, 2003

- The negative impact of this bottleneck is obvious in the case of maize, scarcely traded in the country since only a limited number of growers have marketable surpluses. Scarce market access (road network in very bad condition and logically high transport costs, often rudimentary, marketing channels) may explain frequent inability or unwillingness to invest in inputs that would increase production. Another reason (as well as a consequence) for this, is migration from rural areas to the cities, and the resulting reduction in labour force available for farming³.
- Lack of irrigation and appropriate water management; there is no *ad hoc* institution designing and implementing a water management policy. While maintenance of irrigation schemes is in some cases effectively carried out, virtually no instruments are in place to monitor performances, utilization of equipments, to study new opportunities and evaluate costs. In addition, farmers are very seldom organized in water user organizations.
- One important consequence of these constraints is an underutilization of the agricultural sector, with a reduction of the planted area observed in all the districts, combined with scarce use of the technologies apt at tapping the important potential of the country.

Yields of individual products

Productivity of maize under shifting cultivation and/or intercropping systems commonly found in Timor-Leste is lower than the one cultivated under high-input, intensive agriculture. However, other techniques - such as mulching, the use of animal manure and/or compost and the intercropping or rotation with nitrogen fixing legumes - are available to enhance productivity of traditional systems. These are not widely adopted in Timor-Leste. Therefore, yields generally remain very low, ranging from 0.9 to 2.2 t/ha in normal years. As a consequence of the drought observed this year, and the resulting water stress plus the effect of pests (locusts, rodents), maize yields in 2007 are expected to range between 0.3 and 1.3 t/ha depending on the local conditions of each district and sub-district. The national average yield is estimated at 1.1 t/ha (Table 3). Due to the pivotal importance of maize as staple food in Timor-Leste, increasing such very low yields is a priority.

Productivity of rice differs depending on production techniques. In Timor-Leste, yields are generally low, varying from 1.2 to 1.5 t/ha with peaks of around 1.8 t/ha in areas where water is available throughout the cropping season. The average yield in 2007 is estimated at 1.4 tonnes of paddy per hectare.

Cassava, Sweet Potato, Taro and various other local root crops (kontan, wild yams, etc.) provide a constant and relevant contribution to the diet of the rural population, but their importance for food security is also related with their role as alternative staple crops in adverse years of low cereal production. Yields in Timor-Leste vary according to the species and farming practices, ranging from 1.1 t/ha for local tubers to 4.4 t/ha for Cassava.

3.4 Production forecast for main crops (maize, rice, cassava and other root crops)

Table 3 shows estimated crop production in 2007. Total production of maize, rice, cassava and other root crops in 2007, in cereal equivalent, is estimated at 123 469 tonnes. Maize production is estimated at 69 820 tonnes, approximately 30 percent less than previous years, average production ranging around 100 000 tonnes/year. Rice production is estimated at 44 566 tonnes of paddy – some 20 percent lower than previous years average estimates and 30 percent lower than in 2003. Production of cassava and other root crops is estimated to decrease slightly.

³ Barnett, J, Dessai S, and Jones, R (2003). *Climate change in Timor-Leste: Science, impacts, policy and planning*. The University of Melbourne and CSIRO.

Table 3: Timor-Leste: Crop Production Forecast in 2007

District	Maize			Prod. Second Crop (t)	Total Prod. 2007 (t)	Paddy			Prod. Second Crop (t)	Total Prod. ^{1/} 2007 (t)	Cassava Prod. (t)	Other Root Crops Prod. (t)	Total output in Cereal Equiv. ^{1/2/} (t)
	Main Cropping Season					Main Cropping Season							
	Area (ha)	Yield (t/ha)	Prod. (t)			Area (ha)	Yield (t/ha)	Prod. (t)					
Aileu	2 720	0.9	2 448	-	2 448	580	1.2	698	-	698	1 890	1 500	3 952
Ainaro	4 680	0.9	4 001	-	4 001	1 040	1.2	1 239	-	1 239	2 770	2 700	6 495
Baucau	5 200	1.1	5 616	1 000	6 616	4 440	1.0	4 530	500	5 030	4 880	1 500	11 676
Bobonaro	2 560	1.1	2 918	800	3 718	3 700	1.6	5 950	840	6 790	5 150	2 700	10 304
Covalima	5 540	1.3	7 046	1 390	8 436	4 200	1.5	6 305	1 040	7 345	6 290	2 630	15 698
Dili	1 080	0.7	778	-	778	50	1.3	67	-	67	1 010	750	1 381
Ermera	2 710	0.8	2 060	400	2 460	860	1.2	1 030	-	1 030	2 770	1 580	4 469
Lautem	11 360	1.2	13 291	1 200	14 491	3 630	1.2	4 330	-	4 330	8 230	7 030	21 973
Liquiçá	1 500	0.6	900	500	1 400	330	1.2	393	-	393	1 010	380	2 081
Manatuto	3 120	0.9	2 808	700	3 508	4 270	1.1	4 644	400	5 044	2 380	3 600	8 448
Manufahi	5 510	1.2	6 612	-	6 612	2 550	1.5	3 799	400	4 199	2 510	1 900	10 542
Oecusse	7 440	0.4	2 976	-	2 976	2 000	1.2	2 400	-	2 400	4 140	4 050	7 037
Viqueque	9 980	1.2	11 976	400	12 376	4 000	1.5	6 000	-	6 000	6 690	4 050	19 413
Total	63 400	1.0	63 430	6 390	69 820	31 650	1.3	41 386	3 180	44 566	49 720	34 370	123 469

Note: Numbers may not add up exactly due to rounding.

1/ Milling rate of paddy is 60 percent.

2/ Cereal equivalent of cassava and other root crops is 32 percent.

The secondary crops of both maize and rice are expected to be slightly below normal as a result of the erratic nature of the rainfall and the delay in planting during 2007.

3.5 Livestock

Livestock raised in Timor-Leste include cattle, buffalo, sheep, goats, pigs and poultry. Production is mostly on a small scale and based on traditional systems with no commercial livestock in rural areas. Pigs and poultry are mostly raised at household level to meet basic needs of the family, namely: (i) to be used to fulfil social obligations, (ii) to be sold in case on unexpected/unmet cash requirements, and (iii) to be consumed by the family on special occasions. Buffalo is raised mainly to provide animal power in paddy rice farming systems, being meat consumed when available as a by-product. Cattle, buffalo, sheep and goats are considered as family assets and therefore marketed only when strictly necessary, with the exception of the districts bordering West Timor where cross-border trade represents an important source of income due to the higher prices for livestock in Indonesia. Animals are generally left roaming freely on extensive areas with little or no feed supplementation. Overgrazing and land degradation are commonly observed along the Northern coast.

4. AGRICULTURAL OVERVIEW BY DISTRICT

In the **Aileu** district, maize and cassava are more produced than rice, and fruit and vegetables are widely grown. Concerning animal production, chicken, pigs and goats dominate. The maize crop is again this year affected by late and insufficient rainfalls, especially at the beginning of the growing season. Rodent infestation is a recurring problem in many areas. Coffee, fruit and vegetables, which are a source of monetary income for many farmers, are also affected by the drought, in particular at the flowering phase.

Agricultural production in the **Ainaro** district is mainly made up of maize, with rice and coffee occupying a limited position. Vegetables are grown in the uplands and they represent an important source of income. Animal production concerns essentially pigs and goats. Maize production has been stricken by the drought.

Baucau: located in the northern coast, has 5 sub-districts. Rainfall has been better distributed on the hills, while the coast faced a drought. The district is an important food-producing area, where rice accounts for nearly half of aggregate cereal production, the remainder being maize. In addition, the district is an important producer of beans, groundnuts, cassava, sweet potatoes, copra and candlenut. Main livestock are buffalo cattle and goats. Compared to other districts, Baucau is agriculturally more developed and has a surplus production. Maize is rarely cultivated under traditional slash and burn systems. Population density is also comparatively high in the district. The effects of drought in small areas on slope/terraces in Laga sub-district were observed during the mission. Production this year is likely to be slightly below average for maize and normal for rice.

Bobanaro: Located in the west of the Country, with its 6 sub-districts, ranges for more than 100 km from north to south. It is one of the most productive districts in Timor-Leste both for crops and livestock. Maize and rice are predominant in the sub-districts of Maliana, Atabae and Cailaco with surplus production yearly. The 2003 CFSAM report mentions: *"This district is also a big producer of red bean, mung bean and peanut and to a little extent coffee. Main livestock are cattle, buffalo and goat. In the current season, maize planting commenced in early December with rice planting following from January to April. The district has nearly 3 600 hectares of functioning irrigation schemes"*... Maliana has cross-border trade with Indonesia and therefore agricultural inputs are more easily available, at cheaper prices, than in the rest of the country.

Covalima district is made of seven sub-districts and has a significant second crop of maize. Maize is mainly cultivated close to the Indonesian border. Rice is cultivated in the lowlands under irrigation. Soybean, mung bean and groundnuts are also widely grown. Livestock is mainly composed of buffaloes, cattle and goats. As in other districts, maize was affected by a delay and shortage of rain at the beginning of the season.

Dili district is not agriculturally very important, having very limited land area. However, a significant share of the population practices agricultural production. A dry spell was noted, including in the Island of Atauro.

Concerning the district of **Ermera**, the major crops are *maize and cassava and to a less extent rice. Maize output was severely reduced by the drought and the population has already reverted to coping strategies such as increasing cassava consumption and/or increasing sales of fuel wood. Main livestock are horses, buffaloes and goats.*

Coffee is an important cash crop and 29 000 hectares are under the crop, often on steep slopes. More than 60 percent of organic coffee in the country is produced from coffee plantations in this district. A dry spell at

coffee flowering stage reduced last year's output in Railaco and Atsabe sub-districts. The shortage of rainfall in 2007 will similarly decrease the coffee crop, to be harvested in June-August.

Lautem district is a major maize producing area with more than 3 500 hectares of functional irrigation schemes. The main crop is maize cultivated in the planalto area under slash and burn system. Rice is mainly cultivated in the southern flatland around Ilomar. Cassava, beans, and vegetables are extensively cultivated. The district is also an important livestock and fish producing area. Main livestock are buffalo, cattle and goats. Maize production in 2007 was negatively affected by delayed and erratic distribution of rains.

Liquiça has 3 sub-districts; two areas can be identified for the sake of agricultural production: the highlands, where coffee and maize are produced, and the lowlands, where only maize is the most important crop. It is not an important food crop producing area, as coffee is an important source of income. Notably due to specialization on coffee, this district is a chronically food deficit area. Maize production in 2007 on the coast is below average as a consequence of the drought. Logging for fuel wood sale is widely practiced as it is a source of additional income.

Manatuto is the only district that extends from the north coast to the south coast, encompassing all agro-ecological zones in Timor-Leste. In the northern part of the district, rice is extensively grown in rehabilitated irrigation schemes; In the central uplands subsistence agriculture is practiced based on maize inter-cropped with cassava, beans, pumpkins and other crops; and Rice is also cultivated on a small scale in rain-fed area of Natarbora, closer to the south coast. At higher altitudes coffee is also cultivated to a limited extent. Main livestock are buffaloes, pigs and goats. The combined effects of the drought in the northern sub-districts and a severe rodent infestation in the central and southern sub-districts caused a significant reduction of the 2007 maize production. Delayed planting is also expected to negatively impact on rice productivity.

In **Manufahi** district, maize is grown throughout the 4 sub-districts, however, with rice predominating in Betano and in the sub-district of Same. Beans, vegetables, fruits and other horticulture crops, and to a limited extent coffee and candlenut are also grown. Livestock is composed of cattle, buffaloes and goats. Maize production suffered from the drought. Like in other districts, rice planting was delayed.

Oecussi district is an enclave within the Indonesian territory of Western Timor. Commercial imports, mainly from West Timor with smuggling accounting for a significant share thereof, are a major source of food. Smuggling has reportedly increased during the last months, due to the closure of the border.

Oecussi's agricultural sector is characterized by a conflict between farming and animal husbandry, often translated into a shortage of labour for farming activities. Insufficient rainfalls resulted in crop failures and the overall maize production has been severely reduced, particularly in the coastal areas, which are also the more densely populated and in which the population is consequently facing food shortages for the second consecutive year. Interviewed households reported having very few cassava roots left, because they have eaten most of them during the last year. Low prices of cattle, even in Dili, have led to an increase of the total livestock population. Estimates report an increase from 22 704 cows and buffaloes in 2004 to more than 30 000 currently. Historically, trade with neighbouring West Timor concerned mainly livestock, and has been revived in recent years, but at a lower level. The main livestock are cattle, buffaloes and goats. Albeit trans-border trade of agricultural inputs is active, hence more readily available and at lower prices than in the rest of the country, effective use is limited. The district also produces groundnuts and sweet potatoes. Post-harvest losses are high.

Viqueque district is a major maize and rice producing area. Rice is predominant in Uatu Lari and Uatu Carbau sub-districts. The district is also a big producer of coconut and candlenut as well as livestock (cattle, buffaloes, pigs, and chickens). The overall production of maize and rice in 2007 is expected to have been less affected by the drought.

5. FOOD SUPPLY/DEMAND BALANCE

The projected supply/demand balance for marketing year 2007/08 is summarized in Table 4. It is based on the production estimates of maize harvested in April 2007 and a forecast of both the main rice production and secondary crops in 2007. It is also based on the following population, consumption and utilization parameters:

- A mid year 2007 population of 998 907 people (see Table 1.)

- Consumption rates for maize, rice and cassava are estimated at 90 kg/caput/year, 75 kg/caput/year and 15 kg/caput/year respectively.
- Seed and post harvest losses: in general, precise seeding rates for maize are difficult to estimate given the predominance of inter-cropping systems in Timor-Leste. A seed rate of 20 kg/ha would be reasonable. Paddy seed rate of 40 kg/ha is used. Post harvest losses in maize vary substantially, but an average of 25 percent is assumed, while in rice they are assumed at around 5 percent. Very small amounts of grain are used as feed.

Total available staple crop production is estimated at 124 469 tonnes, well below total utilization of 210 833 tonnes. Opening stocks are estimated at 1 000 tonnes and closing stocks forecast at 9 000 tonnes. The production of rice is well below normal. The assumption, substantiated by direct observations and the analysis of the rice crisis of February-March, is that at the beginning of the season virtually no stocks of rice were left, and only one half of maize stocks of previous years, i.e. 1 000 tonnes. Food security stocks are expected to be reconstituted by using one-half of the expected Government purchases of 16 000 tonnes by Ministry of Development for Strategic Reserve. The indication of "no import requirement" for maize must not be understood as an endorsement of the present pattern whereby only rice is imported. It merely reflects current practices.

The total cereal import requirement in 2007/08 is estimated at 86 364 tonnes. In anticipation of the government purchase of 16 000 tonnes, private cereal commercial imports are estimated at 55 000 tonnes. Imports in the last several years ranged from 40 000 tonnes to 55 000 tonnes. Government purchases are mainly for strategic rice reserve and is done through the private traders, also with the possibility of government-to-government agreements.

Uncovered import requirement is estimated at 15 364 tonnes and need to be met through food aid. 5 000 tonnes already pledged and a likely additional quantity of 2 000 tonnes through WFP for 2007

Table 4: Timor-Leste Food Supply/demand Cereal Balance Sheet (April 2007 - March 2008) (tonnes)

	Maize	Rice ^{1/}	Cassava & Other Root Crops ^{4/}	Total
Total Availability	70 820	26 740	26 909	124 469
Opening Stocks	1 000	0	0	1 000
Production	69 820	26 740	26 909	123 469
Total Utilization	70 821	113 104	26 909	210 833
Food Use	89 902	74 918	14 984	179 803
Seed, feed and losses	18 974	2 249	807	22 030
Closing Stocks	1 000	8 000	0	9 000
Cross-commodity substitution	-39 055	27 937	11 118	0
Import Requirements	0	86 364	0	86 364
Anticipated Commercial Imports		71 000		71 000
Of which, Government Purchase ^{2/}		16 000		16 000
Uncovered deficit^{3/}		15 364		15 364

Note: Numbers may not add up exactly due to rounding.

1/ Milling rate of paddy to rice is estimated at 60 percent.

2/ By Ministry of Development for Strategic Reserve

3/ Uncovered (through food aid)

4/ In cereal equivalent.

The food supply indicated in this table does not include products other than cereals and tubers (in fact essentially cassava). While this does not change the overall picture of a characterized food deficit in the country, these other products account for a significant share of the population's diet.

Available data plus direct observations made by the mission show that bananas and beans plus other products, especially fruits, are produced and consumed in noticeable quantities in the districts. Moreover, the nutritional value of these products can be crucial to mitigate the food deficit.

Food aid provided through WFP does not only consist of rice, but also of beans and CSB (Corn Soya Blend). Expected arrivals of beans in 2007 amount to 1 590 tonnes (590 tonnes already scheduled plus 1 000 additional tonnes likely to be brought to the country), while CSB represented 3 025 tonnes in 2006 (but no CSB was imported in 2005 and expected arrival in 2007 will likely be limited). The cereal equivalent of beans as expressed in kilocalories is 8/5, i.e. 267 percent, while that of CSB usually is around 120 percent.

6. HOUSEHOLD FOOD SECURITY

6.1 Context and approaches used in food security analysis

The assessment mission used a combination of secondary and primary data, collected by the assessment team during field visits to administrative headquarters in the affected areas and a sample of affected communities, in order to analyze the food security situation. Secondary data on food security in Timor-Leste were verified through the field visits in regards to the impact of the drought-like climate and the locust infestation. Information on the impact was collected from focus groups (men and women) and key informants. Ten districts were purposively selected where either the impact of the harvest failure was believed to be worse or where secondary data had to be validated. The districts were Lautem, Baucau, Viqueque, Manatuto, Liquiça, Bobonaro, Manufahi, and Oecussi.

Data was entered into a spreadsheet and judgment-based classification was used to analyze the outcome of the crop failures and the estimation of people in need of assistance.

The type of farmers that have been identified as being more vulnerable than the other farmers are those who do not have other income sources. These farmers are called ordinary farmers (see above).

Six districts have been identified for priority purposes where the food security situation is slightly worse than the other districts. These districts are; Baucau, Bobonaro, Ermera, Lautem, Manatuto and Oecussi. There is no difference in vulnerability between IDPs and local population and e.g. in Oecussi the IDPs are called returnees as they all have their proper homes there.

As mentioned earlier, the livelihood group that is most affected by the crop failure and the locusts are the farmers that are solely dependent on their agricultural production (called ordinary farmers in the CFSVA 2005) and do not have other income sources like livestock, small trade or handicraft. Based on the above analysis and prioritization of the worst affected districts from both locust infestation and drought like climatic change that greatly hampered the maize harvest, it is estimated that between 210 000 and 220 000 people are in need of food assistance until the next harvest.

Dili city is not included in the above estimation of people in need of assistance as assessing the needs of the IDPs who have received food aid since May 2006 is beyond the capacity and the TOR of this Mission.

6.2 Nutrition and health

The nutritional impact of the unrest and the erratic rains is unknown as no survey has been done and no surveillance system is yet in place 11 months after the onset of the conflict. What is known is that the nutritional situation was very alarming prior to the crisis and has most likely not improved.

The team observed both moderate and severely malnourished children during the field visits but it was of course impossible to assess the magnitude. Mothers in the focus groups reported that many of their children had lost weight during the past months.

Table 6 shows results from previous anthropometric surveys indicating that the level of malnutrition in Timor-Leste would call for blanket supplementary feeding to all children under the age of 5 and to all pregnant and lactating women. Malnutrition rates are unacceptably high and demand a multi sectoral approach in reducing both acute and chronic malnutrition.

Table 6: Past nutrition surveys' results

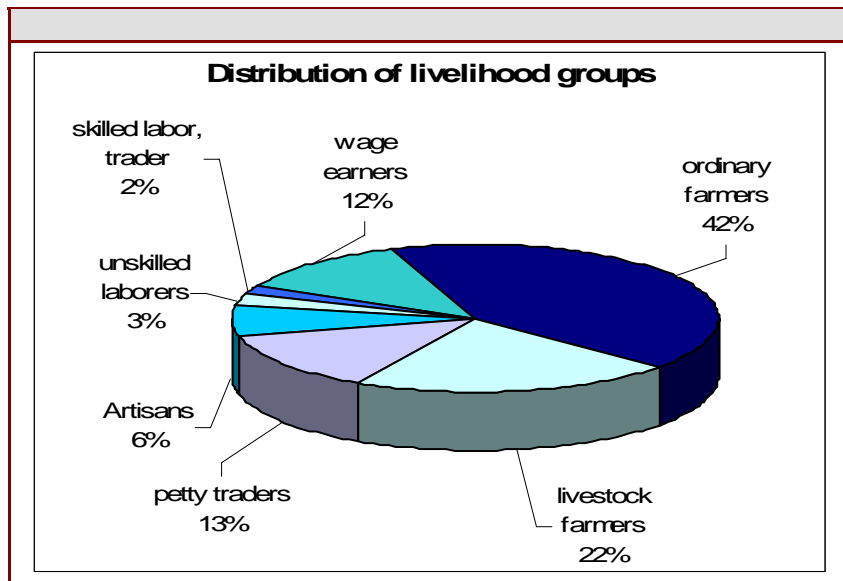
Date	Organization	Area covered	Global Acute Malnutrition	Global Chronic Malnutrition
Aug.02	UNICEF - MICS	Countrywide	12 %	47 %
Dec.03	GTZ	Baucau, Viqueque	18.7 %	54.1 %
May.04	Oxfam Australia	Oecussi	17.8 %	58 %
Aug.04	Care Australia	Liquiça, Covalima, Bobonaro	14.5 %	52.8 %
May.05	Care Australia	Covalima	16.6 %	55.1

There is an overall low utilization of health services – in particular for preventive services, one of the biggest challenges of the health sector. Despite the poor health status of the population, only one in ten people seek outpatient care when sick. Only one in four deliveries is attended by skilled health staff, and immunization coverage of children under one year is unacceptably low.

6.3 Food security and livelihood groups

The livelihood groups found in Timor-Leste are mainly a variety of different types of subsistence farmers. Of the most vulnerable to shocks are the subsistence farmers who do not engage in other activities (ordinary farmers). This group makes up for 40-45 percent of the population⁴. The other livelihood groups are presented in Figure 1.

Figure 1: Distribution of livelihood groups



The population can be grouped into four food security categories as presented below.

It is the food insecure and the highly vulnerable that are of most concern when a lean season becomes longer than normal and when crops fail. Usually the lean season lasts from October/November to February. The current lean season started much earlier due to the large IDP movements which resulted in an earlier depletion of food stocks at household level in the district and therefore the lean season began as early as August/September for some households. With the late start of the rains this year, the harvest of the maize has been late, adding another two months to the lean season in some districts like Lautem where maize will be harvested in May.

As discussed in the previous chapters, the late onset of the rainy season, followed by erratic rains has led to poor development of maize and a sharp reduction in maize harvest. As a result an earlier onset of lean season anticipated as the maize harvest for the poorer households will last 2-4 months consumption requirements.

⁴ CFSVA 2005 and District Emergency Food Security Assessment(EFSA), September 2006

Maize is the most important crop for 83 percent of the farming population. Rice on the other hand is only the most important crop for some 13 percent. Rice is important for food insecure households as they have the opportunity to work as daily labourers during labour intense periods of planting, weeding and harvest. Daily workers are often paid in kind and get a small share of the rice production. All households are growing cassava and other tubers such as sweet potato which are mainly grown to substitute maize and rice when the stocks have depleted. The importance of these “other” crops (cassava, taro, sago etc.) is often underestimated but in fact makes up for a large proportion of households food intake.

In 2005 the CFSVA findings showed that rice is a fairly new cereal in the Timorese diet and was introduced some 30 years ago by the Indonesians. In terms of consumption it is fair to say that rice is more an urban staple even though it has become more important also in the rural areas as it is seen as more of a status food than the traditional staple foods.

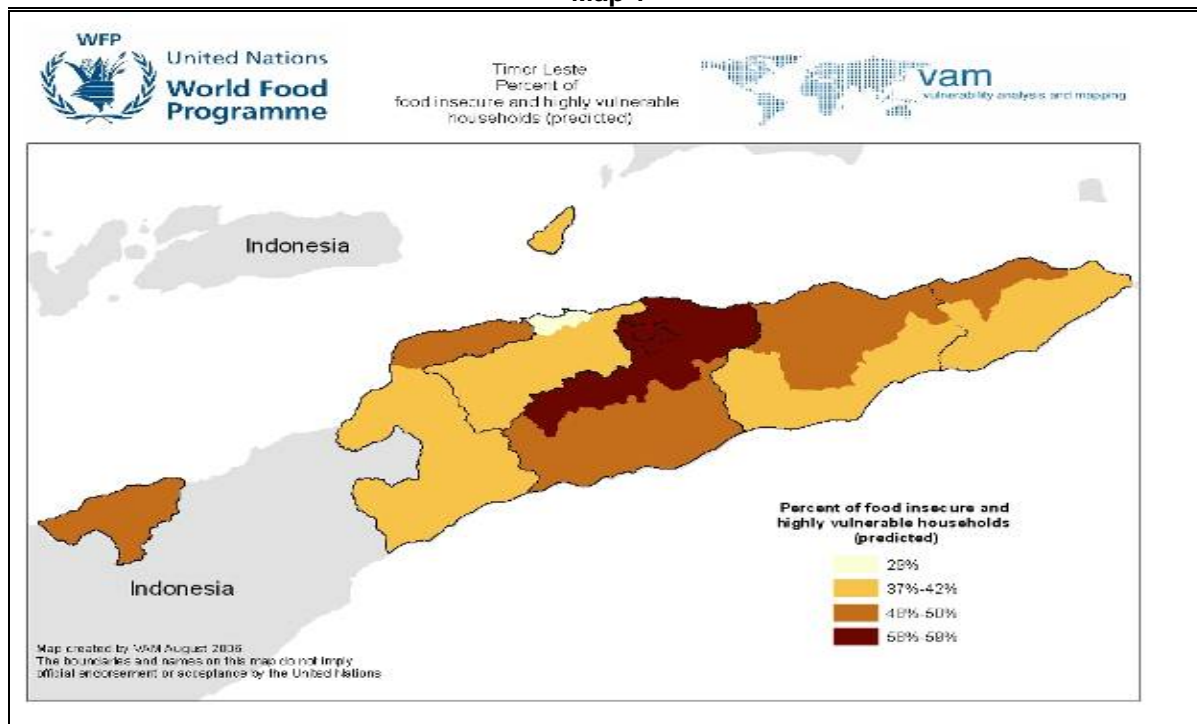
Table 5: Food security groups^{1/}

Food Security Category	Percent of the sample (weighted) CFSVA 2005	Ranking cut-off points
Food Insecure: households with generally poor or borderline food consumption and very weak food access; or households with weak or very weak access and poor consumption.	20 %	Below/equal 1.50
Highly vulnerable: food-access and/or food-consumption are so insufficient that these households are close to being food insecure.	23 %	1.51 – 2.50
Moderately vulnerable: food-access and/ or consumption are not good enough to categorize them as food secure.	21 %	2.51 – 3.50
Food Secure: in general, fairly good to good food consumption and medium to good food access, includes also “good access + borderline consumption” and “good consumption + weak access”.	36 %	Above 3.51
Total	100 %	

^{1/} To define the Food Security and Vulnerability level, WFP ranked each household in terms of its food consumption and access rate to obtain a *Food Security Score* (1–4). The same cut-off points were used to divide the sampled households into 4 groups, ranking them as Food Insecure, Very Vulnerable, Moderately Vulnerable and Food Secure. Those cut-off points were: below/equal 1.50, between 1.51 and 2.50, between 2.51 and 3.50, above 3.51 (CFSVA December 2005-January 2006).

The map below shows the regions with highest level of food insecurity as per CFSVA 2005. This was regarded as a more or less normal year in terms of agriculture production and thus the lean season lasted as expected, some 4 months. As mentioned earlier, this year’s lean season is already approaching 6 months. The delayed and erratic rains have affected the northern coast more than the southern, corresponding broadly with the areas with higher percentage of food insecure and highly vulnerable, as per the map.

Map 1



Coffee growers

Over 21 000 farmers belong to Cooperativa Café Timor (CCT), which makes up for approximately 95 percent of the coffee growing farmers in the country. The political crisis had a disastrous effect on the 2006 production⁵ as it coincided with the picking season. The quantity of green beans exported in 2006 was 1 800 tonnes. In a good year the export can reach 5 000-8 000 tonnes.

There has been a negative impact of the current drought like climate on the coffee production. Some of the coffee bushes, especially those located on low altitude, have died and the flowers fell off due to lack of rain. It is estimated that there will be 35 percent reduction in coffee production in Ermera and Liquica compared to normal production. The CCT estimation of 2007 export is 2 500 tonnes and thus still better than in 2006.

In the case of vanilla, another cash crop, CCT exported 556 kg last year and the estimation for this year's export is 450 kg. The reduction is also due to lack of rain at the blooming stage.

6.4 Food access

Food access for households has become much more difficult since the beginning of the political crisis in April 2006. As mentioned above, most families are engaged in a number of activities depending on the season in order to make ends meet. Since the instability, farmers have become more restricted in their movements and have avoided the more lucrative markets in e.g. Dili due to fear and have sold their produce at the local market for lower prices. This has led to an overall reduction in income during 2006.

Not only do households have less money to purchase food but food prices have significantly increased. This is not only the case of rice, which as reported in September EFSA was more correlated to the increase in fuel prices due to transportation needs but also for the less preferred foods that people restore to during the lean season.

Cassava prices have increased three to five times in some areas, which greatly reduces the purchasing power of the poorest people. The increase can partly be blamed on the rice shortage which have forced also well off families to change staple from rice to cassava and therefore increasing the demand more than during previous lean seasons.

Income sources and expenditures

As the food stocks deplete households depend on the market for their food. In order to get money to purchase they sell livestock, vegetables, fish, salt, firewood and other items, an activity that increases during the lean season. The price of livestock has reduced as supply exceeds demand. In Lautem a one-year-old goat cost US\$30 whilst it was sold for US\$35 before the lean season. Buffalo has reduced from US\$200 to US\$150.

In Liquiça, selling firewood is an income activity that is commonly used and which is increasing during the lean season. This has an environmental impact and deforestation is widespread on the hills surrounding Dili.

Expenditures on food has continued to increase from an average 55 percent in 2005 (CFSVA), 65 percent in 2006 and reaching 70 percent in March 2007. Rice has remained the largest expenditure item even though many households are reporting that rice has become too expensive for them to buy.

6.5 Coping strategies

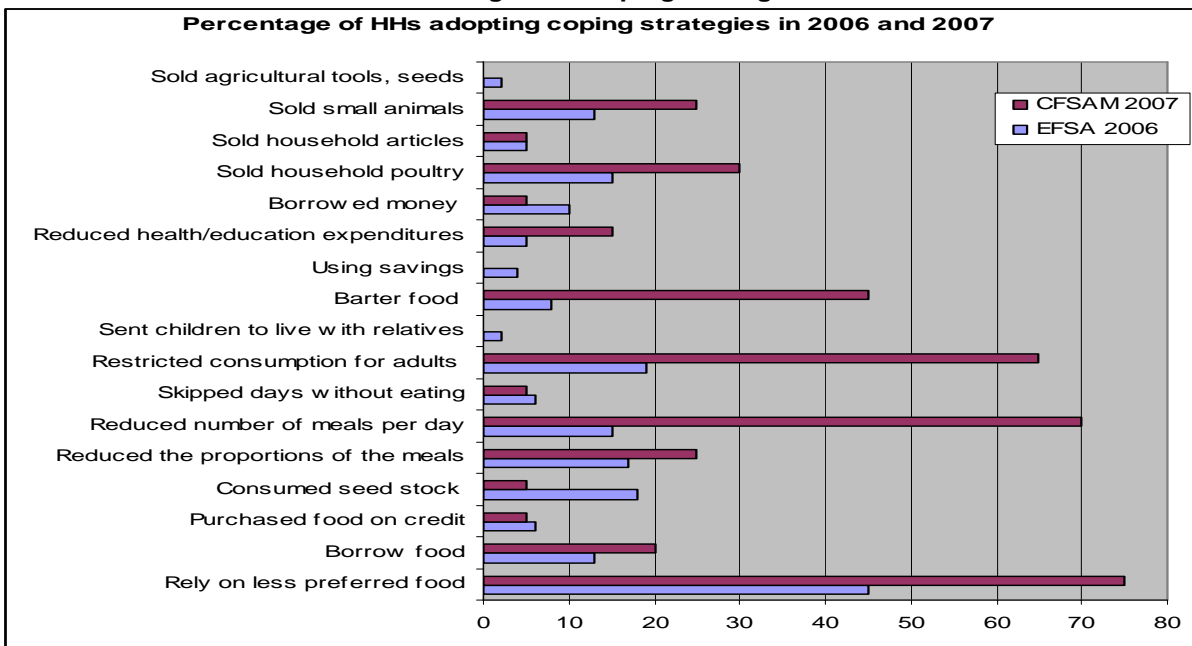
The coping strategies encountered through focus group discussions in the district were very uniform and does not alter from information given in other Food Security assessment reports (CFSVA and EFSA). The percentage of households using coping strategies now is higher than during the EFSA which is natural as the EFSA was not carried out during the lean season as is the case for this assessment.

Households rely on less preferred and less expensive food during the lean season and have thus changed from consuming rice to cassava, sago and taro (Figure 2). The second most common strategy used by 65 percent of the households is restricting the number of meals for the adults in the family. In Lautem, Viquegue and Baucau the adults are consuming on average two meals per day instead of three. In Bobonaro and Liquica they have further reduced it to one meal per day for adults whilst children in all districts were reported to consume three meals. Quantities were reported to have reduced though. The reduction in number of meals started in January for most of those households who have resorted to this way of coping.

With less income and increased food prices households reported considering taking children out of school, especially those studying in Dili and Baucau as they simply cannot cover the costs anymore.

Sale of livestock is a normal income source but becomes a coping strategy when families are selling out of distress, leaving them without the asset for the future. This is reported to be happening in Lautem.

Figure 2: Coping strategies



6.6 Food assistance requirements

The mission estimates that some 210 000 to 220 000 vulnerable rural people (ordinary farmers without other livelihood activities) will require emergency food assistance until March 2008, with some 15 000 tonnes of cereal. In addition to the cereal deficit, the Mission recommends 4 000 tonnes of non-cereal to meet the required 2 100 kcal per person per day including micro nutrient needs.

The below table highlights the districts that are worst affected by either crop failure or Locusts infestation. These districts are Baucau, Bobonaro, Ermera, Lautem, Manatuto and Oecussi.

In addition to the farmers affected by crop failure, Timor Leste also have nearly 100 000 IDPs living in Dili or with relatives in the districts due to the political crisis that started in 2006. The IDP households have been supported with food assistance since May 2006. The IDPs level of livelihood stress varies and was beyond the scope of this assessment as they are not directly affected by the crop failure. A specific assessment is needed to determine the needs for continued food assistance to them.

The population figures by districts in the below table however, have been adjusted to the IDP influx into the districts and they are thus included in the number of people need of assistance if they are "ordinary farmers".

WFP, has distributed 6 200 tonnes of food commodities between January to May 2007 and plan to distribute another 17 000 tonnes until March 2008 through different types of programmes such as Maternal and Child Health project, Food for Education and Food for Work. This covers the requirements for food aid based on the food gap. An evaluation will take place in late August 2007 to evaluate if the planned distributions meet the requirements. An assessment will also be planned for later in the year to assess whether the projected needs have changed or remain the same.

Table 7: Summary of Consolidated Food security information used as basis for analysis

District [Region]	Pop. Mid Year 2007 with IDPs	CFSVA 2005 Food Insecure and highly vulnerable	EFSA 2006 Poor Consumption	Percentage of Ordinary Farmers (CFSVA 2005)	Maize Production 2007	CFSAM 2007		
						Food Security observation 2007	Estimated pop. in need of food assistance (food insecure 2005)	Estimated pop. in need of food assistance (ordinary farmers)
Aileu [3]	46 897	35%		37%		better	16 414	17 352
Ainaro [2]	60 356	53%	9%	49%		poor	31 989	29 574
Baucau [1]	134 786	44%	44%	34%	Crop failure	worse	59 306	45 827
Bobonaro [4]	93 773	38%	30%	41%	Locusts	worse	35 634	38 447
Covalima [4]	60 017	38%	13%	41%		better	22 806	24 607
Dili with Atauro) [3]	115 961	35%	31%	37%		better	40 586	42 906
Ermera [3]	116 175	35%	33%	37%	Locusts	worse	40 661	42 985
Lautem [1]	66 750	44%	42%	34%	Crop failure	worse	29 370	22 695
Liquica [4]	67 423	38%	20%	41%	Crop failure	poor	25 621	27 643
Manatuto [2]	42 439	53%	26%	49%	Crop failure	Worse	22 493	20 795
Manufahi [2]	50 573	53%	7%	49%		better	26 804	24 781
Oecussi [5]	64 736	49%	34%	61%	Crop failure	worse	31 721	39 489
Viqueque [1]	79 021	44%	18%	34%		better	34 769	26 867

6.7 Recommendations

There is a need for short term interventions until the next maize harvest to mitigate further deterioration in the health and nutritional status of the vulnerable households that have been most affected by the crop failures. Food-for-Work (FFW) could be one type of intervention, which is based on self targeting and thus would only attract households with no other income options.

It should be well planned by keeping other seasonal activities in mind in order not to undermine those. The time frame for a FFW intervention could cover April-June, when the rice harvest takes over and households can work on the fields of better off farmers. The next FFW period could cover September-October/November up till the maize planting period.

Safety net programmes that protect food insecure households such as School Feeding and Maternal and Child Health programmes (MCH) should be encouraged and should serve the larger community by preventing malnutrition. It is highly recommended that the MCH programme is a blanket programme, including all children under 2 (highest priority) rather than being curative as the effectiveness of a curative programme is questionable.

Seed protection rations should also be considered for most vulnerable household in connection to seed distributions in order to protect the seeds from being consumed. All focus groups reported a severe shortage of maize seeds for the next planting season in November.

Tuberculosis was reported in many focus groups as being a burden to poor households as it reduces the labour force of the family when one of the adults gets sick. Food assistance to patients enrolled in the DOTS programme could be considered, ensuring that the treatment is completed and that the person recovers. This could be a vital assistance to food insecure households who depend on every family member's contribution.